QUEENSLAND

GEOGRAPHICAL JOURNAL

(NEW SERIES).

Including the Proceedings of the Royal Geographical Society of Australasia, Queensland.

15th SESSION,

1899-1900.

J. P. THOMSON, Hon. F.R.S.G.S., Etc., Etc., Honorary Editor.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. XV.

PUBLISHED AT BRISBANE BY THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND

NOTE.—All communications should be addressed to the Hon. Secretary, at the Rooms of the Society, 102 Elizabeth-street, Brisbane.
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Note.—The Geographical Journal is published monthly by the Royal Geographical Society, London; price, 1s. 6d. per copy to members of the Royal Geographical Society of Australasia, Queensland. The prices of Supplementary Papers and other publications of the former Society may be obtained on application.

The Scottish Geographical Magazine is published monthly by the Royal Scottish Geographical Society; price, 1s. per copy to members of the Royal Geographical Society of Australasia, Queensland.

N.B.—All Donations presented to the Royal Geographical Society of Australasia, Queensland, are acknowledged by letter and in the JOURNAL OF PROCEEDINGS.
A JOURNEY IN INDO-CHINA. *

By His Excellency the Right Hon. LORD LAMINGTON, G.C.M.G., etc., etc.

I made my first acquaintance with Siam and the Siamese at Bangkok, the capital, where the cordiality shown me by the king and his ministers was an agreeable introduction to my journey in the interior. After a fortnight's stay I started on my way up-country. On arrival at Chieng Mai, the capital of the Laos country, after a three weeks' journey by boat up the Me Ping River, which Mr. Holt Hallett has so admirably surveyed, I was just in time to accompany Mr. Archer, our Consul at Chieng Mai, on his way to Muang Tuen in the Shan States, where he was to take charge of an expedition coming from Burma, appointed to inquire into and survey the frontiers between the Shan States and Siam. I had only a few days in which to find transport and to make arrangements. Stores I had brought with me from Bangkok. My pack-animals were mules owned by Hös or Panthays; these are Chinamen who were driven out of Yunnan for rebellion some few years ago, and have for the most part settled in Burma, carrying on trade in the dry season by caravan. I was fortunate enough to find a party having only ten mules, a sufficient number for my requirements; twenty-five mules being the least number they usually venture to travel with. A Siamese commissioner had to be appointed, and the authorities had some difficulty in doing this, as it is not a favourite post. The pay drawn is very small, and if all the proceedings are not carried out to the satisfaction of the Government, the consequences are probably unpleasant. After divers delays, we started on Dec. 10, 1890, making only a short march the first day. The first two days we travelled through level

* Read at a Meeting of the Royal Geographical Society of Australasia, Queensland, September 27, 1899. We are indebted to the Royal Geo. Soc., London, for the use of the blocks of Lord Lamington's route maps. [Ed.]
Lord Lamington’s Route through the Northern Shan States

Scale 1 Inch = 60 Miles

Route shown thus —
country, occasionally cultivated, but capable of great development if the jungle were cleared. We then ascended the right bank of the Me Ping along a narrow and precipitous path. The scenery was lovely, the water rushed along hemmed in between steep hills clothed with palms, plantains, tall forest trees, and all the wonderful luxuriance of tropical vegetation. Before reaching the approximate frontier the most prominent feature is Doi Chieng Dow, a mountain which rises to the west out of the plain, showing to the north a precipitous face thousands of feet in height. The village of Chieng Dow is palisaded, and is the place whither witches are banished.

As we travelled north the people were more clothed and dirtier. The country was covered with jungle, which became much less dense where there were teak forests. The villages, very small and rare, were almost hidden in the jungle. A narrow pass, strewn with boulders and with precipitous rocks on the right hand, took us up to the watershed between the Me Ping and Salwin water systems. All along the route, wherever there had been some former encampment, were traces of little shrines or plaited bamboo devices to keep off the devils. We found the village of Pong Pa Chem and others beyond the frontier quite deserted owing to recent political disturbances.

In consequence of constant raids and the submission of the weaker state to the stronger neighbour, it is difficult to determine now the proper frontier. Our approach, when about two miles from Muang Tuen, was marked by the coming of the mother of the Governor to greet us, accompanied by a retinue of brilliantly-dressed attendants.

Three days' march brought us to Muang Sat, where the party was joined by a commissioner from Chieng Tong; he complained bitterly of his fate, both on account of his age, and also through fear lest he should do anything to displease his chief, who is not renowned for an amiable temper.

Muang Sat is a very small village with a decent market for yams, plantains, pork, and native medicines. The plain of the same name is very extensive, but not nearly fully cultivated. The Me Kok, a fine river some 60 yards broad, flows on the eastern side of the plain.

Our further route lay down the opposite or left bank, but the crossing took some time, as, what with elephants, mules, and bullocks, our party was large, and there were only two small canoes available to transport the baggage.

From Na Mon, a small village which we left on January 2, until our arrival at Ban Me Chan on January 26, the main body of the expedition never passed a single inhabited dwelling. The antagonism of interests for the last decade had made the neighbourhood by no means safe. The out-post villages on either side were inhabited by men whom a sense of constant danger had made somewhat oblivious of the rights of property. There was consequently nothing but an ill-
defined foot track, and even this had been unused for a year after the burning of the Muang Yôn and Viang Ché villages by the Siamese last year. We had therefore to cut, and in a good many places to dig, our own road not far short of a hundred miles in all, extending on either side of Viang Ché. This resulted in a very serious loss of time, but as a compensation it induced the former inhabitants of the destroyed villages to return and rebuild their old houses, so that the line is now likely to be kept open. From a distance of about twelve miles below the town of Muang That, as far as Ta Tôn, the Nam Kôk runs in a narrow channel between hills, and the stream is rendered quite unnavigable by constant rapids, of which the chief is Chieng Sô Wyen. This is the point at which the Siamese claim that their frontier crosses the Nam Kôk.

Viang Ché, to judge by the great double ditch that surrounds the site, must have once been a large town. Now impassable jungle reigns everywhere supreme. The number of tigers is therefore very great, and until we left the Nam Kôk there were alarms in the mule and bullock camps every night, and sometimes several times in the same night. No mules were taken, but several bullocks were carried off. The density of the jungle secured the safety of the tigers. From Muang Nyam the road leads gradually up to the Kyn Hki Tai range, which divides into two ridges, the higher of which is 2,750 feet above the sea level. The ascent and descent are very gradual, and the road under ordinary circumstances, and with regular traffic, would be very easy. It had, however, been almost totally disused for many months, with the result that we marched mostly along stream-beds, and by paths cleared for us by working parties through interminable stretches of gigantic bamboo. After getting clear of the Me San Noi, we entered the western fringe of the great Chiang Sen plain; but, although there were abundant signs of former cultivation, no inhabitants were met with until we reached the Lao village round about Ban Me Chan. Just under the hills at Pung Pen there are hot springs. There is a considerable deposit of sulphur, and the air was heavy with the smell of sulphuretted hydrogen. The water bubbled out from fissures in the rock, and in at least one place spurted out in a spray to a distance of two feet. We had no apparatus for testing the temperature, but it seemed to be very close on boiling point, and in the early morning heavy masses of steam rose from the marsh formed below the springs.

The village of Ban Me Chan marks the commencement of the plain of Chiang Sen, a tract of country some thirty miles long, with an average breadth of twenty miles. It would be very productive if there were a population in proportion to its size. The distant prospect was an agreeable change after the confined range of view in the wooded mountains.
After three or four days easy travelling, to Honglük, we were once again in the Shan country. The ownership of the plain of Chieng Sen was the principal point of inquiry for the Commission; from the want of any strong natural feature, and from the northerly advance of the Siamese in recent years, it will be hard to define the boundary.

Our route lay under the abrupt precipitous ridge which marks the western boundary of Chieng Sen. Chieng Tong villages have crept down under this range and are stationed on the upper waters of nearly all the rivers here as far down as the Me San. Close to the source of the Me Htain, which flows out of a cavern at the foot of a sheer cliff, are two fine caves, high up in the face of the precipice; inside both are shrines, pagodas, and images, which seem nowadays to attract few worshippers.

As I wanted to enter Tonkin through the Sipsong Pana, a route by which no European had hitherto travelled, and time was getting short, I with great regret had here to bid farewell to my friends of the Commission and go on alone. This was by no means agreeable to my mulemen, who disliked going into new country, and were still more afraid of having to return alone. However, extra pay tempted them, and in three days, leaving Honglük on February 1, we reached Chieng Lap, passing through a succession of small plains.

On the way to Chieng Lap we passed by Muang Lin, 21½ miles distant from Honglük, and on the north side of the stream named after it, and in the centre of a very fine plain. It was the largest and most flourishing place I had seen in the Shan States.

At Palao the country was quite park-like, but here my little party of eight men were first alarmed at the reports of dacoits. Near to this place I saw some women of the Kha Kaw tribe. They are of very low stature and were extremely shy, bolting into the jungle if one looked at them. Their dress was dark blue—a jacket and a head-dress covered with beads and shells. They carried their loads on a little yoke supported by a band around the forehead. The lower part of their dress exactly resembled a kilt, having plaits and two lappets hanging in front that answered to the sporran. Most of them also wore leggings.

It was a little below Chieng Lap that Garnier, in ascending the Me Kong, had to forsake his boats, and continue his journey by land along the right bank. Even here, some 1,500 miles from its mouth, the Me Kong is a noble river. The natural bed would be about 600 yards wide, but where I crossed it was not more than 80 to 100 yards, very deep, and flowing between jagged rocks that protruded out of the sandy channel. A raft was fashioned out of two canoes and a bamboo platform to ferry over myself and my belongings. This was not done, however, before some tapers had been burnt to propitiate the devils,
and a sacrifice of rice, nuts, and a rupee offered up on the rocks. I was unaware of the ceremony till it was too late to see it. The eastern or left bank of the river is Chieng Kheng territory. We had to descend it for some six miles, marching over the burning sands of the broad river-bed.

Here the Nam Ma flows in, and during the rains its current is so violent and the volume of water so great, that the passage of the Me Kong has to be made below the mouth of the Nam Ma. On a high bank, in the angle formed by the bend of the Me Kong, is the site of the ancient city of Viang Kôk. As usual, the neighbouring population could give no sort of idea as to when this city ceased to exist. The ramp and the moat can still be traced, though choked with jungle, and the place must have been of considerable size, and, commanding as it does two reaches of the river from the one front, must have been of some strength. The Chieng Lap village which existed here has not been resettled by the Muang Sing people, no doubt because it would require to be able to protect itself, and the old cleared lands in the neighbourhood are not sufficiently extensive to support more than a hamlet. Indeed, the whole country from here to the immediate neighbourhood of Muang Long is deserted, and the land itself is so nearly flat, with only very gentle undulations, that practically the whole area could be brought under cultivation by irrigation from the Nam Ma, the Nam Oo, and the Nam An. Muang Long lies in a flat valley, or rather a strath, along the banks of the Nam Ma. It is the beginning of the long plain, as it might almost be called, which runs up to Muang Sing, and past it on to Muang Pong in Chieng Hong territory. It varies in width from a mile or two at Muang Long, Muang Kang, and Muang Nang, to five or six at Muang Sing, and eight to ten at Muang Phong. Each of these townships is separated from its neighbours by gently sloping ridges of from 100 to 200 feet high, covered with dense forest, but otherwise the plain is unbroken, and the existing clearing for paddy cultivation might be enormously extended without any other labour than that of cutting down the jungle. To the west a high range, growing steadily higher northwards, separates the strip of plain land from the Me Kong, and to the east hills, range behind range, tower up to heights of 6,000 or 7,000 feet, shutting off the Siamese country beyond so completely, that there is absolutely no communication except by toilsome forest tracks from one village to another.

Fire was raging over the pampas, roaring and devouring the trees and all other vegetation. I had to be cautious in approaching Muang Sing, the capital of Chieng Kheng, as the Sawbwa, who is by rights a vassal of Chieng Tong, had been annoyed at not obtaining the latter state for himself instead of his nephew, and had placed himself under the protection of Nan, a Siamese State. Chieng Tong being tributary
to us since the Burmese war, I did not know how far his animosity might extend. Whilst I sent on emissaries to ask for camping ground, a shouting and yelling crowd of men, dressed in black, engaged in dragging timber, spying a curious object, dashed towards me. However, they were most peaceful, and delighted at examining any of my possessions. During the whole of my stay at Muang Sing they followed me about like a tribe of children filled with wondrous delight. I learnt they were Khas, brought down from the hills to build a new palace for the Sawbwa. They have no religion, and for food were given a daily allowance of dogs from the neighbouring villages. All was arranged amicably with the Sawbwa, and my camp was pitched near the market to the east of the town. I paid a visit to the chief, a kind, portly old gentleman, who conducted me to some cushions across the uneven and springy bamboo floor. All his ministers were assembled, and a motley set they looked, the Mongolian type being very predominant. Whilst the interpreters were at work the contrast of the soft sounds of the Burmese with the harsh tones of the Shan language was very noticeable.

The gradual re-settlement of the trans-Me Kong country drew the capital eastwards to the ancient town of Chieng Kheng, on the left bank of the Me Kong, and from there, the present Myoza, on his accession, moved still further eastwards to Muang Phong, no doubt as a precautionary measure against possible attacks from Chieng Tong. Except rice, cotton, and opium, and a small amount of tea, which is more and more cultivated as one goes north till the tea gardens of Ibang are reached, there is no produce of any value in the State, sugar-cane and tobacco being only grown for personal consumption. The arable land is, however, vastly in excess of that actually under cultivation, and the State should be very rich. Though the capital was shifted to this side of the Me Kong only seven years ago, it already numbers 2,000 inhabitants.

In my opinion, Muang Sing has a future before it, and the plain, though not nearly of the same extent as that of Chieng Sen, has yet a most promising appearance. I trust that the chief of Chieng Kheng will once more return, as I believe he is anxious to do, to his proper allegiance. The position of Chieng Kheng on the trade route from the trans-Me Kong States of Chieng Hong to Northern Siam makes it a trading station of some importance; and the natural development of trade, and improvement of communications in these regions, must all tend to enhance the value of Muang Sing as a future commercial centre. The climate also is far cooler and more invigorating than that of Siam; while the scenery is less tropical, the jungle giving way gradually to the fertile open plains peculiar to the Shan States. The people also are a taller and stronger race, approaching to the Yunnanese type.
The difficulty of obtaining here definite information as to the route to the Nam Tay or Black River was great. Very few people knew the country even as far as the watershed between the Me Kong and Nam Oo, and of these all differed as to the practicability of the route. My object was, if possible, to find a road to the Black River without having to go to Muang Sai in the south, or by way of Chieng Hong in the north. The latter I knew to be Mr. Archer's intended route, and I therefore wished to cover other ground. My start took me in a northerly direction to the extreme end of the plain, on which several villages were scattered about on either hand.

Our first march was not a long one, and to no purpose, as during the night dacoits stole some mules, and, pursuing being impossible in the dark jungle, we returned to Muang Sing on the following day. Having been delayed two days I crossed the low watershed between the Nam Sing and the Nam Mang, which flows into the Nam La (?), and then the path lay through a narrow valley gradually opening out into the small but well cultivated plain of Muang Mang. A good many opium caravans passed through here; for the poppy cultivation, which commences about this latitude, is extensive to the north and west, and the produce is thence taken southward and bartered chiefly for cotton.

Some little distance after quitting Muang Mang, the march or boundary between Chieng Kheng and Muang Phong is reached, and is marked by a low mud wall with a bamboo palisade on the top. Walking is extremely easy, as the road leads through the extensive plain of Muang Phong. A high mountain of sugar-loaf form rises to the north-east, called Loi Cham Lem, and rather more to the east another, with a sharp double top, Phu Chu Phu Cha. They are a great distance off, and overtop all the other mountains, but after leaving Muang Phong I never saw them again. Muang Phong is one of the twelve states of the Sipsong Pana, of which Chieng Hong is the chief, and to the Sawbwa of which the rest pay their taxes. The Sipsong Pana is held to be the richest and most fertile region in the north of Indo-China. The western bank of the Me Kong may perhaps offer superior advantages for a railway, but at all events there would be no obstacle, beyond the Me Kong at Chieng Lap, to the prolongation of the Burma-Siam railway, as advocated by Mr. Holt Hallett and others, along the route I had come; and the general appearance of the country would warrant the belief that it could be easily continued from Muang Phong to Chieng Hong.

At the request of the Sawbwa of Muang Phong, I made a longer stay than I had intended. We interchanged visits, and he showed a childish delight at the most commonplace objects. He was supposed to be bad-tempered and proud, but he must have reserved these qualities for his own subjects. For state occasions he has golden umbrellas, silvered harness, pikes, and tridents; and the herald in front blows.
blasts on a long trumpet with a round conch-like shell. He was most anxious that I should make my journey to Muang La as rapidly as possible, owing to the chance of dacoits being about. All through my journey I was invariably warned of the danger to be feared from the people of neighbouring states and of the unhealthiness of other districts. These are said to be refugees from our war in Burma, or followers of the Minghoon prince, who escaped from our custody, and has ever since been intriguing and causing disaffection in Burma and the Shan States.

Iron is found in the State. The houses situated in the plain numbered about 400. The further route lay up the Nam La, a picturesque river, but enclosed in a deep valley and with no human habitations. The track I went by must have been of considerable age, as occasionally it was worn so deep into the soft rock that my mules could not pass with their packs on. Muang La, another town of the Sipsong Pana, did not strike one as of great importance, nor was I greeted with the warmth usually shown me.

Some tremendous thunderstorms burst about this time, making travelling very hard work. In spite of the vexatious delay it was ludicrous to see us toiling with feet and hands up a steep greasy path in the jungle, often slipping back till arrested by a tree. The route I took had been in a northerly direction from Muang Sing to Muang Phong, thence to Muang La it changed to the east, and from Muang La to Muang Sai, generally speaking, it might be said to be south-easterly. After Muang La I had gradually to abandon my idea of finding any way into the Nam Oo valley, except by Muang Sai. At no great distance from here stood four pillars on a hill called Doi Lak Khan, to mark the meeting of the frontiers of the old kingdoms of Burma, Siam, Annam, and China. The road to Ban Chom, a town in the Chieng Hai district, lay up the valley of Nam Ngaw.

Usually the villages are almost hidden in the jungle, or grouped together at one corner of a paddy field, so that the Baw Hay, built on a rocky knoll, by contrast reminded one of an Italian village. "Baw" signifies "well," and I went to visit the salt wells near the stream. I only did this after strenuous opposition on the part of the headman of the village, as the people are in great fear of the spirit which is said to preside over the well, and they never approach it in white or red garments. The mines are a collection of little huts, having pits into which the brine taken from the well is put; then it is boiled and the salt moulded into bricks, the dimensions of which are 9in. x 5in. x 2in., which cost two annas apiece. Salt obtained from wells is one of the chief articles of trade, and the Panthay caravans having brought opium in exchange take it away on their return westerly journey. Cotton also they obtain from the natives. This is the wild cotton collected by the hill tribes, which the Panthays,
establishing themselves in some centre, go about purchasing from the different villages till they have obtained the amount they require. From Yunnan they bring raw silk, silk jackets, hats, shoes, and walnuts; on the return journey they load up with cotton and woollen goods from Moulmein. Very picturesque are these caravans. The first notice of their approach is given by the gong sounding through the jungle to encourage the mules. The leading mule is usually decorated with a highly ornamented headgear leaving spaces only for the eyes; foxes' brushes, peacock's or pheasant's feathers wave about on the top, little flags project from the sides, and small mirrors and beads are intermingled with the silver trappings. There is a man in charge of each set of five mules. For defence they carry old muzzle-loaders, dabs, or a great trident some seven or eight feet long.

Here the hill tribes are mostly Yao Yin. They have the neatest and most intelligent appearance of all the hill people, and bear a closer resemblance than any other to the Yunnanese, whose language most of them understand. The women have a light complexion, and wear a very becoming costume—a loose kind of Turkish trousers of very fine embroidered silk, a long loose coat, and numerous silver ornaments. On occasions of ceremony they wear an extraordinary head-dress of red cloth stretched over a stand about six inches off the head, and about two feet long and one broad.

At some other salt mines called Baw Luang Lun the valley was more free from jungle than usual, and had a pleasant green park-like look, whilst the air was fragrant with the pomelo blossom. A short distance beyond this village the path crossed a low watershed between the drainage-area of the Nam La and that of the Nam Ta, both of which flow into the Me Kong. There were two rather high ascents of about 2,900 feet to be made whilst crossing the head-waters of the Nam Ta; the names of these hills were Doi Ta Pi and Doi Mon Katui. The jungle was continuous and good camping-ground entirely wanting.

After crossing Doi Mon Katui there is a small village, the people of which are Thai Dams and come from the Muang Theng region. Their houses were dirty, and unlike those of the Shans, the floors were not raised above the ground. The women wear the regular Muong attire—a long black upper garment cut away at the sides, and dark blue trousers. Their hair is parted for two or three inches, with a transverse parting close to the head. The men have black turbans and long black overcoats and trousers.

At Ban Bunyon the people are Kamoos. The women's petticoats, instead of being horizontally striped their whole length, have broad red, white, and blue stripes in the lower part of the front.

The information as to the road became more confusing, and, after losing time and temper by following for some distance a path imprac-
ticable even for loaded coolies, it became certain that the only possible way was by Muang Sai, the one route I had hoped to avoid. From here there is a path to the east leading to lead and iron mines, but pack animals are unable to go. Caravans of female coolies, attended by one or two male protectors, seemed to be the fashion hereabouts. They were extremely shy, and if they had sufficient notice of our approach would bolt into the jungle. We had now to cross the watershed between the Nam Ta and the Nam Koh, whose waters flow into the Nam Oo. The watershed is 3,600 feet, the ordinary elevation of the valleys being about 2,000 feet.

Ban Konoi is a prettily situated village on the banks of the Nam Koh, the immediate surroundings giving it the appearance of a large orchard. The road on from here to Muang Sai was a pleasant afternoon's march.

Muang Sai, a trade-centre, and a town of Luang Prabang, is on the right bank of the Nam Koh, and, owing to the thickness of the jungle, it only comes in view when one arrives immediately in front of it on the opposite bank. It is usually here that the Panthay caravans load up with cotton. The people are Laos, dressed like Shans, excepting that they kept their hair cropped around the sides of the head in old Laos fashion, though even then some of them wore turbans.

We had taken twelve days from Muang Sing to Muang Sai. From here the path ran in a northerly direction to Muang La, which I reached in one day, leaving Muang Sai on February 23. Muang La charmed me more than any place I had been to. Instead of the usually scattered houses with compounds, there was quite a little street, reminding one of a Swiss village. The town is on the right bank of the Nam Pak, which we forded to camp on the further bank; by mistake we took up our quarters at first in the cemetery. There was a bridge (only of use in the dry weather); it was made of bamboo caissons, filled with stones, and planks laid from the one to the other. On the left bank were salt works kept in the neatest order. The land by the river was banked up with stones to form broad terraces covered with light earthy soil. This is taken away in the morning, having become impregnated with salt. It is then boiled in split bamboos over a fire burning in a long earthen trough. It was a great change to see a place with the people so busy. They were cheerful and extremely pleasant to talk to.

There was no path by the river practicable for mules, and I did not venture to let them leave me and go on by water, as I should require them later on. Consequently, we had to take a path along the mountains on the left bank of the Nam Pak, and one which, as far as I could learn, had never before been used by pack animals. It was far the hardest travelling I had done. We took three days
from Muang La to where we rejoined the Nam Pak. The greatest altitude we went up was 4,000 feet. Some of the ascents were almost impossible for loaded animals; and the narrowest of tracks on precipitous slopes, often blocked by fallen timber, made our progress slow, though I had eight natives cutting a way.

We were on the paths of the nomadic hill tribes, who just clear the jungle here and there to grow paddy, and therefore this was almost the first opportunity I had of getting a distant view. A feeling of awe came over me when there was nothing to be seen but a crowd of jungle-covered hills; and after passing one of those clearings the dense impenetrable shade of the forest seemed intense. The hill villages were miserable places, with nothing to offer or sell. But Ban Ma, situated in a valley, was inhabited by some of the Thai Dam from Muang Theng, whom I have before described. They were very well-to-do. The three head men came to do homage, prostrating themselves three times, and also made me offerings of rice and eggs, and hearing I wished for some of their home-spun petticoats, brought a great variety to choose from.

I saw evidence of other European influence in the shape of a French ten-centime piece on the neck of a child. All through the country I had been passing the only coinage that is current is Indian silver, or, in the market, lumps of silver in the shape of a half-globe and of the diameter of a rupee, having pieces chiselled out of them according to the value of the articles purchased. From this village we went east, following the Nam Ma and Nam Noi. Then our difficulties began again; the valley contracts, and the ribs of rock project into the river. I was assured by the natives that one place was impracticable, and it was only after cutting the jungle for a quarter of a mile on the steep opposite bank that the party managed to get on. At length we again reached the Nam Pak, and camped on the right bank at Na Sien. I was told there was no further road for mules, but I determined on putting the loads on a raft, and allowing the animals to get along as best they could. My muleteers were in despair; for many days they had been imploring to be allowed to be off their bargain and to return, and they said they were now worn out and could not face further difficulties. I was inclined to let them off, as a boatman said he could take me all the way by water to Muang Theng. Fortunately for me I hardened my heart, and determined on keeping to the mules, as there would not have been nearly enough water in the Nam Ngoa to carry out this plan.

The next day saw three of the party in a canoe, the baggage and one of the interpreters on a raft; and the rest had to scramble with the mules along the banks. The boatmen handled the canoe very skilfully, and it was pleasant, after the hard travelling, to lie down, with the occasional excitement of getting splashed when shooting a
rapid. The raft came to grief, and only arrived at the camp long after sunset, having accomplished the latter end of the journey by the light of my solitary bull’s-eye lantern. We passed some young poungees or priests in a canoe, decorated with little tricolour flags, having “Vive la France” on them. When I reached the Nam Oo, there was a large tricolour flying on a boat, which had lately brought up two Frenchmen from Luang Prabang. They had gone to Muang Sai, so I had missed them whilst coming along the hill road. I subsequently learnt they were Messrs. Macey and Massy, who were going into the Sipsong Pana with the view of opening up trade. The Nam Oo, one of the largest affluents of the Me Kong, was some forty yards broad, some five feet deep, with a current of about two and a half miles an hour. The mules swam the river, and proceeded down the left bank as the road to Muang Theng branches off at Sop Hat, some nine miles further down. Sop Hat is a Siamese guard-house. The road followed a range of hills, with water at only rare intervals, and I, not fully understanding this, started rather late, with the result that night come on and we had no water. The Hős refused to proceed in the dark, and in a spirit of general discomfort we had to go supperless to bed.

The next morning from a hill-top a splendid panorama displayed itself; the mist in the valleys had the appearance of a ruffled billowy sea, but motionless, studded with islands fringed to the water’s edge with lovely vegetation. Even my Chinese interpreter admired the beauty of the scene. Sop Nao is the most eastern Siamese post before reaching the first French station. It is a well-to-do village, and laid out with considerable neatness. The path as far as the French frontier was thickly overgrown, and necessitated a great deal of cutting, as what little trade exists is carried on by river.

At times the fallen timber could not be circumvented, and was so large that ramps had to be constructed, by which the mules could get over. The watershed forming the frontier has an elevation of 4,400 feet, with a very steep descent, of which my interpreter took advantage by sliding down on a plantain leaf, though it brought him ultimate discomfiture.

The next morning we passed through a fine grassy plain previous to arriving at the Nam Ngoa. Some large deer darted away at our approach, and wild cattle were seen not far off. At length, after wallowing in deep muddy holes, we traversed the Muang Theng or Dien Bien Phu plain, which, though there had been but little rain, was partially under water.

By 9.30 a.m. on March 4 I heard the French bugle, and crossed the embankment surrounding the fort. Captain Leger, of the Infanterie de la Marine, came to greet me, and I was soon comfortably lodged in a bamboo house, also—what was more to the purpose—had
a good meal. There are only a few native houses near to the fort, Muang Theng village being five miles away. The fort is situated in the middle of the plain, which is about fifteen kilomètres long from north to south, and about six or seven broad. The Nam Houm flows outside the parapet, and has its banks smothered with sweet roses. During the rains the whole country is inundated, and, even when I was there, Captain Leger said I should only have to remain a few days to get fever. There were two European non-commissioned officers besides himself, the troops being tirailleurs or Annamites.

After spending two nights at Muang Theing, I left for Lai Chau, or Muang Lai, as it is called by the Siamese. The travelling now was very different from what we had experienced; the whole way to Lai Chau the path, with the exception of a few rocky places, was kept in good repair; the rivers and streams had bamboo bridges of sufficient strength to bear laden animals.

At the village of Na Theng, two hours from the fort, the road to Son La branches off. Silkworms are bred here; but the village struck me as miserably poor. No doubt the plain has once been populated, but constant warfare has driven away and impoverished the people. The Thai Dam are the inhabitants of the valleys in the whole country east of Luang Prabang as far as the delta of Tonkin and the coastline of Annam. Their language is very similar to that of the Laos, but the writing differs to some extent. They are certainly the same race as the Laos, but are whiter, or rather yellower, and wear their hair long and tied up in a turban, while their expression and costume show their connection and frequent intercourse with Annamites. Also, unlike the Laos, they bury their dead and burn only the belongings. Their graveyards are very curious. A long pole, with as sort of umbrella on the top, is stuck into the side of the hill, and a number of smaller ones are fixed into it at a slight angle from the perpendicular, each with a small flag. On one side these represent the dead men of the village, and on the other the women, a new stick being added for each decease. On a separate pole are placed the clothes of the deceased. Provisions were double the price we had paid in the Shan States, and neither plantains nor poor (coarse sugar) were obtainable. On leaving the plain, the altitude of which is 1,800 feet, we crossed the watershed (2,700 feet) into the valley of the Nam Pun.

After the junction of the Nam Mun the road took us up the valley of the latter stream, which is very charming with its deep rocky pools. But we had one most unexpected climb. The watershed leading over into the Nam Tay or Black River, instead of being 1,000 feet, as I had been led to expect, above the valley, was nearer 3,000 feet, giving one a hard climb in a mid-day tropical sun, and for five hours without water. For two hours we skirted the valley high
up on the mountain side, with magnificent scenery stretching away to the north-west. Half-way down we came to a spring of water, and a native brought in a bunch of grapes the size of small peas.

Our last camp was at Muang Tung, where three of our mules were killed by tigers during the night, close to the village. Fortunately the march to the Nam Tay was only some nine miles, and very easy travelling down a narrow valley studded with villages. The post is on the north bank of the Black River, and a boat shoved off to take me over. On landing on the rocky promontory, Captain Seigneur and M. Pellitier came down to welcome me. As we climbed up the steep path I was shown a flood-mark sixty-six feet above the normal river-level. At Lai Chau the hills rise abruptly from the valleys of the Black River and Nam Ma, leaving space for only two or three native houses, as the half-company of tirailleurs take up the rest of the room. The Europeans were five in number; it is a deadly place for them, as the well-filled little cemetery only too sadly testifies. The Black River might well be so named, for its valley is precipitous and gloomy, and the valleys that run into it, excepting the one I descended, are steep and narrow, giving, in spite of the sun, a sombre and chilling effect. The gorge through which the river pursued its course was particularly precipitous, and was a mere cleft in the range of mountains. A storm at night made not only the frail bamboo houses shake, but seemed as if it might sweep away the very mountains in its tempestuous rush down the defiles.

Here I had to part with my men, except the Chinese interpreter. After some delay in getting coolies for my boat, I left Lai Chau on March 11, carrying with me the warmest recollections of the hospitality I received at the hands of the two French officers, who greatly envied me my departure.

The first day of the descent of the Black River there were many rapids to shoot, and it was exciting work to see how swiftly the natives turn the boat in the midst of the boiling water, which comes foaming and splashing over the sides. The first three hours the mountain sides were precipitous, then the hills became lower and more jagged with isolated pointed rocks. The right bank, for about a quarter of a mile near to Na Shan village, is an unbroken face of rock, hundreds of feet high, with numerous caverns at the base worn away by the water.

At Van Bu a new French post was in course of construction, and the three or four Europeans there complained terribly of the fever exhaled in disturbing the soil. The officer in charge was a piteous spectacle; he could barely move for weakness.

Ta Chau, a little lower down the river on the right bank, is the port or point of landing for Son La Chau. A sergeant commanded the post; he was one of the few Frenchmen I met who had a good
word to say for the Black River, either in the way of health or productiveness. The minerals he especially mentioned as being in abundance, and showed me specimens of gold, lead, iron, and copper. But so far as I could see, till the delta is reached, the sides of the river are almost uninhabited, and fertile soil was quite wanting, though I was informed that flax, maize, and cotton are grown on the hills. To me there appeared the greatest difference between this country and the Shan States, the advantage lying with the latter.

A large rapid occurs below this place, and then the current was slow till we reached Takao, where the steamer in which M. Pavie attempted to ascend the Black River was finally wrecked.

I arrived at Cho Bo just six weeks after the catastrophe when the Resident, M. de Rouvigny, was killed by dacoits, and the settlement entirely burnt. The other Europeans escaped into the jungle; but a French officer, and a Frenchman travelling under his escort, arriving at the post after the event, were both murdered by the militia, under order from the chief of the dacoits. The militia then joined the dacoits, with a large amount of ammunition and rifles. When I arrived, but little had been done to rebuild the place, and the marks of bloodshed were yet visible. At Cho Bo is a barrage of rocks, an obstacle to steamers going higher up the river, which otherwise they could easily do as far as Van Yen. I descended the river from Cho Bo for some distance in the gun-boat Montbrun, and then, owing to the shallows, I had to continue my journey in a sampan, or large boat, as far as some curious rocks on the right bank, called from their close resemblance to the church, Les Rochers de Notre Dame.

I had a sail hoisted on the sampan, the ropes of which were the bark of some creeper. We moored for the night at a post called Les Mines des Cuivres, or Copper Mines, but, warned by two sampans bringing up ammunition that pirates were about, we anchored in the middle of the river, and remained undisturbed. After passing the massif of Mont Bavi on the right, the delta of Tonkin may be said to commence. Chinese pagodas and occasionally brick dwellings were visible amid the numerous villages. The junction of the Red and Black Rivers is a very tame piece of scenery, the banks are low and flat and treeless, and the water thick and with but little current. Viêtri is a large military post where the great Clear River joins the Red River. Here again was bustle and excitement, as a large body of troops were starting to-morrow in search of some marauders. Enlivened by one or two false alarms of pirates, we reached Hanoi, the capital of Tonkin, and there was a charm, though a sense of awkwardness, in approaching again a place boasting anything of Western civilisation.

A steamer runs every day to Haiphong, the port and seat of commerce of Tonkin. There are fine warehouses, but nothing in them B
The Chinese have left the place. Piracy flourishes within a mile or two of the town, and the ground remains uncultivated, natives being afraid to go far from the village. Undoubtedly, however, the delta is rich in soil and in minerals. There is a seam of coal, a little way to the north at Hong Gay, 169 feet thick. Unfortunately the French home policy has retarded the development of the resources of the country.

I visited in a coasting steamer the different magnificent harbours on the Annam coast. Rolling green hills, that look as if they would afford excellent pasturage, embosom fertile valleys. The coast, like the delta, is healthy, a contrast to the fever-stricken mountains of the interior. I landed at the charming town of Saigon, having everywhere met with the greatest kindness from the French.

The “Rue Paul Bert” is quite European, and the other roads are well kept; the success of the place, though, is entirely dependent upon the large official population. Improvements are being carried out, the most interesting feature being perhaps the Horticultural Gardens, started for the purpose of introducing into Tonkin new plants for cultivation. The results have been hitherto most satisfactory; and apparently tobacco, cotton, and coffee can all be grown. At present the natives are content with producing paddy, opium, and castor oil. The military quarters on the river-bank are good buildings in well-kept compounds. Except one or two pagodas, there is little of interest to be seen in the town. Here my travels across Indo-China really ended.
THE GEOGRAPHICAL AND CLIMATIC FACTOR IN PULMONARY CONSUMPTION. *

By EUGEN HIRSCHFELD, M.D., Honorary Physician to the Brisbane Hospital.

The climatic treatment of pulmonary consumption is almost as old as the disease itself. Nearly all the writings of the old physicians (some of them 2,000 years back) contain reference to the important rôle which climate plays in the prevalence and treatment of phthisis. They did not always agree. While Celsus and Aretaeus believed in the favourable influence of sea voyages and residence at the seaside, Galen recommended mountain climate, and the elder Plinius advised consumptive patients to settle near pine forests, as the resinous exhalation of the oil of pine seemed to possess a healing influence upon the lungs. It is of special interest for us to note, that some of the Roman writers, while recommending a sea voyage to Egypt, advise a subsequent residence in that country, the climate of which is very similar to that of our Western plains. Still there can be no doubt, that a more thorough investigation of this subject was only rendered possible by the increased facility of travelling, which began to obtain during the latter half of this century. In dealing with the matter in this paper, I intend to exclusively confine myself to discussing, with reference to pulmonary consumption, the influence, which the climate of Queensland, owing to its geographical position, exercises upon the prevalence, course, and treatment of this disease. Although by limiting myself to the Queensland climate, certain other varieties of climate, which do not obtain in this country, are by necessity left out of consideration, I shall be able to present to you an exclusively personal experience of the influence of our climate upon the consumptive patient, who either contract the disease in this country, or come here in the hope of being relieved or cured.

GENERAL INFLUENCE OF A HOT CLIMATE.—In studying the influence of a given climate upon man, during health or disease, it is necessary to remember, that the term climate embraces a number of factors, which, though frequently operating together, can be examined separately. The different elements which combine to make up the climate are (1) the temperature of the atmosphere; (2) the insolation of the sun; (3) the relative and absolute moisture; (4) the rainfall; (5) the prevailing winds; (6) the barometric pressure; and finally, the nature of the soil. All these factors differ considerably from those prevailing

* Read at a Meeting of the Royal Geographical Society of Australasia, Queensland, December 14th, 1899.
in the temperate climate of European countries, and the type of disease is correspondingly modified from that observed at home. We consider first the influence of all the factors combined upon the prevalence of the disease in Queensland. The vital statistics for the past 30 years show that since 1870 there were 10,521 persons, who were certified to have died from phthisis, or only taking the last ten years into consideration, 4,534 persons, an average of 453 per annum. Compared with the general mortality, the result is that of each 10,000 deaths, 818 were caused by Tuberculosis, or in round figures, Phthisis is responsible for 8 per cent. of the total mortality. Although this may appear rather high, it is distinctly favourable in comparison with the experience in European countries, where it reaches between 12 and 15 per cent. However, when computing the number of deaths from Consumption. per 10,000 living, the result is even more favourable. Leaving off the fractions we find that out of 10,000 people residing in Queensland, between 10 and 11 die annually from the disease. I append the figures of European countries and places again for comparison:—Germany, 36; England, 21; London, 25; Stettin, 26; Amsterdam, 26; Hague, 24; Queensland, 10. The number of persons that die from Consumption in Queensland is only between \( \frac{1}{2} \) and \( \frac{3}{5} \) of those that die at home from the same disease. 

When examining the influence, which climate and geographical position exercised in bringing about this favourable result, we must first eliminate the factors other than climatic, which militate for or against the diminution of the mortality from phthisis.

In the first instance, it must be pointed out, that a diminished mortality of phthisis does not necessarily imply, that a less number of persons are suffering from the disease; it only means that the number of persons who die from it is smaller. On the other hand it it quite certain, that more people suffer from pulmonary consumption than the death rate leads one to expect. The fact of the matter is that so many more persons recover from their complaint in Queensland than in the old country. But apart from the climatic factor, the lessened prevalence of tuberculosis in Queensland is to a certain extent accounted for by other conditions. All the manufactories, which are accompanied by the production of dust or noxious gases, injure the mucous membrane of the respiratory tract and facilitate the entrance of the tubercle bacillus. But even without the dust all factories increase the liability to phthisis by congregating people together in close rooms. The relatively small number of factories in Queensland is, therefore, partly accountable for the low mortality from tuberculosis.

Another factor, which has to be taken into consideration, is the absence of close settlement. Fortunately we have not arrived as yet
at that degree of civilisation, in which a large number of families are herded together in one house, as is generally the case in all the large cities, especially of Continental countries. When we remember how very few families of the working class have a house of their own to live in, but are packed together in small rooms, which, during the winter months, get very little ventilation, it is evident that the poisonous atmosphere resulting therefrom must bring about diseases of the respiratory tract. If, however, a member of the family suffers from pulmonary consumption the risk of infection to the other members of the family is very considerable; nay, sometimes even a certainty. How much more favourably we are situated in this respect in Queensland needs no dilating upon.

We are often accused of eating too much meat. There is no doubt that a large consumption of meat in a hot climate, especially during the summer months is not without its injurious effects. Still, on the other hand, the low price of meat, which makes this article of food accessible to even the poorest in this country, lessens the liability of the individual to phthisis, provided of course that the meat is not derived from tubercular animals. The presence of a considerable portion of albuminous food in the shape of meat—vegetarian considerations notwithstanding—is of the utmost importance in the daily fare of the consumptive patient. Summarising these as small number of factories, absence of close settlement, cheapness of food, favourable conditions of residence, and the comparative wealth of the working population, the lecturer proceeded. Still these alone are not sufficient to account for the fact that in this our country between 50 and 70 per cent. less persons die from tuberculosis than is the case in European countries, which enjoy a more temperate climate. We are, therefore, forced to the conclusion, that the climatic conditions of Queensland, owing to its geographical position, are the principal factors which influence favourably the prevalence and the course of pulmonary consumption.

The principal feature of our climate, which is common both to the seaboard and the West, is the increased temperature of the atmosphere.

The greatest advantage, in my opinion, which the increased warmth has for the consumptive patient is, that it enables him to spend more time in the open air on the one hand, while on the other it allows of a more thorough ventilation of his living rooms, more particularly his bedroom. The winter months at home are very deficient, as the poisonous air is partially retained lest the precious heat might escape with it. Many people seem to think that raising the window of a bedroom for half an hour or an hour in the twenty-four is sufficient to remove the air which has been repeatedly in the remotest air vesicles of the lungs of the occupant, and been charged with the poisonous
substances normally exhaled by the lung. I dare say, even in this country, the "fresh air crank" is still looked upon with some suspicion. On the other hand, we see how soon a troublesome cough is lessened, if we persuade our patient to sleep with open window, or insist that the consumptive should be the sole occupant of the bedroom, so that he might have the whole air contained in it for himself. Such a thorough ventilation is not only out of question, but would be even injurious during the winter at home. In this country, owing to the warmth of the atmosphere, the windows or the fanlight of the bedroom may be left open practically nearly the whole year round. Beside the advantage accruing to the patient from a mode of living, which approximates the open air life, it is apparent that the risk of infection is considerably lessened in consequence.

The direct effect of the increased warmth of the atmosphere upon the constitution of the consumptive is exercised in several directions. We take first the effect upon the blood and the bloodmaking glands. The number of red blood corpuscles contained in a cubic millimetre of blood of a healthy man living in a temperate climate is, roughly speaking, five millions. As the result of a large number of personal examinations I can state that the enumeration of the red blood corpuscles of healthy people in Queensland shows that this figure (five millions) is not frequently approached. This is not the place to go into the details of these observations, but the average for persons who have lived here a considerable time or are born out here does not exceed 4,500,000 per cubic mil. The number of red blood corpuscles of Queenslanders are, therefore, 10 to 12 per cent. below that of Europeans. The explanation for this may be sought in the following. Life is maintained in its proper balance by the mutual adjustment of production of heat and dissipation of heat. If the loss of heat is greatly increased, as is the case in a cold climate, the production of heat must proportionately rise to make up for the increased loss, as otherwise the bodily heat could not be maintained on the same level. On the other hand, in a warm climate like that of Queensland the dissipation of bodily heat is greatly lessened through the warmth of the outside atmosphere throughout the year; consequently the production of heat will be found to be correspondingly lessened. Now, the red blood corpuscles are the principal carriers of oxygen, which is required for the production of heat, and as the production of heat is habitually lessened in a warm climate less oxygen and less red blood corpuscles will be required to carry the oxygen.

How does all this affect the consumptive patient? It is a peculiarity of the man who is suffering from pulmonary consumption or, though so far yet healthy, is predisposed to it, that his circulation and blood supply is below the standard of the normal man. As a matter of fact, it is this very faulty blood supply which pre-
dispenses him to phthisis by weakening his resisting power. If I may express myself so, the consumptive or consumptively inclined individual is a man in whom the daily balance between income and expenditure is on the wrong side, he does not produce sufficient heat and a sufficient number of blood corpuscles to meet the daily expenditure. This is the reason for his loss of weight. Now, as we just have seen, in the warm climate of Queensland 10 to 12 per cent. less red blood corpuscles and a correspondingly lessened heat production are required to maintain life on a normal level. The consumptive is, therefore, in a considerably more favourable position in Queensland, than he is in a cold country. Owing to the warmth of the atmosphere his bodily expenditure is over 10 per cent. lower than in Europe, he consequently requires less blood to meet it, and the balance is consequently transferred from the wrong side to the right side. This, as a matter of fact, is the reason why a hot climate is so much more suitable, not only for the consumptive, but for every individual with an enfeebled blood supply, especially for aged people. This, however, does not apply to excessive degrees of heat, as in some of the Northern parts of the colony, where the great warmth of the atmosphere throughout the whole year leads to anemia. The effect of the increased outside temperature upon the bodily temperature of the consumptive is so full of technical details, that its consideration is better left out of this paper.

The direct action of a warm atmosphere upon the respiratory tract from the nose downwards to the lungs is favourable. Cold air, when taken into the lungs, acts as an irritant, and its first effect is to produce abundant secretion and to lead to fresh and repeated attacks of bronchitis, which again disseminate the tubercular disease to other portions of the lung, which had hitherto remained unaffected. We all remember how severe the exceptionally cold winter of 1896 was on everybody who was afflicted with weak lungs.

In contradistinction to the favourable direct and indirect effects of a warm climate upon the consumptive just now considered, certain injurious effects must also be noted. These are principally the decrease of appetite and the desire for physical exercise; although the latter can be taken with more impunity by the weak chested than at home. Physical exercise necessitates more deepened and frequent breathing, so that mouth breathing has to be resorted to if the passage through the nose is not sufficient for the volume of air required in the lungs. The consequence is, that in a cold atmosphere cold air taken in big draughts through the mouth without being forewarned in the nose leads to taking cold with all the usual consequences. These factors combined furnish a sufficient explanation why the climate of Queensland enables so many tubercular people, not only to live, but to pursue their calling; people who would otherwise rapidly have succumbed to the severe strain of European climate.
INFLUENCE OF INSOLATION.—The action of the direct rays of the sun is of great value in Tuberculosis. (1) Direct sunlight is one of the strongest, and in Queensland certainly, the cheapest antiseptic. Pure cultures of tubercle bacilli are killed by the direct rays of the sun, and the strong insolation in this country is very effective. At first I saw here culture experiments miscarry, simply because they had inadvertently been exposed to the sunlight. But the culture bacteria would develop in places, which by accident had been shaded, while no growth occurred in the adjoining places where the sun had full access. This strong insolation (at summer time exceeding 150° F.), is of the greatest value for us by preventing the spread of the ubiquitous tubercle bacillus, and no doubt has its considerable share in the low mortality from consumption in this country. (2) Strong insolation, according to recent experiments by Kronecker and Martin, promote the formation of red blood corpuscles and of Haemoglobin. It is astonishing how quickly our fever patients will convalesce as soon as their condition allows them to be moved on to the verandah. Rubner has actually proved that the sunlight will to a small extent take the place of food. (3) The action of light upon the nervous system and the whole constitution is stimulating. We all know how depressing a series of days becomes, in which the sun has been obscured. Confining an old man to his room on account of his sickness is always a risk. South Sea Islanders and aboriginals suffer more than white people, whose European descent has accustomed them to more or less prolonged absence of sunlight. The consumptive, the enfeebled, the aged, and children cannot do without. A great deal of sunlight, and Queensland gives them more than a full share of it.

The influence of the remaining factors of climate upon consumptives (the absolute and relative moisture, prevailing winds, rainfall, and nature of the soil), I could not treat on the present occasion without unduly enlarging the paper, and even so the points, which were discussed, were perhaps not as exhaustively dealt with as they ought to have been. In conclusion, I wish to express my thanks to the Council of this Society for the honour they conferred upon me by asking me to read a paper on this subject before them.
THE ISLANDS AND INHABITANTS OF TORRES STRAIT.*

By the Hon. JOHN DOUGLAS, C.M.G., F.R.G.S., Government Resident, Thursday Island.

(Hon. Corresponding Member R.G.S.A.Q.).

Hon. John Douglas, who was received with cheers, said: I have come here to-night to address to you a few words—an explanatory lesson I may call it—upon the geography of Torres Strait, to explain these charts, and to tell you something of the inhabitants of the Islands. Of course, my remarks on an occasion of this kind must be very discursive, and of merely a popular character. Early last year we had a visit from a deputation of very learned men, headed by Dr. Haddon, of Cambridge, who have already taken a great deal of interest in the inhabitants of Torres Strait. He was accompanied by five other gentlemen, all of them of high standing and reputation in the Universities of Cambridge and London, and these gentlemen spent nearly six months in the islands of Torres Strait and on the shores of New Guinea. You can imagine that such an important scientific deputation as that would deal most exhaustively with the subject. It will be some time, no doubt, before we reap the benefit of their researches. Indeed, Dr. Haddon told me that it would be possibly some years before they could embody in a lasting form all the information that they had obtained during their residence in Torres Strait. Of course, the arrival of such a body of gentlemen was most agreeable to myself. I had instructions from the late Mr. Byrnes to be as hospitable as possible to them, and do everything I could to further their views. Unfortunately, at that time there was no steamer stationed at Thursday Island, so that I was not able to give them the assistance in that way which Dr. Haddon had expected. However, on Mr. Byrnes' instructions I was able to be useful to them in many ways, and the Government for the time being, under Mr. Byrnes and on Mr. Byrnes' recommendation, voted £100 towards the expenses of the expedition. From that source, at any rate, we may expect a very exhaustive statement in reference both to the islands and inhabitants of Torres Strait. My purpose, however, is merely to give you more general ideas than I daresay many of you have, of the geographical position of the Islands. I have had two or three charts prepared on a somewhat larger scale than any of the existing

* An Extempore Address, illustrated by Maps and Lantern Views, delivered at a Special General Meeting of the Royal Geographical Society of Australasia, Queensland, January 17th, 1900.
charts, in order to bring out the prominent places. You see here (indicating) a chart with which I propose to commence my remarks. It is an enlargement of the actual chart made by Capt. Cook, in 1770; and the landmarks, and the places which are laid down in this chart correspond with almost complete accuracy with all the observations of the present day—(applause)—showing what a careful observer Captain Cook was. He only spent a few days in passing through that portion of Northern Australia, which is here indicated. All the names on the chart were given by Capt. Cook. I need hardly remind you, I am sure, that Capt. Cook’s vessel, “The Endeavour,” was on a reef to the South of Cooktown, near what is known as Cape Tribulation. Cook named that Cape, because he got into trouble, and very serious trouble too, there. He had to throw over his guns to lighten the vessel, and we know now almost the exact position in which, in all probability, those guns may be found. Still we have never been able to find them. Captain Mackay, our Portmaster here, on several occasions I believe, has endeavoured to find these guns, but without success. It has always been considered that it would be a great triumph if we could pick up those guns. Probably by this time they are well encrusted in coral. As you know, the story is a deeply interesting one. “The Endeavour” was repaired in the river where the present town of Cooktown is situated. By-and-bye I will show you a slide representation of the monument, which has been erected to Cook, at Cooktown. However, when he had repaired his ship at Cooktown he set forth to explore the inner passage if possible. He met with very great difficulties. The account of his voyage is most interesting. Pray let me invite you to look up the subject. It is quite as interesting as any novel you can read. It is full of incident. Capt. Cook I regard as one of the greatest men of the 18th century (Applause.) He was certainly one of the greatest navigators, and for us Australians, he was the greatest of all explorers and of all discoverers. We venerate his name as one of those men whose past we should revere, and who we should respect as one of the great men of his time. He discovered for all practical purposes the Eastern coast of Australia, and was our first and the greatest of all our explorers. He was a great man in every sense of the term. I would like to mention here I have found in your library—a library which I observe is increasing every day—a book which was received lately from Sir Henry Norman, a most valuable contribution in the shape of the original journals which Capt. Cook kept. “Cook’s Voyages” were originally compiled by Dr. Hawksworth, and there is a good deal of stuffing in them. Now, we have recovered the originals of his journals they are well worth looking at; and any day, if you call on Mr. Thomson, I have no doubt that he will
be very happy to show you this book, which is of the very greatest interest. It is published by the authority of the Admiralty, or at any rate is edited by Capt. Walton, who has in every respect faithfully recorded Cook’s own observations and memoranda at the time when he made them.

Now, having said this, I will endeavour to pick up Capt. Cook’s course from Lizard Island. We know that island very well. It is a high island about 60 miles to the N.E. of Cooktown, and it was there that Capt. Cook left the inner passage, and took the open sea. When he got to the open he found his trouble had only just commenced. He found he was gradually being drifted in towards the Great Barrier Reef. Before following him, let me say a word to you about him. He was born of a Yorkshire peasant father and mother. He went to sea as an able seaman, and it was only after many years of service that his great qualities were found out by those under whom he served. He rose in rank and gradually attained the rank of lieutenant. He is known as Capt. Cook, but he never rose above the rank of lieutenant. Still, whatever his rank, he was a great man in every sense of the term.

When he got outside, as I have said, he found he was gradually being drifted in towards the Great Barrier Reef. He was beset with calms and drifted on to this great reef. He speaks of the terrible anxiety which he and those who were with him felt when they found themselves within 80 yards of the Barrier Reef. The huge breakers bursting upon this precipitous rock. There was no bottom at 200 fathoms, and these huge precipitous rocks were ahead, upon which the seas were breaking. Gradually, however, he was drifted off again. I have experienced very much the same thing in the little ‘Cairns.’ On two or three occasions I have been very close, very uncomfortably close to the Barrier Reef, and being gradually sucked in, in a calm toward the breakers, but somehow or other we always got off. It was the same thing with Cook. He found a small opening first. That opening was not sufficient. There was a strong tide coming out, which apparently took him out to sea for about two or three miles, and then he was sucked back towards the reef, and eventually got through by what he termed a providential channel (Mr. Douglas now pointed out on a chart the course followed by Cook). This is Forbes Island, well-known to us now. Cook passed outside Forbes Island. We invariably pass inside and round Piper light, one of our lightships. Forbes Island is frequented by beachcombers, at any rate by beche-de-mer men, and sometimes by natives. Then here is Cape Grenville, which is a well marked point on the coast; and a bay called Margaret Bay, which the natives have corrupted into Mackum Bay. At one time this was the habitat of a very powerful aboriginal
tribe. I am sorry to say there are not many of them left now. Passing Cape Grenville there is an opening through the Barrier Reef at Rain Island. Capt. Blackwood, who was sent to find a convenient passage, erected a beacon here. Rain Island is a rather inaccessible place. I was there once when we were getting guano from it. Capt. Cook gives a full description of Cape York and the islands in the neighbourhood, and then he passed Possession Island, where he hoisted and saluted the flag. He felt confident, when he had rounded Cape York, that he was clear of most of his difficulties, which he was. He did not explore Prince of Wales Island. He passed through Endeavour Straits, which he describes as about 10 leagues long, by 5 leagues wide, and he tells us also that he saw natives on Possession Island. They came down, apparently, in somewhat hostile form; they wore ornaments of pearl shell; they had lances; and one was armed with a bow and arrow. We do not find any bows and arrows in Torres Strait now, so far as the natives are concerned. When you get to the coast of New Guinea there are plenty, and very beautiful and interesting instruments they are, from an artistic point of view. The only explanation I can offer of Capt. Cook seeing a native armed in this way, is that the native was probably a visitor from the other side of the strait. However, as I have said, he passed through Endeavour Straits and close to Wallace Island. He then reached Booby Island, which was used for some years as a kind of post office. There was no settlement on the Cape York Peninsula, but there was a kind of cave on Booby Island, where provisions were placed for shipwrecked mariners. There was a log-book kept on Booby Island, but we have never recovered it. It was taken away by somebody, and there are legends of it having been sent either to Brisbane or Sydney. Possibly it may be found among the old records in the offices, either here or in Sydney. However, that may be, inquiries have been made here, and they have failed to elicit any record of the log that had been kept there. If it can be discovered anywhere it would be a most interesting document. For many years it was used by the passing ships as a means of recording their passages through Torres Strait. Beyond that we come to Cook's Shoal, and he then passed over to Timor and Java. I do hope that some day or other a monument will be erected to him on Possession Island, where he planted and where he saluted the British flag to show that he had taken possession of the whole of the country from 38 par. of latitude to Cape York 10.55, in the name of his then Majesty George III. He does not speak of New South Wales, but of New Wales. He named the whole of that country New Wales, and he took possession of it on behalf of the King who was then reigning, George III. Cook himself was never satisfied until he found that there was a
passage between Cape York and New Guinea. You know, a good many years before that, about 170 years before, Torres had actually passed through and got to Manila. He sailed away from South America right across to Manila, which was then in possession of the Spaniards. How it is that his account of his voyage did not transpire it is difficult to say. It is certain that it did not transpire until many years afterwards, when it was raked up by the Britishers when they were occupying Manila in the early years of George III.'s reign. It would never have transpired probably if it had not been that, when we were in possession of Manila, we discovered an authentic account of his voyage—an account which he had addressed to the King of Spain. It has been said that these discoveries were purposely kept secret by the Spanish Government, because they were afraid of the depredations of our British buccaneers of those days. There were some very queer characters abroad in those days—men who did not hesitate to take any ship that they came across. Drake was one of them. It is supposed that they kept this discovery secret in order that we might not become acquainted with the results of Torres' passage through the strait. Cook writes on more than one occasion, that his great object was to discover whether there was a passage between Australia and New Guinea. He was the first man that really set out to demonstrate the fact that there was a channel between New Guinea and Australia.

Now, here (indicating) in this map we have an illustration on a somewhat larger scale than you could possibly have recourse to, of the islands in the immediate vicinity of Cape York. Geologically these islands are granitic—diorite and porphyry prevail. Some of them are rather high islands, and are different altogether from some of the series of islands which we meet with beyond. For instance, here is Naghir Island. That is the highest island shown on this map. Mount Ernest, on that island, is about 800 ft. high, and is a very prominent feature in the strait. Here is the Escape River, on the mainland, where poor Kennedy was knocked on the head by the blacks. He saw Albany Island, where he knew there was a vessel waiting for him. Kennedy, however, was too late. The blacks were on him, and they killed him. Jacky Jacky, who was with him, got away, and reported the matter, and the schooner was enabled to go off and relieve those portions of the company who were still alive at Weymouth Bay. Two only of that noble band of explorers were rescued. I forget their names, but there was a botanist and another man. Months afterwards two bodies of the remainder of Kennedy's company, which had consisted of thirteen men altogether, were found, and they were buried on the top of Albany Island. Capt. Stanley, of the Rattlesnake, erected a monument on that island. Albany Pass is recognised as very picturesque. It is exceedingly well surveyed, and
vessels now can pass through with certainty in spite of the strong tides which prevail. Poor Kennedy's body never was recovered. Capt. Stanley put up a wooden tablet—a good substantial wooden tablet—on which were recorded the names and the fact of the burial of the remains of the ill-fated men which were recovered. Unfortunately Albany Island is often swept by fire; and a fire came along and burned this tablet. Mr. J. Jardine, who was the first Police Magistrate, at Somerset, renewed it. Kennedy's expedition was in 1848. It was despatched from Sydney to explore the Cape York Peninsula. They, unfortunately, landed too far down the peninsula, and they had to pass through an impracticable country. Before they got through they were completely knocked up, and they were not fit to encounter the difficulties and perils of a journey through the peninsula. Jardine, as I have stated, renewed this tablet, and he still lives at Somerset. Well, I ran through there four months ago, and I found that this tablet—a large slab—was decaying gradually, and being burned, and I therefore brought it in to Thursday Island.

Now, I want to enlist your sympathy, Sir Hugh, and the sympathy and interest of the Royal Geographical Society of Queensland in this matter. You could not do a better or a nobler act than assist by your prestige, and in any other way you can, in erecting a monument to these men—to Kennedy and his companions. (Hear, hear.) He was one of the first of the explorers. The result of his expedition was unfortunate, but he was a brave man. He was like the volunteers now going to fight the Boers. He failed, unfortunately, but he deserves that he should have a monument to perpetuate his memory for all time, and the memory of his companions. (Applause.) It is not necessary to spend much money. All I ask for is a mark or cairn of some kind, which could be seen by all the vessels passing through Albany Pass. I have no doubt that the Government will assist in the object, but I want the Royal Geographical Society of Queensland to take this matter up. It will be responded to, I am sure, in New South Wales, and I believe throughout Australia. Kennedy was an explorer who deserves, especially at the hands of those who are interested in that part of the world, to have some mark or memorial of his achievements. I am quite sure that with your assistance, and possibly with the assistance of the Government, we shall be able to erect a fitting memorial for this brave man. (Applause.)

Somerset at one time was supposed to be a rather important place. The whole of the trade and shipping were concentrated there for some time. The reason why it was abandoned was that the tide was extremely strong, and large steamers never felt comfortable when they were anchored in the passage. They often had to put down two anchors, and even then they did not always hold. I am not certain that the selection of
Thursday Island was a very wise one. I believe myself that at that time good anchorage could have been found in one of these bays on the mainland not subject to the difficulties experienced at Somerset. If that had been done settlement would have remained on the mainland, which would have been a great thing. It is just possible that in some wild flight of imagination we might have had a railway. In fact a railway was deliberately talked of at one time, and Somerset would have been the point of departure for the East. When the settlement was changed to Thursday Island we had to give up all hopes of this Northern railway to the Cape York Peninsula. The shellers moved from Somerset to the Prince of Wales Group, and it was thought most prudent for the Government to follow the settlement, and the Police Magistrate and resident officials were moved to Thursday Island. It became my duty when in office down here to effect this change, and the change to Port Kennedy was made at the instigation of Capt. Heath. On the ordinary charts you cannot see Thursday Island at all. There is a group of islands called after the Prince of Wales, and Thursday Island is a mere spot among them. Port Kennedy, situated on Thursday Island, is surrounded by an archipelago of islands. It is virtually surrounded, and the grouping of these islands constitutes a fine anchorage. The actual area of Thursday Island is very small—I think it is less than 900 acres altogether. That sounds very small, but it is wonderful when you come to go into details, what a large space 900 acres really is. We, who are accustomed in our great Western country, to regard 9,000 acres as a mere flea-bite, and 90,000 acres as not a very large area, cannot view an area of 900 acres as of much importance. There is a population of about 1,500 on it, and that occupies about a third of the island. There is space still for ten times the population. The island, as you know, is the centre of the pearl-shelling industry. Prince of Wales Island is about twelve miles square. At one time there was a very formidable tribe on it, numbering about 400 or 500. The navigators in the time of "The Fly" and "The Rattlesnake" speak of them as very formidable. Their number does not exceed 100 altogether now. Since I came down I have heard of the death of their chief, who was familiarly known as Tarbucket. He was a very portly man, and sometimes used to inherit my garments, when I had done with them, and the consequence was that there were people who rather confused his identity with mine. This was a source of amusement to some of the inhabitants, but when they saw his visage, I hope they saw the distinction between us.

Horn Island is the seat at present of our hopes of the future, so far as gold is concerned. The position of the gold diggings is close to what is called Horn Hill. As to the prospects, it is impossible for me to say what they will eventually turn out. Some say it is no good,
and others say it promises very well indeed. At any rate the Melbourne Syndicate now working it, are spending a lot of money in putting up expensive machinery and so on, and they hope for a good return. Their assays and tests are sufficiently encouraging for them to speak of them as indicating that they will make a good thing out of it. I hope they will, because they have spent a lot of money on it. They have about forty men working, and in the course of a month or so they hope to commence crushing. Of course, it will be a great help to us if it turns out well, because we desire above all things to be supported by a European population, and of course the presence of gold diggers there will contribute very much to our advancement in every way.

On Thursday Island, as you know, there is a most varied population. Nearly every nationality is represented there. The Europeans, I am happy to say, still head the list in spite of everything; and the Japanese come next. Then, of course, there are a great many working on the boats. The population of the island is about 1,500, and the population working in the shelling boats a little over 2,000. I will not trouble you with the details of the statistics, but I would like to say that from a strategic point of view Thursday Island is regarded of very great importance. Some people, however, run away with the idea that the guns in the forts completely command the Straits. That is a fallacy. The fort was never placed there with any idea that it would command the Straits. A man-of-war could, of course, come through Endeavour Straits. Navigation is somewhat difficult in consequence of the shoals and reefs there, but still it is quite possible to make your way through, and any foreign man-of-war could come through there. The course which is generally followed by all our steamers from the westward is through the Prince of Wales Channel and outside of Hammond Island. Steamers drawing more than 17 or 18 feet of water all have to come through the Prince of Wales Channel and come under Goode Island, and those drawing less than 22 feet come to Thursday Island, and those which draw more drop anchor at the Black Rock. Our jetty at Thursday Island will not admit of vessels berthing there which draw more than 21 feet. However, there are many ways of getting past, but Thursday Island is a good strategical point because it has a convenient harbour, and coal can be obtained there, and in the event of war it is a place within sight of which all vessels must pass; and no vessel really could pass without it being known. There are passages through which foreign vessels could pass if it were necessary.

Booby Island is about 18 miles West of Goode Island, and we are not connected by cable with it, though I think we ought to be. Here is Mount Adolphus Island. It stands about 500 feet
above the level of the sea. It is a rather picturesque island, but viewed from a distance it presents the appearance of a flat-topped island. Near by is the scene of the terrible wreck of the "Quetta," which all mourn so much, as we lost many dear friends among the passengers. Most of those who were saved were taken to the Little Adolphins. These islands are strongly marked, and can be seen by everybody coming up the Strait. Here is the Banks Group, an important group similar from a geological point of view to the Prince of Wales, primitive rock diorite. Three of the group are Moa, Badu and Mabuiag, and probably the last is of the most importance. There is a population there of about 250 natives and a few South Sea Islanders. They have lately been very fortunate. They have learned, I am glad to say, to work on their own account. They owe this to the Rev. Mr. Walker, a missionary, who was established among them for a short time. He taught them how to co-operate and work together in such a way that they could buy their own luggers. There had been attempts to buy luggers on previous occasions, but they failed, to a certain extent because when they had worked off a certain proportion of the price they got tired; and as they did not pay up, the persons from whom they had bought came down and took possession again. However, thanks to Mr. Walker, a different spirit came over them, and they have been able to acquire their own luggers and work on their own account. They were fortunate in one respect. A short time ago they found a lot of derelict copper. This brought them several hundreds of pounds, made them rich men, and helped them to buy their luggers. They are allowed to work among these reefs without licenses in their own fishing ground. They are rather lazy, but on the whole they are interesting people, and their village is a very orderly one. There are some beautiful cocoanut groves immediately in the vicinity of the village, but the island itself is not very fertile, and there are only a few patches that can be called arable, and there they cultivate their sweet potatoes and bananas. I am trying to get a teacher, either male or female, to go there and help in the instruction of their children. There are nearly 100 children on Mabuiag Island. The people are very anxious that their children should learn English, and they desire them to learn English because they know their prospects will be materially assisted by their knowledge of English. I am trying, as I said, to secure a volunteer, either male or female. I sometimes think if I could secure a good woman of experience and enthusiasm I should prefer it. A good school ma'am while teaching the young children would thereby obtain an influence upon the people. Whether we shall be successful in that I don't know, but I hope we shall.
At Mabuiag there is a healthy population, and it is not decreasing. There are some South Sea Islanders among them, and some have married Mabuiag women, so that on the whole the population is not retrogressive. They should be looked after, because we may get many useful workers in the Strait from the natives of this island.

Badu is a much larger island, but the population is not so large as that of Mabuiag. Still, the people are very interesting, and I have lately managed to establish a school there also. The population of Badu at the present time is scarcely 200. They are nice people; but they are rather lazy. There is a good deal of fair timber on it. The people make use of the native yam, which grows rather abundantly, and is known as the Boer. It is an excellent yam, very much superior to most of the yams I know of. I sent some of them to Captain Penefather to see if he could get them to grow at St. Helena.

Then here is Green Island, which is very much resorted to by the pearl shellers, who pursue their calling on what is known as “the old ground.” They can always make sure of getting a certain quantity of shells, and the extent of the area is very considerable. I am sure it is much larger than is at present known, but the difficulty about going further is that the luggers don’t like to go too far from the mainland. If it blows they come into Badu or Green Island. Not long ago a change was made in the direction of moving the village to a position called Greenwell, and at that place there are a good many houses built.

Moa Island is also a very fine island—a large island with great diversity in its area. There is a high mountain on it called Mount Augustus, about 1,600 feet high. There is a good deal of scrub, and also a good deal of good pasture land. There are not many natives on Moa. I believe in the old times they were decimated. At one time the population was much larger, but a war-like tribe famous in the old times fought the Moa people, and cut them up to such an extent that they never recovered. I don’t think the population at the present time is more than 40 or 50 at the outside.

Here is another island called Naqhir, occupied by a South Sea Islander called Jimmie Samoa, a very big man, weighing about 20 stone, and he has a large family. There are only about half-a-dozen natives upon it. It is a very picturesque island, with some good land on it. Jimmie has some very good cultivated garden ground. I may say that a question of nationality arose the other day with regard to him. I have known him as an inhabitant of the island ever since I have been there, and it seems rather hard that he should be deprived of getting a license because he does not happen to be a British subject. However, it was held the other day that he was not a British subject, but
a Samoan. Still he has some grown-up sons, and they are certainly British subjects; these people here are British subjects, and they are entitled to the rights of British subjects; and I hope we shall see that they secure them. The native-born population are British subjects. They are civilised people; they are being educated, and they are entitled, and I say, should be treated as British subjects. Still they are not enumerated even in the census. I hope that in any future census notice will be taken of them. They marry and they are given in marriage. They live in good houses. They live on a vegetable diet and fish. They are human beings; they are our own flesh and blood; they are born under our jurisdiction; and they are entitled, I maintain, to the privileges we enjoy. Of course there is a very great distinction between the natives of the islands of Torres Strait and the natives of Australia. I think even the natives of Australia deserve to be enumerated in the census, and those of Torres Strait should certainly be enumerated as part of our population. Still there is a decided distinction between the two people. The natives of the islands of Torres Strait are capable of exercising all the rights of British citizens, and they ought to be regarded as such. They are a growing and intelligent people, and they want to be educated. They want to be educated even more than our people. They show an inclination for education which often exceeds that of our own white population. This is not an extreme statement. It is a true statement, which I can prove by facts, and I am quite sure that anyone who saw these people would be quite convinced that what I have said is true. (Applause.)

Now, as another indication of the civilisation of these people I must not forget to mention that they observe our tactics in training soldiers. Most of them have visited Thursday Island at some time or other, and have seen our soldiers drilling at the barracks. This struck them as exceedingly delightful and interesting. They have got together on Mabuiag, for instance, a force of 20 men, put them into a uniform of their own, and made them to look as like soldiers as they could. They got a few wrinkles from the way our sergeants saw about training their men, and amongst them is a man who can put them through their facings almost as well as the sergeants themselves. In this way they have shown their desire for discipline and training, and I have not the slightest doubt that if it be necessary, from the natives of Mabuiag, Moa and Badu you could raise an auxiliary force which would be very useful. They are men fond of that sort of thing. They look upon it as a kind of play, but they are fine men, capable of hard work, and they could pull about the guns; and there is not the slightest doubt they could be used with great benefit if we were put to the necessity of employing them.
That is an indication of what these people are capable of. Having seen our soldiers drilling, they are anxious to drill themselves, and they have actually managed amongst themselves to put together a force of men which is very presentable.

The map I have here illustrates the whole of Torres Strait. Formerly when a man got away to one of these islands there was no law to touch him. It became necessary to extend our boundary, and when I was in office—I think in 1876—we got a bill passed which authorised us to extend our maritime boundary. The Great Barrier Reef was then made the eastern boundary, and it was extended so as to include the islands along the coast of New Guinea. There is a popular belief that the whole of this area is British territory, but that is a mistake. It was stated, I think, during the controversy going on about the Behring Strait that John Bull had annexed not only the islands and the whole of Torres Strait but that he was going to bar the passage of Torres Strait against the rest of the world. Of course he could not do anything of the kind. All the islands within the boundary were annexed, but we did not attempt to annex the ocean. We have not attempted to do that yet; and I do not think John Bull will ever attempt it. However, this must not be forgotten, that in this space there is very little ocean, where there is no island and when we annex an island that means we annex everything within three miles of that island, so that if you annex all the islands and claim jurisdiction over the sea within three miles of each island there is not much left which can be regarded as the open sea. (Laughter.) It is a distinction possibly which may be said to be without a difference. At any rate we do not presume to annex the ocean, whatever we may have done with regard to land annexation. All these islands have been taken in, and are now Queensland territory. I will just go over a few of them. The Three Sisters are here, where we have had a good many wrecks. I don't know how it is, but somehow they seem to attract vessels in an extraordinary way. Possibly it is because vessels can go ashore so easily there. They are a comfortable distance from Thursday Island. We have had several wrecks there, and one of the last was an Italian vessel. We went out to see it, and we found the vessel comfortably berthed on a reef—a very nice, safe, coral reef; and we thought there would not be much difficulty in getting the vessel off. The captain and all his crew had deserted her, and declared that she was abandoned, and a total wreck. We went out, and with very little assistance got her off, and she sailed away after a few necessary repairs. Unfortunately, she got ashore again in a most extraordinary way, and she was finally lost, and I believe paid for by the insurance company. How that may be, I
They wonder. The man. The very few. Volcanic would. The a. The a. They is. And not. Ships in. Inhabited the. Reduced He. It. Good I. I am. Vei-v refer. Are a. Cocoanuts. There have. Famous that. He. Here a. Night. The. Gardens. Warrior. Island. Almost all. Origin. Powerful one. Attacked shell. Fishing money, 500. Island, people. Years everything. Cocoanuts. Cocoanut. Machinery. Name, he. Growing. Growing. Taken. Taken. Friday, he. Raised. Island. Money, he. Said.Thing. Good. Things. Tribes. Tribes. All. Say. others. Years. Lives; and if they are not attended to the probability is that they will not reach maturity. We have now on several islands people who are really doing a little in the way of cultivating. York Island, for instance, which is inhabited by a wonderful individual. His name, or rather what he is always called, is Yankee Ned. He is an American, and his real name is Moseby. He is an intelligent man, and has for many years lived on York Island. He has made lots of money, but he is one of those unfortunate men, who, as soon as they make money, go into Thursday Island and spend it. He lives on this island. Lately he has taken to raising cocoanuts, and now has at least 500 cocoanuts growing there and coming to maturity. Somewhat the same may he said of a man on Warrior Island. This is a famous fishing ground, and there has been an immense quantity of very good shell taken from that reef. The island was once the centre of a very powerful tribe. There is a story that at one time they came out and attacked "The Fly." They certainly attacked a man of war that was surveying. Now they are reduced to very few. There is one fine fellow amongst them who is the representative of the old Warrior Tribe. They were a very powerful tribe, and now they are almost all gone. The few that are left live on Turtleback Island.

Here let me point out to you three islands of a different character altogether—Darnley, Murray, and Stephens. They are of volcanic origin. Here they grow an abundance of cocoanuts. They are perfect gardens, and the people on them live entirely by what they grow. They have good houses. Murray Island, as you may observe, is right on the Barrier Reef. There is a very good entrance here—the entrance for the great North-east Channel, which is near Bramble Cay. I could tell you stories about that, but I have not time tonight. This is the entrance all the sailing ships go through. It is the great entrance for all ships that pass through the North-east passage.
Now, I came to Saibai. I was there a few weeks ago, and left a schoolmaster there. Since that he has got together a school of 90 children, all of whom are keen to learn the English language; and who are now learning it. The Saibai people, even in my time, were absolute savages, and now they are amongst the most enterprising and industrious of the whole of the Torres Strait people. They have built a church. There has been an epidemic, I may say, in church building. It is wonderful what money they have collected for the purpose. They got the timber from New Guinea, and they have built it all themselves, and purchased iron for the roof. They have put up a very good structure, and it will hold as many people as this little hall (the School of Arts’ Hall), and they are very proud of it. Saibai is a long island, swampy right through, with a fringe of cocoanuts right round it. Yet it is not unhealthy, in spite of that. It is a curious thing that Cornwallis Island, close to Saibai, which stands out very high, and has a granite peak, and you would think was healthy, is not so; for some unaccountable reason it is not healthy. Well, Saibai is a prosperous island. They have now bought two luggers of their own, which they have paid for, and they are working on their own account. They have a shrewd idea of the value of money, and they will not part with anything without getting very good value. I think that is a good sign. It is an indication of civilization. (Laughter.) It is undoubtedly. I used to think in New Guinea, where I was, that when they once began to traffic and exchange their shell for tobacco, etc., that they would progress, and when I found that they were dealing with actual coin instead of the barbarous exchange of tobacco, trade, etc., I said to myself that was a step on the upward grade. (Sir Hugh Nelson: So it is.) Now they understand the value of money and coin, and they prefer to go into the stores and price what they want, and buy and pay for it.

Here is Boigu. It ought to belong to New Guinea. There has been a good deal of discussion as to what should be the maritime boundary between us. Here is another island, Deliverance Island, which is in Queensland territory. It is a curious low little island but you see it a long way off, because there are a lot of Wangi trees upon it. They bear a very edible kind of plum, and they are largely eaten by the natives. In fact they are a very nice fruit for anybody, and are appreciated as a delicacy, much in the same way as the Torres Strait pigeon. In the Wangi season the Torres Strait pigeons come and feed upon them. Talking about birds, when I was last on Saibai there were immense numbers of ducks and native companions. Just at sundown the geese came across in thousands, and fine large birds they are. The natives shoot them. They have their guns now, and they get powder and shot. At one
time I used to supply them with cartridges. At that time there was a great scare about the Togari men, who came from Dutch New Guinea and along the coast. They were great fighters, and head hunters, and they carried off a good many heads in the old times. When I went there I supplied these Saibai men with ball cartridge wherewith to encounter the Togari men if it were necessary. That ceased to be the case after Sir William MacGregor had dealt with them. After Sir William had met them, the Togari men thought it better not to come over again; and I don’t think they will ever trouble us very much in the future. They were formidable, and they may still be, but at any rate, for the last few years we have heard nothing of them; and I don’t think the Saibai people now think it necessary to be on the look out for them.

Deliverance Island is a curious little island—a sandbank swarming with turtle, and there are some very high Wangis there. When I visited it last it was inhabited by five European sailors, who lived most luxuriously. They did nothing. They had ducks galore, fowls galore, besides turtle whenever they liked to catch them, and they cultivated sweet potatoes and bananas. Altogether they were most luxurious dogs. I don’t know whether they are there now, but Deliverance Island has often been resorted to by white men, beach-combers, who live idle lives of that kind.

Just let me say a few words about the proposed maritime boundary, which has been talked about a good deal. It has been proposed that a portion of the islands included in our present boundary should be given to New Guinea; but whether that will come about I don’t know. The proposed boundary would pass through Deliverance and Turn Again Islands, and so on through Moon Pass on the Warrior Reef to Dalrymple Island, and thence to Bramble Cay. This is contended for by Sir William MacGregor, on the ground that the old fishing ground belonging to the natives of New Guinea should be preserved for them, and there is a good deal to be said in favour of it. Of course, the people of Thursday Island do not look favourably upon the transfer of any of the islands. They think it would injure their interests. I do not think it would, because, I think, whatever is got from Torres Strait would go to Thursday Island to be exported. I am quite sure it is not fair that Saibai, which is only a mile or two from New Guinea, should be Queensland territory and not New Guinea. It ought to be transferred to New Guinea, and I think on the whole the natives would be better off if that were done. The administration of New Guinea is, of course, based on the principle of taking care of the natives, and doing as well for them as possible. I am, therefore, an advocate for an alteration of boundary, whenever it may come about.

Some of you may not know what has been done towards the settle-
ment of New Guinea. All along here (indicating) anybody may live as safely as in Queensland, but when you get up towards the mouth of the Fly River, the condition of the natives is just what it was a hundred years ago. There has been no change. They are as savage and as dangerous as ever they were; and if there are any explorers here to-night, or anyone who is ambitions to become a great explorer, here is an opening. All that country is absolutely unknown. We know scarcely anything of the inland country here or of the rivers, and the people are as they were a hundred years ago.

Dowdi has a good deal in its future. There is a good deal of fair country there, and the natives are tolerably friendly.

Daru is the headquarters of the New Guinea Administration—that is for British Western New Guinea. It is a rich island. That is as far as I can take you now. In conclusion, I would again assure you that the people in Torres Strait desire your sympathy and help to secure to them the rights which are their own, which ought to belong to them, and which I hope some day will belong to them. (Prolonged applause.)
MITIGATION OF FLOODS IN THE BRISBANE RIVER. *

By the Hon. A. C. GREGORY, C.M.G., F.R.G.S., M.L.C., Etc.

The question of mitigating the disastrous effects of the floods in the Brisbane River is of such great importance that it demands a most careful scrutiny of the several schemes which have been suggested for the attainment of that object, and more especially of that recently recommended by Colonel Pennycuick, who has been engaged on important works of this nature in India.

In dealing with this subject it may be premised that I have spent some considerable time in the geological investigation of the district of the Upper Brisbane, especially of those parts which from the steepness of the ranges and remoteness from roads are seldom visited even by the stockmen. I have twice been arrested by sudden floods, and have travelled along the summit ridge of the mountains during the continuance of one of the terrific electric rain storms which so frequently occur on these ranges, and cause torrents to flow down and flood the valleys.

The geological features are granite and allied crystalline rocks—Devonian slates—and rocks and shales of the Mesozoic period. The soil resulting from decomposition is thin and absorbs little water even after periods of dry weather, and is completely saturated by one or two inches of rainfall.

Colonel Pennycuick’s scheme for mitigating the floods in Brisbane is to form a regulating reservoir in the Upper Brisbane Valley, in which a sufficient quantity of water can be stored during the high floods to reduce the river 15 feet at the Victoria Bridge, and thus restricting the flood level to 15 feet above mean tide, and this would reduce the surface gradient of the river one half below the bridge.

For this purpose he proposes to construct a regulating reservoir having a capacity of twenty-five thousand million cubic feet, in which to store the surplus rainfall until the excessive rain ceases.

The question, therefore, arises, whether a regulating reservoir with a capacity of twenty-five thousand million cubic feet would be sufficient to contain the surplus flow during a flood equal to that of 5th February, 1893.

Colonel Pennycuick adopts actual measurements made by the Hydraulic Engineer (Mr. Henderson), but considers the computations

* Read at a Meeting of the Royal Geographical Society of Australasia, Queensland, March 21st, 1900.
of the flow of water in the river near Brisbane to be altogether fallacious and useless, and he therefore rests his computations on the records of the rainfall during the flood of 5th February, 1893, and that the flow of water in the channel of the river would be limited to four-fifths of the rainfall, the remaining fifth being absorbed by the soil and vegetation within the catchwater area.

He also gives an opinion that the value of that part of the river channel, which is below tide level is of little use for the transmission of flood water, and therefore dredging the river below the city will not afford relief from flood.

Though there are grounds for questioning the sufficiency of the data on which Colonel Pennycuick bases his calculations it will be convenient in the first instance to apply his data in investigating the question whether the proposed works are practically adequate for the reduction of the flood in Brisbane from 30 feet to 15 feet above the mean tide level at the Victoria Bridge.

In order to ascertain the proportion of the flood water, which has to be withheld to reduce the surface level 15 feet at the Victoria Bridge, the section of the river has to be divided into three nearly equal parts, the lower area (a) being the part below mean tide level. The central (b) that which occupies the 15 feet above tide level, and to which the flood is to be restricted, and having a surface gradient of one in 2750. And the 15 foot (c), which is to be kept back by the regulating reservoir, and would have a surface gradient of two in 2750.

Now, in (a) the water is only moved by the pressure of (b) and (c), with grades of one and two, and according to the practical rules of water flowing in regular channels, the velocity and quantity in the lower division (a) is only half that in the central (b). And it is 50 per cent. greater in the upper (c) than in (b). The result is that the quantity flowing down in (c) is one half of the three sections (a), (b), (c).

Thus in order to restrain a flood like that of 1893 to the level recommended by Colonel Pennycuick, one half of the total flood waters of the river has to be detained in the reservoir until the excessive rainfall terminates.

In applying these data to the determination of the practical value of the regulating reservoir, and the adoption of a co-efficient, on which to base the computation of the quantity to be retained in the reservoir, the four days of heaviest rain may be taken, and the mean of those days will certainly not exceed the actual flow at the Victoria Bridge at the height of flood. Thus on the 2nd, 3rd, 4th, and 5th of February the mean rainfall, deducting one-fifth, amounted to 46,589 millions of cubic feet, and half this, 23,294 millions, has to pass the bridge, and the other half detained in the reservoir until the excessive rainfall terminates.
The next matter to be dealt with is the amount of rainfall which has to be controlled, and for convenience the observations during the flood of February, 1893, have been tabulated.

For the Upper Brisbane area above the dam of the regulating reservoir there were seven stations where the rainfall was recorded, and there were eight stations in the Lower Brisbane division, and from the observed amount of rain one-fifth has been deducted to comply with Colonel Pennycuick's estimate of the absorption by the soil and vegetation, though the fact is that the first two or three days of rain had fully saturated the country, so that when the excessive rain commenced almost the whole flowed down the watercourses.

We will now assume that the reservoir has been constructed, in accordance with the recommendation, and that the same conditions of rainfall, as in 1893, are repeated.

The total rainfall for the whole area during the four days of heavy rain was 186,359 millions of cubic feet, or 46,590 millions cubic feet per day. And to reduce the flood 15 feet, or half the quantity, one half the total flow has to be kept back, and only one half, 23,295 million cubic feet allowed to pass the Victoria Bridge.

February 1st.—The rainfall of Lower Brisbane, 10,292 million cubic feet, and of Upper Brisbane, 4,686 million cubic feet, together 14,978 million cubic feet could pass the bridge.

February 2nd.—The Lower Brisbane would contribute 16,139 million cubic feet, and 7,156 million cubic feet would be allowed to flow through the sluices, and as the rainfall of the Upper Brisbane is 18,603 million cubic feet, there is a surplus, 11,447 million cubic feet, to be retained in the reservoir.

February 3rd.—Lower Brisbane contributes 11,984 million cubic feet, and Upper Brisbane 39,428 million cubic feet, of which 11,311 million cubic feet would pass the sluices and 28,117 million cubic feet retained, and this added to the retention of the previous day makes an aggregate surplus of 39,564 million cubic feet, which is 14,564 million cubic feet in excess of the capacity of the reservoir.

February 4th.—The Lower Brisbane contributes 11,452 million cubic feet, and Upper Brisbane 59,098 million cubic feet, of which 11,843 million cubic feet would pass the sluices, and the balance of 47,250 million cubic feet added to the surplus of the previous day amounts to 86,814 million cubic feet.

February 5th.—Lower Brisbane contributes 5,895 million cubic feet, Upper Brisbane 23,765 million cubic feet, of which 17,400 million cubic feet might pass the sluices, retaining 6,365 million cubic feet, which added to the previous day's surplus of 86,814 million cubic feet, makes a total surplus of 93,179 millions of cubic feet, or 56,732 millions in excess of the capacity of the regulation reservoir.
No provision is made for the passage of this enormous surplus, as
the retaining wall of concrete is not calculated to sustain an overflow,
so that unless some additional means of passing the flood waters is
provided besides the sluices the result would be a disaster far ex-
ceeding the highest known flood in the lower valley of the river.

In the foregoing computations the quantity of water flowing past
the Victoria Bridge has been taken from Mr. Henderson's measure-
ments, as 400,000 cubic feet per second, but if Colonel Penny-
cuick's estimate of only 270,000 cubic feet per second were adopted, and
also his opinion that the portion of the river channel below tide level
is ineffective for the passage of flood water, the result would be much
less favourable to the employment of a regulating reservoir.

Having dealt with the question of the flood on the basis of the
data employed by Colonel Pennyieuick, let us now consider it under
the actual conditions which existed locally in February, 1893, assum-
ing that the regulating reservoir had been constructed.

The rain commenced on the 29th January, in the Lower Brisbane
division, and only 4.98 inches fell on that and the next three days.

In the Upper Brisbane the rain commenced on 31st January, and
on that day and the 1st February 1.50 inches of rain fell, and thus
the whole of the area was thoroughly soaked, and the watercourses
filled to flowing.

On the 2nd, 3rd, 4th, and 5th there was no absorption by the soil
or vegetation, and practically the whole of the rainfall flowed down
the river, and any provision for the mitigation of floods must deal
with the whole of the rainfall on its watershed, for unless every
possible contingency of excessive rainfall is provided for the regulat-
ing reservoir would be liable to destruction by overflow with results
far more disastrous than the uncontrolled natural flood.

On the 31st January the rainfall on the Lower Brisbane was
5,013 million cubic feet, and on the Upper Brisbane 3,723 million
cubic feet; no part of this would be retained, and the ground would
be thoroughly saturated.

On the 1st February 12,860 million cubic feet would be contri-
buted by Lower Brisbane, and 5,858 million cubic feet would be
allowed to pass the sluices of the Upper Brisbane, as the total would
only be 18,753 millions of cubic feet.

On 2nd February 20,174 million cubic feet would come from the
Lower Brisbane, and the rainfall in the Upper Brisbane, 23,254
million cubic feet, of which only 3,121 million cubic feet could be
allowed to pass the sluices, and 20,133 million cubic feet would be
retained in the reservoir.

On 3rd February 14,980 million cubic feet would be contributed
by Lower Brisbane, and 49,286 million cubic feet would fall in the
Upper Brisbane, but only 8,274 million cubic feet could be allowed
to pass the sluices, and 44,012 million cubic feet would have to be retained, but of this only 4,867 million cubic feet could be added to the reservoir, leaving a surplus of 39,145 million cubic feet without any provision for its disposal.

On the 4th February the Lower Brisbane would contribute 14,315, and 73,869 million cubic feet of rain would fall in the Upper Brisbane, of which only 8,939 million cubic feet could be allowed to pass the sluices, leaving a surplus of 64,930 million cubic feet to be added to that of the previous day, making a total of 104,075 million cubic feet.

On 5th February 7,369 million cubic feet would be supplied by the Lower Brisbane. The rainfall of the Upper Brisbane amounting to 29,707 million cubic feet, of which 15,885 million cubic feet would be passed through the sluices, leaving a surplus of 15,822 million cubic feet to be added to that of the previous day, 104,075 millions, making a total of 117,897 million cubic feet in addition to the twenty-five millions of cubic feet retained in the reservoir.

As a check on the calculations connected with the flood of the 5th February it is desirable to apply the data given by Colonel Penny- cuick to the flood of the 19th February, adopting the quantity of water, he estimates passed the Victoria Bridge at the time of highest flood as 270,000 cubic feet per second, and that this is to be reduced to 150,000 cubic feet per second by the operation of the regulating reservoir, also that one-fifth of the actual rainfall is to be deducted for absorption, etc.

In applying these conditions to the flood of 19th February, it is premised that the rainfall continued for four days, and that the average quantity of rain, taking the whole area of the catchwater, and deducting one-fifth for absorption and waste, was 39,893 million cubic feet per day.

The first day the rainfall amounts to 31,893 million cubic feet, but only 12,969 million cubic feet, equal to 150,000 cubic feet per second, could be allowed to pass the Victoria Bridge, the surplus of 18,933 million cubic feet would have to be retained in the reservoir.

The second day there would be a second surplus of 18,933 million cubic feet, which would increase the quantity to be withheld to 37,866 million cubic feet.

The third day the surplus would be 18,933 million cubic feet, increasing the total to 56,799 million cubic feet.

The fourth day the surplus would be 18,933 million cubic feet, which added to that of the previous day increases the surplus to be withheld to 75,732 millions of cubic feet.

Thus the surplus to be retained would be more than three times the capacity of the reservoir.
The actual conditions of the flood of 19th February, 1893, were exceptional, because the previous flood of 5th February had soaked the country, and there was a considerable quantity of water flowing down the river, in addition to the rainfall, therefore, so far from there being any loss from an absorption of one-fifth of the rain, the actual quantity flowing down the river must have exceeded the total rainfall.

If we take the actual rainfall, the computation stands thus:—

First day's rainfall, 39,806 million cubic feet; quantity passed through Victoria Bridge, 12,960 million cubic feet; surplus, 26,846 million cubic feet.

The second day the surplus would be increased to 53,692 million cubic feet.

The third day the surplus would be 80,536 million of cubic feet.

The fourth day the surplus would amount to 107,380 million of cubic feet, or more than four times the capacity of the reservoir.

The results of my own measurements of the surface velocity of the current in the Milton Reach during the flood indicate that Colonel Pennycuick's estimate of 270,000 cubic feet per second is too low, and that Mr. Henderson's estimate of 400,000 cubic feet per second, or 34,560 million cubic feet per day, is nearly the correct quantity, and if half of this, or 17,280 is allowed to pass the Victoria Bridge daily, the result would be as follows:—

First Day.—Surplus, 12,526.
Second Day.—Surplus, 25,052.
Third Day.—Surplus, 37,578.
Fourth Day.—Surplus, 50,104 millions of cubic feet.

This surplus being double the capacity of the reservoir for lesser flood of 19th February.

Thus in each of the cases cited the regulating reservoir of 25,000 million cubic feet capacity would be inadequate to retain the surplus flood waters.

The question is: How such great differences should occur in the results of calculations based on the same data? But on examination it appears that the difference arises from Colonel Pennycuick having taken the average or mean rainfall for the eight days of rain instead of the four days of heavy rainfall which caused the flood.

Thus on the first two days the average was only 2.25 inches, on the next four days the average rainfall was 8.84 inches, and on the last two days only 0.80.

The average for the whole eight days was 5.10 inches, which is 3.74 inches less than the 8.84 inches of the four days of flood, and this would be equivalent to a rainfall of 144,967 million cubic feet per day.

No doubt the average of extended periods of rainfall is the suitable basis for calculating the storage of water for irrigation purposes,
but it is not a correct method when dealing with abnormal floods, and though Colonel Pennycuick would have discovered the defective computation had he worked out the flood of 19th February, yet his sojourn in Queensland was so short that it did not give time for working out details for the verification of his primary investigations.

Theoretically Colonel Pennycuick's system of regulating reservoirs is correct, but his computations have been made on imperfect data, and on investigation it becomes evident that the reservoir ought to have at least five times the capacity of that specified for the storage of the excessive rainfall, and as the cost of works of this class increases in a greater ratio than the capacity it is obvious that the system is one which would entail a greater cost than the colony could afford to expend on a work which would only benefit a single district.

Even Colonel Pennycuick's estimate for the works necessary for his scheme is £1,300,000, and this at 4 per cent. would be an annual charge of £52,000, while the cost of maintenance and supervision would probably bring the annual charge to £60,000.

In regard to the schemes for cutting channels for the flood waters to pass more directly to the ocean, the magnitude of the excavations involve such high figures that Colonel Pennycuick and Mr. Henderson consider the cost prohibitive. Colonel Pennycuick expresses an opinion that dredging the channel of the river below the city will not afford any great facility for the passage of flood waters, giving as a reason, that the salt water would have to be pushed back by the flood, and, therefore, affording little facility for the discharge of the river water.

This, however, must have been said without sufficient consideration of the fact that it is unimportant whether the channel be enlarged above or below the tide level, the quantity of water discharged is proportionate to the area of the cross section governed by the surface gradient.

For instance, let it be assumed that the Brisbane River from the bridge to the Bay were widened to a mile with a depth of 100 feet the flood below the bridge would rise only a few inches instead of many feet.

In order to fully consider the effect of dredging below the city, it may be assumed that the area of the cross section of the river, where the dredging is to be effected, is double that at the Victoria Bridge, or 100,000 square feet. The dredging of a channel, 300 feet wide and 10 feet additional depth, would only enlarge the channel of the river one thirty-third part, and the effect would scarcely be appreciable.

Unfortunately the enlargement of the channel by dredging has been more than neutralised by the construction of a training wall, the material dredged being deposited within the flood channel of the river, so that no relief can result from the dredging operations.
While the training wall, having been connected with the bank at its upper end, will not only obstruct the passage of flood waters, but have a far more serious effect by decreasing the tidal scour during dry seasons. And it is singular that so many engineers have failed to notice this grave defect in the design of the works for the improvement of the navigation of the Brisbane River.

So far the various schemes which have been proposed for the mitigation of the floods of the Brisbane River have not been practicable on account of the enormous cost. And even in the minor matter of protecting the contents of the warehouses connected with the wharves in Brisbane no more feasible scheme has been suggested than that recommended in the papers read before this Society in May and July, 1893, wherein it is urged that small steam engines should be placed on the upper floors above flood level, so that the merchandise stored below could be readily hoisted to positions of safety.

Hitherto the difficulty has been that the gas engines used to work the hoists became useless from the effect of submergence, the failure of the gas supply from damage to mains, or failure of the gas works. Manual power is of little avail, as the men either demand exorbitant wages, or even refuse to work at any price, while the employees of the warehouses are insufficient to raise the goods to the upper floors without the aid of hoisting power to work the lifts.

Objection has been made to the use of steam engines on the ground that the insurance companies charge higher premiums where steam engines are used, but there is little doubt that the charge would be very small where the engines are only to be used in case of high floods.

In conclusion, I trust that the data used in this paper will be carefully scrutinised by those whose practical acquaintance with the subject will enable them to test the value of the data and methods of computation.
RAINFALL ON THE BRISBANE RIVER WATERSHED, JANUARY AND FEBRUARY, 1893.

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RAINFALL IN MILLIONS OF CUBIC FEET PER DAY.

WATERSHED OF THE BRISBANE RIVER ABOVE THE RESERVOIR AND BELOW THE RESERVOIR BUT ABOVE VICTORIA BRIDGE.

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<tr>
<td>Feb. 1</td>
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<tr>
<td>7</td>
<td></td>
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<td></td>
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<tr>
<td><strong>Total</strong></td>
<td>195,300</td>
<td>156,235</td>
<td>271,735</td>
</tr>
<tr>
<td></td>
<td>77,433</td>
<td>61,944</td>
<td>218,181</td>
</tr>
</tbody>
</table>
Mitigation of Floods in the Brisbane River.

**Flood of 12th February, 1893.**

<table>
<thead>
<tr>
<th>Location</th>
<th>Rainfall (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cressbrook</td>
<td>18.08</td>
</tr>
<tr>
<td>Crohamhurst</td>
<td>20.60</td>
</tr>
<tr>
<td>Esk</td>
<td>16.06</td>
</tr>
<tr>
<td>Nanango</td>
<td>9.80</td>
</tr>
<tr>
<td>Woodford</td>
<td>15.90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>574.44</strong></td>
</tr>
</tbody>
</table>

**Mean Daily Rainfall:**

<table>
<thead>
<tr>
<th>Location</th>
<th>Rainfall (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fassifern</td>
<td>9.24</td>
</tr>
<tr>
<td>Helidon</td>
<td>10.78</td>
</tr>
<tr>
<td>Ipswich</td>
<td>12.97</td>
</tr>
<tr>
<td>Laidley</td>
<td>8.86</td>
</tr>
<tr>
<td>Brisbane</td>
<td>14.51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>557.36</strong></td>
</tr>
</tbody>
</table>

**Mean Daily Rainfall (22,170,090 Cubic feet):**

<table>
<thead>
<tr>
<th>Location</th>
<th>Rainfall (inches)</th>
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<tbody>
<tr>
<td></td>
<td>3.72</td>
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</table>

**Floods in the Brisbane River, February, 1893.**

**Upper Brisbane District, 2,600 square miles.**

- 2,600 sq. miles,
- 640 acres,

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>104,000</td>
<td></td>
</tr>
<tr>
<td>156</td>
<td></td>
</tr>
<tr>
<td>1,664,000</td>
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</tr>
<tr>
<td>43,560 sq. ft.</td>
<td>1 acre</td>
</tr>
<tr>
<td>99840000</td>
<td></td>
</tr>
<tr>
<td>8320</td>
<td></td>
</tr>
<tr>
<td>4992</td>
<td></td>
</tr>
<tr>
<td>6656</td>
<td></td>
</tr>
<tr>
<td>12972183840000 sq. ft., 1 in. deep.</td>
<td></td>
</tr>
<tr>
<td>6,040,320,000 cube ft., 1 in. Rainfall.</td>
<td></td>
</tr>
<tr>
<td>24) 6,040,320,000 (251,680,000 c.f. per hour)</td>
<td></td>
</tr>
<tr>
<td>48</td>
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<tr>
<td>124</td>
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<td>120</td>
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<tr>
<td>163</td>
<td></td>
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<tr>
<td>144</td>
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<tr>
<td>192</td>
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</tr>
</tbody>
</table>

**60) 251,680,000 cubic feet, 1 hour.**

**60) 41,936,566 cubic feet, 1 minute.**

**1,639,111 cubic feet, 1 second.**

The Lower Brisbane has the same area and the same coefficients.
Mr. A. J. Carter asked Mr. Gregory if he had anything to say to Colonel Pennycuick’s scheme, supposing the figures on which he had based his calculations were correct.

Mr. Gregory said it would be a quite feasible scheme for keeping the floods back if the reservoir were large enough, but it would have to be so large that it would be impossible from a financial standpoint. Instead of costing £1,300,000 it would cost quite £5,000,000.

Asked by Mr. Arthur whether there was ever likely to be a flood higher than that of 1893, he said he scarcely thought so, though Mr. Henderson had assured him that he had found flood marks 3 feet above that level. He did not at all agree with Colonel Pennycuick about the tide water. The flood water would be sure to force back the tide water in the lower channel.

In reply to Alderman Foley, Mr. Gregory said a canal scheme would put an end to navigation if carried out, and, moreover, the cost would be altogether prohibitive.

The Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), exhibited a plaster of Paris model of a section of the Brisbane River, from the Victoria Bridge downwards, which had been prepared for him to illustrate his remarks on the influence of the tidal waters of the river upon the discharge of the stream during times of abnormal floods. Mr. Thomson said the meeting was placed in the very unsatisfactory position of criticising Colonel Pennycuick’s scheme for flood prevention without the opportunity of hearing that eminent authority in defence. It was most unfortunate that Colonel Pennycuick had left the colony, and could therefore have no chance of offering an immediate reply to Mr. Gregory’s criticisms. He (the Hon. Secretary) had no intention of challenging Mr. Gregory’s conclusions—in point of fact, he entertained the highest opinion of that gentleman’s remarkable knowledge and wide professional experience, having had the exceptional privilege of being associated with him in scientific work for many years—but he (the speaker) had been the first to suggest a scheme for preventing floods in the Brisbane River, and he thought it not altogether out of place to offer a few remarks on the occasion, more especially as Colonel Pennycuick’s reservoir scheme was identical with that proposed by himself some ten years ago, and discussed before the Society and in the public Press, and now condemned by his own esteemed friend and co-worker, Mr. Gregory. Mr. Thomson then read the following extracts from a communication that he had addressed to the Prime Minister, Sir S. W. Griffith, in February, 1893, and which it was thought would give the meeting a better idea of what had previously been done in the matter:—

Dear Sir Samuel Griffith,—Shortly after the 1890 flood I prepared a short paper, entitled ‘Notes on the Brisbane River Floods’ (see ‘Proceedings and Transactions of the Royal Geographical Society of Australasia, Queensland,’ Vol. V., Part 2, page 67). Although the result of a somewhat prolonged study of the matter, that communication was simply intended to direct attention to the subject with the view of having it exhaustively discussed. The methods therein advocated for controlling the flood waters of the Brisbane River were:

1. The retention of so much of the head waters as is necessary to equalise the volume of the river, so that the inundation of low-lying areas by an overflow of the banks of the stream may be prevented. The augmented waters would be controlled by upland reservoirs, in which the enormous sediment would deposit itself, instead of doing so in the lower reaches of the river, where it obstructs the channels and impedes the free circulation of the water, causing it to overflow the banks of the river. As a means of enriching the poor lands of the basin, the storage water could be profitably used for irrigation purposes. This would
not only increase the value of these lands enormously, but would yield a handsome return to the State, besides covering part of the expense of construction. At present the immense volume of rich deposit-laden flood water is allowed to destroy many valuable city improvements and afterwards run to waste in Moreton Bay. I have made careful calculations of the whole flooded area within the catchment surface of the Brisbane basin, and it will no doubt surprise you to know that the amount of sediment discharged into the Bay is on the average 1/2000th part of the total volume discharged. During the recent floods, this probably amounted to 142,560,000 cubic feet of solid earth. (2) Among other methods, the next most important dealt with in my paper is the shortening of the river by cutting off the larger bends. This would have the effect of increasing the declivity of the stream and consequently its carrying capacity. The increase in declivity and velocity of current would also deepen the river by what is known as 'lateral corrosion.' In my own opinion, the subject is one of vast importance to the colony, and I have made up my mind to again communicate a paper to our society in which I shall endeavour to deal with the matter in a more practical and comprehensive manner than formerly. To enable me to do so, I have solicited the advice of the accomplished Director-General of the Geological Survey of the United States of America (Hon. J. W. Powell, Ph.D., LL.D.), who has devoted about fifteen years to the study of river engineering problems. About three years ago the United States Government invited Major Powell to report upon the best means of controlling the floods in the Mississippi River. . . . I have submitted my proposals to Major Powell for his opinion. To afford him an opportunity of forming a fair idea of our position, I have forwarded Major Powell copies of the local papers on the floods, copy of my own papers and calculations, and a plan of the Brisbane River and its tributaries.”

Mr. Thomson also read the following extracts from Major Powell’s correspondence:

“In your paper several methods for controlling the river floods are suggested—viz., by reservoirs, deepening and shortening the channel, and by increasing the size of outlets. All of these methods can possibly be employed to advantage, the applicability of one or the other being determined largely by the results of survey and examination.

“An examination of the topography of the upper country will determine the question whether reservoirs can be constructed, and also as to the capacity of these. Experience in this country has shown that out of a large number of possible sites there are relatively few at which it will pay to construct retaining dams. A comparison of the contents of such reservoirs with the probable quantity discharged by the river in times of flood will, of course, determine whether these, if all filled at time of flood, will have a perceptible effect in lowering the water. As a rule, it may be said that the benefits derived from such reservoirs are not commensurate with the expense incurred unless the stored water can be used for some other purpose, as, for example, irrigation or power. . . .

“A great deal might possibly be done by improving the river below your city and by providing cut-offs at points above, so that in time of flood the waters would find a direct course and have less tendency to be backed up over the low country. . . .

“In ordinary cases revetments and training works are of little practical utility towards controlling the river, for if so placed as not to be washed out their influence is to transfer the force of the flood to some other point where the results may be less disastrous, but it is obviously impossible that they should
to any considerable degree hold back or decrease the violence of the torrent. These training works, when intelligently placed with reference to the probable scouring effects, can, as is now well recognised, be made to serve useful purposes, keeping the main channel away from a town or plantation and maintaining a direct course to the outflow. By extending such works so as to prolong the scouring effects to the deep or dead water, results of greatest importance have been accomplished in this and other countries. Their value consists, however, not in the works themselves as a protection, but in the indirect influence which they exert, and unless placed with the greatest care and forethought the enormous cost of their construction may be entirely thrown away.

"All of these works, whether for storage or for deepening and straightening the channel, are, as it is almost needless to say, exceedingly expensive, and every precaution should be taken to ascertain that the benefits will be commensurate with the expenditures—a matter, by the way, which has not always been done in the past. There is perhaps no enterprise in which money has so literally been thrown into the water as in this class of works.

"There is one prominent fact which must not be overlooked—namely, that rivers of the character of the Brisbane must be allowed to retain a large territory in their own possession over or through which to discharge the waters of unusual floods. If man encroaches on these domains, he must take the consequence, from which no ordinary exertions can save him. In other words, the river must be allowed a fair amount of space of its own choosing. When by a large flood this space has been fairly well defined the borders may be thereafter protected, but encroachments beyond this must in the long run prove futile."

He (Mr. Thomson) was decidedly of the opinion—an opinion justified by prolonged professional experience—that a regulating reservoir combined with the cut-off bends of the river, as suggested by himself some ten years ago, and now recommended by Colonel Pennycuick, was the very best practical scheme that could be adopted for minimising abnormal floods in the Brisbane River. He had formed this opinion after a very careful study of the subject, in which the physical structure and hydrographic conditions of the river had been fully considered, and the volume of successive flood waters scientifically investigated. There was no doubt whatever in his mind that this volume of water which had passed through the channel of the Brisbane River during the phenomenal flood of 1893 and subsequently had been vastly exaggerated, local estimates of same having been based upon insufficient or erroneous data. As demonstrated by the plaster of paris model of the natural channel of the river, the augmented tidal waters of the lower reaches of the stream exercised a powerfully retarding influence on the movement of the flood waters over the area of low declivity, an element which appeared to unduly magnify the flooded section, thereby greatly affecting any estimate of actual discharge. His own experiments during times of flood had shown very clearly that by far the greatest velocity of current was at the surface of the river, the bottom velocity being comparatively small along the tidal channel. These elements had evidently not been fully investigated by those who had estimated the volume of flood waters. At least, this was the only conclusion he could come to as the results of his own observations. The cost of construction was a subject that would of course have to be very fully considered in undertaking a flood prevention scheme, but he was certain the stored waters of the reservoir could be utilised for irrigation or power, which would be a big set-off against the original expense. This was an idea which had been kept prominently in view when he first suggested the reservoir scheme, and he was as fully convinced now as ever of its great possi-
DISCUSSION.

bilities. He concluded by remarking that he had no desire to question Mr. Gregory's figures at all nor to controvert his views, but he was satisfied of the feasibility of Colonel Pennycook's proposals, believing that the reservoir which had been recommended would be adequate for the purpose intended. [Mr. Thomson, who for many years was an officer in the Imperial Service occupying the position of Government Surveyor, Fiji, has had much experience in dealing with tropical water channels liable to floods and has given a great deal of attention to the study of river physics.]

Mr. G. Grimes contributed some interesting remarks regarding the flood of salt and fresh water in tidal channels, and the difference between surface velocity of the water and that nearer the bottom of the stream.

Hon. E. B. Forrest moved a vote of thanks to Mr. Gregory for his paper. From his previous record, from his early achievements, from his knowledge, and from his age, he said Mr. Gregory's opinion was entitled to the most respectful consideration. (Hear, hear.) He was sure he was only expressing the thoughts of everybody present when he said they were exceedingly obliged to him for the very able paper he had read to them, though he regretted Mr. Gregory had come to such a disappointing conclusion, and had been unable to present to them a practicable scheme. They had had several experts to advise on the matter now, but he was afraid they were little better off than in 1893 as a result so far. Now it was suggested by Mr. Gregory they should build high warehouses above flood reach, but it was poor consolation to the residents at Seventeen-mile Rocks and other low-lying places, who would be liable to suffer from flood waters. It would not help them to know that firms in the city were gaining relief by putting their goods on their upper floors. (Applause.)

The President seconded the vote, and in so doing said he thought the paper and the discussion that had followed had been very useful. He hoped some progress would result in the desired direction as the result of it. He agreed with Mr. Forrest that the whole thing was getting very complicated—(laughter)—and the further they went into it the more the difficulties that arose. In his opinion, the whole matter resolved itself into a question of money. They would have to regulate their scheme, whatever it might ultimately be, by the amount of money they could afford. Even Colonel Pennycook's scheme would cost them £60,000 a year. They would, therefore, have to consider everything carefully and from a financial standpoint, for it might ultimately turn out a greater trouble and expense to carry out a flood prevention scheme than to have a flood now and then.

The vote was carried amid hearty applause.
ROUND FUJI TO THE ICE CAVES.*

By D. S. THISTLETHWAYTE, C.E.

About 60 miles in a direct line South West of Tokio, the capital, Fiji, the "Peerless Mountain," rises up from the plain at its base in one majestic sweep, and whether you first sight it from the ocean, or catch a glimpse of its mighty cone dominating the intervening hills, as you travel inland, it is always a beautiful and impressive object. It is the highest and most famous mountain in the country, and is at once the pride and glory of Japan.

Tradition says its origin was miraculous; its history is legendary and heroic. It has a special deity of its own, the goddess Sengen, who is also called Asama or Ko-no-Hana-Saku-ya-Hime, that is "The Princess who makes the flowers of the trees to blossom," and the superstitious peasantry of the neighbourhood will tell you that "Oni" (a general name for demons, ogres, or devils) lurk in its fastnesses. According to ancient Japanese legend Fiji arose in a single night, two thousand years ago, and simultaneously a great depression appeared near Kyoto; and Lake Biwa, the largest lake in Japan, 200 miles to the westward was formed. A writer says, "its summit," which he likens to an eight-petalled lotus, "is white with eternal snows, but within its deeps, there is fire unquenchable and divine." It is as it were, a natural idol, a visible miracle, an actual and tangible superstition. It is honoured with a sort of familiar worship, for it has come to be a kind of homely divinity to the thirteen provinces from which Fiji is visible. A centre of romance; there is hardly a poet but has sung its praises, nor an artist but has painted it. One of the most celebrated of Japanese artists, Hokusi, made it his constant subject, and Hokusi's "Hundred Views" are perhaps the work by which his name is best known. It is found pictured "on almost every article, whether for use or ornament," says Mr. Dickins, and there is scarcely a garden but contains its miniature. I have even seen it portrayed in confectionery, and in culinary art.

Making allowance for poetic metaphor, and leaving the realm of legend and tradition, and coming to solid facts, we find that Fiji stands by itself rising from a plain, which is almost surrounded by ranges of mountains, between the provinces of Suruga and Koshu.

Its names are many: it is often called Fuji-san, that is, Mount Fiji, and by the poets Fuji-no-yama, that is, the Mountain of Fiji.

* Read at a Meeting of the Royal Geographical Society of Australasia, Queensland, April 25th, 1900.
whence is derived Fusiyama, the name often used by Europeans. It is also called "The Peerless One," "The Lady of Mountains," and such like, of poetical creation.

Its height has been variously estimated, Ken-ga-mine, its loftiest peak, being computed by Kipping as 12,234 feet above sea level, by Chaplin as 12,341 feet, by Favre Brandt as 12,360 feet, by Stewart as 12,365 feet, by Milne between 12,400—12,450 feet, and by Rein as 12,437 feet; so that taking the mean of these calculations I think we may safely say its elevation is about 12,360 feet.

Although at present in a state of quiescence, Fuji must still be accounted a living volcano, for even at the present day steam may still be seen issuing through the ashes on the east or Subashiri side of the mountain, at which place, too, a few inches below the surface the heat is great enough to cook an egg. So that probably Fuji is only in a state of slumber, and it is not at all unlikely that some day it may again burst forth into eruption, much in the same way that its compeer, old Bandai-san, about 100 miles north of the Capital, did on that terrible day of July 15th, 1888, when, after a long period of repose, the mountain awoke into action, and blowing its head off devastated the country round, and destroyed 401 human lives.

As late as the 14th century, Fuji was crowned with a continual smoke-wreath, but a hundred years earlier its violence had lessened. A Japanese author, who lived towards the end of the 9th century, in describing the crater says, "This cauldron is usually filled with vapour of a pure green or blue colour, and the bottom appears like boiling water. The steam is visible at a great distance from the mountain."

In A.D. 967 a great disturbance took place and a hummock was formed at the eastern base of the mountain. Again, a traveller's journal of 1021 A.D., speaks of smoke rising from the summit, while at night flame was seen to issue from the crater.

Eruptions occurred in A.D. 1082 and 1649, and the most recent one began on the 16th Dec., 1707, and lasted with intervals for a whole month. It was at this time that an excrescence was formed on the upper slope of the south side of the mountain, to which the name of Ho-ei-zan was given; it somewhat mars the perfect symmetry of the cone.

Very violent must have been this last eruption; it is recorded that the plain at Fuji's base was covered 6 feet deep with ashes and scoria, while ashes even fell in Yedo, as the capital was then called, nearly 60 miles away, to a depth of 6 inches. The streams of lava that have flowed from Fuji on different occasions must have been enormous. One stream may be traced to the village of Matsuno, on the right bank of the Fuji-kawa, 15 miles in a direct line from the
summit, while the track of another is seen on the north-east side of the base, between the villages of Yoshida and Funatsu.

Fuji is by no means a difficult mountain to ascend; there are no dizzy precipices, no dangerous rocks, nor narrow ledges to negotiate. Moreover, the first 6,000 feet of the ascent can be performed on horseback to a spot called Uma-gashi, lit. "Horse send back," beyond which no horse is supposed to pass, after which the climb is merely a matter of perseverance up a steep, steadily ascending, loose, cinder track.

The base of the mountain is cultivated up to a height of about 1,500 feet, above which spreads a wide grassy moorland to 4,000 feet, where the forest commences. The belt of moorland is carpeted with wild flowers, among which I noticed many familiar species, the wild indigo, Canterbury Bells, Campanulas, etc. The upper limit of the forest varies considerably, being lowest on the eastern side, namely, from 5,500 ft. to 7,900 feet, but on the western face it must extend as high as 9,000 feet or more. This difference is no doubt due in a great measure to the comparatively recent volcanic disturbance on the south-east side, when the great bulk of the ashes thrown out fell in the direction of the village of Gotemba, destroying the forest and leaving a barren waste which only a long lapse of years can again cover with vegetation. To the same cause must also be attributed the almost entire absence of those Alpine plants which abound on the upper slope of the other high mountains in the neighbourhood, notably on Ontake, Shirane, and Yatsu-ga-take.

Above the forest belt lies a narrow zone of bushes, chiefly of dwarfed larch, and a few species of hardy plants are found up to a height of 10,000 feet. From here the ascent becomes more fatiguing, being now over loose cinders. Patches of snow, too, will be found in rifts in the lava rock, but there are nowhere any actual snow-fields to be traversed; that is, in the period between the 15th July and 10th September, when the mountain is open to travellers. The summit of the mountain consists of a series of peaks surrounding the crater, the diameter of which is computed at 2,000 feet. The descent into the crater down the loose talus of rock and cinders is quite easy, and the depth has been variously calculated at 416 feet, 548 feet, and 584 feet. The bottom, which is formed of cinders, inclines slightly from west to east, and is intersected by small stream-beds, which lose themselves at the east end among loosely piled lava masses. All around, except where the descent is made, rise precipitous walls of rock. On the West side, immediately under Ken-ga-mine, the highest peak, there is usually a large snow-slope.

As Fuji is endowed with sanctity, trains of white-clad pilgrims with staff in hand, are met during the midsummer weeks toiling up and down the mountain. They are chiefly from the agricultural
classes, who form mutual pilgrimage associations, each member paying a small annual fee; from the capital so derived each one in turn has his travelling expenses defrayed. On the lower slopes of the mountain there are three or four small Shinto temples, at which the pilgrims pray and have their staves and garments stamped with the sacred seal by the priests in attendance; this again is usually repeated on arrival at the summit.

We started from Miyanoshita, a favourite summer resort frequented both by Japanese and foreigners alike, in the Hakone Mountains, in the second week of July to walk round Fuji. Our party consisted of four: three military officers in Her Majesty's service, and myself, with three coolies to carry our baggage and provisions. The route led through the villages of Kiga and Miyagino, and crossing the river, followed up the valley of the Haya-kawa. Clearing the latter village we climbed a steep ascent which brought us out on to the open bamboo-grassed hillside; this we contoured round for a couple of miles or so, always with a charming view on our left—for we were high up on the slope—while the river raced along the valley-bed many hundred feet below. Presently we dropped down to the level of the river, the valley opened out a little, and the hills formed an amphitheatre round a small well-watered and timbered parklike patch of country in which the pretty little village of Sengoku snugly nestled. The approach to the village led by narrow raised paths through the cultivation surrounding it, and skirted a clear running streamlet in which wooden rice tubs, buckets, trays, and other household vessels were cleansing. Soon after leaving Sengoku the climb up the Otome-toge or "Maiden’s Pass" commences. It is very steep and zigzags up the mountain range to a height of 3,333 feet. The gap forming the Pass is a sharp razor-back, the ground falling suddenly away both in front and rear. The view from the summit is a glorious panorama, for straight in front, and 16 miles distant as the crow flies, is Fuji rising up to its full height from the plain below. Looking down from our eminence into the dreamy, silent plain all objects were softened by pearly atmosphere; still Gotemba and other villages could be distinctly seen, and we traced here and there, stretches of the great Tokaido road, that great highway over 300 miles in length, connecting Kyoto, the old historic capital with Yedo the business mart, which from the 17th century onwards was at all times crowded with pedestrians, traders, pack-horses, etc., distributing their merchandise in the towns and villages along the route, and twice yearly was traversed by processions of Daimyos with their gorgeous retinues, on their way to pay homage to the Shogun at Yedo. Across the valley the graceful mountain raised its giant peak, the whole bathed in sunshine from base to summit, save where a thin wreath of fleecy clouds girdled her waist.
The descent from the Pass is very rapid, the path winding down a leading spur until the slope flattens out into moorland, and then where it finally sweeps into the plain cultivation begins again; this is chiefly rice, tea, millet, and mulberry trees.

We halted at a "yadoya" or inn at the entrance to the village of Gotemba, and in accordance with the custom of the country, leaving our boots at the threshold, mounted a steep ladder-like stairway to an upper story where we rested and had tiffin. Resuming our journey, we passed through the village, and turned off into narrow, muddy lanes. At many of the cottages we passed, large trays of silk cocoons were drying outside, while the women were occupied sorting and winding off the silk into skeins. Fuji at this time became enveloped in cloud, and remained so shrouded for the rest of the day. Later on we traversed an extensive stretch of undulating moorland, and as evening was closing in entered the long cobble-paved street of Subashiri, where the whole village turned out to look at us. We halted at the Yane-yama inn. Like most Japanese "yadoyas" the ground floor was open to the street, one side devoted to culinary purposes, while the other is a kind of divan where the poorer travellers lounge, have their meals, and later on settle down for the night. Although we had only walked 18 miles we were glad to turn in on our "futons" on the floor fairly early.

But our sleep was broken and disturbed. In the first place it was a hot night, and all the "shoji" or sliding shutters being closed, the stuffiness became unbearable.—parenthetically I may remark the sanitary arrangements of Japanese inns are far from perfect. I pushed back the "shoji" and turned in again: in a short while that artful little woman, our hostess, noiselessly crept up the stairs and closed them: as soon as she had retreated, I as noiselessly opened them again, but she was back again at once, and although I shammed sleep told me she would get into trouble if they were opened: the police insisting on their being closed after certain hours as a precaution against burglars.

Then at 2 o'clock in the morning two of our party with their coolies were called, as already arranged, to start on their ascent of Fuji, and we saw them off by lantern light. Then at 5.30 a.m. that tormenting little woman came and pushed back the shoji with a great rattle: let in the full flood of daylight, and banished sleep for good and aye, so we had to get up.

Soon after starting again, we began a long ascent leading over a stony pass, steep at the last pinch. On the summit is a tea-house with a number of rest benches. In front the ground falls away in a long and gentle, grassed slope, down which the road winds to Lake Yamanaka—the first of the chain of lakes which encircle the northern base of Fuji—in the distance. Fuji now appeared on our left, rising
up from a grassy moorland, and continued in view all day, at times clear, at others wreathed in cloud. The road hugs the margin of the lake—which is about 3 miles long by 1 ¼ across—for some distance, and peasants were working in the fields bordering it. Presently we passed through the long, straggling village of Yamanaka, which seemed singularly deserted, the adult population being out in the fields. Here too, silk culture seemed to be general. Then the track rose from the village and came out on to a wide expanse of open moorland, with a range of broken hills on the right; here we first met the track of the lava stream from Fuji crossing the path.

Approaching Yoshida there is a pretty cascade tumbling from the hills on the right, and then a charming view opens up of wooded and cultivated plain backed by high mountains, with outlying cottages of the village in the foreground. Yoshida is an unusually long village, the roofs of the houses are either covered in with curved, grey, tiles, or shingles, and are weighted down with pieces of rock as a safeguard against the fierce winds which sweep down from the mountains, and are prevalent here at certain seasons. We stopped at the "Kogiku" inn, removed our boots, and were shown upstairs. whence there was a splendid view of Fuji. 9 miles distant, though appearing much nearer. Whilst having our tiffin a crowd of men and boys climbed on to the low roofs of the adjoining outhouses and other places of vantage to stare at the foreigners eating.

In the afternoon we visited an interesting old Buddhist temple in a dark, solemn grove of trees, approached through an avenue of ancient cryptomerias by a paved way, with moss covered stone lanterns on either side. Midway the paved path crossed a stream of clear running water by a stone arch almost semicircular, with dwarf parapets cleverly wrought. It was a delightfully retired, restful spot. The distance from Subashiri to Yoshida is 11 miles.

We left the latter village early next morning; our hostess presenting each of us at parting with a fan. This custom of presenting the departing guest with a small gift, such as a fan, handkerchief, chopsticks, or small book is common to the country, and is a pleasing token of goodwill.

From Yoshida to Funatsu, 2½ miles, the road led for the greater portion of the way over a vast lava field, one of the two mighty lava torrents previously mentioned as flowing from Fuji. Where the ashes and scoria had covered over and more or less smoothened off the irregularities, a hardy vegetation had sprung up, but huge masses of lava were piled up on the roadside, and dotted over the wild looking moor. Notwithstanding the unpromising material, the conversion of the lava into arable soil, partly by weathering, partly by human toil was taking place, and on the outskirts of Funatsu, the peasants, busy in their small plots of ground reclaimed from the pumice, rested a
moment to look at the passing strangers. Leaving the high moorland, a sudden dip in the ground brought us into Funatsu. The village on the southern shore of Lake Kawaguchi seemed prosperous judging from the number of shops and life in the street; its chief product is a coarse white and coloured fabric woven from spun floss silk called "tsunugi." A crowd of laughing, shouting children raced in front of, and after us as we marched along the street to the lake shore. Six or seven picturesque sampans were drawn up on the beach, into one of which we stowed ourselves and baggage. Our child escort gave us a parting shout and scrambled for the few sen we threw them; the boatman pushed off, and with the big stern swept sculled away. The water was clear, its surface unruffled and the reflection of the hills, etc., wonderfully sharp and distinct.

Lake Kawaguchi is about four miles long by three-quarter to one mile wide, on the North, hemmed in by wooded mountains, which also close in the East end; cultivation creeps some way up the hill slopes, and little hamlets embowered in, and half concealed by trees, lie nestling at their feet. On the South there is a strip of flat, cultivated land with farm houses, and a picturesque high roofed temple in a grove of trees, further back the wild moor, and then the giant cone of Fuji towering up above all. On the West a high ridge separates it from Lake Nishinoumi. The row up the lake was enchanting, the day perfect, and the hills, clouds, bright patches of yellow grain, cottages and trees all mirrored in the water.

Landing at the hamlet of Nagahama, a mere cluster of cottages clinging to the hill side at the head of the lake, we climbed to the top of the saddle dividing the waters of Kawaguchi from those of Nishi-no-umi. The lakes are about one mile apart, but from our elevation it seemed almost possible to throw a stone into either one or the other. The track then wound down the steep decliviy to a little thatched roof hamlet on the shore of the lake. We arranged with a farmer to row us up the lake, and were soon on board, sculling along the northern shore. The hills rising precipitously from the water's edge were thickly timbered, and afforded shelter for deer, wild pig, foxes, badgers, and monkeys, which our boatman told us were plentiful thereabouts. Leaving the boat at the head of the lake we landed near the hamlet of Nemba, clustered at the foot of steep cloud-capped hills, and at the extremity of a cultivated flat reclaimed from the lake. Resuming our journey we kept along the foot of a range of hills, crossing numerous gullies running down from them. Small patches of cultivation, mostly dwarfed mulberry trees, clung wherever the slope and soil permitted. On our left was a vast lava field again, we crossed the edge of it, and then came to some large pools of water clear, but gloomy, in their blue-black lava rock basins, and so to Lake Shoji. Across the lake was the hotel, Hoshino's,
perched on a wooded headland jutting out into the water and 100 feet above its surface, picturesque old gnarled fir trees surrounded it. Unfortunately, a month after our visit the whole building was swept away in a typhoon, many of the fir trees uprooted, while Hoshino and his family only escaped by taking refuge in a cave close by. Here we rejoined our two companions; they had just arrived from their trip over Fuji, but were disappointed in not obtaining a clear view from the summit. From Yoshida to Shoji is 14 miles.

I awoke early the following morning to witness a wonderful sight, Fuji emerging from the night. My bed-room window overlooked the lake, across the lava field on the opposite side, and over a wide expanse of forest and moor to Fuji, 8½ miles distant. As I watched the cold, grey mists that hung over the earth, a ghostly undefined outline of the giant cone began to reveal itself, assuming a more distinct shape and becoming whiter every moment. Then the silver grey snows on its summit borrowed the rose flush of early dawn, gradually turning to gold, and as the sun rose and the light crept down the mountain's sides, the higher vaporous atmosphere became saturated with rich light; but for some time, even after the snow-capped peak fairly glowed in dazzling sunlight the lower slopes of the mountain were bathed in grey and violet mists.

Under the guidance of Mr. Hoshino, our host, we started after breakfast to visit some very interesting ice-caves. 3½ miles distant, and at the foot of one of the numerous spurs running down from Fuji. Crossing the lake, we clambered over the lava, which here formed its margin and came out on to forest land. The forest consisted of beech, larch, ash, chesnut, "bara," "isunga," "hinoké," "moure," the three last being conifers, and a tree called "Saru Subere (Monkey Slide), so named from its smooth and polished bark making it difficult to climb. At a wood-cutter's hut on the way we provided ourselves with torches made of the resinous top of "hinoké."

Then we struck the lava bed again, and came to a sudden dip in the forest, a circular basin 20 ft. by 30 ft. in diameter, at the bottom of which is the entrance to the caves. Down in this hollow the temperature was 35°, although the rays of a summer sun shone directly upon it, and an ice cold current of air came steadily from the cave mouth, showing that the caves have probably other openings than that by which we were about to enter. The entrance, 20 ft. broad by 7 ft. high, with walls of moss covered lava, narrows immediately to an aperture of 5 ft. by 3 ft., and a descent is made partly by a rude sort of ladder and then by clambering over blocks of lava to a depth of 30 or 40 feet, and from this point throughout the floor of the cavern is of ice. Still descending, the way led through a wide and moderately high passage to a spacious chamber about 30 ft. in height, whose further extremity I roughly measured as 429 ft. from the entrance.
The roof of this chamber is of lava, and from it depend myriads of icicles of various lengths, sparkling in the torchlight with crystal-like brilliancy. At the further end was an ice growth, which for want of another name our guide had called “the Shrine”; no more fitting name could be given it; roughly it may be described as a table of ice edged with icicles, and supported on a cluster of pillars, somewhat resembling a huge mushroom, while on three sides it was surrounded by slender pillars of ice from 5 to 7 feet in height, and 6 inches in diameter. A very pretty effect was obtained by placing lighted torches behind it. Two local Japanese, whom we met at the caves, told us they had penetrated beyond this large chamber by a narrow passage that necessitated crawling, and that some considerable distance on they came to a sudden drop which stopped further progress.

The surface of the floor was smooth, but formed in undulating waves, and walking would have been difficult had we not fastened “waraji,” the native straw-sandal, to the soles of our boots. These “waraji,” are most useful. If one’s boots are giving out, they will last several days longer by tying on “waraji,” they prevent you slipping, and dull the inconvenience of sharp stones when doing any rough walking. They can be bought in any little village or hamlet for a few sen, and a pair will last you for a day.

We had no means of ascertaining the thickness of the ice-floor, probably it varies greatly, but in one of the holes made by local people cutting out blocks of ice it measured over 18 inches.

Our host, Mr. Hoshino, discovered the caves in 1893; they had, however, been previously known to a few of the neighbouring peasantry, who had kept their knowledge secret, and worked them for obtaining supplies of ice.

As to their origin, it is probable that Professor Burton’s theory is the correct one: he believes that during one of Fuji’s eruptions a stream of molten lava had flowed over and covered a deep crevasse of snow. the upper layers of which would be melted and reduced in bulk. As the lava cooled, the immense store of accumulated snow beneath, would rapidly reduce the temperature, a void would be formed, and the cavity and ice thus accounted for. In this view he is. I believe, to some extent supported by Professor John Milne, who for some years occupied the Chair of Geology and Mining at the University of Tokio. Personally, I should be glad if some of our members would express their opinions on this interesting subject.

We returned home by a detour of five miles, leading over a moor rich in an abundant and varied flora, and through the village of Motosu, on the eastern shore of a small lake of the same name.

The following morning we left Hoshino’s, and resuming our journey, climbed a steep and wooded hill immediately at the back of the hotel. From the summit, 4,500 feet above sea level, the view
is superb. Looking northerly is a wonderful mass of mountain ranges and deep valleys. The entire mass seems to be due to volcanic upheaval, and it was no doubt at one time the great centre of the volcanic forces of Japan. On the left the rugged summits of Shiran-san tower up for over 10,000 feet above the valley of the Fuji-kawa, further to the right the eight giant peaks of Yatsu-ga-take, an extinct volcano, said to have formerly been loftier than Fuji; and then the mountains of Nikko.

Facing southerly, the shapely Fuji, 8½ miles distant, rears its snow-clad summit immediately opposite, while 1,250 feet beneath us the blue waters of Motosi, the nearest of the chain of lakes stretching eastward sleep peacefully in their sheltered environment of green hills. The five lakes in view are Yamanaka, Kawaguchi, Nishi-nomii, Shoji, and Motosi.

Our host, who had obligingly come with us thus far to point out the salient features of this beautiful panorama, and of which he was justly proud, left us here.

We crossed the divide, and dropped rapidly down by a winding track. The steep slopes were thickly clothed with timber, and many streamlets emerging from cool and leafy retreats leapt across our path, tumbling and hurrying down the steep decline to combine and form an affluent of the Fuji-kawa. An occasional wood-cutter’s or charcoal burner’s hut was the only sign of habitation for some time; then we came to a small hamlet, a cluster of three or four cottages clinging to the hill-side, and wherever the slope permitted the ground was terraced for cultivation. Some of these patches were not more than three or four yards square, and the ingenuity and labour displayed in conducting the water to irrigate them seemed far in excess of what the resulting meagre crop warranted. These irrigation channels would be contoured round the hill sides for long distances, and the water carried over intervening gullies in bamboo pipes supported on rude tressels, or rough piers of stones. The further we descended into the valley, so did the prosperity and general improved appearance of the villages increase; the plots of cultivation were of greater area, and life seemed easier than under the uphill conditions we had so recently left behind. By this time the stream had become one of considerable volume and strength, and racing over its pebbly bed or rushing between large boulders, was utilised by the industrious peasantry in turning the simple but effective machinery of their rice mills. Later, it flowed through a wild rocky gorge, through which our path also led; in many places the path overhung the water, being carried round the cliff face on logs let into and projecting from the rock. There was a wealth of wild flowers in this gorge, chiefly a beautiful white lily with scarlet stamen; they grew in every crevice
and ledge where soil rested, and in such profusion that they formed patches of dazzling white in the landscape.

We continued on down the valley, the plots of cultivation, of which rice formed the larger proportion, became more extensive, until late in the afternoon we left the stream, and bearing northward climbed a range from which we looked down on to the thriving town of Kofu; then rapidly descending again struck the river Fuji-kawa, opposite the village of Kajikazawa. The current flows swiftly at the ferry and the boat is steadied from either bank by a rope. The crossing is effected by poling and hauling on one rope as the other is paid out. The scenery at this point is very fine; the river flows swiftly over its broad shingle bed forming numerous races of broken water and rapids in its course, and on either hand the mountains rise precipitously, sometimes receding a little and leaving a small area of flat at their base sufficient for a few thatched roofed farmhouses to stand in their surroundings of paddy field.

We put up for the night at a small Japanese inn at Kajikazawa, and engaged a boat to descend the river on the morrow.

We were up betimes in the morning, and on board, and made a start by a quarter past six. The boat was about 40 feet long and 6 feet broad; her crew consisted of the skipper standing in the bows with a bamboo pole to ward her off any rocks; two small boys pulling each a short bladed oar worked in a loop of wistaria for rowlocks, and a man at the stern sculling with the double jointed sweep of the country. The craft was very flexible and worked a good deal.

From Kajikazawa to Iwabuchi by water is a little over 40 miles. The rapids commence immediately below the former village, and for the whole distance the river may be said to be one continued series of swiftly flowing races and small rapids.

There is considerable traffic on the Fuji-kawa, no less than 600 boats being engaged in it. The scenery is most striking and varied; the river rushes along now at the base of bare rocky hills, now past picturesque villages and green rice fields, then again through a rocky ravine, or walled in by forest-clad mountains. Twisting and carving for itself a channel where there seems no possible means of exit, the mad current hurries the boat swiftly onwards.

It is in such places that the skill of the boatman will be most admired; where the boat which looks as if it must be dashed to pieces in another moment is by dexterous management shot round the corner only to be whirled on to some new apparent danger equally exciting.

On approaching a rapid our skipper forward would quietly look back over his shoulder as a signal to the others; then down would go his pole on the rock to be avoided, a vigorous tug at the oars by the
two boys, a strong pull over by the steersman and the trouble would be passed.

The finest of the rapids is just above the "Hanging Bridge," where the current whirls along at a dizzy pace. On nearing the village of Matsuno there are some fine groups of hexagonal andesite columns on the right bank.

At Iwabuchi the boat was taken along a narrow canal to a landing place close to the Railway Station which we reached at half-past twelve, thus taking 6½ hours to make the passage.

The charge for the boat was 5 yen (roughly 10/-) covering all; not a very high price when the fact that it takes from 4 to 6 days to tow the boat up stream again is taken into consideration.

On the way down we met several boats being towed up; to a string of four boats we saw 15 men on the tow line, and in some of the shallows they were actually crawling on hands and knees so severe was the strain.

From Iwabuchi we took train and tram to Kozu and Yumoto, thence walked up the beautiful ravine of Hayakawa to Miyanoshita, thus completing the circuit of Fuji.
THE WALLOONGGURRA CEREMONY.

By R. H. MATHEWS, L.S., Corresponding Member Anthropol. Society.

It is intended in the following pages to give a short account of a form of initiation ceremony in force among native tribes scattered over that part of the north-east coast of New South Wales, which is watered by the Orara, Boyd, Mitchell, and Upper Clarence rivers, and bounded on the west by the tableland of New England. The principal languages spoken by the inhabitants of this tract of country are the Koombanggherry and Bunjellung. They have the Kamilaroi organization† being divided into four sections, with numerous totemic subdivisions, and having descent counted in the female line.

The people who are to participate in the ceremonies are called together by means of messengers sent into different parts of the community by the headmen. When the people have assembled at the main camping ground, corroborees are indulged in every night in a cleared space in a central part of the camp. No embankment or wall is raised around this clear space, similar to the raised earthen circles of the Keeparra, Wandarral, or Burbung, described by me in former memoirs.

In a retired spot about fifteen or twenty chains from the main camp, the men clear a circular piece of ground, about ten yards in diameter, by removing all loose rubbish and grass from its surface, which is levelled and made smooth. The loose earth scraped from within and around the circle is heaped up so as to form a boundary. This place is called the Walloonggurra, and a fire is lit near one side of it.

About dusk on the evening which has been decided upon for taking the novices away from their mothers, all the men proceed to the Walloonggurra, shouting as they go. On arriving there, they dance and sing, and swing the dhalguynyen, a small bull-roarer used by the natives of these districts. The women then muster the novices and bring them into the cleared space in the centre of the main camp, where they strip them naked, putting feathers in their hair, and place them, lying on their backs, in a row, with rugs

* Read at a Meeting of the Royal Geographical Society of Australasia, Queensland, May 31st, 1900.
thrown over them, leaves having been strewn on the ground for them to lie on. The mothers and female relatives of the boys now dance and sing around them by the light of the camp fires.

The men at the Walloonggurra then light pieces of dry bark, which they had cut in readiness, and start through the darkness to the quarters of the women, waving their fire-brand and jumping and singing as they go along. When they reach the women's camp, the men who have been appointed guardians to the novices uncover them and help them to rise to their feet, when each boy is placed astride his guardian's shoulders, and a rug is thrown over his head. The men then start back to their own camp, the guardians carrying the novices being in the middle. The mothers and sisters of the boys commence shouting, and throw burning sticks from the camp fires after the men.

On arriving at the Walloonggurra the novices are placed lying down on a bed of leaves strewn thickly on the ground, and rugs spread over them. Fires are lit near the boys to make them warm and perspire freely.* The men dance and sing until they feel weary, and then go to sleep. The boys are kept here all night, and are not allowed to turn over, or in any way change the position in which they have been placed lying by the fires. If they want to attend to any necessity of nature, they must do it where they lie.

The following morning a number of the men ornament their bodies with a few stripes of red ochre and pipe-clay and march to the camp of the women, and throw small pieces of bark over the heads of the latter. These men then retrace their steps towards the Walloonggurra, and on the way gather handfuls of grass, which they carry and throw over the novices where they are lying in the same spot where the men placed them the previous evening. The boys are now uncovered and are taken on their guardians' shoulders into the Walloonggurra ring, the other men dancing round, shouting and elevating their spears in the air. The boys are then taken out of the ring, and are painted with red ochre and grease, and placed sitting on a couch of leaves near the camp fires. They have to catch their genitals with both hands, with their heads bent down, and must remain in that position with their guardians in charge of them.

Shortly after the men have thrown the pieces of bark over the heads of the women, as already described, the latter pack up their baggage, and start away to another place, called the Britharan camp, perhaps some miles distant, which has been decided upon as a suitable camping ground. Some of the old men remain with them for the purpose of seeing that everything is carried out according to tribal custom. Near this new camp the women clear a small space

of ground on which they light a few fires, around which the mothers of the boys, and the elder women, all of them painted according to rule, dance and sing every night.

After the women have taken their departure from the original ring in the manner just stated, the novices are helped to their feet, and are placed in a row, with their heads bowed, round the Walloonggurra. Some old men stand out in the ring, and catching hold of their genitals, tell the boys to raise their eyes and take particular notice of those parts. The old men next elevate their arms above their heads, and the boys are directed to look at their armpits. Their navels are exhibited in the same way. The men then put their fingers in each side of their mouths, and draw their lips outward as wide as possible, lolling out their tongues, and inviting the special attention of the novices. They next turn their backs, and stooping down, ask the boys to take particular notice of their posterior parts. During each of these exhibitions the other men standing around give a series of shouts. All the men then jump round and clap their hands on their bellies; they then turn their backs and clap their hands on their rumps. Next, a number of the men crouch on the ground on their knees and elbows, and other men get on top of them, going through disgusting gestures. At the conclusion of these burlesque proceedings the novices are again put lying down near the camp fires, and are covered with rugs as before.

In the course of a short time all hands start away from the Walloonggurra, and proceed to another camp several miles distant. Here the novices are placed sitting on leaves spread on the ground, cross-legged, with their heads bowed on their breasts, clutching their genitals with both hands, their guardians remaining constantly with them. They are not allowed to converse either among themselves or with their guardians. If they want anything they must make signs, and the guardians then attend to their requirements. The men go out hunting during the day, and the usual performances of imitating totemic animals, mythologic creatures, and so on, are gone through at night by the camp fires. As these representations are similar in character to others described by me in the initiation ceremonies of various other tribes, it is not considered necessary to give further details at present.

During the stay at this camp, which is generally only for a few days, the novices are compelled to partake of the most disgusting kinds of food and drink at certain periods, in addition to their ordinary food; and many obscene and indecent practices are enacted by the men in view of the novices, amongst which may be mentioned the following: The old men rub their genitals on the food which is given to the boys; at other times they smear the faces of the boys with human excrement; and on other occasions they rub their hands on their own persons after which they rub them over the faces of the boys.
About four or five hundred yards from this camp a circular space, called the muggindyoorn, about fifty or sixty feet in diameter, is cleared, and is surrounded by a wall of loose earth, about six inches or a foot high, with an opening two or three feet wide in the side nearest the camp—a narrow pathway leading from one place to the other. On either side of the track where it approaches the ring, and also around the boundary of the latter, the trees are marked with the customary moombeery devices. Several patterns, consisting of wavy lines and imperfect ovals, and quadrilaterals, are also cut into the surface of the ground, with sticks sharpened at one end for the purpose.

On the afternoon of the last day of their stay at this camp the men take the novices to the muggindyoorn a few hours before sundown. One of the clever old men goes ahead, and ascends a tree near the pathway, above referred to, and when the novices reach the tree they are halted, and their guardians tell them to look up, pretending that there is a native bear among the branches. On raising their eyes they see the old man sitting in a forked branch, pulling pieces of string out of his mouth with his hands, or performing other feats of jugglery. The novices' heads are again bent down, and they are taken a little farther on, where another stoppage is made. A pole has been inserted in the ground, on the upper end of which a clump of bushes and bits of bark have been tied, in imitation of the nest of the ring-tailed opossum. The novices are told to look at this, and then the men hit the bushes or strips of bark and knock them off the pole. The markings on the ground and on the trees are next exhibited to the boys, each carving in the soil, and each marked tree being shown separately, shouts being raised by the men at each exhibition.

As soon as the novices have been shown everything in the vicinity of the muggindyoorn, an old man makes his appearance, carrying in his hands a coolamin, or bark vessel, containing human blood collected that day by making incisions in the arms of several blackfellows, in the way described by me in other publications.* A piece of tough bark about nine inches long and nearly the thickness of a man's finger, one end of which has been beaten with a mallet to make it fray out and form a kind of mop, is lying in the vessel containing the blood. This old man comes in amongst his audience, and requests each man and boy to hold out his right hand. The old man then goes along, and with the bark mop, dyundyaa, he deposits some of the blood out of the coolamin in the palm of the hand of everyone present, who at once lap it up with their tongues. This blood ceremony is called yeelungajy. The old man then takes

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* In former times this blood was obtained from a man who was killed for the purpose, and portions of his body were eaten; but for several years past this has been discontinued, in obedience to our English laws.
the coolamin containing the remainder of the blood and places it in the centre of the ring, in a slight depression made for the purpose to keep the vessel from capsizing.

A novice is now taken into the muggindyoon by his guardians and friends, who hold him up on their shoulders with his face in the direction of his own country. He then spreads out his arms horizontally, and sways his breast from side to side*, on which all the men standing around give a shout. Each novice is held up in succession, and when the ceremony is over they stand with their guardians in a row on the other side of the ring, and the men clap their hands on their thighs. The guardians and the other men are then supplied with pieces of bark, called gootan, about two feet six inches in length, and four inches in breadth at the widest part, tapering smaller at the end to be held in the hand.† The men and boys now walk round inside the ring several times, and the men hit the ground with the gootans, after which they come out, and the boys are placed sitting in a row at a fire which is burning near the ring. The old man who has charge of the yeelunga jy now brings it out of the muggindyoon, and places it in front of the novices, and rubs a little of it on their arms. Bark mops, dyundaya, similar in character to that already described, but very much smaller, are now given to the novices, one to each, which they dip into the blood and convey it to their mouths. The guardians and other men standing around also sip some of the blood in the same way, until it is all consumed.

Everyone now leaves the muggindyoon, and all go back to their camp, which as before stated is a few hundred yards away, where the men stand in a group in a clear space, and the novices are put standing in a row close by, with their eyes cast upon the ground. The men then separate into two divisions, some going to one side and some to the other, and two or three of them step out into the open space and commence singing dhalguunguns. An old man then comes up to each boy, and putting the string of the dhalguungun around the boy’s neck, rubs the instrument on his breast, penis, under his arms and on other parts of his body, inviting him to take particular notice of it. Some armed warriors now advance in front of the novices and caution them that if ever they divulge any of the ceremonies they have seen in the bush, but more especially anything respecting these bullroarers, ‡ to an uninitiated person they will be killed. Each novice is cautioned by a man belonging to a tribe other than his own.

† Journal Anthrop. Inst., XXV., 308, plate XXVI., figure 40.
‡ See my paper on "Bullroarers used by the Australian Aborigines." Journal Anthrop. Inst., XXVII, 52-60, plate VI.
By the time these ceremonies are concluded it is getting dark, and all hands set to work packing up their movables, and make a start towards the women's camp, which may be a mile or two distant, or perhaps farther. They walk in file, two or three abreast, some men being in the lead, the novices with their guardians in the middle, and more men bringing up the rear. On coming in sight of the camp of the women, the latter are seen gathered round some fires close by, dancing and singing. This place is known as the *ngoora*; and the mothers have kept up this singing and dancing by these fires every night since their sons were taken away into the bush by the headmen. On getting near the *ngoora* the boys and their guardians drop out of the procession, and go into quarters by themselves, which have been provided for them a short distance off. All the other men go on and gather round the women, and join in the dancing. Shortly after this all the people retire to their camps, and go to sleep for the night.

Next day, early in the forenoon, the mothers and female relatives of the novices paint their bodies and put ornaments in their hair, and proceed to the *ngoora*, where they were dancing the night before, which is in close proximity to their camp. They are accompanied by some of the men who have remained with them all the time the boys have been away. The fires are replenished, and green bushes are cut and placed beside them. While the women are making these preparations, the guardians are busy in the camp of the novices, painting them with white and red stripes, and putting birds' feathers in their hair. They are also invested with the belt, kilts, and head-band, which constitute a man's dress. The old men who have charge of the women then take the sisters of the novices, about fifty or a hundred yards away from the fires, in the direction from which the novices will presently approach, and place them sitting down in a row a yard or two apart, with their faces towards the fires.

The novices, with their heads bowed, now make their appearance, walking with their guardians, who place the boys sitting down beside their sisters, who catch their brothers by the hand. There is thus a row consisting of novice and his sister, succeeded by another novice and his sister, until all the boys are in their places, with their guardians near them. The novices and their sisters do not look at each other, or speak a word. All the other men come up behind this row, a headman standing at each end, uttering a kind of guttural chant. The guardians then tell the boys and girls to get up and run towards the fires. When they have gone about half-way, they are told to sit down, and the men who are following them behind throw pieces of sticks over their heads. They then get up and run on again, and when approaching the fires, the old women standing there each throw several pieces of bark over the heads of the boys and those
who are with them. When they get close to the ngoora, the sisters drop out of the procession, and the mothers of the boys step forward and catch their sons by the hand and lead them to the fires, on which the green bushes above referred to have been thrown. The novices stand on these bushes, which emit a thick smoke, which rises up around them. The mothers rub their hands on their sons, while holding them in the smoke, after which the sisters come up and rub their feet on the feet and ankles of their brothers. Some of the novices are smoked at one fire and some at another, after which they are taken away by their guardians to a camp which has been erected for them in close proximity. The guardians and other men are smoked in a similar manner, after which the men and women disperse to their camps.

In the course of a few weeks' time, or perhaps a longer period, the novices are again brought in sight of the women's camp, which has been shifted to another place, and are met by their mothers, painted as before, who provide food, which is spread upon rugs, or upon pieces of bark, laid upon the ground. The boys carry the food away with them to a camp near the men's quarters, where they remain with their guardians, or perhaps their uncles or other relatives, and after a time are brought right into the single men's camp. From this time onward the neophytes mix with the men, and go out hunting or playing with them, but they are still kept under the care of some of the older men of their relatives until they have passed through some further training in the secret customs and beliefs of their forefathers. They must not associate with the women, or let a woman's shadow fall upon them, or upon anything belonging to them.

In the foregoing brief description of the Walloonggurra, which is the first ever published, it will be observed that this form of initiation is of more than ordinary interest, because it differs very widely in many particulars from similar rites practised by tribes occupying other districts. I regret that exigencies of space have compelled me to abridge my descriptions so very much that portions of the narrative may be a little out of their proper sequence in some instances, and other portions have had to be omitted. I possess very exhaustive notes of the whole ceremony, gathered by myself amongst the natives, from which it is intended on a future occasion to supply a more comprehensive article.

The Walloonggurra is an elementary form of initiation, and the neophytes who graduate in this way must subsequently submit to the Burbung ceremonies of the tribes to which they belong. At the fuller ceremonial of the Burbung the novitiates will, amongst other things, be shown a larger bullroarer, Yoolooduree, and also flat, narrow pieces of wood, called Kungara, having certain mystic marks
upon them, which the old men state are the handiwork of Dharroongan, an evil being in human shape, who is supposed to have control of the inaugural rites.

For details of the Burbung of the Koombanggherry and Bunjel-lung tribes, the reader is referred to my description of that ceremony published in the "Proceedings of the American Philosophical Society," Philadelphia, U.S.A., Vol. XXXVII., pages 54-69. In that article I have added a map of New South Wales, showing the boundaries of the several tracts of country in which the different forms of inaugural rites and totemic divisional systems are in force throughout the colony mentioned. The reader is also invited to peruse my paper on the initiation ceremonies of the Barkunjee tribes, published in the "Journal of the Royal Society of New South Wales," Vol. XXXII., pp. 240-255, and the map thereto appended.
ANNIVERSARY ADDRESS TO THE ROYAL GEO-
GRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND. *

By the Right Hon. Sir HUGH M. NELSON, K.C.M.G., D.C.L.
President.

YOUR EXCELLENCY, LADIES, AND GENTLEMEN,—

I have first of all the pleasure of congratulating the Society on
the marked progress it has made during the last session, as disclosed
by the report for the year, which has already been read and adopted.
The great accession in the number of our members (both life and
ordinary), together with the sound financial position of our affairs,
are very gratifying—evincing as they do the widely spreading interest
taken in the Society throughout all parts of the Colony, and I
sincerely trust that our success in the past is but the earnest of a
still greater expansion in the future. Secondly, I have very cordially
to thank you for doing me the honor of a second time electing me
your President—a compliment which I assure you I appreciate, and
esteem very highly, and it will be my privilege and duty to fill the
position you have so kindly bestowed upon me in such a manner as
will merit your approbation, which I shall very heartily endeavour
to do. As I informed you at our last annual meeting, I can make
no claims to the title of being designated a geographer, but I may
say now that you having placed on me the responsibilities of Presi-
dent, has been during last year a new education for me, and having
spent my spare hours in perusing the journals of our early explorers
and other geographical works, I have found the study not only
exceedingly interesting but even fascinating, and at the same time
most useful and instructive. Amongst other subjects which have
occupied my leisure is one closely connected with ourselves and fellow
colonists, and one which in my opinion it behoves us all to keep
constantly in remembrance, as it is only proper that we and our
children should be intimately acquainted with the heroes to whose
indomitable perseverance and dauntless courage, often amid dangers
and privations difficult for us at this day to realise, we owe the
privilege of possessing this fair and pleasant land, and enjoying the
blessings of British liberty. The subject I have selected for this
evening's deliberation is the early history of the discovery of the
Brisbane River; but before entering into details respecting the
river itself, it will be as well to take a short retrospect of the history of the discovery of the bay into

* Delivered at the Annual General Meeting, July 27th, 1900.
which it debouches. This carries us back to the illustrious Captain James Cook's celebrated voyage in the "Endeavour" in the year 1770, an expedition primarily equipped for the purpose of making astronomical observations; after the satisfactory conclusion of which that great navigator proceeded on his voyage of discovery, and was the first, as we believe, to sail along the eastern coast of Australia and explore its physical features and natural resources for the support of a civilised community. Cook, as you are aware, first struck the coast of what is now known as New South Wales, at a place named by him "Point Hicks," after his first lieutenant, but now known as Cape Everard, just westerly from Cape Howe, which is on the boundary of the colonies of Victoria and New South Wales. From this point, he ran north to Botany Bay, and then along the coast, experiencing many vicissitudes and dangers amongst the islands and shoals of the Barrier Reef, passing through the opening now known as "Endeavour Straits," and onward to England. The great navigator spent but one day on the part of the coast with which we are now dealing; naming the most prominent points of what he took for the main land—"Point Lookout" and "Cape Morton"—the latter after Earl Morton, who was President of the Royal Society in 1764, and one of the Commissioners of Longitude; and it may interest you if I quote from his own journal, and in his own words give his description of the locality:

"Thursday, 17th.—Winds Southerly, mostly a fresh breeze, with which in the P.M. we steer'd along shore N. 2 E., at the distance of about 2 Leagues off. Between 4 and 5 we discover'd breakers on our Larboard bow; our depth of water at this time was 37 fathoms. At sunset the Northernmost land in sight bore N. by W., the breakers N.W. by W., distant 4 Miles, and the Northernmost land set at Noon, which form'd a Point, I named Point Lookout, bore W., distant 5 or 6 Miles (Lat. 27° 6'). On the North side of this point the shore forms a wide open bay, which I have named Morton's Bay, in the Bottom of which the land is so low that I could but just see it from the Topmast head. The breakers I have just mentioned lies about 3 or 4 Miles from Point Lookout; at this time we had a great Sea from the Southward, which broke prodigious high upon them. Stood on N.N.E. until 8, when, being past the breakers, and having Deepned our water to 52 fathoms, we brought too until 12 o'Clock, then made sail to the N.N.E. At 4 A.M. we sounded, and had 135 fathoms. At daylight I found that we had in the night got much farther to the Northward and from the Shore than I expected from the Course we steer'd, for we were at least 6 or 7 Leagues off, and therefore hauled in N.W. by W., having the Advantage of a Fresh Gale at S.S.W. The Northernmost land seen last night bore from
us at this time S.S.W., distant 6 Leagues. This land I named Cape Morton, it being the North point of the Bay of the same Name (Lat. 26° 56' S., Long. 206° 28'). From C. Morton the Land, Trends away W., further than we could see, for there is a small space where we could see no land; some on board where of opinion that there is a River there because the Sea looked paler than usual. Upon sounding we found 34 fathoms fine white sandy bottom, which alone is Sufficient change, the apparent Colour of Sea Water, without the Assistance of Rivers. The land need only to be low here, as it is in a Thousand other places upon the Coast, to have made it impossible for us to have seen it at the distance we were off. Be this as it may, it was a point that could not be clear'd up as we had the wind; but should any one be desirous of doing it that may come after me, this place may always be found by 3 Hills which lay to the Northward of it in the Lat. of 26° 53' S. These hills lay but a little way inland, and not far from Each other; they are very remarkable on account of their Singular form of Elivation, which very much resembles Glass Houses, which occasioned my giving them that Name. The Northermost of the 3 is the highest and largest. There are likewise several other peaked hills inland to the Northward of these, but they are not near so remarkable. At Noon we were by Observation in the Lat. of 26° 28' S., which was 10 Miles to the Northward of the Log; a Circumstance that hath not hapned since we have been upon the Coast before. Our Course and distance run since Yesterday noon was N. by W. 80 Miles, which brought us into the Long. of 206° 46'. At this time we were about 2 or 3 Leagues from the land, and in 24 fathoms Water; a low bluff point, which was the Southern point of an open Sandy bay, bore N. 52° W., distant 3 Leagues, and the Northermost point of land in sight bore N.  \[\frac{1}{4}\] E. Several Smokes seen to-day, and some pretty far inland."

Cook always commences his day at 12 noon; according to our ordinary reckoning, therefore, he discovered, observed the position of, and named Point Lookout in the evening of the 17th May, and Cape Morton in the forenoon of the following day. From his description, I think there is little doubt that his "Morton's Bay" is the large indentation (in what he took for the main land) between Point Lookout and Cape Morton—and not what is now called Moreton Bay, which from his delineation came to be known for some time as Glass House Bay. You will also notice that in his narrative we have the first germ, so to speak, of geographical knowledge respecting the existence of a river in the locality.

Cook's Journal, now that we have it, thanks to Captain Wharton, in the original with all the great navigator's quaint remarks and old
fashioned orthography, is one of the most interesting documents in the English language. I wish that time permitted me to dwell longer on his career. I can only now refer you to an admirable paper on the subject read to this Society by Sir Henry W. Norman on 25th October, 1895, and published in the yearly volume of our transactions (Vol. XI.)

Next in the procession of worthies followed Lieut. Matthew Flinders, from whose fame a cruel freak of fortune has unjustly detracted much by the harsh stroke which threw him into the hands of the unscrupulous De Caen, Napoleon's Governor of Mauritius, by whom he was not only deprived of his liberty, but robbed of those records of his labours and perilous adventures which should have been his passports to celebrity and to promotion. As a matter of fact, Flinders was a man second only to Cook in the spirit he displayed, both in respect to the love of adventure and the pursuit of fresh discoveries, and also in regard to the accuracy with which he noted his observations. He was, when quite a youth, a midshipman in H.M. ship "Reliance," in which Captain John Hunter returned to New South Wales in the capacity of Governor, in succession to Captain Arthur Phillip, its first Governor. He had not long before returned to England from a voyage in the South Seas in the ship "Providence," "and was led by his passion for exploring new countries to embrace the opportunity of going out upon the station which, of all others, presented the most ample field for his favourite pursuit." On arrival at Port Jackson, in conjunction with his friend George Bass, the surgeon of the "Reliance," he formed a determination to examine the coast of New South Wales, of which then little was known, by all such opportunities as the duties of the ship and procurable means would admit; and perhaps no finer instance is to be found in the history of exploration than the enthusiasm exhibited by these two young men. Quoting from the introduction to the account of his voyage, we have the following:

"Projections of this nature, when originating in the minds of young men, are usually termed romantic; and so far from any good being anticipated, even prudence and friendship join in discouraging, if not opposing them. Thus it was in the present case: so that a little boat of 8 feet long, called 'Tom Thumb,' with a crew composed of ourselves and a boy, was the best equipment to be procured for the first outset." Yet with this tiny craft, after obtaining the Governor's permission (very reluctantly granted, however), they were able to greatly enlarge the then existing knowledge of the coast southerly from Port Jackson, often encountering serious dangers, of which I give you the following from Flinders' diary as a sample:

"March 29 (1796).—By rowing hard we got four leagues nearer home, and at night dropped our stone" (which they had used as an anchor)
"under another range of cliffs, more regular but less high than those near Hat Hill. At ten o'clock, the wind, which had been unsettled, and driving electric clouds in all directions, burst out in a gale at south, and obliged us to get up the anchor immediately and run before it. In a few minutes the waves began to break: and the extreme danger to which this exposed our little bark was increased by the darkness of the night and the uncertainty of finding any place of shelter. The shade of the cliffs, over our heads, and the noise of the surfs breaking at their feet, were the directions by which our course was steered parallel to the coast. Mr. Bass kept the sheet of the sail in his hand, drawing in a few inches occasionally, when he saw a particularly heavy sea following. I was steering with an oar, and it required the utmost exertion and care to prevent broaching to: a single wrong movement, or a moment's inattention, would have sent us to the bottom. The task of the boy was to bail out the water, which, in spite of every care, the sea threw in upon us. After running nearly an hour in this critical manner, some high breakers were distinguished ahead: and behind them there appeared no shade of cliffs. It was necessary to determine, on the instant, what was to be done, for our bark could not live ten minutes longer. On coming to what appeared to be the extremity of the breakers, the boat's head was brought to the wind in a favourable moment, the mast and sail taken down, and the oars got out. Pulling then towards the reef in the intervals of the heaviest seas, we found it to terminate in a point, and in three minutes were in smooth water under its lee. A white appearance, further back, kept us a short time in suspense, but a nearer approach shewed it to be the beach of a well-sheltered cove, in which we anchored for the rest of the night. So sudden a change from extreme danger to comparatively perfect safety, excited reflections which kept us sometimes awake. We thought 'Providential Cove' a well-adapted name for this place."

In December, 1797, Bass obtained leave to make an expedition to the southward (Flinders' duties on board the "Reliance" preventing him from accompanying his former companion on this occasion), and he was furnished with a whaleboat and six weeks' provisions by the Governor, and a crew of six seamen from the ships. His voyage, which I need not, I think, recount, resulted practically in the discovery that the land now known as Tasmania did not form part of the continent of Australia. He returned, after an absence of twelve weeks, during which he explored no less than 600 miles of coast, in a voyage which "has not perhaps its equal in the annals of maritime history," regretting that he had not been possessed of a better vessel, which would have enabled him to circumnavigate Van Diemen's Land. This desire was, however, gratified so soon as Flinders could be spared from his duties as an officer of the "Reliance," and in the following September (1798) Governor Hunter had the good-
ness to give these two young adventurers the "Norfolk," a sloop of 25 tons burden—built at Norfolk Island a few months before to carry despatches—with a crew of eight volunteers from the King's ships, for the express purpose of settling the question of the existence of a passage separating Van Diemen's Land from the continent beyond all possibility of doubt, by the experimental test of "sailing positively through it." This they accomplished most successfully, fixing the positions of the various islands in the straits, the prominent headlands on the north and west coasts of Van Diemen's Land, the bays and inlets, with descriptions of the country, so far as they could ascertain, including minute details carefully charted for the guidance of future navigators, and returned to Sydney by Cape Pillar, arriving on the 11th January, 1799 (only 11 days beyond the time fixed for their return).

"To the strait," says Flinders, "which had been the great object of research, and whose discovery was now completed, Governor Hunter gave, at my recommendation, the name of 'Bass Strait.' This was no more than a just tribute to my worthy friend and companion, for the extreme dangers and fatigues he had undergone in first entering it in the whaleboat, and to the correct judgment he had formed from various indications of the existence of a wide opening between Van Diemen's Land and New South Wales."

The Governor, being very desirous of gaining some information respecting the coast to the northward of Port Jackson, particularly with regard to the two large openings marked by Captain Cook respectively as "Glass House" Bay and "Hervey's" Bay, Flinders was despatched on the 8th July, 1799, on his own proposition, for this purpose.

"I had some hope," he says, "of finding a considerable river discharging itself into one of these openings, and of being able by its means of penetrating further into the interior of the country than had hitherto been effected."

He was granted the use of the same little vessel, the "Norfolk," and he was fortunate to get also the same volunteer crew, as on his voyage to circumnavigate Tasmania, and took with him an aboriginal named "Bongaree," a native of the north side of Broken Bay, whose good disposition and manly conduct had previously attracted his attention. But he was deprived of the assistance of his friend Bass, who had in the meantime quitted the station and returned to England. The period of his absence was limited by the Governor to six weeks.

Previous to this trip, the mainland was supposed to be continuous from Point Danger to Cape Moreton, but Flinders, while coasting along, discovered an opening north of Point Lookout, inside of which there appeared to be a very large extent of water, but suspecting that there
was not any passage for the vessel in that direction, he continued along the shore and entered the Bay, by rounding Cape Moreton, on July 14th. (By Flinders' time a slight change had taken place in the spelling of the name. Flinders always gives it as "Moreton," just as we have it now, not "Morton" as Cook writes it).
The following day, being delayed by numerous shoals and a foul wind, he was unable to proceed further than the west side of the entrance, and the sloop came to an anchor within two miles of a low projection of land, and he ascertained his exact position by lunar observations. The following unfortunate occurrence led him to name the projection off which he had anchored "Skirmish Point":

I may mention that the description of this expedition to Moreton Bay is very much condensed in Flinders' own book. He, however, kept a journal, for a copy of which we are indebted to Lieut. Col. Collins, who came to Botany Bay with the first fleet under Governor Phillip, and filled for many years the position of Judge Advocate, and Secretary of the Colony, and published a very interesting account of the early history of the settlement. In the second volume of which he has preserved Flinders' journal, from which I gather that on the morning of July 16th, Flinders went in his boat towards an opening near which he wished to anchor, taking "Bongaree" with him. As they approached the shore, a number of natives made their appearance, most of them carrying fishing nets over their shoulders, and as they seemed friendly, "Bongaree" jumped ashore naked and unarmed. The muskets were, however, kept at hand in the boat, in case of treachery. "Bongaree" quickly exchanged his yarn waistbelt for a fillet of kangaroo hair, and as the natives seemed rather shy than otherwise, Flinders joined his companion, taking his gun with him. By making friendly signs—laying down his gun and offering them a woollen cap—he was suffered to approach, and one took the cap; but when Flinders made signs that he expected to get his net bag in return the native gave him to understand that he must first give him his cabbage-tree hat, which apparently excited the cupiditiy of the whole party. As the hat was not given to him, he came forward, first throwing the cap on the bank behind him to secure it, and appeared very anxious for either the hat, or gun, or both. Everything, however, went on amicably, and Flinders and "Bongaree" retreated slowly towards the boat, but turned again on finding the natives pressing close after them. One of them, while laughing and talking to Flinders, tried to take his hat off with a long hooked stick, which attempt created a laugh: another tried to reach it, but failed. On the two getting into the boat and shoving her off into deep water, the natives seemed displeased, and wanted them to land again. Failing in this, two of them threw pieces of firewood at the boat, which, however, fell short, and then one of them, slipping the hook off the stick, produced a spear, with which he ran up to his
middle in water and threw at them. It passed over the centre of the boat, about a foot and a-half above the gunwale, but touched no one. Flinders tried to fire at this native, but the flint of his gun, which was loaded with buck-shot, having got wet on the beach, missed twice; on the third attempt it went off; the man in the water fell flat, as did all the other natives, but those on shore scrambled towards the bank. Another shot drove them into the bush, and even the man in the water made off, though he was evidently wounded and, according to "Bongaree," another native had his arm broken. With a view of intimidating the blacks from further mischief, by giving them a more extensive idea of his power, Flinders then fired two balls at a man who was among the trees about 200 yards off, but with what result is not known.

He spent about a fortnight in examining the Bay, but was entirely unsuccessful in his search for the river, though he thought he had made a discovery of that nature when he found an opening, which he said was more than a mile in width, and which he named "Pumice-stone River," from the quantities of that volcanic output lying on its banks. He described it as leading towards the remarkable peaks called "The Glass Houses," which were at this time suspected to be volcanic and greatly exercised his curiosity. But although he failed in the main object of his expedition, altogether his voyage added considerably to the geography of the locality. He subsequently verified the fact that the land upon which Cape Moreton was situated was an island, and he named it "Moreton Island," supposing that that would have been the name given to it by Captain Cook had he known of its insularity.

Altogether, Flinders was very unsuccessful in making a friendly impression on the natives. At the same time, the news of the effect of his firearms spread rapidly, for they evinced great dread of them, and insisted, before they would hold any intercourse, that they should be laid aside. Though they were induced on a few occasions to sing and dance,—in the former of which they are reported as excelling the Port Jackson natives—they were always suspicious, and the explorer's attempts to inspire them with awe as to his powers, and with a sense of the superior refinement of his party from a musical and terpsichorean point of view, failed lamentably. Apart from the guns, they appeared to regard the whites as not a whit abler or better than themselves, and even the value of these weapons was to some extent discounted by Flinders on one occasion firing at a hawk—with the deliberate intention of giving the natives a specimen of his prowess—and missing it, or only breaking a leg. With respect to the other accomplishments, "Bongaree's" attempts at singing proved barbarous and grating to the ear, as compared with the local singers, and for once—let us hope it is the only instance on record—a Scotch reel failed to impress its spectators. It appears that three of the sailors, who were Scotch, were desired to dance a reel; "but," says the report, "for want of musick, they
made a very bad performance, which was contemplated by the natives without much amusement or curiosity." Fancy Scotchmen dancing a reel without bagpipes!

The other places discovered by Flinders in Moreton Bay were Red Cliff Point and all the islands as far south as Cleveland. "I judge favourably," he says, "of the country on the borders of what would seem to be a river, falling into the head of the Bay, both from its thick covering of wood and from the good soil of the sixth island, which lies at the entrance. The other islands in the Bay are very low, and so surrounded with forests of large mangroves that it must be difficult to land upon them."

Whilst the sloop was being repaired in "Pumice-stone River," Flinders made an expedition to the "Glass Houses," and described the country through which he passed as "low, swampy, and brushy, the surface being full of winding holes." He reached the foot of the mountains, but was unable to ascend, and was greatly surprised at not meeting with the volcanic appearances which the pumice-stone in the river had led him to expect. He found very few traces of men or animals, and described the inland part of the country as something higher and better than any in the neighbourhood of the salt water, but nowhere did he meet with any that was suitable for agriculture. After being delayed a day or two through very bad weather, he made his way out by the northern end of the bay, but he did not at that time discover the reef lying to the north of Cape Moreton, which now bears his name. (This he subsequently found on the 26th July, 1802, in his expedition in the "Investigator.") His report of the Bay, after his fifteen days' experience of it, was that it was so full of shoals that he could not attempt to point out any passage that would lead a ship into it without danger. And after visiting Hervey's Bay, where his operations were continually harassed by shoals, he returned to Sydney, and he winds up his observations on the trip by the following comment:—

"I must acknowledge myself to have been disappointed in not being able to penetrate into the interior of New South Wales, by either of the openings examined in this expedition: but, however mortifying the conviction might be, it was then an ascertained fact that no river of importance intersected the east coast between the 24th and 39th degrees of south latitude."

This brings us up to the full extent of the acquaintance of geographers with Moreton Bay at the end of the 18th century, and nothing further seems to have been attempted for 23 years, at least so far as we possess any published information. I have reason to believe, however, that the bay was visited more than once in the interval. I have lately dropped on a M.S. copy of the log of H.M. cutter, "Sally"—Captain Bingle, from which it appears that he was at "Skirmish Point" in March, 1822, and having ascended Pumice
Stone River, came to the conclusion that, as the water continued to be as salt as far up as he could go, as it was at the entrance, it could not be a river at all, but an arm of the sea, which subsequent exploration has proved to be the case.

Lieutenant Oxley sailed from Sydney in the cutter "Mermaid" on 23rd October, 1823; and it is with Oxley and his explorations of the beautiful river which flows at our feet, so to speak, that we are principally concerned to-night. And in that connection I shall have the gratification of relieving the character of that zealous explorer from aspersions which have been cast upon it in relation to this very matter.

By way of introduction I may state that Oxley was born in England in 1781, entered the Navy when quite a youth, and, after active service in various parts of the world, rose to the rank of lieutenant. Soon after his arrival in Australia he was appointed Surveyor-General, on January, 1812.

In 1813, long and severe drought in the neighbourhood of Sydney drove the inhabitants to further attempts to surmount the hitherto impenetrable Blue Mountains, and this, having been accomplished by Lieutenant Lawson, Mr. Blaxland, and Mr. W. C. Wentworth, was followed by the discovery of the Macquarie and Lachlan Rivers (the former named after the surname and the latter after the Christian name of the then Governor) by Mr. G. W. Evans, Assistant Surveyor-General. On 6th April, 1817, Oxley and a party of twelve left Sydney to make further explorations of these rivers, in which work they spent nineteen weeks. They endured great hardships, and traced the Lachlan about 1,200 miles, being at last blocked by a wide impassable swamp. In May of the following year he started on a second expedition, and found (3rd July) that the Macquarie, like the Lachlan, ended in an immense uncrossable swamp.

The facts that those two rivers, the only ones known to exist in the interior, should both terminate in swamps or shoal lakes, instead of finding their way to the sea, caused (says a writer of that time) as justly the surprise of the physical geographer as the disappointment of the political economist. It was indeed the problem of the day.

Coming now to what we can discover from history respecting Oxley's connection with Moreton Bay and the Brisbane River, you will find that the original professed historian of the territory of Queensland was the Rev. Dr. John Dunmore Lang, to whose active mind and ever busy pen all Australians owe a deep debt of gratitude. Yet I cannot help thinking that he has treated Oxley, when embodying in his narrative of the beginnings of Queensland particulars of that explorer's discovery and investigation of the Brisbane River, with an amount of acerbity quite uncalled for, and not by any means warranted by the facts of the case. This arose, I dare say, from the strong predisposition on his part to
disparage and speak contumeliously of "officialdom" in general. The worthy doctor had been so often thwarted in his laudable exertions to settle the new territory with a thrifty people, by the ignorance or stupidity (at least in his opinion) of the Government officials, that he never could resist any opportunity that presented itself to him of decrying them, and was not over-particular in his discrimination. From his point of view, he was apt to treat the whole class with contempt. Unfortunately, subsequent writers appear, so far as respects Oxley, to have simply followed the Doctor's lead, without troubling themselves to investigate the sources from which his information was originally derived.

I must here, however, make two honourable exceptions, viz., my old acquaintance, Mr. J. S. Russell, in his "Genesis of Queensland," and Mr. W. H. Traill, in his admirable sketch of the early history of the colony, published in the Picturesque Atlas, both of whom have done Oxley justice.

Now, the actual source whence Dr. Lang derived the information he embodied in his work relative to Oxley and the Brisbane River exploration was a volume of miscellaneous papers dealing with subjects connected with New South Wales, collected and published in London in the year 1825, by Mr. Barron Field, F.L.S., on his return to England, after occupying for some years the position of Judge of the Supreme Court of New South Wales. In this collection are included the official "Report of an Expedition to Survey Port Curtis, Moreton Bay, and Port Bowen, with a view to form convict penal establishments there, in pursuance of the recommendation of the Commissioner of Enquiry into the Colony of New South Wales, by John Oxley, Esq., Surveyor-General of the Territory."

I have carefully perused that report, and have failed to discover any warrant whatever that would lead to the conclusion that Oxley was other than an honest and truthful man, as well as a capable and expert officer. But the insinuations laid against him are founded, not so much on what the report contains, as on alleged omissions or suppressions with respect to matters which it ought to have contained. In order that you may clearly grasp the subject, let me quote from the most recent publication on our pioneer history—viz., that of Mr. J. J. Knight, who we will readily admit has done his best to provide us with an accurate as well as a most interesting compilation.

(See "In the Early Days," by J. J. Knight, 1895.)

After mentioning (page 11) that Oxley was despatched in the "Mermaid" to find a new depot for convicts, and referring briefly to his unsuccessful examination of Port Curtis, Mr. Knight continues, and I may as well give his narrative in extenso:

"Considerable doubt exists as to his subsequent discoveries; and, such being the case, it may be as well to give what Oxley himself
says in his official report—a copy of which the writer has—and follow it with an incident which seems to bear in no small degree on the subject. Oxley says that Pumicestone River had been so thoroughly (1) explored and well described by Captain Flinders, that he conceived it would answer no useful purpose to go over the same ground; ‘but, considering the west shore of Moreton Bay as only cursorily examined, I determined to trace it entirely round, in the hope to find in such an extensive inlet some opening which would render an apparently fine country of more utility and value than it could be expected to be if the accounts of the scarcity of fresh water here were correct. Our first day’s survey terminated a little above Red Cliff Point . . . Early on the second day (2nd December) we had the satisfaction to find the tide sweeping us up a considerable opening between the First Islands and the mainland. The muddiness of the water and the abundance of fresh water mollusca convinced us we were entering a large river; a few hours ended our anxiety on that point by the water becoming perfectly fresh, while no diminution had taken place in the size of the river after passing what I have called Sea Reach.’ It will thus be seen that Oxley claimed full credit for the discovery of the Brisbane, and it is worth remarking that he made no mention of an incident which occurred during the time his vessel was coming to anchor at ‘Pumicestone River.’ That he could have forgotten the event is impossible, and his failure to record it is certainly a strong argument on the side of those who contend that Oxley had no right to take unto himself all the honour of having found the noble stream. It was left to Mr. John Uniacke to hand down this statement, and but for him Oxley’s claim would never have been challenged. While engaged in paying out the anchor chain on arrival at Pumicestone River, those on board the ‘Mermaid’ noticed a number of natives congregated on the beach. One of these, taller and much lighter skinned than the others, so attracted Uniacke’s attention, that he prevailed upon Oxley to send a boat ashore. Judge of the surprise of both Oxley and Uniacke on nearing the beach to hear themselves hailed in the English tongue by the tall man. Investigation showed that this man was named Thomas Pamphlet, who some seven months previously had, with three others, been blown out to sea while prosecuting a voyage in an open boat to the Five Islands (now Illawarra) in search of cedar. In the meantime they had suffered inconceivable hardships, one of them, John Thompson, dying at sea. As may be imagined Pamphlet was overjoyed at the prospect of his deliverance from a wild yet withal happy life. His two surviving companions, Richard Parsons and John Finnegan, after having travelled in company with him to the place where he was found, had about six weeks before resolved to work their way towards Sydney; he had accompanied them about fifty
miles, but his feet becoming too sore to allow him to travel further he resolved to return to the blacks. A few days after they parted, Parsons and Finnegan quarrelled, and the latter also returned. At the time of the arrival of the "Mermaid" Finnegan was absent hunting, but a day or so afterwards he returned and shared in Pamphlet's joy. Pamphlet's and Finnegan's stories were taken down by Mr. Uniacke, and it is somewhat significant, in view of Mr. Oxley's statements, to find them concurring in a story they told of a large river they had crossed which fell into the south end of the bay. 'Messrs. Oxley and Stirling' (Lieutenant Stirling, of the Buffs), says Mr. Uniacke, 'started next morning in the whaleboat, taking Finnegan with them and four days' provisions, in order to explore it!' There appear then to be strong grounds for supposing that Pamphlet and Finnegan's river was identical with Oxley's 'discovery.'

"Oxley explored the Brisbane for many miles, discovering and designating, it is said, the Bremer, and naming the noble main stream the Brisbane in honour of the first Governor of New South Wales. To go back to the first day's search of Oxley, it should be stated that he landed at Redcliffe Point, which he concluded offered the best site for a depot in the first instance. His principal reason for so deciding was its easy communication with the sea, and the little difficulty likely to be experienced in effecting a landing; though he admitted that the Brisbane River presented many superior situations, and that the country on the west side of the river, at the termination of Sea Reach, was a much better site for a permanent establishment. Considering all the circumstances of the case, however, Oxley decided to recommend Redcliffe, and with a view of reporting his success he returned to Sydney, where he received the congratulations of the Governor. What Pamphlet and Finnegan received is not on record. One thing is certain; neither received any credit at the hands of Oxley; indeed they are not even mentioned in his report of the voyage, and had it not been for Mr. Uniacke the troubles and trials of the shipwrecked timber-getters would have remained unrecorded."

The gravamen of the charge here brought against Oxley is that, for his self-glorification, he purposely suppressed the fact that the rescued castaways had given him the information which they had acquired, during the period they had been residing with the blacks, of the positive existence of a river in the vicinity. But all such strictures arise from a too superficial and perfunctory perusal of the report.

The fact is that the romantic story of the adventures of Finnegan and Pamphlet, written from their own narratives, at the time by Mr. Uniacke was enclosed by Oxley, as an accompaniment to his official
report; it formed part and parcel of the report, when that document was submitted to His Excellency the Governor, Sir Thomas Brisbane. An express statement to that effect is made in the report when referring to the aborigines:

"For a more detailed description of these people" (the natives), "I beg to refer you to the information obtained by Mr. Uniacke during my absence from the vessel, and which is appended to the accompanying journal" (page 22).

Neither do the rescued men appear to have been of much assistance to Oxley, beyond giving him this information, for Mr. Uniacke tells us that Oxley and Lieutenant Stirling, having started in the whale-boat to explore the river, with four days' provisions, taking Finnegans with them as a guide (p. 57), the whole of the first day was lost in the examination of a large creek, which Finnegans mistook for the river (p. 82).

But it is evident, even from Mr. Uniacke's report, as published by Barron Field, that Oxley had no intention of ignoring any credit due to Pamphlet and Finnegans with respect to the discovery of the Brisbane, as the full text of the sentence quoted will show. It reads:

"Both he (Finnegan) and Pamphlet concurring in a story they told us of a large river which they had crossed, falling into the south end of the bay, Messrs. Oxley and Stirling started next morning in the whale-boat, taking Finnegans with them and four days' provisions, in order to explore it."

The "accompanying journal," mentioned in the report, was, unfortunately, not included in Mr. Barron Field's published collection. It has disappeared, never, it is to be feared, to be recovered, but there is not a shadow of a doubt that in that journal would have been found every significant detail connected with the exploration, day by day, of the bay and the river.

But although Oxley's journal has not been preserved, his chart of Moreton Bay and of the Brisbane River, as far as ascended by him on this occasion, have been preserved, or at least a copy, which is appended to Mr. Barron Field's book, and from it we can judge of the value of the work performed by this explorer.

I am fortunately able to exhibit to you a copy of this chart, on an enlarged scale, for which thanks are due to Mr. Eggar, of the Survey Office, who has kindly devoted his spare time to its preparation. Upon this are shown not only Oxley's first tracing, but also his subsequent examination of the river to which I shall refer later on, as also a tracing of the river as determined by our most recent surveys.

There is no difficulty whatever in determining by a study of the chart the precise point to which Oxley ascended the river. Considering that he attempted nothing more than a "running survey," and had only
four days to devote to the work; that both he and Lieutenant Stirling, of the Buffs, who accompanied him—and whose assistance in taking observations and measurements he cordially acknowledges in his report—were already afflicted with the incipient stages of scurvy when they started up the river; that the month was December, and their vehicle an open boat, the exactness of their observations and of the draft map is truly remarkable. Nothing of material significance appears to have escaped their vigilant attention. The soundings, the vegetation on the banks, the nature and aspect of the adjacent country, the distant heights, the bearings of the sinuous river, the tributary streams—all are noted. We can recognise in succession, the ingates of the creeks, which to-day are known to us as Bulimba, Breakfast, Norman, Oxley, Moggill, and Pullen Pullen.

Oxley's highest station is identifiable, beyond possibility of mistake, as that angle of a bend of the river where Goodna is now situated. There will be recognised his "Termination Hill," from the summit of which he was able to view the apparent course of the upper part of the river for 30 or 40 miles, and to perceive, nearly due south, a distant mountain, which he conjectured—quite correctly, although Captain P. P. King, in an annotation, questioned his accuracy—to be the High Peak marked on Captain Flinders' chart. At any rate, the bearing and approximate distance given by Oxley locate with precision the Mount Flinders, otherwise Peak Mountain, of our present day maps.

It may be as well here to mention that while on his way up from Sydney in the "Mermaid" Oxley discovered and named the Tweed River. Later on he found the opening at the south of Stradbroke, opposite to what is now named Southport, as the following excerpt from his diary will show:

"We had little opportunity of making any nautical corrections of the present excellent charts of Captain Flinders. We, however, discovered that the land of Point Lookout is an island, and that Moreton Bay extends as far south as 28°, where it communicates with the sea by a shoal channel through a sandy beach, navigable for boats," now known as the "Boat Passage" at Southport. It was not, however, for some time afterwards that names were given to the channel discovered by Flinders, and Oxley's discovery that the main land did not extend to Point Lookout, as the following excerpt from the "Government Gazette" will show:

On the 26th July, 1827, the following Government order was published:—"His Excellency the Governor has been pleased to direct that the island forming the southern boundary of the eastern channel into Moreton Bay shall be designated the 'Isle of Stradbroke,' in compliment to the Honorable J. H. Rous, commanding H.M. ship 'Rainbow,' the first ship of war which entered 'Moreton Bay.'" It may be explained that Admiral Rous was the second son of the Earl of Stradbroke.
"The point of land in the Isle of Stradbroke (which is intended as the site of a public establishment—quarantine), opposite to Peel’s Island, is named ‘Dunwich’; and the anchorage where the ‘Rainbow’ lay ‘Rainbow Reach’. The channel between the Isle of Stradbroke and Moreton is named ‘Rous Channel’.

"2nd. The Governor has been further pleased to name the river recently discovered at Moreton Bay immediately to the southward of the Brisbane, the ‘Logan,’ as a record of His Excellency’s approbation of the zeal which Captain Logan, the commandant of Moreton Bay, evinced in adding to the important discovery made by Mr. Oxley, the Surveyor-General, of the river in 1823."

I have now arrived at a stage when it becomes possible for me to adduce what I rely upon as justification for occupying your attention with so long a preamble. It is my privilege to present to you original and conclusive evidence that Oxley, far from deserving the strictures with which the statements in his published report have been assailed, was candid and modest as to his own part in the discovery and exploration of the Brisbane River, painstaking and minutely accurate in ascertaining and noting facts, and unimpeachably clear in his method of recording them. His speculations with regard to the sources whence the waters of the river were derived have indeed, by later and fuller positive knowledge, been proved to be erroneous. But we are enabled to learn, from his own remarks, jotted down daily while that problem was exercising his judgment and ingenuity, how frankly ready, although reluctant, he was to subordinate to adequate evidences, the strong preconception in his mind, that in this the first considerable stream up to that date discovered flowing from the Western inlands, easterly to discharge in the Pacific Ocean, was that outlet for the waters of the Lachlan and the Macquarie, which their diffusion in shallow and impenetrable reedy marshes, had in a former famous expedition defeated his desperate efforts to follow to their debouchure.

It is on record that in the year 1824, following that in which Mr. Oxley discovered, and, as already described, ascended for some distance the Brisbane River, he returned to Moreton Bay in the brig “Amity,” having on board Lieutenant Miller, with a detachment of the 40th Regiment and 30 convicts, to lay the foundations of a branch penal settlement. But what has escaped notice until now, except by a passing reference to the incident by Mr. Russell (Russell, p. 26), is that on the sixth day after re-entering Moreton Bay, the intermediate time having been utilised in laying out the details of the settlement at Redcliffe Point and fixing the site for the projected buildings, Lieutenant Oxley left the brig, accompanied by Lieutenant Butler and Mr. Allan Cunningham (His Majesty’s Botanical Collector for Kew Gardens), with two boats and crews to renew the survey of the Brisbane River.
As I have already observed, only the official report by Oxley of his previous exploration has been preserved, and that by the intelligent appreciation of a gentleman in quite a different walk of life—Judge Barron Field. His journal—the daily log of his adventure—has disappeared.

Neither report nor journal relating to this second exploratory expedition has been heard of, I might almost say till this day. I have now the pleasure of laying before you a verbatim transcript of Lieutenant Oxley's autograph M.S. Journal, in which are recorded, day by day, his observations, his measurements, his soundings, and his reflections and inferences, as he ascended the River Brisbane, to the highest reach which his boats could navigate.

For this our Society is indebted to our esteemed fellow member, Mr. W. H. Traill, who discovered the original amongst a lot of old field books in the Survey Office, Sydney, and obtained it from the Deputy Surveyor-General, as a curiosity, to which he seemed to attach little value or interest. The first portion, which contains a record of Oxley's proceedings from the time the "Amity" rounded Cape Moreton on the 10th September 1824, until he started up the river on the 16th, is written in ink, probably on board the brig—the latter portion is in pencil, no doubt jotted down in the boat, while at work.

**Authenticity of Oxley's 1824 Journal.**

It was jealously compared with a quantity of Oxley's private letters and other documents, un challengingly in his handwriting, by that most eminent of authorities in early Australian records, Mr. David Mitchell, of Sydney, whose superb collection of MS. and books relating to these colonies has been by him devised to the Government of New South Wales, and by Mr. W. H. Traill. The identity of handwriting was found to be unmistakeable. The transcript has been carefully made under Mr. Traill's direction and compared with the original.

I have already touched, in passing, upon Oxley's strong preconception that this river might and should furnish the outlet for the waters of those interior rivers of New South Wales, which he had traced to extensive swamps, from which no issue was discernable at the time. How greatly the problem thus presented had exercised his mind can be learned from the frequent references to it in the diary or journal now before us. But that Oxley was not a mere faddist in regard to this matter we are enabled to assure ourselves by reference to particular passages in the journal. Nothing could be more sober and reasonable than the following reflections or observations, noted down on the evening of the 19th September, after a day of exploration by river and land, during which he, Mr. Cunningham, and Lieutenant Butler ascended a high grassy ridge, which he named Belle Vue Mountain, and from it had a very extended view of a magnificent range of mountains, distant between 60 and 70 miles.
"The result," wrote Oxley, "of this day's observations effectually destroyed the perhaps too ardent and flattering hopes I had indulged that this large river would prove the outlet to the waters of the great Western interior. In proportion to the strength of my expectations was my feeling of disappointment, and I again experienced the fallacy of trusting to appearances, which in countries" (where) "the rules governing the operations of nature are more certainly reduced to known laws, would fully have warranted the opinion I had formed, connected as that opinion was with the conviction I cannot but still continue impressed with, that the waters of the Western interior cannot be entirely dissipated by evaporation."

The foregoing passage, and one I am about to read, furnish fairly conclusive evidence that this journal, or diary, was jotted down nightly on the spot, and not compiled at leisure subsequently. Only two days later I find interjected in the notes of the current observations a curt memorandum:——

"Memo.: Native and Bathurst Fish"——

and a few pages further, at the end of the day's observations, Oxley, with evident relief, recants his recantation, in these terms:——

"My hopes of finding this an interior river, which I had considered so effectually destroyed in consequence of the appearance of the river on the 19th, were this day destined to be again awakened, and my sanguine expectations unexpectedly confirmed, so far at least as conclusive arguments can be drawn from the discovery of a fish hitherto known only to exist in the waters of the Western interior."

The circumstance which thus influenced his judgment arose from the following incident:——

"On our route towards the Pine Ridge we fell in with an old native who had been fishing. He sat down by Mr. Cunningham, who, seeing the tail of a fish protruding from the mouth of his bag, began to examine the contents, and before he could disengage the fish, exclaimed, 'This is a Bathurst cod.' On the fish being placed fairly before us not a doubt could possibly exist, (there being) identity in every particular. This species of fish was intimately known both to Mr. C——, and myself, and we also knew that it did not exist in any Eastern waters."

This assumption on the part of Oxley and Cunningham, that the Murray Cod had no existence in any river of Australia flowing to the East Coast, was one of those hasty generalizations to which the best of men are sometimes liable; for I am informed by Mr. De Vis, the accomplished curator of our Museum, as well as by old residents in the locality, that it is not a very uncommon occurrence to find that fish in the upper parts of the Brisbane River.

Before leaving this subject, I should like to mention that this speculative theory of Oxley and his companions was practically exploded, so far as the Brisbane River is concerned, by Cunning-
ham's famous expedition in 1827, when he discovered and named the Condamine River (after his friend, Mr. De la Condamine, the Governor's private secretary) and the Darling Downs, so named in compliment to His Excellency. The whole question as to the outlet of the Western waters, which at that time so much agitated the minds of geographers and others, was finally set at rest when that indefatigable Australian explorer, Captain Charles Sturt (November, 1829, to February, 1830) descended the Murrumbidgee to its junction with the Darling, and traced the united river, which he named the Murray, to its mouth at the sea in Encounter Bay, in South Australia.

It might be tedious, and perhaps scarcely intelligible, to attempt to follow, in a paper such as this, every bearing and distance set down in the journal. Without entering so much into detail, let me present to you the sketch map, on a large scale, and smaller charts—fascimiles of Oxley's own draft as preserved in Barron Field's book, of his first exploration of the Brisbane River, with the addition of a careful plot of the bearings and distances, now made available in connection with his second and last expedition.

A perusal of this journal, however, clears up many matters of uncertainty connected with the early history of the river. For instance, it has been alleged that Oxley was rather lax in his duty in neglecting to take steps to ascertain the fate, or possibility of rescue, of the man Parsons, one of the three men cast away on Moreton Island, and who had left his mates and disappeared. But the following extract from the journal effectually disproves any insinuation of that nature.

The very first entry in the journal, dated 10th September, 1824, states that they weighed from under Cape Moreton, and after standing along a large shoal, which he judged extended further to the north-west than is laid down in the sketch by Captain Flinders, they rounded the reef and worked up a good channel to the mainland, and anchored about a mile off (Lat. 27.00.37 observed), and he goes on to say:

"After dinner the whale-boat was lowered, and I proceeded in her for our old station, in Pumicestone River, for the purpose of seeing if the bottle which was left near the wooding-place in my former voyage had been removed. It had been left for the purpose of informing Mr. Parsons, the remaining man of the unfortunate boat's crew wrecked here in 1823 (March), that a vessel had been here during his absence, and that his two companions had quitted the coast. I confess that I was by no means sanguine. He had quitted his companions and proceeded singly towards the North, labouring under the delusion that he was to the south of Sydney. He had taken a northward direction near 12 months ago, and considering the nature of the population and the privations he must necessarily suffer from want of food, etc., the chances were that he no longer existed. It was therefore with feelings of the
most pleasing description that among the group on the beach on landing the first man was recognised as our long-lost countryman, and close beside him the venerable old man so often mentioned as the protector of Pamphlet and his mates.

"Parsons appeared in very good condition, being a stout, powerful man; at first he expressed himself very imperfectly in his native language from long disuse; he was too much agitated and overcome by his deliverance to give very clear answers to the numerous questions put to him. I defer, to moments of calmer recollections, detailing the narration of his adventures after he quitted his companions on the Northern trip. When Parsons was about to get into the boat the old man, his kind protector, evinced the strongest marks of attachment towards him, and could not be persuaded he would ever see him again. After he left the beach he followed us for some time alone, and waved many an adieu. There might be perhaps 30 or 40 natives collected at the wooding-place. I recognised many I had seen in December last, and the recognition was mutual. They appeared as friendly and harmless as before experienced—in truth their treatment of the shipwrecked seamen affords the best proof that their hearts at least are not very savage."

Then, again, as to the discovery of the Bremer, the doubts expressed in Mr. Knight’s history and other earlier works as to whether Oxley ever saw that river are peremptorily set at rest. While on the way up the river Oxley noted the position of this affluent, which he terms “a considerable creek or stream.”

There can be no doubt that he gave it at that time the name it bears to-day. When on the return trip down the river he camped for the night opposite this creek, he refers to it in a matter-of-fact way as “the Bremer River,” a name, no doubt, suggested by the circumstance that—Captain—(afterwards Sir James) John Gaden Bremer—had sailed from Port Jackson in command of H.M.S. “Tamar” to establish the first British settlement in North-west Australia, and his departure preceded that of Oxley by only a few weeks at most. Bremer started in August, 1824; Oxley was in Moreton Bay by September 10 of the same year.

The following is the entry in his journal on the subject:—

“Saturday, September 25.—Proceeded down the river, and stopped at 5 o’clock on the left bank opposite Bremer River for the night. This place will be desirable and convenient for an establishment, whenever the settlement is so far extended as to render it an object to procure the pine in large quantities, the river being navigable for very large craft, and quite fresh. The country on both sides of the river is fit for cultivation. The tide rises about three feet. Passed a family of natives, who on seeing us ran into the country, leaving their valuables behind them. They had been feeding on long worms, which are found
in wood that has long been in a state of decay under water. If we had nothing to add to their store, we left everything as we found it."

If any corroboration were needed it is supplied by Allan Cunningham, who, it will be remembered, was in the boat with Oxley, and who in December, 1828, incidentally—in the course of an official report on his "Excursion to the summit of Mount Lindsay" in company of Mr. Fraser, the Colonial Botanist, and Captain Logan—mentions that in 1827 Logan, "in tracing the Bremer (of the late Mr. Oxley, who merely passed its mouth in 1824), from its junction with the Brisbane, discovered at ten miles through its many windings from that point the calcereous hummocks on its right bank, now named Limestone Hills." Cunningham accompanied Logan on that trip. Subsequent to that Mr. Cunningham made an expedition in search of a road to the Gap, which he had discovered in the Main Range in 1827, and on his return connected his surveys with those of Mr. Oxley. He says in his report:

"An excursion made in September last (upon my return from the Pass" (Cunningham's Gap) "from the Limestone station, north to the channel of the Brisbane, which I intersected in five miles at a point visited by Mr. Oxley and myself in 1824, and which I clearly recognised, has enabled me to connect most satisfactorily (as regards geographical position) the westernmost point to which our very able Surveyor-General had penetrated on his second visit to the Brisbane."

Cunningham's accuracy in the most minute details is universally acknowledged. He was in truth a grand man, one to whose dauntless energy and love of enterprise the people, of Southern Queensland especially, owe an everlasting debt of gratitude. Originally chosen by Sir Joseph Banks (one of Cook's companions in the "Endeavour"), and sent out as a collector of botanical specimens for Kew Gardens, he spent many years in Australia, and eventually died here, and proved himself not only a distinguished expert and enthusiast in the particular science to which he was devoted, but also an accomplished naturalist, explorer, and geographer.

So far as regards the claim made by some on behalf of Major Lockyer, as the discoverer of the Bremer, is concerned, I have read the Major's journal very carefully, and have failed to find any mention of that important affluent whatever. He made a trip up the Brisbane River in September and October, 1825, of which he gives a most interesting narrative, with glowing descriptions of some of the country he saw, and a vivid account of his adventures by flood, but he added nothing of any material utility to the stock of geographical knowledge previously acquired. I have totted up the mileage as given by himself on the down journey, from which it would appear that he ascended the river 164 miles from Edenglassie, as the site of Brisbane was first named. He mentions having gone up a branch for about three miles, but as its
junction (reckoning from Lockyer's own mileage, for he nowhere gives his position by observations) would be 88 miles from the settlement, it could not possibly be the Bremer; more likely the affluent which now bears his name.

Mr. Cunningham in the report to which I have already referred thus sums up Lockyer's work:

"Beyond this spot" (he is referring to Oxley's highest point) "the river was subsequently (in 1825) traced up in a north-western direction by Major Lockyer. It is to be regretted that, possessed of so much zeal and perseverance, this gentleman had not provided himself with the requisite instruments for the determination of the position of his several stations, and more particularly of the extreme points to which the means he possessed had enabled him to reach." "Being thus aware that this excellent gentleman had no means of ascertaining the geographical situation of this point, and as he has not furnished us with a single bearing of any one known fixed point, I have left the river just where my late friend, Mr. Oxley, did, rather than add to it the trace of its channel by Major Lockyer."

It is always interesting to note the characteristics displayed by the aboriginals in their first intercourse with white men, and also their treatment by the latter. In this connection the following extracts from the journal will illustrate to some extent both of these phases:

"Thursday, September 16.—Fine, pleasant. We left the brig accompanied by Lt. Butler and Mr. Cunningham with two boats to complete the survey of the river. At 4 arrived at the head of Sea Reach, when we stopped for the night. We had scarce pitched the tent when we were visited by a party of natives, the seniors of which were very troublesome, endeavouring to steal everything they could lay their hands on. At dark we were relieved from their company.

"Friday, September 17.—The same party of natives visited us again this morning as we were embarking. I had put my hat, barometer, and surveying instruments on a rock close to the boat, and surrounded by the people who were getting the baggage into the boat, when two of the natives were discovered making off with the above articles. They were pursued, but as they gained on us, Mr. Butler fired at the man who had the instruments, which caused him to drop them, being I suspect struck by some of the shot: other fellow got clear off with my hat. We pushed our course up the river, which we did not find fresh so low down as in the former voyage.

"Monday, September 27.—Sultry as usual. Proceeded down the river. It may be remarked that when I first visited it in December, 1823, the water was found fresh about 16 miles lower down than we at present experienced it. The tide having been against us the greater part of the day, we did not get lower down the river than present reach, where we intended stopping for the night, as I expected to find
fresh water. We saw at the commencement of the reach on the left bank a very large assemblage of natives in the same spot we saw them last year. It was evidently a favourite place with them, most probably on account of water being convenient, as among the company was a full proportion of women and children. We landed about half a mile below this encampment, on the same side of the river, there being a small creek between us, which I hoped would prevent them visiting us, as I had no desire to hold communication with them, having had proof of their desire to possess everything they see, and make off with what they can secure without the ceremony of asking leave. While the tent was pitching and the things getting out of the boats, Mr. B—and myself went in search of water, while Mr. C—— superintended getting the things on shore. We had not been long absent, and were returning unsuccessful to the tent, which was by this time pitched, when we found that a large number of natives had found their way to it. They had been very troublesome, and Mr. C—— had some difficulty in preventing them taking what they chose, particularly one man, who was recognised as the one who took my hat on the morning of the 17th. He was a fine athletic man, as indeed they all were. On my seeing him, made signs that I knew him, and was angry with him, and that he must bring back the hat. He seemed well to understand my meaning, but only laughed and jumped about. At length, seeing we would not suffer him to come near the tent, made signs as if he and another would go and bring the hat, and went off, leaving five or six about us on a hill a little above the tent. He shortly returned, but, as might have been expected, without the hat; on the contrary, he brought with him a number of other natives, making now about 14, about the strongest and best-made muscular men I have ever seen in any country. We determined that this fellow should not camp near us, and Mr. Cunningham endeavoured to explain to a fine, stout young man the reason, which he seemed very well to understand. Mr. Butler was holding some of the others in conversation, when the savage before mentioned, who had for some time appeared working himself into a transport of passion, as is usual before they attempt anything violent, seized a piece of wood and hurled it at me, fortunately some dead branches on the ground intervening, it fell short, being thrown in the same manner as the womerin. The other natives had before begun to fall back, and Mr. Butler having seen him throw the stick, and observing him about to renew the attack on Mr. C—— with a stone, fired at him, and struck him on the left arm and side. He immediately made off, running towards the creek, the others slowly going off different ways, but in no manner interfering to assist their companion. We observed him drop on the edge of the creek about 200 yards from us. After a little time, observing no one come to assist him, though the greater part of the remainder were within a few yards of him, we went to him, and found
him lying on his side, being apparently severely, though not dangerously wounded, with the small shot with which the barrel was loaded. He bled but little, and I was not sorry that he had suffered for his boldness. The other natives seemed to consider him as having sought his fate, for on our making signs that they should come and take him away, they immediately crossed the creek, and first motioning for us to withdraw a little, two of them approached him, and first blowing in his face several times, they shouted as for more assistance, which being immediately afforded by the others, he was taken to their camp on their shoulders. The camp was not distant more than 500 yards from us, but out of sight. We soon discovered his arrival there by the most dismal howlings and wailings I ever heard set up by the women and children, and this noise was continued with but little intermission through the night, and the men occasionally joined in loud but measured shouts. We thought at different times we heard dancing, as if a corroboree had been held round him, but the cries of women and children in seeming distress prevailed, and from singular noises, we conjectured that various ceremonies were performing, and that the wounded man was of some consideration among them, as indeed his numerous curious tattooed and raised marks, together with his whole conduct and deportment, had before seemed to indicate.

"It had been necessary repeatedly before firing to point the piece at one or other, more particularly at the wounded man, in order to deter them from plunder. They, however, seemed to think very little of it, which I attribute to their having seen Mr. Butler fire at a duck in the river, which he unluckily missed, as also that the man who had been fired at on the 17th whilst making off with the instrument had been so very slightly wounded as to give them a contemptible opinion of our means of defence against their depredations, and though I deeply regretted the necessity which had now occasioned our firing, yet I was glad that the shot had taken effect on the right person, and the serious pain he must doubtless have suffered would operate in some degree as a warning and proof that we were not utterly defenceless. I also hoped it might have its good effects among the tribes in the vicinity of the new settlement, as, though the distance is considerable, probably 20 or 30 miles, yet events of this nature are sure to be communicated from tribe to tribe, and the knowledge of the powerful effect of our weapons operate in deterring them from attempting the little petty thefts, which their ardent desire to possess whatever they beheld, would otherwise tempt them to commit."

"Tuesday, September 28.—A calm, still night. The howlings at the camp of the natives ceased an hour or two before sunrise, and were resumed with redoubled violence on the rising of that luminary, and shortly afterwards almost entirely ceased. We had intended to visit their camp, but considering that we might disturb them, and certainly
frighten their women and children, the intention was given up, and we proceeded down the river."

The chief objects of natural history observed were fish, some of which were very large, and kangaroos, which are said to have been very numerous. The general appearance of the country from a botanical point of view is thus described in the journal:

"September 17. . . . The botany of the Brushes was entirely tropical. I found nothing to alter in my former report.

"Saturday, September 18.—The botany of the Brushes was examined, and many curious plants found, but all tropical. A species of Flindersia was found (a large tree), but it was not ascertained if it was different from the one already described by Brown.

"September 21.—Having crossed the river, we penetrated through a very thick brush, abounding with stately and magnificent pines, which towered far above the other timber of the hill, among which was the Flindersia. Mr. C——procured a couple of young cones, which satisfactorily demonstrated that the tree which had excited so much admiration was an entirely new species of the Genus Araucaria, being the first discovered in New South Wales, and decidedly the growth of the interior, and not a coast tree. We measured one, the first we came to, the circumference of which was 10 feet. Many others were of greater magnitude, which was carried up perfectly straight without a branch to a height of from 50 to 100 feet, the whole height of the full-grown tree being 150 feet. To this stately tree Mr. C——gave the name of 'Brisbane Pine,' being first discovered on the banks of the river of the same name. Mr. C——in this noble forest discovered many new and valuable plants, among them being a Calystegia or Pancratium, the bulbs of which were procured. Since named (very properly) Araucaria Cunninghamii."

I think I have said enough to satisfy you that it is to Oxley we owe the discovery and exploration of the Brisbane River; and I trust that I have succeeded in clearing his name from the unjust aspersions which have been cast upon him.

By the early days of 1828 this zealous officer had become quite worn out by the continuous hard work and the severe privations he had undergone, and he obtained leave of absence in February of that year in the hope of regaining his health, but it was too late, for he died on the 25th of May. To show the estimation in which he was held, it may be proper for me to quote what was stated in the proclamation issued by the Governor when appointing his successor:

"[Government Order.]

"Colonial Secretary's Office,

"May 26, 1828.

"His Excellency has directed the notification of Major Thomas Livingstone Mitchell's appointment to the office of Surveyor-General, in the room of John Oxley, Esq., deceased."
"It would be impossible for His Excellency, consistently with his feelings, to announce the decease of the late Surveyor-General without endeavouring to express the sense he entertains of Mr. Oxley's services, though he cannot do justice to them.

"From the nature of this colony, the office of Surveyor-General is amongst the most important under the Government; and to perform its duties in the manner Mr. Oxley has done for a long series of years is as honourable to his zeal and abilities, as it is painful to the Government to be deprived of them.

"Mr. Oxley entered the public service at an early period of life, and has filled the important situation of Surveyor-General for the last sixteen years.

"His exertions in the public service have been unwearied, as has been proved by his several expeditions to explore the interior. The public have reaped the benefit, while it is to be apprehended that the event, which they cannot fail to lament, has been accelerated by the privations and fatigue he endured during the performance of these arduous services.

"Mr. Oxley eminently assisted in unfolding the advantages of this highly-favoured country, and his name will ever be associated with the dawn of its advancement.

"It is always gratifying to the Government to record its approbation of the services of meritorious public officers, and in assigning to Mr. Oxley's name a distinguished place in that class, to which his devotion to the interests of the colony has so justly entitled him, the Governor would do honour to his memory in the same degree as it feels the loss it has sustained in his death.

"By His Excellency's command,

"ALEXANDER McLEAY."
APPENDIX TO PRESIDENT'S ADDRESS.

Mr. W. H. Teail said:—

The following is a strict transcript of an autograph journal by Lieutenant Oxley, Surveyor-General of New South Wales, recording his second visit to Moreton Bay, and his second inspection and continued survey of the Brisbane River. The original is contained in a small common paper-covered copy-book or note-book. The first eighteen pages are written in ink, the rest are in pencil, commencing with the new survey of the river, and therefore probably jotted down in the boat while at work. The book itself was found among a lot of old field-books in the office of the New South Wales Surveyor-General, and was presented to me by Mr. Fitzgerald, Deputy Surveyor-General, as a curiosity, to which he seemed to attach neither value nor interest. On the cover is written in same handwriting as contents, "Remarks on Moreton Bay, September, 1824." At the end of the book writing commences reverse way, and there are some rough pencil sketches and drafts, outlines of Mt. Forbes and Mt. Bannister, others unnamed, sketch of hind portion of a fish, and marine survey of shoals, &c.

Saturday, September 10 (? 11th).—At 6 a.m., the wind blowing fresh from the south, with a flood tide, weighed from under Cape Moreton, and stood along the extensive shoal that runs off from the N.W. point of Moreton Island. The sea broke very heavily on this spit, and we frequently had breakers in five fathoms. I think it extends farther to the N.W. than is laid down in the sketch by Captain Flinders. After rounding this reef we worked to windward between it and the Main in a very excellent channel with a smooth sea, though outside the spit there was a very heavy swell from the east. At noon, falling calm, with the ebb tide we anchored in 6½ fathoms, distance off the Main about a mile, and observed the latitude, 27.00° 37" south.

After dinner the whaleboat was lowered down, and I proceeded in her for our old station in Pumicestone River for the purpose of seeing if the bottle which was left near the Wooding Place in my former voyage had been removed. It had been left for the purpose of informing Mr. Parsons, the remaining man of the unfortunate boat's crew wrecked here in 1823 (March) that a vessel had been here during his absence, and that his two companions had quitted the coast. I confess I was by no means sanguine that he had quitted his companions and proceeded singly towards the north, labouring under the delusion that he was to the south of Sydney. He had taken a northward direction near 12 months ago, and, considering the nature of the population and the privations he must necessarily suffer from want of food, &c., the chances were that he no longer existed. It was therefore with feelings of the most pleasing description that among the group on the beach on landing the first man was recognized as our long lost country-man, and close beside him the venerable old man so often mentioned as the protector of Pamphlet, etc. Parsons appeared in a very good condition, being a stout powerful man. At first he expressed himself very imperfectly in his native language from long disuse. He was too much agitated and overcome by his deliverance to give very clear answers to the numerous questions put to him. I defer to moments of calmer recollections detailing the narration of his adventures after he quitted his companions on his northern trip. When Parsons was about to get into the boat
the old man, his kind protector, evinced the strongest marks of attachment towards him; and could not be persuaded he would ever see him again. After he left the beach he followed us for some time alone, and waved many an adieu. There might be perhaps 30 to 40 natives collected at the wooding place. I recognised many I had seen in December last, and the recognition was mutual; they appeared as friendly and harmless as before experienced; in truth, their treatment of the shipwrecked seaman affords the best proof that their hearts at least are not very savage. Owing to a strong flood tide, it was nearly 11 o'clock when we returned afloat. During the night the weather calm and clear.

Sunday, September 12.—High winds from the west and south-west; lat., 8. Weighed with the flood tide, and worked to the southward in a good and wide channel, the deepest water 13 fathoms, and shoaling gradually to the sand-banks bounding the channel. Sent the sailing barge into Pumice Stone River for water. At noon, being calm, anchored in 6 fathoms, sandy bottom. Sent the whaleboat to sound the channel we were in. At half-past 1 the boat returned; found we were in the best channel; the boat sounded several times across the sand shoal between us and Moreton Island; the least water in crossing 18 ft. Crossed in other places having not less than 3 fathoms; this, however, was at high water. The sand shoals is very narrow; on the eastern side the water deepens to 9 fathoms. At noon observed the lat. 27 5 15. At half-past 1, the wind springing up from the east, weighed and made sail. The ebb tide making strong against us, we were set into the heart of the sand shoal; to the westward of us we passed over the tail of this shoal in 2 fathoms, the breadth of the shoal being about one-eighth of a mile, the sand laying in narrow ridges about the length of the vessel in breadth; on these ridges the water was 2 fathoms, and then deepened to 3 fathoms to the next ridge. We passed over four or five of these ridges before we got into the proper channel again, when the water deepened to 5 fathoms. Observing a sand shoal to the south-east of us, anchored and sent the boat to sound it. The boat returned, finding on the shoalest part about 6 ft., but it soon terminated, leaving us a clear and good 4 fathoms channel between it and the deep bight formed by Redcliffe Point, carrying from 4 to 6 fathoms. At 5 anchored in a good situation in 4½ fathoms, about half-mile from the land.

Monday, September 13.—This day was spent examining the islands towards the head of the Bay, none of which towards (?) however) were worthy of notice, being merely mangrove swamps, the outer parts overflowed at high water; the dry portion of none of the islands exceeded more than 50 or 60 acres. The plants upon these islands were almost entirely tropical, and not hitherto found without that parallel, neither were any of them known to exist in the more southern lat. of N.S.W. I had directed a party to explore the main opposite to the vessel during my absence, more particularly to examine the water I had found in my former voyage. The report was very favourable, and confirmed the opinion I had previously formed. With the concurrence and approbation of Lieut. Miller, comd. (of) the intended establishment. I fixed upon a site for the Settlement close to Redcliffe Point, possessing permanent good water close at hand, good soil in its immediate vicinity fit for most agricultural purposes, well adapted for grazing with a sufficiency of useful timber for present purposes. Miller appeared highly pleased with the situation, and with the favourable prospects of establishing himself and people which the appearance of the country held out to him.

Tuesday, September 14.—Fine, pleasant weather. Walked over the ground of the intended new Settlement; fixed upon the most eligible places for the different public buildings, having reference to contiguity to water and the convenience of landing stores and provisions. The land most eligible for cultiva-
tion is on the north side of the creek, and to the north of the Settlement. The natives visited the place when the stores were landing in considerable numbers, but gave no annoyance.

Monday (? Wednesday), September 15.—Do. weather. Employed in sketching the coast in the vicinity of the Settlement, and in preparing the boats for a continuation of the survey of the River Brisbane.

Thursday, September 16.—Fine, pleasant weather. Left the brig, accompanied by Lieut. Butler and Mr. Cunningham, with two boats, to complete the survey of the river. At 4 arrived at the head of Sea Reach, when we stopped for the night. We had scarce pitched the tent when we were visited by a party of natives, the seniors of which were very troublesome, endeavouring to steal everything they could lay their hands on; at dark we (were) relieved from their company.

Friday, September 17.—The same party of natives visited us again this morning as we were embarking. I had put my hat, barometer, and surveying instruments on a rock close to the boat, and surrounded by the people who were getting the baggage into the boat, when two of the natives were discovered making off with above articles. They were pursued, but, as they gained on us, Mr. Butler fired at the man who had the instruments, which caused him to drop them, being, I suspect, struck by some of the shot. The other fellow got clear off with my hat. We pushed our course up the river, which we did not find fresh so low down as in the former voyage. The botany of the brushes, etc., was entirely tropical. I found nothing to alter in my former report. We suffered considerably from thirst, not finding any fresh water. We stopped for the night at Fram Hills, where the water, though drinkable, was still brackish. Measured the breadth of the river, and found it 330 yards.

Saturday, September 18.—We had the ebb tide against us the whole of the early part of the day. The botany of the brushes was examined, and many curious plants found, but all tropical. A species of Flindersia was found (a large tree), but it was not ascertained if it was different from the one already described by Brown. At 2 o'clock we halted at Termination Plains, being the limit of the former voyage. In the course of our progress we shot some B. swans and a duck; saw no natives. In the evening we had a slight thunder-storm, with a light refreshing rain.

Sunday, September 19.—A fine, pleasant morning. At 10 a.m. I commenced the survey of the river from the point where the former one ended. 1st Sta.: A on Ld. S. back to tree formerly taken 60 deg. E. 30 chains. N. 271 deg. 60 min., to tree on Ld. bank. The land on which we encamped last night nearly an island; the soil light and good, apple tree (Ango johord) and blue gum. St. B to C. N. 328 1/4 90 chains, in line with a hill on sth. shore, distant from it perhaps four or five miles; both shores flat forest land, apple tree. The former Sta. laid down 10 chains too long. This last reach the river widened to about 15 chains, and was shoal the whole length up, having no more than from 8 to 10 ft., in some places only 6. At D on larboard shore, N. 315 deg., 1 mile to east on starboard shore cutting the point on the side, both sides low. This reach the soundings varied from 8 to 7 fathoms towards the starboard shore and latter part of it. The starboard shore towards the end of the shore is lofty and rocky, the ridge covered with ironbark trees; the opposite side low and bushy immediately on the shore. A little back the land rises into an open apple-tree flat, from E. to F., N 221 1/4 40. The soundings along the bend of the river varied from 4 fathoms to 10 ft. The river at end widened considerably, and the country on the larboard shore to the next station nice open forest. Towards the end the bank rises a little, but is very open. From
F to G, N. 189 120 chains. To this station the sounding from 8 ft. to 7 fathoms; but I consider there is on the larboard shore a good channel of 8 ft. at low water. At the end the river narrowed a little, and the soundings measured 7 fathoms. From G to H, N. 277^3 30 chains; a creek to the left. This bend narrows the river to about 8 chains. A deep channel, 4 and 5 fathoms, at end. The bank on left commences low, the opposite side ascending to a forest bank of gentle elevation. H to S, 89 chains N. 350 60, a ridge of hills of moderate elevation lying about S.S.W. and N.N.E. in line with this station, their base about two miles and three-quarters back from the end of it. The first rapid was crossed near the commencement of this station, having 4 ft. over it; it was about 150 yards long. The breadth of the river about 280 yards. At the end of this station another 4 ft. rapid and a considerable creek or stream on L. opposite. The country around very fine; the range of hills before mentioned crossed the present course of the river at R L. Forest flat on both sides, no appearance of floods, and the tide appears to rise about 18 inches. From F to K, N. 338 60, passing between a low sandy creek and the starboard shore, the other side shoal. The land on the left a fine open forest flat, also on the right. Tide rises about 2 ft.; average depth in the channel, which is close to the starboard side, about 5 ft.; the river about 20 chains wide. K to L, N 332 100 chains; average depth, 7 ft.; width of river, about 12 to 15 chains. The larboard shore a steep forest bank, SM (surmounted by) ironbark trees, soil apparently not good, but grassy, resting on a base of sandstone; opposite side a flat of land, very lightly timbered. To M, north 90 chains; the opposite shore from the end of this station rises along the course of the river into higher forest land than before, and at the end of the next station is a small steep clear hill, perhaps about 150 ft. high; the opposite point on the left of this hill the shore brushy, but a most directly becomes a flat of forest land; the soil of these flats light, but good average; starboard 6 to 8 ft. M to N, N. 14 deg. 35 chains. From N to O, N. 341 45 chains, small island at N. Obtained specimen of the rocky base of the hill, a small brush turning the side of the hill to the right. The country rises on that side into bold forest hills of considerable elevation. The river appears still to have a rise of about 2 ft. of tide. At the end of this station we passed the shortest rapid we had yet met, having only 3 ft. pebbly bottom. A chain or two beyond this station rocks in the river; no appearance of floods. O to P, N. 321 60. On the right to the end of this channel a very lofty rocky bank, at end a brush extending up the sides, and on the summit of the hill. P to Q, N. 271 50. Starboard shore lofty, with a thick brush on the sides, much line; opposite shore, low forest; same rise of tide as before. Q to R, N. 237^3 31 chains. Left bank low, the right lofty, hilly bank, very steep; river about 5 chains, with 2^3 fathoms. R to S, N. 177^3 20. Left bank low, with pebbles indicating at some very distant period that it had been overflooded. Starboard shore continues hilly, but declining. S to T, N. 100 60. The starboard bank an elevated flat of rich land, declining to a point which had evidently by its sandy shore and pebbly surface been at some period washed by an inundation; a flood would be too weak an expression to use for a collection of water rising to the height of full 50 ft., which the appearance of the shore renders probable; the width of the river must be about half-a-mile. The left bank rose into an elevated ridge of grassy land, stony, and studded with trees, chiefly gum and ironbark. We halted on the pebbly bank for the night about half-past 4, and while our dinner was preparing, Mr. C., Mr. B., and myself ascended the high grassy ridge on the O side, and from it we had a very extended view to the S.W., in which quarter two remarkable points, bearing respectively N. 205 and N. 210^3, of a lofty and wooded peak, afterwards called Belle View Mt., N. 280. Magnificent range of mountains were seen; this range
was distant between 60 and 70 miles, and the country, though probably broken into lower ranges, did not present any remarkable feature above the general surface, it appeared a wooded level. It appeared probable that the river at some branch of it flowed from between the points whose bearings were taken. The result of the day's observations effectually destroyed the perhaps too ardent and flattering hopes I had indulged that this large river would prove the outlet to the waters of the great Western interior; in proportion to the strength of my expectations was my feeling of disappointment, and I again experienced the fallacy of trusting to appearances, which in countries (where) the rules governing the operations of Nature are most certainly reduced to known laws would fully have warranted the opinion I had formed, connected as that opinion was and is with the conviction I cannot but still continue impressed with, that the waters of the Western interior cannot be entirely dissipated by evaporation.

Monday, September 20.—The fogs and dews intensely heavy, but are soon dissipated by the strength of the morning sun. At 9 resumed the examination of the river. Sta. a, F on Ld. shore to 6—N. 162\(^\degree\) 30. 6 to C—N. 221 12 chains. Ld. shore declining from the ridge to a flat of rich land; tide flowing C to D N. 235 60. The Ld. shore declines to a flat, and the S. shore rises into grassy ridges of open forest land; sand shoals and islands in the river. D to E, N. 234 25 chains. At the end of this station the starboard side declines from the grassy ridge to a flat. The whole of the last reach the river was shoal and wide, having now about 2 ft. water, and at high water perhaps 15 inches more. E—F, N. 217 40 chains. A long sandy Pn. from L. shore; the river shoal, the flats continue alternately free from inundation. At end of this station the O.S. rises into forest ridges, while a flat commences on the starboard. Passed on the left hand a remarkable point of trees jutting from the sand in line of flood on starboard; a little above a bold rock of a species of quartz protruded into the water. F—G, N. 198 20 chains; G—H, N. 209\(^\frac{1}{4}\) 12; H—I, N. 260 20; river very shoal, tide flowing. I—K, N. 235 12; rapids, tide ceases to flow. Boat navigation ends; pulled the boats with some little difficulty over the rapids. K to L, N. 278 60. The Ld. shore steep and hilly, the opposite side good flat. The who'e of this reach and the next shoal rapid, the river about quarter of a mile wide, the channel of the water narrow as well as shoal, percolating through the gravelly shoals which engross the greatest part of the width. Landed on the Ld. shore, and ascended the high ridge forming the bank of the river; walked to its western extreme; the view was not very extensive in any direction. To the West was a very extensive ridge of hills, covered to their summit with pine, and the river apparently wound round its base; the country was broken with forest hills, some of considerable elevation, and on the whole it had a very pleasing and picturesque aspect. The high range seen yesterday was not visible. L—M, N. 265 60. All shoal; it was half-past 4 before the boats cleared the rapids. M—N, N. 278* 50 chains. We encamped for the night near the end of the station on a gravelly point on the starboard shore. The opposite bank of the river rose nearly perpendicular from the water to height of 150 ft., presenting a rocky front composed of coarse pudding stone, dipping to the east bank about 15 deg. Many large detached rocks on the margin of the water were a species of granite sandstone.

Tuesday, September 21.—A fine, clear morning. As a narrow channel of the river a little above our encampment was blocked by several large trees lying across, I determined to endeavour to clear it before we loaded the boats. The (river) here between the banks was full quarter of a mile wide; the channel through which the water flowed not more than 30 yards; the remaining waters of the stream, entering the pebbly shoals, flowed under them, and again emptied themselves into the deep reaches which invariably lay between the rapids. While
the people were employed clearing the channel, Messrs. C., B., and myself resolved to examine the river and see what other difficulties might be opposed to our further progress in the boats. Sta. N.—O, N. 36 deg. 9. At the end of this station the starboard shore a perpendicular rock of pudding stone, about 70 feet high, strata nearly horizontal. O—P, N. 247 deg. 100. Walked along the steep bank of the river on the left-hand side; the opposite side flat, rising into forest hills, the highest peak of which is above the base of O. At the end of this station a peak, hitherto taken for Flinders Peak, N. 166 deg., distant about 20 miles, presenting a bold rocky front to the westward course of the south end of a pine ridge, to which our course is directed, N. 295 80, at the extreme of which a sandy point commences this side. At two miles crossed the river in the direction of the bearing of Pine Ridge. Crossed a barren stony tract for—(Memo., native and Bathurst Fish)—about ¾ mile more, and came to the edge of the river at the base of Pine Ridge, the river bearing of the reach N. 5 deg. and W. 185, about two miles. Having crossed the river, we penetrated through a very thick brush abounding with stately and magnificent pines, which towered far above the other timber of the hill, among which was the Flindersia. Mr. C. procured a couple of young cones, which satisfactorily demonstrated that the tree which had excited so much admiration was an entirely new species of the genus Araucaria, being the first discovered in New South Wales, and decidedly the growth of the interior, and not a coast tree. We measured one, the first we came to, the circumference of which was 10 ft. Many others were of greater magnitude, which was carried up perfectly straight without a branch to a height of from 50 to 100 ft., the whole height of the full-grown tree being 150 ft. To this stately tree Mr. C. gave the name of Brisbane pine, being first discovered on the banks of the river of the same name. Mr. C. in this noble forest discovered many new and valuable plants, among them a Caystema or Pancratium, the bulbs of which were procured. My hopes of finding this an interior river, which I had considered so effectually destroyed in consequence of the appearance of the river on the 19th, were this day destined to be again awakened, and my sanguine expectations unexpectedly confirmed, so far at least as conclusive arguments can be drawn, from the discovery of a fish hitherto known only to exist in the waters of the Western interior. On our route towards the Pine Ridge we fell in with our old native, who had been fishing. He sat down by Mr. Cunningham, who, seeing the tail of a fish protruding from the mouth of his bag, began to examine the contents, and before he could disengage the fish exclaimed, "This is a Bathurst cod fish." On the fish being placed fairly before us, not a doubt could possibly exist, identity in every particular. This species of fish was intimately known both to Mr. C. and myself, and we also knew that it did not exist in any Eastern waters. The fish measured 1 ft. 9½ in. in length, and was 5½ in. broad. The dorsal fins had 11 rays, the anal fin three rays; towards the breast the pectoral fins were placed before the ventral, having each four rays; the ventral fins were many-rayed and rounded, the caudal, or tail fin, the same; four tiers of gills. With those who had ever seen the fish of the Western waters no doubts could remain; no other fish ever seen in any of the other fresh waters of the colony having the smallest resemblance to them. Since we had been among the rapids several fish of very large size, some measuring more than 4 ft. long, had been seen by us all in the deep pools under the steep banks. These we called the freshwater shark, having only an imperfect view of them through the dark shade of the water. The larger-sized fish of the Bathurst fish do in outward form and at a distance somewhat resemble the shark. The Pine Hill being clothed with an almost impervious vegetation to its very summit, of course our hopes of an extended prospect were disappointed, and we returned to the tent highly gratified and exhilarated by the day's accou-
trements and acquisitions, though quite exhausted by the heat of the sun and the length and difficulty of our journey.

Wednesday, September 22.—The weather continues very warm and sultry. I gave up the idea of taking the boats any further up the river, which indeed could not be effected in the present very low and depressed state of the stream without immense difficulty. The whole country bears the marks of extreme drought, and I should judge it has been many months since rain has fallen—at least, of any consequence. Leaving the tent, accompanied by Mr. Butler, I ascended a lofty conical hill about four miles north from the tent, having a rocky summit, from which I expected an extensive prospect. My expectations were not disappointed. A more magnificent view it has not fallen to my lot to behold. The whole country to the south was before me, bounded by the noble range which extends about W.N.W. from the Coast Range of Mount Warning, a lofty peak in which reared its head high above the surrounding mountains. Southern distance, bearing N. 191 deg., distant 50 or 60 miles, probably more, from whence gradually becoming less broken and elevated, was apparently lost in the lower and nearer ridges of forest hills, bearing nearly W. by S., and distant 25 or 30 miles, a broken hilly country, covered with pine forest intervening. From W. 22d S. round to W. 56 deg. No., I saw no remarkable or distant mountains, the country being hilly and broken. My situation was quite sufficiently elevated to have seen any ranges or points of ranges, had they existed, at all comparable with the grand Western range of Mount Warning. The hills in this quarter might be generally considered as very thinly timbered, with the exception of some very extensive pine forests, to the S.W. by W. and N. by W. The most attentive consideration of the formation of the country, the direction and termination of the principal ranges, all tended to strengthen my long-formed opinion that this river communicates with the waters of the Western interior, though certainly by no navigable channel. A very remarkable hill, conical, with a flat top, covered with pines, bore N. 210 about 30 min., I named Mount Forbes, and another under the Great Western Range, distant about 45, and bearing N. 196, I named Mt. Bannister. Flinders Peak bore N. 169, about 20 miles.

The Southern range of mountains before mentioned appeared to have a stream of water washing its northern base, as a chain of fires of the natives could be distinctly traced nearly 40 miles to the east, and it may probably be ultimately found to be the Tweed River, which discharges itself under Mt. Warning into the sea. A conical, thinly wooded hill bore N. 30, and was the only remarkable object in that quarter, and might be about 15 miles distant, the country between very broken. A distant peak in the Mount Warning range on the coast bore it 178. The rocks composing the summit of this hill, which was named Belle View Hill, were of quartz and jasper, the latter predominant.

Thursday, September 23.—Fine and clear. At 7.40 the baro. at tent stood at 29.673; having no ther., the sun was estimated at about 65 deg. At the summit of Belle View Mt., baro. 29.155. Having made preparations for an absence of five days, Mr. Cunningham and myself set forward to the westward, intending to reach the conical hill which bore N. 30 deg. from Belle View, and from which we hoped to have an extensive Western prospect. Our course was on the north side of the river, which was seldom distant above two miles, and lay through a broken and very hilly country; we travelled along the ridges when possible, which caused us to make a very circuitous route to the point we had in view. At 2 o'clock we halted on the south bank of the river under a lofty peak on the O side, south side of which was nearly perpendicular, but clothed with pines and other timber to its summit, which was only thinly studded with gum and ironbark trees. We had come in a direct course west not more than about eight miles, but the difficulties and fatigue of travelling through a broken
country and under a burning sun can only be properly appreciated by those who have been compelled to march on foot through a tropical country in the middle of the day. After we had refreshed ourselves we crossed the river and ascended the hill, at the summit of which we arrived in time to witness the last descending rays of the sun into the Western interior. The great S. Range was fully developed, and we had the satisfaction to perceive its gradual dip to the lower Western country. Between N. and N. (° W.) nothing intervened but a ridge of pine hills lying north and south, declining from a slightly elevated centre to either extreme point, over which the south peak of the Southern Range was lost in the abyss, while over its northern point was seen the rising of the northern chain of mountains, gradually increasing in altitude as it extended. Northerly the country on its eastern side very low, with two or three hummocks rising from the apparent level. The river was seen to wind round the northern end of the Pine Ridge of hills, flowing directly from the West, in which quarter there was nothing in the elevation whatever, and I felt a decided conviction in my mind that there was no natural barrier intervening between the point at which we stood and the Western interior, and that consequently the stream of this river was the channel to convey those Western waters to the sea. The whole country bore the appearance of excessive drought, and, judging from its appearance, I should say little or no rain had fallen within the last twelve months. All the Northern and Southern watercourses, having their sources in the lofty hills in those years were dry, and the growth of grass and shrubs in those parts of the bed of the river (between its outer banks, were near quarter a mile wide) now dry proved that years had intervened since the accumulated waters of the interior had rolled down its channel to the sea, causing those numerous sandbanks and shoals which render the navigation of Moreton Bay so tedious and difficult. I do not think that the bed of the river where we halted was more than six feet above the level of the tide water, and I have no doubt whatever that, in ordinary seasons, the river is easily navigable for boats many miles above the point which terminated our investigations. It is known that a very severe drought has affected the Southern parts of N.S. Wales during the past year, and appearances justify the conjecture that a similar season has prevailed here, and that the low state of the Western waters rising therefrom is the cause of the present depressed level of the river. A comparative series of observations made at Bathurst and in the vicinity of this river, carefully noting its rise and fall, would tend much to elucidate what may still appear to be obscure and doubtful in the question of connection between the Brisbane and the Western waters.

We saw great numbers of the fish common only to Bathurst and the waters in its vicinity, but we were not so fortunate as to take any; its absolute identity, therefore, rests on the minute examination of the one found in the possession of the native on the 21st. Great forests of noble pine were observed to the S.W., and their useful applicability to naval and other purposes was contemplated with pleasure. The sides of the hills over from Pine were thinly studded with wood and well covered with grass, the summit stony and bad; the levels and valleys good and fit for cultivation. The soil of the hills on which the pine grows, though stony, is very rich and fertile, being covered with a multitude of new and beautiful trees and plants. The country did not seem to be ill-peopled, fires being seen in every quarter from the eastern range of Mount Warning to the distant West.

Kangaroos were numerous, and there would be no want of food for a native population in a country whose waters nourished the nutritious fish of the Western rivers.

The following bearings of remarkable points in the country in connection with the general survey of the river being taken, we descended the hill, which we
APPENDIX TO PRESIDENT'S ADDRESS.

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named Mount Aruncavia (? Araucaria), and returned to our temporary wigwam or gunyah for the night.

Friday, September 24.—The weather continues very hot and sultry; the dews of the night almost equal small rain, and no doubt cause that appearance of freshness in the vegetation which a long-continued drought would in this climate otherwise destroy. In the early part of the morning Mr. C. employed himself in examining the production of the pine brushes, and procured many new plants and genus hitherto believed to exist only in these tropics. We returned to the boats by a somewhat different, but better, track, through a country well clothed with grass, and adapted for grazing, more particularly sheep. The day was remarkably clear, and on reascending Belle Vue Mt. on our return we had a distinct view of the Coast Range, Mt. Warning bearing N. 144, distant about 55 miles.

Fatigue and extreme heat had almost exhausted us, and a good night's repose was a welcome relief.

Saturday, September 25.—Clear and sultry. Proceeded down the river, and stopped at 5 o'clock on the left bank opposite Bremer River for the night. This place will be desirable and convenient for an establishment whenever the Settlement is so far extended as to render it an object to procure the pine in large quantities, the river being navigable for very large craft and quite fresh. The country on both sides of the river fit for cultivation. The tide rises about 3 ft. Passed a family of natives, who on seeing us ran into the country, leaving their "valuables" behind them. They had been feeding on long worms, which are found in wood that has been long in a state of decay under water. If we had nothing to add to their store, we left everything as we found it.

Sunday, September 26.—Hot, sultry. We continued our course down the river. Obtained several fine plants and specimens of wood. Halted for the night on the south bank of the river, below Termination Island. During the evening we had a severe storm of thunder, lightning, and rain.

Monday, September 27.—Sultry as usual, proceeded down the river; it may be remarked here that when I first visited it in December, 1823, the water was found fresh about sixteen miles lower down than we at present experienced it. The tide having been against us the greater part of the day, we did not get lower down the river than present (? Crescent) reach, where we intended stopping for the night, as I expected to find fresh water. We saw at the commencement of the reach on the left bank a very large assemblage of natives in the same spot we saw them last year. It was evidently a favourite place with them, most probably on account of water being convenient, as among the company was a full proportion of women and children. We landed about half-mile below this encampment on the same side the river, there being a small creek between us, which I hoped would prevent them visiting us, as I had no desire to hold communication with them, having had proof of their desire to possess everything they see and make off with what they can secure without the ceremony of asking leave. While the tent was pitching and the things getting out of the boats, Mr. B. and myself went in search of water, while Mr. C. superintended getting the things on shore. We had not been long about, and were returning unsuccessful to the tent, which was by this time pitched, when we found that a large number of natives had found their way to it. They had been very troublesome, and Mr. C. had some difficulty in preventing them taking what they chose, particularly one man, who was recognised as the one who took my hat on the morning of the 17th. He was a fine, athletic man, as indeed they all were. On my seeing him, made signs that I knew him, and was angry with him, and that he must bring back the hat. He seemed well to understand my meaning, but only laughed and jumped about. At length, seeing we would not suffer him
to come near the tent, he made signs as if he and another would go and bring the hat, and went off, leaving five or six about us on a hill a little above the tent. He shortly returned, but as might have been expected, without the hat. On the contrary, he brought with him a number of other natives, now making about 14—about the strongest and best-made muscular men I have ever seen in any country. We determined that this fellow should not camp near us, and Mr. Cunningham endeavoured to explain to a fine stout young man the reason, which he seemed very well to understand. Mr. Butler was holding some of the others in conversation, when the savage before mentioned, who had for some time appeared working himself into a transport of passion, as is usual before they attempt anything violent, seized a piece of wood and hurled it at me. Fortunately, some dead branches on the ground intervening, it fell short, being thrown in the same manner as the womerings (sic). The other natives had before begun to fall back, and Mr. Butler, having seen him throw the stick, and observing him about to renew the attack on Mr. C. with a stone, fired at him, and struck him on the left arm and side. He immediately made off, running towards the creek, the others slowly going off different ways, but in no manner interfering to assist their companion. We observed him drop on the edge of the creek, about 200 yards from us. After a little time, observing no one come to assist him, though the greater part of remr. were within a few yards of him, we went to him, and found him laying on his side, being apparently severely though not dangerously wounded with the small shot with which the barrel was loaded. He bled but very little, and I was not sorry that he had suffered for his boldness. The other natives seemed to consider him as having sought his fate, for on our making signs that they should come and take him away they immediately crossed the creek, and, first motioning for us to withdraw a little, two of them approached him and, first blowing in his face several times, they shouted as for more assistance, which, being immediately afforded by the others, he was taken to their camp on their shoulders. The camp was not distant more than 500 yards from us, but out of sight. We soon discovered his arrival there by the most dismal howlings and wailings I ever heard set up by the women and children, and this noise was continued with little intermission through the night, and the men occasionally joined in loud but measured shouts. We thought at different times we heard dancing, as if a corroboree had been held round him, but the cries of women and children in seeming distress prevailed, and from singular noises we conjectured that various ceremonies were performing, and that the wounded man was of some consideration among them, as indeed his numerous curious tattooed and raised marks, together with his whole conduct and deportment, had before seemed to indicate.

It had been necessary repeatedly before firing to point the piece at one or other, more particularly at the wounded man, in order to deter them from plunder; they, however, seemed to think very little of it, which I attribute to their having seen Mr. Butler fire at a duck in the river, which he unluckily missed, as also that the man who had been fired at on the 17th, whilst making off with the instruments had been so very slightly wounded as to give them a contemptible opinion of our means of defence against their depredations, and though I deeply regretted the necessity which had now occasioned our firing, yet I was glad that the shot had taken effect on the right person, and the serious pain he must doubtless have suffered would operate in some degree as a warning and proof that we were not utterly defenceless. I also hoped it might have its good effects among the tribes in the vicinity of the new settlement, as, though the distance is considerable, probably 20 or 30 miles, yet events of this nature are sure to be communicated from tribe to tribe, and the knowledge of the powerful effect of our weapons operate in deterring them from attempting
the little petty thefts which their ardent desire to possess whatever they behold would otherwise doubtless tempt them to commit.

Tuesday, September 28.—A calm, still night. The howlings at the camp of the natives ceased an hour or two before sunrise, and were resumed with redoubled violence on the rising of that luminary, and shortly after almost entirely ceased. We had intended to visit their camp, but considering that we might disturb them, and certainly frighten their women and children, the intention was given up, and we proceeded down the river, landing about three-quarters of a mile from our sleeping place, to look for water, which we found in abundance and of excellent quality, being at this season a chain of ponds watering a fine valley. The soil good, with timber and a vines, by no means an ineligible station for a first settlement up the river. At 4 o'clock, after a fatiguing row, we gained the entrance of the river, and stopped an hour to dine before we proceeded to the vessel. I took several bearings from the N. point of the river to determine its position, and returned to the vessel about 10 o'clock the same night, after an absence of 13 days, spent in most interesting and, I hope, useful investigations. The examination of the lower part of the Bay had been executed and a good channel sounded, the vessel having been moored on the bank of sand below Redcliffe Point for the convenience of unloading, had drifted in a strong gale from the S.E., having broken one of the flukes of the boat (? anchor). The vessel was moved further out and again moored, the anchor lying in a bottom of stiff mud. No vessel should anchor for any considerable time in less than 5 fathoms off the Point, as the holding ground within the shore from bank is bad, being hard sand. Small vessels of light draught may lie close to the shore, but when unloading should haul out into deeper water, as the extreme openings and want of shelter cause a very heavy sea to rise in a short time; it subsides, however, as suddenly as it rises. The winds causing the greatest sea are from north round by the east to S.S.E., the land lying at such a distance between those points as to afford little or no shelter. The master had proceeded in the barge, accompanied by Mr. NodLe, to sound the south entrance into the Bay, as I had previously directed. The settlement was getting on but slowly.

Wednesday, September 29.—Warm, sultry weather. Repairing boats and goods in order to procure some of the pine spars from Deception River. At noon obd. the O.M.A., 64 deg. 56 min. 10 sec.

(Note.—Here the journal breaks off. There is a hiatus of over a week. Then the notes are resumed, commencing at the end of the book.)

Thursday, October 7.—Having anchored under the S.W. end of Peel Island towards the head of Moreton Bay; landed on the S.E. point to examine it while Mr. Penson proceeded in the whaleboat to examine the channel between it and the mainland. The island is composed of an indifferent sandy soil, and contains 600 or 700 acres; the timber is small, and generally useless, a few cypress trees (Calytrix) excepted. There is plenty of fresh water in a swamp near the centre of the island. The S.E. point is founded on sandstone rock, as indeed the whole island appears to be; it is unaccessible on all sides at low water except at the S.E. point, being surrounded by very extensive mud flats, covered with oysters, cockles, and fan muscles. These mud flats are staved over with lamina or sandstone, and are firm to walk on. The boat found a good channel nearly close to the mainland, leading to the anchorage under the N.W. extreme of the island. The general soundings were 6 fathoms, one cast (3 fathoms) being the tail of a shoal about 30 yards broad. The soundings at low water, which is the best time to pass down the channel, as all the sands show themselves distinctively. At 6 returned on board.

Friday, October 8.—Light winds from the southward. The tide of flood making strong between the islands, I did not weigh until half-past 8, when I
passed to the southward of Peel's Island, through a very good channel at high water. The ebb, having made strong, swept us out of the channel from 5 fathoms to 8 ft. in one cast, and before the vessel could be rounded to she grounded fore and aft on the sandbank, about 30 yards within or on the bank. This occurred about twenty past 10. Got the longboat out and laid the stream anchor in the channel astern in deep water, and hove taut on it; but the tide having ebbed upwards of one foot, we were obliged to defer our further efforts until high water. This was a vexatious circumstance, as, independent of the delay it will occasion, if we had waited until ebb tide we should have got through the channel without difficulty. Bearings to ascertain our situation being taken when on shore. At 2 p.m., three-quarter ebb, the following bearings of the shoals and channels were taken in order to lay down the position of the several banks by which almost the whole east side of this extensive Bay or inlet is bounded. (Here sketch of Peel Island.)

During the time I was taking the bearings on shore I was closely attended by a party of natives, fine, well-built men. They did not show any troublesome curiosity, but, on the contrary, conducted themselves in such a manner as to impress us with a very favourable opinion of them. Some of them I must call it horribly marked by raising the skin in lines over all parts of the body and back, the thighs, and arms were raised in the form of small angles, so (sketch)—very regularly disposed. One man had * x Bearings of Shoals from Ship.—Shoal bending round W. 28 deg. N. quarter mile, including N.W. G end, then N. by W.W., V being the southern edge of a bank, between which and the north side of Peel's Island there is a channel into the western part of the Bay, about 2 fathoms at the west end at low water, one spit of the west point of the main opposite Peel's Island 2 W. 78 deg. 45 N. Line of sandshore on which the vessel is towards the five mainland N. 45 deg. 25 E. Tree on the sandbank running off from the main being opposite or east side of the main channel E. 10 deg. 20 N. X. extreme of spit running off from the N.W. end of Peel's Island N. 267. All to the North of that bearing round to the bearing of the south end of Moreton Island being sand shoals with at most boat passages the remainder of the space being at low water dry sand. Landed in the sandy patch running off from the main about 3 chains west of the tree. Line of sand shoal south cutting at South end, the bearing from S. No. 2, N. 213 20 N. Double Island, N. 198 W. point of main N. 199, extremes of Peel's Island from N. 220 to N. 2453, vessel N. 259 deg., 3rd island 2761, 2nd island N. 290, N. extreme of mainland, X. 9 50, N.E. extreme of sand shoal N5) on which the vessel is N. 132. Line of shoal bearing in close to the mainland N. 34. Second station on the brow of a sandhill covered with cypress about 4 chains in from the edge of mangroves, the sand shoal extending about 20 fathoms outwards. N.W. end of Peel's Island N. 250, vessel N. 2601, centre N. 306, east extreme of sandshoal No. 5 and last station N. 333, eastern extreme of western sandshoals N. 3474, western extreme of sandshoals bounding the mainland N. 349, N. extreme of mainland. North line of these northerly N. 9 1/2, distant 1 1/2 or 1 3/4 miles. End of sandy beach, when the sand shoals bounding the west side of the main commence, N. 321; from this to the north point of the main is the anchorage. N. 2881. From the vessel the south end of the beach (N. 331 E.) E. 65 deg. N. Returned on board near sunset obs. the OAM. * x—so disfigured himself that it actually hung in pendulous masses from his shoulders. He appeared to be a person of influence among them, and surely no human being would submit to such extreme torture and inconvenience as the raising these lines must occasion unless the operation and marks were an indication of superior rank and merit. (Here sketch of the channel.)

* The matter contained between these marks (* x) is of a different character.
W. 14 deg. 40 S. at 9 o’clock the vessel was hauled off without difficulty, and we remained during the night at anchor in the fairway. The west point of the main E. 91 deg., S.S.E. point of Peel’s Island W. 63 deg. S.

Saturday, October 9.—Light winds from the westward. At 5 o’clock weighed and steered down the channel towards Cypress Point*, being the N.W. point of the mainland, and forming the inner south head of the harbour. Our soundings were various, from 5 fathoms to 10, but on a medium 6; the channel fair and good. At half-past 9 anchored in 3 fathoms, being too close over with the mainland and between two spits running off the eastern shoals, having sounded the fairway and found from 6 to 10 fathoms weighed with the first ebb and towed down to excellent anchorage in 7½ fathoms under Cypress Point, having distant quarter of a mile.

* Since named ”Amity Point.”

Plants mentioned in Lieutenant Oxley’s autograph journal recording his second visit to Moreton Bay:—

APPLE-TREE, Angophora intermedia: A myrtaceous tree, usually of medium size, but sometimes attaining a considerable size, with a rough fibrous bark. The wood is of a grey colour, close-grained, and easily worked. The aboriginal name on the Brisbane River for this tree is Bu-poo.

IRONBARK, Eucalyptus siderophloia: A large tree, with a blackish, deeply furrowed, thick bark. Flowers in bunches at or near the ends of the branches. Aboriginal name on Brisbane River, “Biggar.” Wood of a grey colour, close-grained, hard, heavy, and very durable; useful for large beams in buildings, railway sleepers, and other work where strength and durability are required.

BLUE GUM, Eucalyptus tereticornis: “Mungar” of Brisbane River aboriginals. A tall, handsome tree, with a smooth, whitish or ash-coloured bark, shedding in thin layers, leaving here and there patches of a bluish hue; hence the name “blue gum.” The wood is of a red colour, close-grained, tough, and durable, and is used for building and many other purposes.

Brisbane Pine, Araucaria Cunninghamii: usually known as “Moreton Bay” or “hoop” pine. The common pine of our sawmills, and used extensively for flooring and lining boards in house building. Aboriginal name on Brisbane River, “Cumburru.”

Flindersia, F. Oxleyana: named after J. Oxley, commonly known as “yellow wood.” A tall, mucu-branched tree, with a smooth bark, with leaves of four to ten leaflets and a fruit which divides when ripe into boat-shaped pieces two to four inches long, rough on the back. The wood, which is of a bright-yellow colour, is strong and fibrous, and is much used in cabinet work, besides being specially adapted for buggy shafts, hand screws, etc.

Cypress Pine, the variety Microcarpa of Callitris robusta: An ornamental tree, with a very dense, dark-green head. Wood of a dark colour, fragrant and durable, useful for piles of wharves, sheathing of boats, and also for cabinet work.

Calostemma, or Pancratium, Eurydes Cunninghamii (named after Allan Cunningham): A bushy plant, with broad oval leaves four to ten inches long, on a long stalk. Flower-stalk eighteen inches high, crowned with a head of beautiful white flowers.

F. Manson Bailey, Colonial Botanist.
Quotation from Allan Cunningham's Journal, 16th December, 1828:—

"GENESIS OF QUEENSLAND."

Page 158.—“During my stay at the Limestone Hills, and just previous to my return to Brisbane Town in September last, I traced the Bremer, through its various windings, to its junction with the Brisbane, measuring on its bank the length of each reach; and from the material I then collected I have now constructed the accompanying outline, to which I beg to refer your Excellency.”

Page 160.—“An excursion made in September last (upon my return from the Pass) from the Limestone Station, north to the channel of the Brisbane, which I intersected in five miles at a point visited by Mr. Oxley and myself in 1824, and which I clearly recognised, has enabled me to connect most satisfactorily (as regards geographical position) the westernmost point to which our late very able Surveyor-General had penetrated on his second visit to the Brisbane, with what I have now attempted to effect. The tortuous course of the river is therefore carried on upon the accompanying chart to that point.”
SPECIAL GENERAL MEETING.

SEPTEMBER 27th, 1899.


Mr. Robert Fraser moved: "That so much of Rules 5 and 29 of the Constitution and Rules as relates to an entrance fee be suspended during the remainder of the Session."

This was seconded by Lieut.-Col. Irving, and carried unanimously.

SEPTEMBER 27th, 1899.


There was a large and distinguished company present, including his Excellency the Governor, Lady Lamington, and Mrs. Stuart, his Excellency the Hon. G. R. Le Hunte, Lieut.-Governor of British New Guinea, his Honour Sir S. W. Griffith, C.J., and Lady Griffith, and the Hon. A. C. Gregory.

The minutes of the previous Annual General Meeting were taken as read, and confirmed.

Elections: Ordinary Members, Isidor Lissner and Hon. T. Macdonald-Paterson, M.L.A.

The President announced that since the last meeting a communication had been received in reply to the Council's criticism on the Queensland volume of the International Catalogue of Scientific Literature, read at the last monthly meeting of the Society; that in consequence of the unsatisfactory nature of the reply the Council had been obliged to again urge the necessity for revising and completing the catalogue, by the issue of a supplement; that the Council had unanimously approved the recommendation made by the President in his anniversary address in favour of the resumption of the trigonometrical survey of the colony, and that the following communication had been addressed to the Government with respect to this matter:—

"Brisbane, August 10th, 1899.

"Sir,

"At the Annual Meeting of the Geographical Society held last Saturday I had occasion to refer to the discontinuance of the Trigonometrical Survey of Queensland, and a unanimous opinion was expressed that the time had arrived when that important work should be revived. The service was commenced by a
vote in the financial year 1882 of £4000, which amount was continued for the two following years. In the three years following it was reduced to £2500, £1250, and £1000. In 1889 it was increased to £2500, and the same amount was voted for 1890. During the three succeeding years it was reduced to £1500, and since that date—that is from 1893-4 to 1898-9—the mere pittance of £200 has been placed on the Estimates for this work, barely sufficient (I should imagine) to keep instruments, etc., in proper order.

"In 1883 a base line was measured at Jondaryan, from which a considerable amount of triangulation was effected—extending as far as the border in a southerly direction and also a short distance to the north. But the triangulation in its present state is not nearly sufficient for the purposes required. It is admitted—in fact, well recognised by experts—that only by covering the country with a triangulation net can anything like a connected delineation of the lands it contains be economically effected. As to the importance of the question, I think I cannot do better than quote to you the words of one of the best authorities on the subject—Mr. G. H. Knibbs, of the Sydney University, who says:

"The Lands Transfer or Real Property Acts in force in the Australian colonies have simplified, probably, to the utmost limit, the legal machinery necessary in the transfer of land. But these Acts afford no sufficient protection in regard to the allocation or to the area of the land itself. Perfect, perhaps, in respect of title, per se, they cannot be held so in regard to the thing to which the title refers, the land itself, inasmuch as the descriptions which these titles contain must be inherently impossible, difficult of identification, or inclusive of an area already embraced in the description of some other title. These are not imaginary but real dangers, already realised in fact, and liable to occur again and again until a proper scheme of survey renders their occurrence an impossibility. Thus it appears that a correct map—an accurate representation of land marks and boundaries as actually existing—is essential in order to complete the design and aim of the Acts relating to the registration of lands; in other words, to secure to the community an enjoyment of its real estate in land, beyond the hazard of disturbance through defects in technical descriptions.

"The other colonies—though their surveys, like ours, were left in abeyance for a while—have already resumed operations in this respect. Victoria has triangulated from Wilson’s Promontory to the southern border of New South Wales; and New South Wales has carried out a network of triangles as far north as about the latitude of Newcastle, steadily advancing towards our boundary; so that it will not be long before the triangulation of Victoria, New South Wales, and Queensland is united.

"From our border we extend nearly three degrees of latitude, and if we resumed operations without delay, confining them principally to the coastal districts—as being the most likely fitted for close settlement—by the time our Southern neighbours have reached our border we ought to have attained about 22 degrees latitude; that is, about the neighbourhood of Broadsound. The triangular survey from Wilson’s Promontory, in latitude 39 degrees to the point I have just named—Broadsound, in latitude 22 degrees—is equal to an arc of the meridian 17 degrees in length. The accomplishment of this survey would be of immense benefit for the accurate delineation of our lands, and I feel convinced that it is hardly necessary for me, after pointing out the importance of the work, to say more to enlist your sympathies in the direction of its immediate revival. Connected with this subject is another one also of vital importance to our Lands’ administration. In the vast territory which Queensland possesses, the work of triangulation, at a moderate expenditure per annum, will necessarily occupy some years, and I think it will be found necessary in the future, as it has been in the past, to devise some cheaper method of opera-
tions in the more remote districts of the colony. This has been accomplished to some extent already by determining the position of a number of stations over the whole of our territory, by a system of telegraphic signals, which depend very much upon a careful comparison of the local time at the Brisbane Observatory and at the astronomical stations desired to be fixed, such observations being taken at each station immediately before and after the exchange of the telegraphic signals. It therefore becomes of very great importance, as being intimately connected with the geography of the country, to have a complete Observatory in Brisbane; the one at present in use can hardly be said to be up to date, and certainly not consistent with the requirements and the growing importance of the colony, as compared with similar institutions down South.

"If it is found advisable to erect a new one, I would take the liberty of suggesting the site selected by Mr. Hume Black and myself at the head of Albert street, just above the Roma Street Railway Station, for a Museum, but which is not now required for that purpose. The area, I think, about an acre and a half, would be sufficient for the purpose, and I do not know of any better use that the site could be put to.

"The value of such cheap and rapid modes of determining the position of outside localities with the nearest possible approach to accuracy is well illustrated in connection with Boulia. When South Australian triangulated from Adelaide northerly and easterly, and Queensland measured the distance from Boulia, after having determined its position by tapes, the difference in longitude to the boundary between the two surveys amounted to only 17 chains, which, considering the immense distance involved, was remarkably close.

"I have no hesitation in submitting the advisableness of asking for a vote of, say, £5000 for the continuation of the triangulation work, to be continued in the future from year to year; and also of a vote from loan of, say, £5000 towards the erection of an Observatory, fully equipped with the best and most modern instruments.

"I have the honour to be,
"Sir,
"Your most Obedient Servant,
(Sgd.) "HUGH M. NELSON.”

"To the Honourable the Chief Secretary.”

His Excellency Lord Lamington read a paper on “A Journey in Indo-China.” This was illustrated by two large wall-maps of the route and country.

The vote of thanks to his Excellency for his interesting and instructive paper was moved by Sir S. W. Griffith, seconded by Mr. Alex. Muir, and carried by acclamation.

Lord Lamington suitably responded.

A vote of thanks to the Surveyor-General for preparing the maps was moved by the Vice-President (Alderman William Jones), seconded by His Excellency the Governor, and carried unanimously.

The Hon. Secretary (Mr. J. P. Thomson) exhibited the instruments used by the Hon. A. C. Gregory on his journey across the Australian continent, and contrasted them with modern instruments. This unique exhibit was greatly admired.

OCTOBER 23rd, 1899.


The minutes of the previous Special General and Ordinary Monthly Meetings were read by the Hon. Secretary (Mr. J. P. Thomson) and confirmed.
A letter of apology for absence from the meeting was read from his Excellency the Lieut.-Governor, and the Hon. Secretary offered a verbal apology for the absence of the Premier.

Elections: Ordinary Members, H. Heindorf and W. A. Seal.

The Joint Hon. Librarians reported the monthly additions to the Library.

Mr. T. F. Furber, F.R.A.S., read a paper on "Systematic Surveying," which was illustrated by a series of maps and an exhibition of instruments used on the trigonometrical survey of Queensland.* Mr. Furber, after observing that he had originally intended his paper to be of much larger scope, said that, after consideration, he deemed it better to confine it to some few matters concerning the Crown surveys in this colony. The essentials of a survey of the public estate he understood to be: 1. The possession of accurate maps, showing at a glance the extent and nature of land available. 2. Rapidity in marking the land and placing the settler in possession. 3. Such comprehensive treatment that proper provision is made for public requirements in the way of roads, reserves, etc. 4. Accuracy and permanency of marking to prevent dispute and litigation and the need for subsequent resurvey. 5. Due connection of the alienation and other detailed surveys so that each individual survey will fall into its place as part of one homogeneous whole. Of these, the importance of the second and third could be easily appreciated by the public, but the others were more difficult of estimation to any but the professional mind. The question of considering each piece of work as part of a comprehensive whole was, however, one which specially concerned those charged with lands administration, the neglect of which had everywhere been followed by a crop of troubles only remediable at an alarming cost. The lecturer then sketched the present system in vogue in Queensland, pointing out that it is impossible to expect surveys to be accurate, conducted as they were in many cases with the wheel and compass, and embracing blocks which were unconnected with any other surveyed portions. He then went on to point out the great advantages which would accrue to the colony, both in regard to economy and accuracy, if the system of trigonometrical survey were adopted—a system which afforded a means of establishing absolutely for purposes of securing proper control the relative positions of an immense number of stations over a large area. In confirmation of his contention, reference was made to the fact that the system was now adopted very generally among the civilised countries of the world, and maps were shown indicating the area in each colony already covered by triangulation, and in this respect Queensland compared unfavourably with the rest of Australia. Although the staff of the Queensland Survey Department was a capable one, they could not do satisfactory work, because they proceeded on a wrong foundation. In 1882 an attempt was made to inaugurate a scheme of triangulation; but the sum devoted to its maintenance had gradually diminished, until it is now at vanishing point. Regarding surveys, Mr. Furber thought no exception could be taken, some points even being attended to here which had been neglected in other places—as, for instance, the efforts made to secure agreement of all surveys as far as linear standard was concerned—a matter of great difficulty. Seeing that the essence of surveying was the art of precise measurement, it was the duty of the Survey Department to advise the Crown on questions of metrology, and the standards which might be made absolutely useless by a single act of careless or ignorant hands, should be in the custody of that officer who was capable of appraising the niceties of the operation. The work of a national survey should not, Mr. Furber thought, be confined to the fixation of points by their horizontal components, for relative vertical height should be also included; and, so far as he...

* We hope to have Mr. Furber's paper in time for our next issue.—En.
knew, nothing was being done in any of the colonies in the way of precise levelling. What was wanted was such work as was being carried on in Europe and India, where it had been the means of indicating that sea level at one place was not at all to be considered as sea level at another. The establishment of permanent standard bench marks had proved of incalculable convenience to all engaged in engineering, and the reduction of all heights to a common datum had removed a source of trouble to those engaged in determining the frontiers of States. This reminded him that in Queensland the various Government departments and municipal bodies used each a datum of its own, and that the heights found by one are not, as far as could be gathered, even convertible to those of another. That must cause frequent duplication of work, and was of itself evidence of the need for a central guiding authority. Closely connected with the matter of a trigonometrical survey was that of a fixed astronomical observatory, the functions and advantages of which Mr. Furber then went on to explain in detail.

With regard to the financial aspect of the inauguration of a systematic trigonometrical survey, and the one or two related matters of which he had spoken, Mr. Furber was of opinion that it would involve a somewhat increased expenditure at first, though ultimately it would lead to greater economy. In New Zealand it had been found that the cost of the inner triangulation (1895-96), together with some topographical surveying, covering 24 millions of acres, amounted to 0.86d. per acre. In the following year the cost of major triangulation of over half-a-million acres averaged 0.22d. per acre, and of minor triangulation 0.60d. Last year the cost averaged 0.49d. per acre. In New South Wales it could be put down at 3d. per acre. Including an allied observatory, the expenditure in Queensland should not exceed 1d. per acre, or 7/10 per cent of the moneys actually received on land sales. That, Mr. Furber thought, was not an extravagant sum to pay for a system possessing such manifest advantages. After making some passing references to the insufficient remuneration given to the survey staff, Mr. Furber concluded by saying that the question of a trigonometrical survey should not be regarded as a recondite process involving occult knowledge, but rather as simple and straightforward, requiring in its conduct only the most ordinary mathematical knowledge, and serving the direct purposes of our daily life.

The Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.) apologised for the absence of the Hon. A. C. Gregory, who had intended to be present to take part in the discussion of Mr. Furber's paper. Mr. Gregory would no doubt have alluded to the first trigonometrical survey of Queensland, which had its beginning before the colony was separated from New South Wales, the base line having been measured on Normanby Plains, about two miles south of the town of Ipswich, with hardwood rods having spherical ends. Some of the trigonometrical stations on the prominent hills were extant in 1860, the extent of the triangulation being from Point Danger to Brisbane and across the Main Range to the Darling Downs. Of the base lines and primary triangles the only permanent record that had been left in the Brisbane Survey Office appeared to be a small sea 'e diagram. Viewed in the light of a professional contribution to geographical literature, there did not appear to be anything in Mr. Furber's paper calling for special criticism. Comparisons, it was true, had been made between the survey work in various parts of the world with the view of showing the insignificance of the trigonometrical operations in Queensland. But these amounted to very little after all, seeing the enormous area and physical conditions of territory to be dealt with in such a young colony as Queensland. He (Mr. Thomson) remembered some twenty-five years ago, when employed in field survey work in the parent colony of New South Wales, that the trigonometrical survey there was being carried on very
actively, although the area actually triangulated up to date was comparatively small, considered in the light of the age, settlement, and population of the country. In this respect he really thought that Queensland had done very well indeed in the geodetic and trigonometrical work so well established and successfully carried out over the south-eastern portion of the colony, work which would compare favourably with that of some of the older provinces of Australasia. It had to be considered that Queensland was a very sparsely populated country, the settled districts being confined to a comparatively narrow belt east of the coast range. He had always held a very strong opinion that the ordinary land surveys could be carried out more satisfactorily if established upon a good, sound scientific basis. Azimuth lines ought to be laid down in each district, with which every survey should be connected, and this would obviate such variations of meridian as are frequently met with. The system of magnetic surveys was professionally bad and scientifically erroneous. It was a very great mistake to have the ordinary surveys of the colony laid down on the magnetic meridian. Why, in the remote Crown colony of Fiji, where he had been for many years in the Imperial service as Government Surveyor, the survey operations had been carried out on a superior basis altogether to the Australian system, with the exception of Western Australia. In Fiji all surveys were laid down on the true meridian, and no magnetic bearings were used in any of the field work, true meridian base lines being established in each district all over the colony, upon which the field operations depended. By the true meridian he meant that every line of a survey coincided with the true meridian, and every Crown grant was endorsed to that effect. Perhaps he might be excused for remarking that for scientific purposes it would have been much better had Mr. Furber prepared a map of Australia showing the general arrangement and disposition of angles constituting the provincial triangulation of the continent, instead of the one that had been used to illustrate the paper, which merely gave an idea of the area covered by the triangles. There was really no necessity to go outside of the rooms of the Society for information of the geodetic and trigonometrical surveys of the world, seeing that all the works dealing with that subject, including maps and illustrations, were to be found in the library. He (Mr. Thomson) had looked up some of these, which he thought would be of great interest to those who had heard Mr. Furber's paper. A great number of books and maps were then exhibited. Continuing, Mr. Thomson remarked that the Society was kept up to date in everything pertaining to the scientific and professional progress of the world. He concluded by moving a very hearty vote of thanks to Mr. Furber for his valuable paper.

After some explanatory remarks, Mr. A. McDowall (Surveyor-General) read the following notes, which he had prepared for the occasion:—

Metrology, the science of weights and measures, is rendered more difficult by the standards of length being arbitrary.

It is impossible with certainty to compare modern standards of length with those of the ancients, and in dealing with surveying the standard of length is all-important.

The most ancient known measure of length is the cubit, of probably 20.63 inches, varying in the Great Pyramid from 20.51 to 20.71 inches.

The unit of length in England is a piece of bronze, the yard of 36 inches being defined thereon by parallel lines on sunk gold studs at a temperature of 62 deg. Fahr. This is the present British standard, copied in various ways on different pieces of metal, and carefully compared with the present standards of other nations. All these standards are also certain recognised marks on different pieces of metal.
The old English yard, suppressed by statute in the year 1439, was 39.66 inches, and the old English mile measured 10 furlongs.

The modern standards of length being pieces of metal, it is within the range of possibility that age may affect the molecular mass of these metallic bars as to their length.

The 10 ft. standard bars used on the ordnance survey of England and on the great trigonometrical survey of India, also on the survey of South Africa, are all derived from the English yard, as are the standard 10 ft. bars used in Victoria and New South Wales.

In Queensland we have used a make-shift copy of the Sydney 10 ft. bar, but I am happy to say that a better standard has been ordered from Messrs. Troughton and Simms quite lately; this will be fitted with proper conveniences for use as a standard for Queensland.

Up to this time we have had to depend upon the New South Wales 10 ft. bars, to which we have had access occasionally.

Given, however, a proper standard of length, the accurate measurement of a line on the earth’s surface, even under favourable conditions and with the greatest of care, is a most difficult operation. Therefore in surveys of extent it is important to restrict linear measurement as much as possible. Thus, after measuring a base with all possible precautions against error, and checking its length by the most approved methods, the survey should be extended by angular measurements. This is the method known as triangulation or trigonometrical surveying.

In angular measurement, however, we have, fortunately, an immutable standard, one that never varies by the smallest possible fraction that can be appreciated by the very best modern instruments or by the minutest quantity that can be imagined by the mind of man.

This is, as far as I am aware, the only absolute standard in the universe that is unchangeable.

Standards of length, of strength, or of volume, or of weight may vary during the ages that the world has been in existence, but the standard of angular measure remains unaltered for ever.

Hence the importance in great surveys of reducing the work as much as possible to angular dimensions.

This great standard of angles is of course the circle. The symbol of eternity, a figure with the same properties irrespective of its size, or whether drawn by a savant or a savage.

The ordinary method of measuring angles is based upon the division of the circumference of the circle into 360 equal parts, called degrees, but the principle would be the same if the circle were divided into 400 degrees, the angles formed by lines radiating from the centre being proportional to the arcs of the circumference which these lines intercept.

Divided at the centre into four (4) equal parts, we have four right-angles, or the angle that is so important in trigonometry and essential to builders and masons, whether speculative or operative.

Having this wonderful and immutable standard of angular measure explains to some extent the advantages of triangulation in determining the relative positions of prominent points and other objects on the surface of the earth extending over considerable areas.

In fact, as Mr. Furber in his valuable paper has pointed out, triangulation is the foundation and framework of the structure upon which the surveys of smaller portions may be built, as brick is laid upon brick or stone upon stone,
and it is only the want of means that have made it necessary in Queensland to resort to other methods.

Now, however, that the subject has apparently begun to interest our legislators, I live in hopes of soon having the necessary money available to continue the triangulation of Queensland, especially its coastal districts.

The vote of thanks to Mr. Furber was seconded by Mr. R. Fraser and carried unanimously.

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**DECEMBER 14th, 1899.**

Mr. Alexander Muir, J.P., in the chair. The minutes of the previous Monthly meeting were read by the Hon. Secretary (Mr. J. P. Thomson), and duly confirmed.

Mr. Poul C. Poulsen was elected a member of the Society.

The Hon. Secretary drew attention to the forthcoming meeting of the Australasian Association for the Advancement of Science and to the Paris Exhibition of 1900, to both of which the Society had been invited to send representatives.

Dr. E. Hirschfeld, M.D., read an interesting paper on "The Geographical and Climatic Factor in Pulmonary Consumption." This gave rise to an entertaining discussion, in which the Chairman, Lieut.-Col. James Irving, and the Hon. Secretary took part.

A hearty vote of thanks was conveyed to the author of the paper.

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**SPECIAL GENERAL MEETING.**

**JANUARY 17th, 1900.**

This meeting was held at the hall of the School of Arts, Ann street, Brisbane.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.) in the chair. There was a large attendance, the hall being filled.


The Hon. Secretary (Mr. J. P. Thomson) read the following correspondence from Sir Clements R. Markham, President of the Royal Geographical Society, London:—

"21 Eccleston Square, S.W., November 20, 1899.

"Dear Sir Hugh Nelson,—

"Very many thanks for your letter of August 30, and for the copy of your address to the Queensland Geographical Society. I received them on my return from abroad. I cannot doubt that the weighty remarks in your address were a great help in forming public opinion in Queensland with respect to the Antarctic expedition. I have just received an intimation from the Agent-General that the Queensland Parliament has voted the sum of £1000 as a subscription to the expedition. The council of the Royal Geographical Society of London is very grateful for this liberal and generous aid on the part of Queensland, and trust that the noble example may be followed by the other Australian colonies."
"We are also much gratified at receiving your assurance of the interest taken in the Antarctic enterprise by your Society, and of its desire to render assistance, an expression of goodwill which, I can assure you, is highly appreciated.

"I am, dear Sir Hugh Nelson,

"Yours Faithfully,

"CLEMENTS R. MARKHAM."

"TO THE EDITOR OF THE 'TIMES.'

"SIR,—

"Will you permit me to draw your attention to the liberality of the Government and Parliament of Queensland in connection with the National Antarctic Expedition which is now being organised? I have received intimation through the Agent-General of the colony, that the Parliament of Queensland has been pleased to vote a sum of £1000 towards the funds of the expedition. This public-spirited liberality on behalf of a scientific enterprise which is of cosmopolitan interest does Queensland the highest credit, and I feel sure her example will be followed by her sister colonies. Liberally as the expedition has been supported in various quarters, I may say that to equip it as completely as it ought to be, in the interests of all departments of knowledge concerned, will require a good deal more than is at present available.

"Your Obedient Servant,

"CLEMENTS R. MARKHAM,

"President Royal Geographical Society."

SIR HUGH NELSON said this was a special meeting of the Royal Geographical Society, and anticipating—and he was proud to say that the anticipations had been verified—that there would be a very good audience, they had very fortunately obtained from the officers in charge of the School of Arts the use of their hall for the purpose of specially listening to his old friend, and, he thought, the old friend of a large part of the audience—(applause)—and one of the oldest public men connected with the colony of Queensland, connected with it in a public way even before Queensland itself was separated from the mother-colony. They had come to listen to some remarks that Mr. Douglas had kindly undertaken to favour them with, on the subject of Torres Straits, the islands there, and their inhabitants. It was hardly necessary for him to introduce Mr. Douglas, because he thought most of them were acquainted with him already, and were aware of his career, which had been a lengthy one in this part of Australia. He had no doubt that they would be all gratified by listening to him, and also interested as well as instructed. Before he asked Mr. Douglas to commence his lecture he would like to mention that he had received a letter from the Hon. J. R. Dickson, the Chief Secretary, regretting that owing to a cold he was unable to be present. He was sure that they very much regretted that Mr. Dickson could not be present.

The Hon. JOHN DOUGLAS, C.M.G., then delivered an exceedingly interesting extemporary address on "The Islands and Inhabitants of Torres Straits," illustrating his remarks by a series of large-scale wall-maps and lantern slides.

The vote of thanks to Mr. Douglas was moved by the Vice-President (Alderman William Jones), seconded by Mr. Alexander Muir, and carried unanimously.
SPECIAL GENERAL MEETING.

FEBRUARY 21st, 1900.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.) in the chair.

The minutes of the previous special general meeting were read by the Hon. Secretary (Mr. J. P. Thomson), and duly confirmed.


The Hon. Secretary intimated that a very fine life-sized bronzed medallion of the late Baron Sir Frederick Von Mueller, K.C.M.G. (who for many years occupied the position of president of the Victorian branch of the society), had been procured for the society, and placed on exhibition in the library and reading-room. This work of art had been executed by August Saupe, R.A. This artist had succeeded in reproducing a very striking and faithful likeness of the eminent baron, who had been for so long a shining light in the Australasian field of geographical science and botanical research. The walls of the library had been rendered still more attractive by the portraits of the past presidents and patrons of the society, in oak frames. This series of pictures, when complete, would be a very valuable addition to the society's collection.

The President was presented with a couple of complete sets of the society's publications for his own private use. Sir Hugh Nelson returned thanks for the valuable gift, stating that he was deeply interested in what had been done in the society by his predecessors.

The Hon. Secretary stated that he had arranged for the loan of the blocks of the maps illustrating Lord Lamington's paper on Siam, the parent Royal Geographical Society of London having kindly sent them out by parcel post.

SPECIAL GENERAL MEETING.

MARCH 21st, 1900.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), in the chair.

The minutes of the previous Special General Meeting were read by the hon. secretary (Mr. J. P. Thomson), and duly confirmed.

Apologies for absence from the meeting were read from His Excellency the Lieutenant-Governor (Sir S. W. Griffith, G.C.M.G.), Mr. J. B. Henderson, Hon. A. J. Thynne, and the Chairman Bundamba Divisional Board.


On the motion of the Vice-President (Alderman William Jones), seconded by Mr. Alexr. Muir, the "Constitution and Rules" of the society, as revised by the Council, were duly confirmed.
Reference was made to a communication from the Societe de Geographie, Paris, intimating that arrangements had been made to issue a new monthly publication, entitled "La Geographie," to replace the Bulletin and Account of Proceedings hitherto published, the co-operation and concurrence of the society being solicited. The President stated that this had readily been granted, and that the hon. secretary (Mr. J. P. Thomson) had at the invitation of the Paris Society undertaken the preparation of a series of monographs for the new publication. These would be illustrated by maps and photographs supplied by the Government.

A paper was then read by the Hon. A. C. Gregory, C.M.G., F.R.G.S., M.L.C., entitled "Mitigation of Floods in the Brisbane River," the subject being illustrated by maps and diagrams.

The paper was discussed at some considerable length by the President, and Messrs. A. J. Carter, Arthur, Foley, Grimes, E. B. Forrest, and the Hon. Secretary.

The President conveyed to Mr. Gregory the very cordial thanks of the society for his most valuable paper.

APRIL 25th, 1900.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), in the chair.

The minutes of the previous Special General Meeting were read by the Hon. Secretary (Mr. J. P. Thomson), and duly confirmed.


The Hon. Secretary read the following letter, addressed to the President by Sir Clements R. Markham, President of the Royal Geographical Society, London:—

"Dear Sir Hugh Nelson,—I have received your welcome letter of December 28 informing me of the steps you have taken to obtain further assistance to the Antarctic Expedition from the Australian colonies, and that, in consequence of your action, warmly supported by the Queensland Government, all the colonies have agreed to grant free use of their harbours for refitting and reprovisioning of the exploring ship. I beg to thank you most warmly for the interest you and your society have constantly taken in the great national Antarctic enterprise, and to express to you my sense of the value of your exertions, and of the great service you have done to the cause of science. We have already commenced the building of the exploring ship, to be specially adapted for navigation in the Antarctic ice, as well as for scientific observations, and, if all goes well, the expedition will be ready to start in the summer of 1901. The cable message from the Queensland Government was duly received, and a letter of thanks was sent to the Agent-General, for transmission. Believe me ever, dear Sir Hugh Nelson, yours very faithfully,

"(Signed) Clements R. Markham."

The usual monthly additions to the Library were announced by the Joint Hon. Librarian (Mr. W. L. Crompton).

The Hon. Treasurer Mr. D. S. Thistlethwayte, C.E.), read a paper on "Fuji and Around the Ice Caves," Japan, the subject being very fully illustrated by pictures, one of which had been prepared by the author of the paper himself.

The vote of thanks to Mr. Thistlethwayte for his interesting paper was moved by the Hon. Secretary, seconded by the Vice-President (Alderman William Jones), and carried unanimously.
MAY 31st, 1900.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.) in the chair.

The minutes of the previous Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson), and duly confirmed.


Mr. Kyre Bellew, F.R.G.S., London, was welcomed to the meeting as a visitor.

In the absence of the author, the President read a paper by Mr. R. H. Mathews on "The Walloonggurra Ceremony."

The paper gave rise to an interesting discussion, in which the President, the Hon. A. Morgan, M.L.A., the Vice-President (Alderman William Jones), Mr. R. Fraser, and the Hon. Secretary took part.

A very cordial vote of thanks to the author and reader of the paper was accorded by acclamation.

Mr. Kendall Broadbent gave a most interesting description of the geographical distribution of some partly and wholly insectivorous birds of Queensland. The subject was very clearly illustrated by a fine collection of stuffed birds.

The vote of thanks to Mr. Broadbent was moved by Mr. D. S. Thistlethwayte and seconded by Mr. R. Fraser.

A suggestion by the Hon. A. Morgan that the society might with advantage hold occasional meetings in centres outside of Brisbane was supported by the President, and met with general acceptance.

ANNUAL GENERAL MEETING.

JULY 20th, 1900.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), in the chair.

The minutes of the previous Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson), and duly confirmed.

Elections:—Ordinary Members: George Fish, John Arnold Sorell, and James Spiers.

A communication was read from Captain T. M. Almond, F.R.A.S., concerning the position of the Tocantins River as an independent stream instead of a branch of the Amazon River, as generally believed to be.

On the motion of the Vice-President, Captain Almond was thanked very cordially for the very interesting information contained in the communication with which he had favoured the society.

The Hon. Treasurer's financial statement and the report of the Council were read by the Hon. Secretary as follows:—
## BALANCE SHEET, 1899-1900.

**THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.**

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<td>&quot; Interest in Government Savings Bank Account</td>
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<td>&quot; Exchanges on Cheques</td>
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Examined with Bank Pass Books, Vouchers, etc., and found correct.

Brisbane, July 18th, 1900.

C. W. de VIS, Hon. Auditor.  
D. S. THISTLETHWAYTE, Hon. Treas.
REPORT OF COUNCIL.

Fifteenth Session, 1899-1900.

We have the honour of submitting to the Fellows and Members the Fifteenth Annual Report on the operations of the Society during the Session which ended on the 30th June last. We have, first of all, to express our very deep regret at the loss sustained by the death of three of our esteemed Associates: Mr. J. Philp, of "Melrose Park," Gatton, an old member; the Hon. Robert Bulcock, M.L.C., a respected pioneer colonist, who had recently joined our ranks; and Mr. John Fenwick, who, until lately, was one of our active and much valued officers. The reputation which the Society has long enjoyed as an active body has happily been well sustained during the preceding Session, the activity of its proceedings being no less satisfactory than the very substantial increase of over eighty new members who have been placed upon the roll since the last annual meeting, including half-a-dozen who have qualified for life membership. Most of these, we are happy to remark, are well-known representative country members, widely distributed over the entire colony and other parts of the Continent, their moral and material support being a most desirable disseminating element, calculated to greatly strengthen the position of the Society, rendering its operations more effective, and extending its influence over a wider range than heretofore. There are now some two hundred members of all grades on the roll, several of whom represent the Society in Great Britain, Continental Europe, Africa, America, and Australasia.

In view of the satisfactory nature of the proceedings of the Society during the year now under review, we have pleasure in again recommending the suspension for the ensuing Session of so much of the rules as provides for the payment of an entrance fee.

In response to an application, and in accordance with the "Constitution and Rules," we have been pleased to confer the Diploma of Fellowship upon the Rev. W. M. Walsh, P.P., of Townsville, an old colonist, and one of our greatly esteemed life members.

Our Hon. Treasurer's statement of receipts and disbursements shows our financial position to be in a very satisfactory condition, notwithstanding the unusually heavy outlay in consequence of our removal last year to new premises, and the necessity for extra fittings and furnishings, as well as rearranging the library and listing the books and maps. We are, however, very happy to state that there are no outstanding liabilities, and thus the Society will be enabled to continue its usual operations during the new Session, without the encumbrance of debt or for lack of funds. For much of this material prosperity we are indebted to the Government, whose praiseworthy liberality we greatly appreciate and cordially acknowledge.

Sessional Work.—There have been altogether ten meetings of the Society, extending over the whole of the Session under review, of which four were special, five ordinary, and one annual. The whole of these have been well attended by the members and their friends, all of whom have evinced a lively interest in the proceedings, several having taken an active part in the discussions that have succeeded the reading of the following interesting and instructive papers:—"A Journey in Indo-China," by our distinguished Patron, His Excellency the Right Hon. Lord Lamington, G.C.M.G., etc.; "Systematic Surveying," by Mr. T. F. Furber, F.R.A.S.; "The Geographical and Climatic
Factor in Pulmonary Consumption," by Dr. E. Hirschfeld, M.D.; "The Islands and Inhabitants of Torres Strait," by the Hon. John Douglas, C.M.G., etc.; "Mitigation of Floods in the Brisbane River," by the Hon. A. C. Gregory, C.M.G., etc.; "Round Fuji to the Ice Caves," by our Hon. Treasurer, Mr. D. S. Thistlethwayte, C.E.; "The Walloonqurra Ceremony," by our Hon. Corresponding Member, Mr. R. H. Mathews, L.S.; "Queensland Birds, Partly and Wholly Insectivorous: Their Geographical Range," by Mr. Kendall Broadbent. Finally there will be the Anniversary Address, by our enthusiastic President, the Right Hon. Sir Hugh M. Nelson, which will conclude the work of the session. To the authors of these very valuable contributions we desire to tender our cordial thanks.

The work of the Council has been actively prosecuted during the whole of the preceding financial year, including the usual summer recess, when sittings were as frequent and regular as at any other time, there being fifteen stated meetings altogether. These have been very well attended by both officers and councillors, all of whom have freely given their best attention to the scientific and business affairs of the Society. Near the close of last Session it was deemed necessary to appoint a Committee of the Council, consisting of the Hon. Treasurer, Mr. C. B. Lethem, and the Hon. Secretary, to examine and revise the "Constitution and Rules," chiefly in consequence of the former deletion of the word "Branch" from the title of the Society, and the desirableness of bringing the working machinery up to date. After being carefully considered in Council, the revised rules, which are now recommended for final confirmation, were adopted by a Special General Meeting of the Fellows and Members, all of whom have received a printed copy thereof. In view of a suggestion made by our President in the Anniversary Address which he delivered at our last Annual General Meeting, we shortly afterwards addressed a communication upon the subject to the Hon. the Chief Secretary. In this we recommended that besides the grant of £1,000 as Queensland's contribution to the funds of the projected British Antarctic Expedition, something else might be done by the whole of the Australasian colonies to still further the interests of our great national exploratory enterprise in the cause of science and commerce. With this object in view we suggested that the Commander of the expedition should be invited to make use of our Australasian ports and harbours, free of the usual charges, for repairing, refitting, or reprovisioning his ships. The suggestion met with the very warm approval and active support of our Government, and at our request the Chief Secretary submitted the proposal to the Prime Ministers of New South Wales, Victoria, South Australia, West Australia, New Zealand, and Tasmania, with the most gratifying result that it was favourably entertained by all. At the instigation of our President a cable message to this effect, preceding our own letter of advice, was very considerately sent by our Premier through the Agent-General in London to Sir Clements Markham, from whom we have received an acknowledgment with thanks.

In August last year we received a communication prepared by Mr. John Shirley, replying to our criticism of the "Queensland Volume of the International Catalogue of Scientific Literature," published in the last issue of our "Proceedings and Transactions," vol. xiv., p. 12. In consequence of the insufficiency and unsatisfactory nature of the reply, we were obliged to again urge the necessity for revising and completing the catalogue by the issue of a supplement.

A few months ago we were favoured by a communication from His Imperial Highness, Prince Roland Bonaparte, who, as President of the Publication Section of the Société de Géographie, Paris, intimated that arrangements had been made by that body to issue a new monthly publication, entitled "La Géo-
graphic," to replace the Bulletin and account of proceedings hitherto published, our concurrence and co-operation in this new enterprise being solicited, and readily accorded. This was followed by another letter, from His Imperial Highness, and one from Monsieur Charles Rabot, the Secretary to the aforesaid Publication Section, addressed to our Honorary Secretary, who, in response thereto, undertook the preparation of a series of scientific articles on Australia for the National Society of France, being the oldest of all the Geographical Societies of the world. The first instalment of the series, which has been completed and sent to Paris, is divided into three sections, and deals exhaustively with the evolution, the geographical development, and physical structure of the Australian continent, the whole being very fully illustrated by maps, pictorial drawings of the prehistoric fauna, and photographs, the last having very considerately been supplied for the work by the New South Wales Government, to which we desire to offer our very hearty thanks. The succeeding articles, now wholly completed, will treat upon the Climate, Artesian Water Supply, Geology, Natural Products, Native Race, and the Material Progress of Australia, the illustrations for which have very generously been supplied by the Governments of Victoria, South Australia, and Western Australia. A special section of the series, nearly completed, will be devoted entirely to Queensland, in which the physical structure, the geology, natural products, mineral wealth, and industrial life of the colony will receive very full and appropriate consideration. The whole of the maps and photographic illustrations for this have, with praiseworthy liberality and enlightened consideration for promoting the best interests of the country, been furnished by the Queensland Government, through the Prime Minister (Hon. R. Philp, M.L.A.), whose material sympathy with the work and active co-operation deserve warm commendation and the hearty thanks of our Society. In this connection we may just remark that the good offices of our active President can scarcely be over-estimated.

Publications.—The fourteenth volume of our "Proceedings and Transactions," which concludes the first series of our publications issued under this title, was sent out from the Press in the beginning of the Session and distributed locally to our Fellows and Members, as well as to all State Departments, kindred institutions, and Public Libraries of the world. The forthcoming issue, now in the hands of the Printer, has been enlarged to Royal 8vo. size, so as to be uniform with the contemporary scientific publications of sister societies elsewhere, and will appear under the shorter and more appropriate title of the "Queensland Geographical Journal." The foreign demand for the current and back numbers of our publication, to which previous reports have alluded, has been well sustained during the Session, whilst numerous applications to enter into exchange relations with cognate bodies have been included in the correspondence to which we have from time to time been called upon to give attention.

Library.—The growing importance and steady development of this highly interesting and indispensable department of our establishment is one of the natural results of our sustained activity. Each year adds its quota to the stock of exchanges and donations with which our valuable treasure store is enriched. The shelves have been put in order, labelled, and arranged geographically, so that any listed publication may be found without the necessity of a long and tedious search. Besides this arrangement, there has been prepared a draft manuscript list, in loose foolscap sheets, of the contents of the Library. One of the most valuable additions to our recent acquirements came to hand in the shape of a fine quarto volume published by the Dutch Royal Geographical Society to commemorate the 25th anniversary of its foundation, and entitled "The Part Borne by the Dutch in the Discovery of Australia, 1606 to 1765, by Professor
Proceedings.

Heeres. "In addition to the usual accessions, we have been fortunate in procuring for the walls of our Library large-sized portraits of our distinguished Patrons and Past Presidents, the donors of which we desire to thank most cordially. Besides these, we have obtained by purchase a very beautifully executed bronzed medallion of the late eminent geographer, Baron Sir Ferd. von Mueller, who, until the time of his death, occupied the position of President of our sister Society in Victoria, and who had always evinced a most lively interest in our proceedings here.

Of the various home and foreign Government departments, kindred institutions, and private persons who, having contributed donations to our Library, are entitled to special acknowledgment, there is none more deserving of thanks than the United States Government Departments and the Smithsonian Institution, which, by the free distributions of its well-known publications and international exchange system, has had most scientific bodies and students in all parts of the world under deep obligation.

We have pleasure in recommending the reappointment of the Hon. A. C. Gregory, C.M.G., as an Hon. Member of the Council and Referee, and that there be associated with him in this position Mr. C. W. de Vis, M.A., the respected Curator of the Queensland Museum, and Mr. A. Muir, one of our oldest members, and for several years an active officer. We desire to offer our best thanks to the following members and friends of the Society who have contributed to the Furnishing Fund, which was started at the commencement of the Session by the Hon. Secretary:—The Right Hon. Sir Hugh M. Nelson, the Hon. A. C. Gregory, Lieut.-Colonel James Irving, Robert Fraser, Esq.; James Allan, Esq.; W. Jones, Esq.; R. M. Collins, Esq.; J. Hicks, Esq.; P. P. Outridge, Esq.; and Messrs. Finney, Is.es, and Co.

In conclusion, we are desirous of offering our hearty congratulation to the Fellows and Members upon the continued prosperity of the Society, and the satisfactory development of its operations, as well as its extended relations with the scientific and literary institutions of the world.

For the Council

J. P. Thomson,
Hon. Secretary.

July 17, 1900.

The joint Hon. Librarian (Mr. W. L. Crompton, L.S.) asked if anything further had been done to revise and complete the Queensland volume of the International Catalogue of Scientific Literature.

The President said he understood the necessity for revising and completing the work was very generally recognised, and he thought that such would be done in due course.

The Vice-President (Alderman William Jones) moved the adoption of the report and balance-sheet. In doing so, he referred to the generous action of the Hon. J. R. Dickson, who, when Premier, had placed an endowment on the Estimates for the society. Mr. Dickson, he thought, was worthy of the best thanks of the society. He then alluded to the services of the Hon. Secretary (Mr. J. P. Thomson), who had wrought hard for many years in the best interests of the society, often enough against great obstacles, without any thanks or remuneration. He considered it was now time to show some practical recognition of Mr. Thomson's services. In this view the meeting heartily concurred.

The motion was seconded by Lieut.-Colonel James Irving, supported by Mr. Robert Fraser, and carried unanimously.
Mr. Fraser was also in favour of recognising the Hon. Secretary's long services to the society. On the suggestion of the President, further consideration of the matter was deferred till the adjourned meeting on the following Friday.


In moving a vote of thanks to the retiring officers and council, the Hon. Secretary acknowledged the loyal support and valuable assistance which he had received from all with whom he had been associated in the administrative work of the society during the Session, referring especially to the valuable service rendered to the society by the retiring Vice-President (Alderman William Jones), who had done the duties of office splendidly, and whose able assistance he was happy to acknowledge.

The motion was seconded by Mr. A. S. Kennedy, who eulogised the services rendered by the retiring officers and council, and carried nem. con.

The Hon. Secretary alluded to the projected Scottish Antarctic Expedition, concerning which some information had been received from the Royal Scottish Geographical Society. As the Queensland representative of that society, he hoped the Australasian Governments would extend to the Scottish Expedition the same privileges of free portage as had been granted to the British Expedition, at the instigation of the society here.

The President said he would see the Government on the matter.

On the motion of the Hon. Secretary, seconded by Mr. W. L. Crompton, the meeting was then adjourned till the following Friday at 8 o'clock.

ADJOURNED ANNUAL GENERAL MEETING
AND CONVERSAZIONE.

JULY 27th, 1900.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), in the chair.

The first part of the proceedings, from 7.30 to 8 o'clock p.m., took the form of a reception by the President, who, with Lady Nelson, the officers and council of the society, received a large number of guests at the entrance to the rooms.

The attendance was large and brilliant, the room being crowded. The occasion was honoured by the presence of His Excellency the Governor (Lord Lamington), patron of the society, who was attended by Captain Farquhar, A.D.C., and among others there were also present the Vice-President (Mr. R. Fraser), Hon. A. Morgan, M.L.A., Thos. B. Cribb, M.L.A., Alderman William Jones, Lieut.-Colonel J. Irving, R. Gailey, R. M. Collins, Captain Pennfather, A. S. Kennedy, L. A. Bernays, C.M.G., F.I.S., A. J. Carter, G. Fish, A. T. Minto, H. Burkitt, his Lordship Bishop Webber, Colonel Finn (Military Commandant), Lieut.-Colonel Lyster, Mr. Justice Real, Hon. E. B. Forrest, M.L.A.,

Apologies were received from Sir S. W. Griffith (Chief Justice), Hon. J. F. G. Foxton (Home Secretary), Hon. W. Allan, Hon. A. H. Barlow, M.L.C., the Auditor-General, Hon. F. T. Brentnall, M.L.C., H. C. Russell, C.M.G., Captain Creswell (Naval Commandant), and many other members and friends of the society.

Elections:—Ordinary Members: John Cameron, James Clark, A. T. Minto, and E. Mueller.

Alderman William Jones, J.P., the retiring Vice-President, rose and said:—

Sir Hugh Nelson, Your Excellency, Ladies and Gentlemen,—At the meeting held last week mention was made of the long-continued valuable services gratuitously rendered to this society in various offices by Mr. J. P. Thomson, and a desire was evinced to recognise those valuable services in some substantial manner. The matter was adjourned to this meeting, and as it was so adjourned at my suggestion, it is my duty to reintroduce it this evening. As Mr. Thomson is so well known to us all, personally, as well as by his works, it will not be necessary for me to say very much, and in what little I have to say, I hope this meeting will bear with me, and not think me tedious. Mr. Thomson is the Founder of this society. It was he who conceived the idea that such an institution as this was necessary and desirable in this city. He performed all the work in connection with its inception; he raised the necessary funds, he overcame all the difficulties, and he it was who received and endured the rebuffs in connection with the founding of this Society. Had he done nothing else but this, I think that the members of this Society should hold him in high honour, and revere his memory. Since the Society’s foundation Mr. Thomson has been most indefatigable in his exertions for the benefit of the institution. With the exception of the time that he was President all, or nearly all, the secretarial duties have been performed by him, and anyone conversant with these duties will readily admit that they are heavy, arduous, and important, requiring constant attention. And those who have seen the work done by Mr. Thomson in this respect will also admit that he has performed those duties with marked ability and consummate tact. It is not too much to say that the success attained by this Society is largely owing to his splendid and enthusiastic devotion to the duties of secretary. Not only has he performed the duties of secretary, but during the infancy of the Society, when the funds of the treasury required special economy, and even nursing, he acted as Treasurer, and during that anxious time he managed the duties of that office so skilfully as to give the fullest satisfaction to everyone. In addition to that, he has at all times prepared for publication all the proceedings, all the matters relating to this Society, and they are voluminous. He arranged all the details for the Press, corrected all the proofs, and arranged everything, and the several comparatively bulky volumes issued under the auspices of this Society are emphatic evidences of his energy and care. Mr. Thomson has frequently appeared before us as an Author. He has time and again appeared at our monthly meetings and read his own papers, and he has just finished a series of articles at the request of the French Geographical Society, whose headquarters are at Paris. These articles will be published in the journal of the French society, and no doubt will be valued very much. In that way credit will come to this Society, but the honour will be his. Mr. Thomson has at all times conducted the
The Vice-President (Mr. R. Fraser) seconded the motion, which was carried by acclamation.

The Hon. A. Morgan, Speaker of the Legislative Assembly, in moving a vote of thanks to the Government for supplying the illustrations and maps which are to appear with the series of papers prepared by Mr. Thomson for publication in the Journal of the National Geographical Society of France, said Mr. Jones had told them what an excellent secretary Mr. Thomson was, and he cordially endorsed every word that Mr. Jones had said. The demands this society had made upon the Government were not many, but every reasonable claim had been recognised. The papers which Mr. Thomson had prepared were voluminous, and were likely to prove of interest to peoples other than the British peoples, and of advantage to this colony, for he was sure that in addition to his other excellencies Mr. Thomson was an excellent Queenslander, and in his series of papers full justice would be done to this colony. The Government had undertaken to supply a series of photographs for the illustration of the papers. The photographs were very fine, and they would be finely produced. The Government had also undertaken to supply the whole of the maps. He asked the meeting to accord its thanks to the Government for its action in the matter. (Applause.)

Mr. T. B. Cribb, M.L.A., seconded the motion. In doing so, he said he did not think too much had been said about Mr. Thomson's capabilities and services. He agreed with every word of it, and was pleased that some recognition was likely to be made for the valuable services which he had rendered.

The President then delivered his Anniversary Address, which was very fully illustrated by two large wall maps of Moreton Bay and the Brisbane
River, by sketches, examples of local timber and other objects of interest. In introducing the subject of his discourse, which dealt with the discovery and early explorations of Moreton Bay and the Brisbane River, Sir Hugh Nelson tendered the Council and the Society his thanks for electing him for the second time as their President. When first elected he had known little or nothing of Geography, but during the past year he had devoted a great deal of attention to its study, and found it wonderfully interesting. (Hear, hear.)

His Excellency Lord Lamington said they had all listened to the paper prepared by Sir Hugh Nelson with the greatest interest, and he felt it his duty to move a vote of thanks to the President, which he had much pleasure in doing, and that the paper be duly printed. They must all feel thankful that while the study of geography had proved so absorbing to Sir Hugh Nelson, he had been willing to give the Society the benefit of his researches. He felt that steps should be taken by the Government authorities to preserve all the old records and relics of early Queensland history such as the President had procured and made use of in his address. They would be much easier collected now than by future generations, as there were people living now who remembered the names of many of the old leading pioneers, and these, with connecting incidents, would later be forgotten perhaps. He complimented the President upon his re-election to the office, and also the Society in having such a guide at their head.

In seconding the motion, which was carried by acclamation, the Hon. Secretary (Mr. J. P. Thomson) alluded to the President's activity in carrying out the Presidential duties of his office. The Anniversary Address delivered by the President was evidence of his interest in the subject of which he had treated.

The President suitably responded.

On the motion of the Hon. Secretary, seconded by Thos. H. Owens, the Council, on behalf of the society, was instructed to send a letter of sympathy to the nearest surviving relative of the late Mr. John Fenwick, who for several years had been an active officer of the society.

An adjournment was then made to the Library Room, where refreshment was partaken of.
The Royal Geographical Society of Australasia,
QUEENSLAND.

DIPLOMAS OF FELLOWSHIP.

(See resolution on page 3 of cover).

The following gentlemen have been awarded the Diploma of Fellowship:

Honorary:
His Excellency Sir William MacGregor, K.C.M.G., C.B., M.D.,
D.Sc., Hon. F.R.S.G.S., etc.
Hon. A. C. Gregory, C.M.G., F.R.G.S., M.L.C., etc.
His Excellency The Right Hon. Lord Lamington, G.C.M.G., B.A.,
F.R.G.S., Hon. F.R.S.G.S., etc.

(b) On Application:
J. A. Baxendell, Esq.
William Jones, Esq., J.P.
Charles Battersby, Esq., J.P.
Robert Fraser, Esq., J.P.
Rev. W. M. Walsh, P.P.

LIST OF MEMBERS.

(P) Members who have contributed papers which are published in the Society's
"Proceedings and Transactions." The numerals indicate the number of such contribu-
tions.

(PP) Past President.
A dagger (†) prefixed to a name indicates a member of the Council.
Life members are distinguished thus (*).
Should any error or omission be found in this list, it is requested that notice thereof
be given to the Hon. Secretary.

Foundation Members:
Daniell, E. N., Survey Department, Brisbane.
†Gailey, R., J.P., Courier Building, Brisbane
PP†Gregory, Hon. A. C., C.M.G., F.R.G.S., M.L.C., &c., Mary Street,
Brisbane.
Marks, Hon. C. F., M.D., M.L.C., Wickham Terrace, Brisbane.
P1*Moor, T. B., F.R.G.S., F.R.S. Tas., Strahan, West Coast, Tasmania.
P1†Muir, A., J.P., Queen Street, Brisbane.
PP†Thomson, J.P., Hon. F.R.S.G.S., &c., Hon. Secretary, "Alsatia,"
Dornoch Terrace, South Brisbane.
LIST OF MEMBERS.

Members:

Abern, John, L.S., Charters Towers, Queensland.


BPP


Almond, T. M., F.R.A.S., Marine Department, Brisbane.

Anning, John, J.P., Charlotte Plains, Queensland.


Armstrong, L. J.P., Normanton, Queensland.

Barlow, Hon. A. H., M.L.C., Toowong, near Brisbane.


Bean, William, J.P., Gasworks, Cairns, Queensland.

Bright, Allan B., J.P., Charters Towers, Queensland.

Bright, C. E., Inspector Post and Telegraph Dept., Brisbane, Queensland.


Buckland, Kendall, Museum, Brisbane.

Burkitt, Horace, Corinda, near Brisbane.


Cameron, W., Geological Survey Office, Brisbane.

Cameron, Charles Christopher, “Coolabah,” Ipswich.

*Campbell, A., J.P., Glengyle Station, Birdsville, Queensland.

*Clark, James, “Wybenia,” New Farm, Brisbane.

Clerk, G. E., junr., Malboona, Corfield, Queensland.

P2

Cox, W. G., C.E., Brisbane.


*Crook, T., J.P., Northam, Western Australia.

Cunningham, J. S., Mundaringba, Townsville, Queensland.

Cunningham, M. W., J.P., Rannes, River Dee, via Rockhampton, Queensland.

Craig, Robert, J.P., Cairns, Queensland.


Davies, John, J.P., West End, South Brisbane, Queensland.

De Vaux, R. H., Birdsville, Queensland.

P1

†De Vis, C. W., M.A., Museum, Brisbane.


Earle, Horace, Johnsonian Club, Brisbane, Queensland.


Finlay, Miss Laura Lucie, 17 Craven Hill Gardens, Hyde Park, London.
Fish, George, Stanley Street, South Brisbane, Queensland.
Fletcher, Victor O., J.P., Taigai Station, via Clifton, Queensland.
Forster, C. E., J.P., Goondi, Johnstone River, Queensland.
Frackelton, Rev. W. S., Ph.D., etc., Presbyterian Manse, Ann Street, Brisbane.
†Fraser, Robert, F.R.G.S.A.Q., J.P., Vice-President, Charlotte Street, Brisbane.
Fullerton, Alex. Young, B.A., I.R.C.P., M.R.C.S., Dalby, Queensland.
Gilligan, John, Parliament House, Brisbane.
Griffith, His Honour Sir S. W., G.C.M.G., M.A., etc., Chief Justice, Brisbane.
Gross, Capt. G., Boys' Grammar School, Brisbane.
Haldane, A. C., P.M., Herberton, Queensland.
Harbord, H. H., J.P., Maytown, Queensland.
*Hardcastle, F. W., J.P., Headingly, Boulia, Queensland.
Hartley, S. W., J.P., Rockhampton, Queensland.
Heindorf, H., Heindorf Bros., Elizabeth Street, Brisbane.
Henderson, W. G., Dental Rooms, Queen Street, Brisbane, Queensland.
Hilcoat, Reginald E. R., J.P., Roomarra Station, via Donaldson, Q'land.
Hogarth, Mrs. William, Strathmore, Toowoomba.
Holberton, Hon. F. H., M.L.C., Toowoomba, Queensland.
Hughes, J., J.P., Registrar-General, Treasury Buildings, Brisbane.
Hughes, E. F., Dental Rooms, Treasury Chambers, George Street, Bris.
Innes, S. N., L.S., Cresswell Downs, Camooowal, Queensland.
Janson, Laurens, J.P., Eastern Boyne, Gladstone, Queensland.
†Jones, Wm., J.P., F.R.G.S.A.Q., Stephens Street, South Brisbane.
Kemnitzer, K., Grammar School, Townsville, Queensland.
Kenealy, P., Albion, Brisbane.
Kennedy, A. S., Kingsholme, Fortitude Valley, Brisbane.
Kennedy, Thomas, J.P., Allora, Queensland.
Kelly-Cusack, William George, P.M., etc., Ravenswood, Queensland.
†Lamington, His Excellency The Right Hon. Lord, G.C.M.G., etc., Government House, Brisbane.
Lee-Bryce, R., J.P., Town Hall, Brisbane.
†Lethem, C. B., C.E., Clayfield, Brisbane.
Lissner, Isidor, J.P., Norman Chambers, Creek Street, Brisbane.
Macintosh, H., Survey Department, Brisbane.
Mackie, Robert, Fairy Meadow, Chinchilla, Queensland.
May, T. H., M.D., L.S.A., Bundaberg, Queensland.
*Mathieson, John, Railway Commissioner's Office, Melbourne, Vic.
Matthews, G. S., Imperial Insurance Co., Queen Street, Brisbane.
*McConnel, J. H., J.P., Cressbrook, Queensland.
McDonald, A. B., J.P., Grosvenor Downs, Clermont, Queensland.
McDonald-Terry, A. J., J.P., Kirknie Station, Clare, via Townsville, Queensland.
Minto, A. T., Royal Insurance Co., Queen Street, Brisbane.
Morison, D N. McKenzie, J.P., Cloncurry, Queensland.
Moran, R. W., Police Magistrate, Tambo, Queensland.
Muller, Edmund, 118 Elizabeth Street, Brisbane.
Munro, Jas., J.P., Webster and Co., Mary Street, Brisbane.
Murray, C. W., J.P., Hughenden, Queensland.
Myrne, Thomas, Public Service Board, Brisbane.
P2 †Nelson, Right Hon. Sir H. M., P.C., K.C.M.G., President, Legislative Council, Brisbane.
Nicholas, C. E., J.P., Matlock, Victoria.
O’Donohue, M., C.P.S., Bowen, Queensland.
O’Reilly, Charles, Dornoch Terrace, South Brisbane.
Outridge, P. P., New Farm, Brisbane.
*Parker, Francis, J.P., St. Albans, via Monkira, Queensland.
Peek, F. W., J.P., Ferndale, Loganholme, Queensland.
Pennefather, C. E. de F., Prisons Department, Brisbane.
Petrie, Andrew Lang, M.L.A., Sandgate, Queensland.
Potts, John, J.P., 172 Queen Street, Brisbane.
Poulsen, Poul C., Consulate of Denmark, Queen Street, Brisbane.
Quaid, J. D., J.P., 101 Queen Street, Brisbane, Queensland.
Queale, Robert, J.P., Dornoch Terrace, South Brisbane, Queensland.
Radcliffe, O., Inspector of Schools, Maryborough, Queensland.
Ralston, W. V., J.P., Queensland National Bank, Brisbane.
Rutledge, Charles Schaefer, c/o Wm. Schaefer, Esq., 12 Wallace Road, London, N.
Sorell, John Arnold, Survey Department, Brisbane, Queensland.
Spiers, James, Toowoomba, Queensland.
Starcke, A., Land Commissioner, Rockhampton.
Steuart, A., Queensland National Bank, Brisbane.
*Stevens, Hon. E. J., M.L.C., Southport, Queensland.
Stopford, W. E., The "Mansions," George Street, Brisbane.
LIST OF MEMBERS.

Strathdee, Robert, "Maudsleigh," Bundaberg, Queensland.
Sword, T. S., J.P., Land Board, Brisbane.
P2 *Thistletwayte, D. S., C.E., Hon. Treasurer, Clayfield, Brisbane.
*Thomas, J. S., Bondi, Sydney, N.S.W.
Thomson, A. A., 198 Pitt Street, Sydney.
P4 Thomson, Capt. W. C., Swan Hill, Brisbane.
Trouton, W. J., J.P., Queen Street, Brisbane.
Uhr, John Frederick, J.P., Wigton Station, Gayndah, Queensland.
Vivian-Williams, J., P.M., Charleville, Queensland.
Waddell, W. A., Tate Tin Mines, via Cairns, Queensland.
*Walsh, Rev. W. M., P.P., St. Joseph's, Townsville, Queensland.
Walsh, A. D., Dalgety and Co., Elizabeth Street, Brisbane.
Walsh, Nugent, c/o Robertson, Tait, and Co., Adelaide St., Brisbane.
Waraker, E. M., Staff Surveyor, Survey Department, Brisbane.
*Weedon, W., Oxley, near Brisbane.
*Weedon, S. H., C.E., L.S., "Yatala," Bent Street, North Sydney, N.S.W.
Welsby, Thomas. Darragh's Buildings, Queen Street, Brisbane.
P1 Williams, Capt. J., c/o Burns, Philip and Co., Sydney, N.S.W.
Williams, Sidney, J.P., Rockhampton, Queensland.
Queen Street, Brisbane.
Winter, Sir F. P., Kt., Port Moresby, British New Guinea.

Honorary Members:

P1 General Sir H. W. Norman, G.C.B., G.C.M.G., etc., 85 Onslow Gardens,
The Right Hon. Lord Stanmore, G.C.M.G., etc., House of Lords, Lon-
don, England.
H.I.H. Prince Roland Bonaparte, 10 Avenue d'Iena, Paris, France.

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His Excellency The Hon. G. R. Le Hunte, C.M.G., Govt. House, Port Moresby, British New Guinea.
APPENDIX,

CONSTITUTION AND RULES

OF THE

Royal Geographical Society of Australasia,

QUEENSLAND.

FOUNDED 1885.

Amended at a Special General Meeting, March 21, 1900.

The Royal Geographical Society of Australasia, Queensland, was formed at a meeting held at the Town Hall, Brisbane, on the 10th July, 1885.

Title.

1. "The Royal Geographical Society of Australasia, Queensland."

INTERPRETATION—SOCIETY:

Whenever the word "Society" is used in the following Rules and Bye-laws, the same shall be read and construed to mean the Royal Geographical Society of Australasia, Queensland.

Objects.

2. The objects of the Society are—

A—GENERAL.

I. Scientific—The advancement of geographical science in its widest sense; the study of physical geography, and the exploration of Australasia, with the islands and seas adjacent thereto, and to obtain information upon their physical features, fauna, flora, geological formations, &c.

II. Commercial—The study of commercial geography, natural and artificial products, and the manufactures of various countries.
III. Educational—The dissemination of knowledge of physical, commercial, and political geography amongst all classes, by means of public lectures and publications.

IV. Historical—The collection and publication of historical records of geographical interest, and of memoirs of men distinguished by the advancement of geographical science in Australasia.

B—Special.

I. The collection of material for the compilation of a reliable Geography of Australasia.

Constitution.

3. The Society shall consist of Ordinary, Corresponding, and Honorary Members and Fellows.

I. Any lady or gentleman may become an Ordinary Member, subject to election.

II. Persons of distinguished scientific attainments, who have promoted the objects of the Society, may be elected Corresponding Members.

III. Honorary Members shall be elected from among such eminent persons as have rendered valuable service in the cause of geographical science.

IV. Fellows.—The Council may confer the Diploma of Fellowship upon such eminent persons as have rendered valuable services to geographical science; on persons of distinguished scientific attainments; on those who have promoted the objects of the Society; and on Honorary and Honorary Corresponding Members of the Society, without the payment of diploma fees. On Ordinary Members, on payment of a nominal diploma fee, subject to the following conditions, namely:—(a) Upon written application: Those who have compounded for life membership and are deemed worthy of the distinction by the Council. (b) Upon written application: Those who are not in arrears with their annual subscriptions, and are, upon the recommendation of
the Council, approved by the Society at an ordinary monthly meeting. Of the honorary class the number of Fellows shall not exceed ten. Each Diploma, after being approved by the Council, shall be signed by the President, and by the Hon. Secretary of the Society. Members who receive the diplomas shall have the privilege of designating themselves “Fellows” of the Society, and may use the initials F.R.G.S.A.Q. after their names as long as they continue to be members of the Society.

Election and Privileges of Ordinary Members.

4. Every person desirous of admission as a member of this Society shall be nominated by two Ordinary Members; the nomination (to be in Form I of the Appendix) to be delivered to the Secretary in writing, and submitted to the Council at its next meeting, and at the next ordinary monthly meeting thereafter the name of such person shall be put up for election.

5. Every person so elected shall, upon payment of the entrance fee and subscription, become a member of this Society; and shall be presented by the Secretary with a copy of the rules, and a Diploma of Membership.

6. The Ordinary Members of the Society have the right to be present and vote at all meetings of the Society; to introduce two visitors at the general or ordinary meetings upon entering their names in the visitors’ book; but no visitor shall take part in a discussion unless specially invited to do so by the Chairman. Each member to be entitled to receive a copy of the Society’s official publications, and to have access to the library and other public rooms of the Society.

7. Any Ordinary Member is eligible to be an officer or member of the Council of this Society.

Election of Corresponding and Honorary Members.

8. The Corresponding and Honorary Members shall be elected under the same conditions as laid down in rule 4 for Ordinary Members. They shall be exempted from the pay-
ment of fees, and may exercise the privileges of Ordinary Members; except that they shall not vote or hold office or seat on the Council.

**Government by Council.**

9. The government of the Society shall be vested in a Council consisting of twelve (12) members including the officers, all of whom shall be elected annually by the Society as hereinafter directed.

**Officers.**

10. The officers of the Society shall consist of a President, a Vice-President, an Honorary Secretary and an Honorary Treasurer.

**Property.**

11. The Council shall have the management of the affairs and property of the Society, and the disbursement of the funds.

12. The whole of the property and effects of the Society of what kind soever shall be vested in the President, the Vice-President, the Honorary Secretary and the Honorary Treasurer for the time being, in trust for the use of the Society.

**Election of President and Vice-President.**

13. The President and Vice-President shall be elected by ballot, at an Annual General Meeting of the Society, and shall be eligible for re-election, provided that they shall not hold office for more than two (2) years successively. The President, or in his absence the Vice-President, shall preside at all meetings of the Society and of the Council, at which he may be present.

**Election of Honorary Secretary and Honorary Treasurer.**

14. The Honorary Secretary and the Honorary Treasurer shall be elected by ballot at an Annual General Meeting of the Society, and shall be eligible for re-election.

**Election of Ordinary Members to the Council.**

15. The election of Ordinary Members to the Council shall be by ballot at an Annual General Meeting of the Society
Duties of the Council.

16. The Council shall meet once in every month for the transaction of business, at such time and place as may be appointed. Special meetings of the Council may be convened at any other time on the authority of the President, the Vice-President, or of three members of the Council. Due notice of all Council meetings to be sent to each member.

17. The Council shall prepare an annual balance-sheet, and a report on the operations of the Society for the preceding year, for presentation at the Annual General Meeting.

18. No business shall be transacted at any meeting of the Council unless three members of the Council are present; in case of equality of votes, the Chairman shall have an additional or casting vote.

19. It shall be the duty of the Council to decide on the papers to be read at the monthly meetings, and to determine as to their publication, in whole, or in part.

20. Any member of Council personally interested in a question before the Council, shall, if requested to do so by the Chairman, withdraw during its consideration.

21. If, in the interval between two annual meetings, any vacancy in the Council occurs, the Council may appoint some member of the Society to temporarily fill such vacancy until it is filled by election at the Annual General Meeting.

Duties of the Honorary Treasurer.

22. The Honorary Treasurer shall have special charge of all moneys and accounts, and shall see to the collecting of all moneys due to the Society, and shall submit quarterly to the Council a list of the names of such members as may be in arrears with their subscriptions. He shall pay all moneys received into a bank account, to the credit of “The Royal Geographical Society of Australasia, Queensland.”

23. All accounts due by the Society shall be approved by the Council before being paid, and all payments shall be by cheque, signed by the Honorary Treasurer, and countersigned by one of the Council members.

24. The Hon. Treasurer shall prepare an annual statement
of receipts and disbursements, to be audited by Auditors appointed at the preceding annual general meeting. Any vacancy occurring in such appointment to be filled by the Council.

25. This statement shall be submitted, audited, to the Council at its meeting prior to the annual general meeting.

**Duties of the Honorary Secretary.**

26. The Honorary Secretary shall attend and take minutes of the proceedings of the Society and of the Council respectively, and see that all such minutes are entered in the several minute books, and shall keep a complete list of the members of the Society, with the name and address of each accurately set forth; he shall conduct all correspondence, and transact all the routine business; and shall have charge of all property, books, maps, papers, &c., and shall see that the same are properly recorded and catalogued.

**Fees.**

27. Ordinary Members shall pay £1 1s. entrance fee, and subscribe £1 1s. per annum, payable in advance, to the Honorary Treasurer, on or before the first day of the session.

28. A member may at any time compound for future annual contributions by the payment of the sum of £10 10s.

29. Members elected during the second half of the session shall pay half the usual fee for that year. No member shall be responsible for any expenditure beyond the annual subscription.

30. Any Ordinary Member who has not paid the year's contribution, during the currency of the year, shall be liable to removal by the Council from the list of members of the Society: Provided always that written application for the same shall first have been made by or on behalf of the Treasurer: And provided, also, that the Council shall have power to restore the defaulter's name by request, and after payment of arrears. No member shall be entitled to vote or hold office while the subscription for the previous year remains unpaid.
Session.
31. Session shall commence in the month of July, and last eight calendar months.

Meetings.
32. The meetings of the Society shall be—
   I. Annual general meeting.
   II. Ordinary monthly meeting.
   III. Special general meeting.
33. The annual general meeting shall be held at the commencement of every annual session in the month of July, on a day to be fixed by the Council, to receive the President's address and the report of the Council on the state of the Society, and to discuss such subjects as may be brought forward relative to the affairs of the Society, and to make the elections for the ensuing year. If after the lapse of fifteen minutes less than ten members are present, it shall not be lawful for the meeting to proceed to business, except for the purpose of adjournment, and the meeting shall stand adjourned until a day and time then resolved upon.

34. The ordinary monthly meetings of the Society shall be held in each month of the session, on such days and at such place as the Council may appoint. The business shall be conducted in the following order, unless otherwise decided—
   I. The reading and confirming the minutes of last meeting.
   II. Election of new members.
   III. The Secretary shall announce any donations made to the Society since its last meeting, and read any special communications.
   IV. Motions, of which notice has been given, to be considered, and notices of motion for the next meeting to be read.
   V. The consideration of any special subject which members may desire to bring forward, provided it be approved by the Chairman.
VI. Any paper or subject notified in the circular shall then be read.

VII. The Chairman to invite discussion.

VIII. Notice of papers for next meeting.

35. No motions relating to the government of the Society, its Rules or Byelaws, the management of its concerns, or the election, appointment, or removal of its officers, shall be made at any ordinary monthly meeting.

36. Except as above provided, no paper shall be read at any meeting which has not been notified to and approved by the Council; and every paper read before the Society shall be the property thereof, and immediately after it has been read shall be delivered to the Secretary.

37. A special general meeting shall be called by the Council when considered necessary, or when required by the requisition in writing of any ten members to do so, the requisition to specify (in the form of a resolution) the purpose for which the meeting is required to be called; and at the meeting the discussion shall be confined to the subjects mentioned in the notice convening such meeting. Ten members shall form a quorum.

38. All meetings of the Society shall be convened by notice written or printed, sent by the Secretary to every member resident in the colony, at least seven days before the date fixed for meeting. The circular shall state as far as convenient the subjects to be brought before the meeting.

39. The President shall take the chair at all meetings of the Society; or, in the event of his absence, the Vice-President; or, in the event of his absence, members present shall elect a Chairman, being a member of Council, if such be present.

40. No person shall at any meeting, unless with the express permission of the Chairman, address the meeting otherwise than in a standing position.

Retirement of Members.

41. Any member may, on payment of all arrears of the annual contribution, withdraw from the Society, by signifying a wish to do so by letter under the member's own hand,
addressed to the Secretary. Such member shall, however, be liable for the contribution of the year in which the wish to withdraw has been signified, and shall also continue liable for the annual contribution until all books or other property borrowed shall have been returned to the Society, or full compensation for the same, if lost or not forthcoming, shall have been made. Should there appear cause in the opinion of the Council to require the retirement from the Society of any member (otherwise than as provided by Clause 30), a special general meeting shall be called by the Council for that purpose; and if three-fourths of those voting agree by ballot that such member shall retire, the Chairman shall declare the same accordingly, whereupon the name of such person shall be erased from the list of members.

Archives.
42. The archives of this Society shall be kept in Brisbane.

Publications.
43. A journal of the Proceedings and Transactions of this Society shall be published from time to time under the authority of the Council.

Alteration of Rules.
44. Any repeal or alterations of the Rules, or additions thereto, of the Society, shall not be considered unless a written notice of motion, signed by not less than five members, shall have been given to the Council and read at three ordinary monthly meetings of the Society, and thereupon such motion may be brought forward at the next annual general meeting; or, if thought desirable, a special meeting may be convened before such annual general meeting to consider the resolution; and any resolution passed at such special meeting, altering or repealing the rules, shall be in force until the annual general meeting next following, and, if not then confirmed, shall thereafter be held void and of no effect.

Bye-Laws.
45. The Council shall have power to make Bye-laws for the conduct of its business and the business of the Society generally: Provided no such Bye-laws shall be repugnant to the objects of the Society, or to any Rules or Bye-laws made by the Society at any of its general meetings.
1. Every paper which it is proposed to communicate to the Society shall be forwarded to the Honorary Secretary for the approval of the Council.

2. The Council may permit a paper written by a non-member to be read, if communicated through a member.

3. In the absence of the authors, papers may be read by any member of the Society appointed by the Chairman or nominated by the author.

4. No paper or communication read before the Society shall be published without the consent of the Council.

5. The Council shall decide, not later than at its meeting next following the reading of a paper, whether or not it or any part thereof shall be printed in the proceedings; and if not, such paper shall be returned, if desired, to the author.

6. All communications intended for publication by the Society shall be clearly and legibly written on one side of the paper only, with proper references and in all respects in fit condition for being at once placed in the printer's hands.

7. In order to assure a correct report, the Council requests that the paper shall be accompanied by a short abstract for newspaper publication.

8. The author of any paper which the Council has decided to publish, will be presented with twenty copies; and he shall be permitted to have extra copies printed, on making application to the Honorary Secretary, and on paying the cost of such copies.

9. A proof corrected by the MS. shall be submitted to the author for revision.
APPENDIX.

FORM I.

THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND.

NOMINATION FORM.

Name, ..........................................................

Qualification or Occupation, .............................

Address, ........................................................

being desirous of admission into the Royal Geographical Society of Australasia, Queensland, we, the undersigned members of the Society, propose and recommend him— as a proper person to become a member thereof.

Dated this ............... day of ............. 190 .

..........................................................

..........................................................
The Thomson Foundation Gold Medal

Of the Royal Geographical Society of Australasia,
Queensland.

[See pp. 132-135]
QUEENSLAND GEOGRAPHICAL JOURNAL

(NEW SERIES).

INCLUDING THE PROCEEDINGS OF THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

16th SESSION,
1900-1901.

J. P. THOMSON, Hon. F.R.S.G.S., Etc., Etc., Honorary Editor.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. XVI.

PUBLISHED AT BRISBANE BY THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

NOTE.—All communications should be addressed to the Hon. Secretary, at the Rooms of the Society, Brisbane.
THE

Royal Geographical Society of Australasia,

QUEENSLAND.

Patron:
His Excellency The Right Honourable LORD LAMINGTON, G.C.M.G., Etc.

President:

Vice-President:
Hon. A. MORGAN, M.L.A.

Hon. Treasurer:
D. S. THISTLETHWAYTE, Esq., C.E.

Hon. Secretary:
J. P. THOMSON, Esq., Hon.F.R.S.G.S., Etc.

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The Society's Rooms:
BRISBANE, QUEENSLAND
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SUGGESTION.

Every person desirous of bequeathing to the Society any money is requested to make use of the following

FORM OF BEQUEST.

I give and bequeath to the Honorary Treasurer for the time being, of the Royal Geographical Society of Australasia, Queensland, the sum of

for the benefit of the said Royal Geographical Society of Australasia, Queensland, to be expended as the Council of the said Society may deem expedient for the promotion of Geographical Science or the purpose of exploration in Australasia.

N.B.—All Donations presented to the Royal Geographical Society of Australasia, Queensland, are acknowledged by letter and in the Journal of Proceedings.

NOTE.—All Communications should be addressed to the Hon. Secretary, at the Rooms of the Society, Brisbane, Queensland.

CORRIGENDA.

Since going to Press some correspondence has come to hand from Mr. John Watts, of Wimborne, Dorsetshire, England, in reference to Ex-Judge Forbes’s paper on “Reminiscences of the Early Days,” printed in this issue of the Journal; page 50.

According to Mr. Watts the paper will require correction in the following particulars:—

First lady on the Darling Downs was Mrs. Arthur Hodgson (now Lady Hodgson); the second, Mrs. Rollands (wife of Dr. Rollands who resided at Tummaville, where she died, in consequence of a fright caused by an attack of the blacks, who were then very hostile. Tummaville was afterwards sold to Gore Bros.

Clifton was originally taken up by Sibley and King, who sold it to Francis Forbes for £400 sterling. Sibley and King then went up the creek (now known as King’s Creek) and took up Pilton and Haldon, afterwards sold to Oswald Bloxome, who only held it a short time, and the run afterwards passed into the hands of John Gammie, who sold to J. J. Whitting.—

[Ed. Q.G.J.]
THE GEOGRAPHICAL EVOLUTION OF THE AUSTRALIAN CONTINENT,*

By J. P. THOMSON. Hon. F.R.S.G.S. etc., etc.

The last time I had occasion to speak of the physical and geological conditions of Australia was in one of my own anniversary addresses, which I had the honour of delivering, as President of our Society, here in 1895. (1).

This address, besides appearing in our own volume of "Proceedings and Transactions," was reprinted as a special memoir and distributed free to all the public schools of Queensland. It subsequently enjoyed the still greater publicity of an honoured place in the "Smithsonian Report" for 1896. (2).

The physical structure and other important geographical conditions of Australia demand much fuller treatment than they have yet received by any European society devoted to the study of Earth Knowledge and the wide dissemination of geographical information. Until quite recently very little has been known of the physiography of this country, and it has been customary for even intelligent and well-informed Europeans to regard Australia as an insignificant and only partly civilised continent. This general ignorance has greatly prejudiced the development of our natural resources, and considerably retarded industrial settlement.

On the present occasion I shall arrange the subject of this communication on a somewhat new plan as adopted by me in a large illustrated popular scientific work which I have prepared and almost com-

* First communicated to the Société de Géographie, Paris, as a literary contribution to the columns of "La Géographie," and subsequently read before the Royal Geographical Society of Australasia, Queensland, August 17th, 1900.


pleted for publication (3). The life history of Australia, so to speak, will thus be traced through its successive stages of geographical development, and the present physical structure of the continent explained.

A great deal has been said about the evolution of man, and, indeed, of the whole of animated nature. But there is still much more to be said, for this interesting and important subject is one that has not yet been fully and clearly elucidated. It is, in point of fact, but very imperfectly understood, even by those who have made it a special study.

To ordinary folks Evolution is a term denoting something profound; something obscure or vague, as the case may be. But if it be admitted that the higher and more complex orders of animal life have been reached step by step through successive stages of evolution, it can scarcely be denied that continents, and even worlds, may be influenced by a similar process of development.

For present purposes it is assumed that every stage in the shaping and building up of the entire world has been reached by the operation of natural forces, that have acted, and are still acting, both internally and externally. This, to my mind, is the only reasonable standpoint from which the subject may be clearly and intelligently discussed.

PALÆOZOIC.

A far backward glance at what may be assumed to be the earliest indications of the evolution of the Australian continent will enable us to realise more clearly the distinctive peculiarities of the physical conditions of the country. And, still following step by step onwards through successive geological ages, the climatic conditions of the past may be fairly comprehended.

First of all there was the Palæozoic period during which some remarkable changes occurred in the earth's crust. It was an age that gave birth to many islands and continents that now extend over an enormously wide geographical range. The Australian area was then represented by a few insulated nuclei projecting above the surface of the ocean, and these slightly elevated masses were resting upon the submerged continental plateau. In Western Australia the dry land at this stage of development was indicated by an elongated tongue extending from the 20th parallel into the neighbourhood of the Swan River. The western or extreme outer fringe of this mass now lies submerged outside of the present coast line, and forms an

(3) This memoir, as here arranged, forms part of an unpublished popular scientific work on Australia, the preparation of which has occupied the attention of its author for several years. The work in question deals very exhaustively with the geography, geology, flora, fauna, and resources, as well as with the industrial and public life of continental Australia, and is profusely illustrated by superb photographic pictures and maps supplied specially for it by the Governments of the other colonies of Australia, whose recognition of the importance and value of such an undertaking is thereby implied.
Sketch Maps illustrating the Geographical Evolution of the Australian Continent in Palaeozoic, Mesozoic and Tertiary times.
interesting section of the ocean bed, wholly within the limits of the 1200 to 6000 feet contour line. An upheaved area, in many respects similar to the preceding one, extended from Melville and Bathurst islands southwards into the heart of the continent. But the north-west edge or shoulder of this uplifted deposit now lies submerged in the neighborhood of Anson’s Bay, also within the 1200 feet contour line. The other projecting areas were represented by a few comparatively small, narrow elevations, widely separated by the waters of the great ocean, and extending along the eastern seaboard, from Cape York Peninsula in the extreme north to the southern limit of the Australian Alps. These, indeed, were the earliest representative land masses of our continent, and they correspond with the existing predominating areas of elevation. They form the seat of the oldest rock formations, in which some of the mineral deposits are developed. It is a curious feature worth noting that in developing the continent the land-making forces of nature were most active in the region bordering the coast line. An annihilating rim was at first formed, and this almost entirely encompassed an immense lagoon or inland sea, traces of which even now exist in the so-called lakes of the interior. The whole continent must indeed at one time have borne a striking resemblance to an enormous atoll. This remarkable feature has, in point of fact, not yet been wholly effaced; it still exists in the saucer-like conformation of the country. The climate of this and other great land divisions of the globe must have been remarkably uniform in character during the era now under review. The rapid circulation of the great ocean currents would scarcely be influenced by the comparatively small and widely-scattered land masses, and thus, by a commingling of the polar and equatorial waters, a very mild and equable temperature would probably be maintained. Anyway, the climate of this period was no doubt an exceedingly moist one, and vastly different from that of the present.

**MESOZOIC.**

The succeeding stage of evolution was rendered notable by the somewhat rapid, wide extension and unity of land areas. Insulated nuclei increased very greatly in area, and assumed more truly continental proportions during the Mesozoic age. A comparatively narrow belt of land, corresponding with the position of our present Great Dividing Range, extended along the whole eastern seaboard of Australia, uniting it with Tasmania, New Guinea, and Borneo. The whole western half of the continent was likewise affected by this extensive upward movement of the earth’s crust. An enormous area, comprising Western Australia, had appeared above the surface of the ocean, and this great land mass curved westward to Java and Sumatra. At Borneo it united with the eastern Australia-New Guinea extension, and stretched away northerly to the south-east portion of India. Ow-
ing to the remarkable configuration of the land, an enormous gulf extended northerly and westerly to the southern shores of Borneo, and the whole central region of Australia was in consequence swept by the waters of a great inland sea. The earth-folds during this long period of changes were apparently very pronounced and widely distributed over the crust of the globe. The climate was no doubt uniform in character, though less persistently marked than during the preceding age.

TERTIARY.

In the dawn of tertiary times, Australia had become entirely continental, or insulated, in position. The connecting belts by which it had formerly been united with neighbouring countries were submerged, and the inland waters were confined to a basin somewhere near the junction of the Murray and Darling Rivers, or the lake region in South Australia. Besides this inland depression, the sea probably encroached upon the coastal districts of the Carpentarian Gulf and a portion of the shores of Western Australia, between Shark's Bay and Cape Leeuwin. A narrow fringe along the head of the Great Australian Bight was also submerged, but in all other respects the general configuration of the continent was similar to what it is now.

Contemporaneous with this great physical change in the condition of the country, a pronounced differentiation of climate occurred. Climatic zones, possessing marked and distinctive characteristics, existed here, and, indeed, over widely-distributed regions, and in these mild seasonal changes prevailed.

The probable uniformity of climate during the preceding ages has already been alluded to. But it seems reasonable enough to suppose that the atmosphere was then very highly charged with moisture—the humidity was abnormally great from a meteorological standpoint—and the rainfall in tropical and extra-tropical regions must, in consequence, have been enormous. This prevailing condition was no doubt very largely influenced by the widely-distributed equatorial waters over vast oceanic areas, as well as by the extensive circulation of ocean currents. These views, however, are set forth in a very broad, general, and merely tentative way. The essential elements of the subject are far reaching in their application and could only be more fully elucidated by taking into consideration the conditions of the prehistoric fauna and flora of the globe and their geographical distribution.

It is worthy of notice that the predominating physical structure of the continent does not appear to have undergone any remarkable change during the successive stages of evolution under review. The dominant areas of elevation mostly correspond with the mountain ranges along the eastern seaboard, the Northern Territory, and Western Australia. The central region, too, is still greatly depressed, al-
though well above the level of the ancient cretaceous sea, and it is chiefly characterised by low, extensive, desert-like saltbush plains dotted with shallow salt lakes and salt pans, and traversed by inland rivers.

The subject of the birth and growth of continents and other less important land masses is one upon which much attention has been bestowed, especially during recent years. It has formed the theme of many erudite and notable contributions to scientific literature, in which the general high order of merit renders their distinctive classification difficult, if not impossible. Amongst the widely-known contributors to this fascinating subject none have appeared to me more successful in their treatment than Professor James Geikie and my esteemed friend and co-worker the Honourable Augustus Charles Gregory. Both have elucidated the matter from the geological as well as the geographical standpoint. The former, in his enlightened and instructive memoir on 'The Evolution of Climate,' published in the sixth volume of the "Scottish Geographical Magazine." The latter in his practical and thoughtful inaugural address to the Australian Association for the Advancement of Science, in 1895. The evidence adduced by Mr. Gregory in support of his views concerning the evolution of continental Australia must necessarily carry great weight. Favoured as few other men have been with the opportunity of travelling over "a larger portion of our territory than usually falls to the lot of a single individual," he has thus been enabled to personally examine the rock structures and physical conditions of the country. His views upon this interesting subject are in the main similar to those to which I have already given expression in the preceding portion of this paper. Mr. Gregory observes that the continent "was raised at the close of the Palaeozoic period" to "at least double its present area, including Papua, and with a mountain range of great altitude."* There was little change, he believes, in the geographical conditions of the country in Mesozoic times, and it was not till the beginning of the Cretaceous period that the whole continent commenced to subside. This general subsidence continued with marked persistency for a long period, until extensive areas in the low-lying regions were inundated by the rapidly-encroaching ocean.

The great mountain ranges on the eastern side of Australia with Alpine summits of over 10,000 feet high or more, must have presented a magnificent picture, in striking contrast to the present landscape. The climate during the period of great elevation was probably one of a pronounced tropical type, with excessive moisture, in which the luxuriant vegetation, now indicated by our extensively developed coal beds, would no doubt flourish abundantly. The rainfall, too, must have been enormous, and the lofty mountain summits would act as accumulators for the densely-packed vapour clouds by which they were no

* These quotations are from Mr. A. C. Gregory's inaugural address. Report of the sixth meeting Australasian Assoc. Adv. Sci., Brisbane, 1895, pp 1 and 12.
doubt almost constantly hid from view. The process of denudation under these climatic conditions would no doubt be very rapid and of widely distributed influence. The torrential rains sweeping down and along the steep slopes of the lofty ranges would carry with them enormous deposits of fertile soils to the great river valleys, low-lying plains, and marshes of the interior. The grand inland rivers which carried the waters from the rugged coastal ranges into the sea at Spencer's Gulf must have been remarkable features of the physical geography of the continent. Most of the great inland streams appear to have converged from the northern, the eastern, and the western watersheds to one common stem in the central regions of the continent, the place of union being located in the neighbourhood of Lake Eyre. The coastal rivers then, as now, differed very greatly from the other important systems to which I have alluded. These were comparatively short and very rapid streams that cut deep into the sandstone formation and excavated great valleys, which were subsequently filled in by the disintegrated rocks of the precipitous sides and lateral ranges. Several of the indentations of the coast line, however, bear indelible evidence of the action of these mighty watercourses during Tertiary times, many of which now reach the sea by different channels.

It can easily enough be imagined that the rapid disintegration of the rock structures would result in the formation of fertile soils, in which the luxuriant vegetation of the period would flourish profusely. This indeed is what actually occurred, for it was the rich tropical and extra-tropical flora of the carboniferous age that gave birth to our largely developed coal-beds.

The Tertiary age was remarkable for the development of animal life, the climatic and physical conditions of the continent, as well as the vegetation, being peculiarly adapted for the support of the higher orders of a striking mammalian fauna. Extensive lakes, marshes, and river systems played an important part in the production and development of vegetable life, and the inland regions teemed with animals of gigantic proportions. These for the most part were vegetable feeders, although the carnivora were not altogether without several notable representatives. The fossil bones of these prehistoric giants are abundantly distributed over the inland plains, that have been formed by the filling up of the ancient river valleys and lake basins. The skeleton remains found embedded in the Post-Pliocene drifts of the vast Rolling Downs in Queensland and on the shores of Lake Mulligan, South Australia, afford instructive evidence of an enormously developed land and fresh water fauna of a bygone age. The extinct animals of this truly productive Tertiary period were indeed distinctive and altogether remarkable for great size. The Diprotodon Australis and the Nototherium dunense were of immense proportions, as indicated by the fossil bones, distributed over their former feeding grounds, in the interior region of the country. It
is interesting to remark that these giant marsupial beasts were distinctly Australian, for in no other part of the world have their remains been found. They were apparently species or types of purely local development, distributed over a narrowly circumscribed geographical area. They abounded in an age when the climatic and other conditions of life were highly favourable for the existence of vigorous faunal types—a period during which a rich and luxuriant flora also flourished. It has been suggested by Mr. C. W. de Vis, the accomplished curator of the Queensland Museum, that this might very appositely be called the "Nototherium Period," to distinguish an age in Tertiary times when that truly remarkable animal and associated species were developed. Mr. de Vis has, perhaps, more than any one else, enjoyed exceptional opportunities for the study of Australian prehistoric fauna, especially in his extensive and elaborate investigations of the fossil remains which the Post Pliocene Drifts of Queensland have yielded. His work in this interesting and important department of human knowledge is widely known and highly appreciated. But nothing can more eloquently testify to his zeal and acknowledged ability in this branch of research than the unique collection of fossil bones deposited at the local institution over which he presides.

The age in which the extinct marsupials flourished so abundantly in this country is one having an important connection with the evolution of the whole continent, and a study of such representative fragments of the fauna and flora of the period as may from time to time be discovered will no doubt throw some light upon its past history. For this reason, if for none else, it seems to me that the
distinctive appellation suggested by my esteemed friend, Mr. de Vis, is worthy of adoption.

It would be of great interest were it possible to discuss the actual causes which brought about the total extinction of the Diprotodon and other truly wonderful faunal types of the period. Their advent was evidently preceded by some tremendous seismic convulsions, that played an important part in moulding the physical structure of the continent, and which contributed greatly to the development of luxuriant vegetation. It was doubtless during this age of maximum disturbance throughout most of the continental area that enormous outbursts of basalt occurred. The great river valleys, lake basins, and extensive marshes were afterwards filled up by the basaltic detritus washed down from the adjacent mountain ranges. Thus by the natural and often enough active process of degradation, extensive areas of fertile country were formed, the vast Rolling Downs developed, and the physical condition of the continent was greatly changed. This wonderful transformation was followed by a corresponding climatic change. The rainfall had greatly diminished, and there was likewise a very considerable diminution of atmospheric moisture. The rivers had lost much of their former volume and importance, and the wide region of the interior was in consequence already feeling the ill effects of thirst. Naturally enough, the vegetation, too, was considerably influenced by these greatly altered conditions, where its former luxuriance could no longer be sustained. Instead of the long, succulent swamp grasses and other highly nutritious growths upon which the giant marsupials flourished, there sprang up a short and greatly inferior herbage, altogether inadequate for the support of these interesting animals of a bygone age. These had now greatly decreased in number, their feeding ground being restricted to the few remaining swamps in which they finally disappeared altogether. Thus the Diprotodon, Zygomaturus and other associated faunal types of the Nototherium Period succumbed to the climatic and physical changes of the age, leaving their bones entombed in the Post-Pliocene Drifts that now cover their former haunts. And it is only by the discovery of such of the fragmentary remains as have recently been brought to light, that a glimpse of their instructive life-history has been obtained.

There is little reason to believe that the bold outline features of the coast were greatly altered during these material changes, which brought about the total extinction of the Post-Tertiary fauna. Except in the Northern Territory and the north-east coast of Queensland no great alteration in the configuration of the land mass has probably occurred. In the region now occupied by the Great Barrier Reef a change has no doubt taken place, and its outer edge may possibly coincide pretty closely with what was formerly the limit of the coast
Various physical causes are no doubt responsible for this altered condition. It is not only the effect of a limited subsidence within this narrowly circumscribed area, but there is the powerful denuding action, which must be taken into consideration by those who may study this interesting subject. In no portion of the continent does the physical structure present more interesting features for investigation than in the region of the Great Barrier Reef. Here we have an enormous belt or fringe extending for about a thousand miles northerly along the Queensland coast, upon which the active coral producing organisms have developed a reef of enormous extent. This area of animated nature is apparently a submerged portion of the mainland, and has been cut off during a period of subsidence, affecting most of the coast-line. This local depression was probably gradual rather than rapid, and the process of severance was no doubt in-

fluenced to some considerable extent by denudation. The sea gradually encroached upon the land, whilst at the same time enormous masses of rocks and soils were washed away from the adjacent ranges by heavy rainfalls. These would cut deep channels into the mountain faces and flood the lowlands, removing all obstructive material except some of the older rock formations, fragments of which are now scattered over the reef area in the shape of islands or mere isolated cones. They are chiefly composed of the old sedimentary rocks and probably represent the summit peaks of moderately elevated ranges, now sub-
merged. The geological and physical structure of the region indicates that it has undergone many remarkable changes during pre-historic times, and has in consequence been greatly and widely influenced by upheaval and depression. The whole of Cape York Peninsula was very likely cut off entirely from the continental area during one of the periods of prolonged subsidence. Evidence in support of this view indeed exists in the Herberton district. Here in the somewhat extensive cave features of the Chillagoe area there occur a typical example of an ancient submarine reef structure, where the old coral formation has been developed. The locality, although not an extensive one, has evidently been at some remote period invaded by the sea, and probably represents a portion of the channel or strait by which the Peninsula was insulated. The physical features of this extremely interesting region have already received some attention. They were very intelligently, and indeed graphically described, by Mr. D. S. Thistlethwayte, our Hon. Treasurer, in a paper to our Society here. In alluding to the remarkable structure of the rock masses that rise up in precipitous wall-like faces from the plain to heights of from 100 to 400 feet, Mr. Thistlethwayte says: "The appearance of the limestone bluffs is eminently wild and picturesque, for rearing up as they do from the surrounding country, sometimes in perpendicular walls, at other times from a talus of fallen boulders, their summits are highly weathered into the form of pinnacles and spires, with their sides deeply fluted, or into overhanging masses causing one to wonder how they remain in position."*

The plateau occupied by the Great Barrier Reef itself has probably been twice submerged, although, it is now apparently rising again. The movement, it is true, is imperceptibly slow, but the numerous raised beaches along the coast line of the mainland and on the Eastern shore of the Gulf of Carpentaria clearly indicate that the whole of this north-east portion of the continent is now affected by the influence of a gradual upward movement. How far this may extend outside the limits of the region under consideration is not yet known, but it may probably affect the whole Eastern coast of Australia. In this connection there is a very material point, hitherto overlooked, having a direct bearing upon the subject to which I refer. It is one in point of fact requiring special investigation when alluding to the present physical condition of the continent, either in whole or in part. It has just been stated that the eastern portion of Australia is rising. Now, is this really the case? Is there an actual increase in the mean level of the whole land mass, or is the ocean actually receding—drying up, so to speak? To my own mind, it is the action of the latter which causes the apparent alteration in level.

* "Proceedings and Transactions," Royal Geographical Society Australasia, Queensland: Vol. IX., p. 18
The whole Australasian region is now passing through an important period of change in its evolutionary development. The ocean is gradually drying up; the seasons are likewise changing; the climate, too, is sympathising with these physical movements, and the vegetation must in consequence feel the effect of the greatly modified conditions of existence. The eruptive forces that were at one time remarkably active are now quiescent, and the natural elements, by which former convulsive movements were caused, now no longer disturb the prevailing tranquillity over the surface features of our country. The ultimate effect of these striking modifications upon the existing fauna may indeed be very great, and the consequence sad to contemplate. As the native race is rapidly disappearing under the influence of British settlement, so will many, if not all, of the existing forms of the animal series be replaced by others more suited to the altered conditions of life. Thus it is with the land fauna as with the vegetation itself: changes—imperceptible though they may be—are going on constantly; the older forms will disappear altogether and be succeeded by newly developed ones. These changes will continue for ages until animal and vegetable life becomes extinguished, and the entire terrestrial sphere lapses into a state of decay, and even the human race itself will be entombed beneath the denuded,
lifeless surface of the Earth's crust. Change is writ largely upon every surface feature of the globe; in Nature there is nothing permanent.

Since the publication of Dr. Guppy's admirable work on the "Solomon Islands and their Geology," much attention has happily been given to coral reef structures. Within the region of the Great Barrier Reef of Australia the submarine fauna has, to some extent, been investigated by Mr. W. Saville-Kent, and more recently by Professor A. Agassiz. The subject of reef formation is one which, however, requires a great deal of study and further investigation. The observations of recent years have done much to clear up doubts, and dispel the illusive theories of over half a century ago. It is now, I think, generally admitted that Darwin's views concerning the development of coral reef structures were not altogether satisfactory. This is certainly the case with the reef zones of Australia, Polynesia, and the eastern portion of Melanesia, where my own experience has extended. Nothing is more certain than that Darwin's Australian region of subsidence is actually one of upheaval, and the same phenomenon occurs within the areas to which I have referred in the preceding sentence. It must, however, be admitted that our knowledge of this subject has very greatly increased since Darwin's views were promulgated. For much of this increased knowledge we are greatly indebted to the widely conducted investigations of the Challenger Expedition. These afford abundant evidence of the wide distribution of pelagic life, and the existence of deep-sea deposits over immense areas of the ocean bed. Dr. John Murray's estimate, that over sixteen tons of carbonate of lime are contained in the marine organisms, which exists in every square mile of the tropical ocean, for a hundred fathoms down, must have greatly weakened faith in the theory of subsidence. Assuming this view expressed by Dr. Murray to be fairly correct, it seems to me that every shallow submarine bank within the great equatorial belt has now developed, or must eventually develop, a coral reef, whilst many of these reefs are at present being formed over areas which have been raised to the proper level. My own observations afford the strongest possible evidence in support of this view. They point unmistakably to the conclusion that widely distributed calcareous deposits are formed on the top of shallow submarine banks and on the summits of submarine volcanic ridges and cones. These formations, which constitute the very bed-rock, as it were, of coral reefs consist of the remains of the foraminifera, calcareous algae, pteropoda, and many other organisms that swarm in the surface waters of the tropical ocean. Sponges, deep-sea corals, mollusces, alceonaria, and other associated forms are at first developed, and these prepare the beds upon which the Barrier and other coral reefs are superimposed. Thus a very simple explanation of the origin of the Great Bar-
rier Reef of Australia is submitted. The structure of this immense forma-
tion is most probably of very recent age and almost sure to be of
no great thickness—certainly very much thinner than at present
supposed. Further investigations will no doubt increase our knowl-
gedge of this fascinating subject very greatly, but it is believed they
will not materially interfere with these conclusions. Coral reef boring
is an experiment that has not yet been altogether successfully carried
out, although a most praiseworthy attempt was made in 1896 by
Professor Sollas and staff, who were sent out by the Royal Society,
London, to conduct operations at the atoll of Funafuti. The attempt
was subsequently renewed by a party sent out from Sydney, with Pro-
fessor David as leader, and it is pleasant to learn that the results are
very satisfactory. In my own opinion, however, complete success
in boring through coral reefs is doubtful. It is easy enough to pierce
the surface with the borer's drill, but the difficulty of reaching lower
levels of the structure seems to me very great indeed, and not likely
to be readily overcome.

SOUTHERN EXTENSION OF THE AUSTRALIAN
CONTINENT.

In the preceding section I have alluded very briefly to the relative
position of the Australian continent, and its probable unity with
other countries to the north and north-west. I have endeavoured to
show that in Mesozoic times Australia was probably connected with
New Guinea, Borneo, Sumatra, and even India, to the north, and on
the south with Tasmania. This view was chiefly based on geological
considerations, not upon any evidence afforded by the geographical
distribution of extinct or existing faunas or floras. There are, how-
ever, several well-known naturalists, who believe there was a far
greater southerly extension. That, in point of fact, the ocean now
separating Australia, New Zealand, Patagonia, and the Antarctic
continent was at one time bridged by land masses, now submerged.
It is to a brief discussion of the more important evidence bearing upon
this interesting subject that the following remarks are now offered.
The theme is one in which the mind is free to indulge in wild and
unlimited theory, for no possible contributing evidence can clear it of
doubt. Still, there is some very suggestive material that may be
amplified, even in the expression of purely theoretical views. I think
it may be admitted without question that the weaker the position the
more there is required for its support, in the same way that an
emaciated constitution requires a greater amount of nourishing food
than a robust one. There is, however, a good deal to be said on both
sides of the question, and many points bearing upon the subject that
require more careful and impartial consideration, before anything
like a satisfactory basis can be established.
Professor James Geikie favours the probability of a land connection between Australia and New Zealand near the close of the Mesozoic era. This view receives support from Dr. A. R. Wallace, who claims to have shown that such a union is in itself sufficient to account for the predominating influence of the New Zealand flora. Here we have the theory of unity supported by evidence adduced from two distinct lines of inquiry—geology and botany. Besides these, there is much important material contributed by the department of Natural History requiring careful consideration. Amongst the more recent writers upon the subject is Dr. H. O. Forbes, who claims to have shown that an ancient southern continent extended from Australia, to Africa, South America, New Zealand, and the Antarctic lands. His views are based upon a consideration of the fossil remains of animals and plants "unknown in the Northern Hemisphere," and "possessing so many characters in common as to show at once that they are descended from the same stock." These fragments of extinct or existing forms are found embedded in the Tertiary strata of widely separated regions of the Southern Hemisphere, and at once suggest, according to Dr. Forbes, a former union by immense land masses now submerged beneath the surface of the ocean. There is, however, not always complete harmony of views in that branch of Natural History now under consideration. Thus we find, my friend, Mr. Charles Hedley, contending that "this theory is totally opposed to the distribution of Placostylus in particular, and the Melanesian Mollusc fauna in general." Mr. Hedley, I may here remark, has submitted a great deal of evidence, derived chiefly from a study of the structure and distribution of land shells, in support of his views concerning the "Melanesian Plateau." This submarine plateau, it will be necessary to observe, lies within the volcanic sub-region extending from the Solomon Islands through the New Hebrides to New Zealand, and embracing the comparatively shallow tongues stretching to New Caledonia, Fiji, and Lord Howe Island. This region is probably bounded by the 1,300 fathom contour line. It is contended by the author of the theory to which reference is now made, that these groups of islands, now widely separated by the ocean, were once united by land connections, over which the terrestrial molluscan fauna was distributed, particularly the genus Placostylus. At the time Mr. Hedley's theory was published, I ventured to offer a few remarks upon the subject in a note contributed to the Society here, and printed in the 8th Volume of the "Proceedings and Transactions." At that time, it seemed to me that if the probable existence of an ancient continent, occupying the position of the so-called "Melanesian Plateau," were admitted upon such slender evidence as afforded by the geographical distribution of land

* Smithsonian Report, 1894; p. 300.
shells, the relative position of other contiguous regions would have to be considered. These comparatively shallow submarine banks, of which the islands of the New Hebrides, Fiji, Solomon, Loyalty, New Zealand, New Caledonia, Norfolk, and Lord Howe are simply upheaved ridges or summits, lie to some extent within the influence of an enormous belt of seismic activity. This extends right across the Pacific, from the South American Continent through the Eastern Archipelago and Sunda Islands to Madagascar. It embraces the Marshall, Caroline, Gilbert, and Low Groups, as well as Samoa and Tonga. If the former existence of a "Melanesian Plateau" be admitted—that is to say, an ancient continent corresponding to the position indicated by Mr. Hedley—then it seems to me that upon physical grounds alone, if for no other reason, these groups of islands to which I have alluded must be added to it. In a subsequent contribution on the subject, Mr. Hedley amplifies his theory very greatly, extending the "Plateau" southerly to the Antarctic regions.

These remarks only refer to recently evolved theories. The question is one that has been discussed since 1853, when Sir Joseph Hooker endeavoured to account for the geographical distribution of certain flowering plants by assuming that the Antarctic lands were more extensive and continuous than in the present age. In addressing the Geological Society of London, in 1870, the subject was further alluded to by Professor Huxley, who favoured the existence of a Mesozoic Pacific continent, including Australia. This, in his opinion, would explain the marked differences between the Mammalian faunas of Australia and other adjacent continents. Captain F. W. Hutton was the next to follow, in 1873. His generalisations resulted in the evolution of an Antarctic Mesozoic continent, in explanation of the origin of the fauna of New Zealand. Shortly afterwards, the theory of the former land connection between the Mascarene Islands, New Zealand, and some of the Polynesian Islands, was proposed by Professor A. Milne-Edwards. His views were embodied in a memoir to the Paris Academy of Sciences, in 1874, upon the fossil avi-fauna of the Mascarene Islands. These birds, he pointed out, were related to those of New Zealand. This faunal region of elevation was not, however, connected with Australia.

Later on, Sir Joseph Hooker's theory was revived by Professor H. N. Mosely, who wrote upon the subject to the Linnean Society in 1876. Dr. Wallace, in his "Geographical Distribution of Animals" and "Island Life," has, of course, dealt with the whole subject. According to his views, Eastern Australia was connected with New Zealand; and it was not till the close of the Cretaceous age or in the beginning of the Tertiary period that separation took place. At this time the question had apparently become one of absorbing interest, especially to those concerned in the study of animal and plant life. In 1882, the French Academy of Sciences received a communication from M.
Emile Blanchard, entitled "Proofs of the subsidence of a Southern Continent during recent Geological Epochs." This learned dissertation was succeeded by a very pertinent contribution from Captain Hutton, whose former Mesozoic Antarctic continent was abandoned in favour of a Mesozoic Pacific one, extending from Melanesia to Chili. We next come to a paper by Dr. Theodore Gill on "A Comparison of Antipodal Faunas." In this essay, which appeared in the publications of the Philadelphian National Academy of Science, in 1888, the author favours the theory of a union between South America, New Zealand, and Tasmania, at the close of the Mesozoic period. Congeneric fishes and analogous representative insects, shells, and amphibians afford evidence in support of this view. The subject was not allowed to rest long at this stage of investigation, for it must be admitted that the theme is of absorbing interest and fascinating to the speculative mind. In this connection it is worthy to note that Australia and New Zealand have contributed in no small measure to the discussion of this important question. The twenty-fourth volume of the Transactions of the New Zealand Institute for 1892 contains a very suggestive contribution "On the Ancient Relations between New Zealand and South America," from the pen of Dr. H. von Jhering. This also deals with the probable existence of a Mesozoic continent in the South Pacific. It included Chili and the Patagonian region, and gave birth to the Islands of Polynesia, New Zealand, New Guinea, and last of all Australia. The relationship between the Eocene marsupial fauna of Patagonia and Australia has been explained by Dr. F. A. Meghino and Professor Zittel on the assumption that a Pacific continent existed in Mesozoic times.

Last of all but one, we have a most valuable and exhaustive contribution from Captain Hutton on "Theoretical Explanations of the Distribution of Southern Faunas." This learned paper, published in the Proceedings of the Linnean Society of New South Wales, 1896, reviews the opinions of contemporary writers upon the subject, and contains additional evidence in favour of a Mesozoic Pacific continent. "The theory," says Hutton, in his paper, "not only explains the origin of the Australian and South American marsupials, but also the almost simultaneous appearance of different Eutherian mammals in North and South America. We must suppose that this continent threw off first New Zealand, then Australia, then Chili, and finally disappeared under the waves." The very latest addition to the literature of this subject comes under my notice in the shape of a work by Mr. W. Saville-Kent, entitled "The Naturalist in Australia." The theory of the existence of a great southern continent, at a time not very remote, is here reiterated in the introductory chapter, the author of it believing in a former land connection between South America, Africa, and Australia.
So far I have simply alluded to the historical side of the question under consideration. There is really very little that is new after all. The opinions of contemporary writers upon the subject have a very decided tendency towards a common point of convergence. The only differences are in matters of detail. There is an absolute unanimity in the view concerning a former extension of the present insulated land masses of the Southern Hemisphere.

Now, it will be noticed, from the preceding remarks, that the opinions of those entitled to speak on the subject are based upon such fragmentary evidence as the geographical distribution of southern faunas and floras afford. That, in point of fact, these have all descended from one common stock, no matter how widely separated their representative types may be or may have been. This, indeed, is the very basis of the contention, and it is upon this the current theories must either stand or fall. There is no doubt whatever that several widely scattered groups of the southern fauna are closely related. For instance, the occurrence in Queensland of the remains of the New Zealand Moa and Kiwi is in itself sufficient evidence upon this point; it has moreover been discovered that these struthious birds were also represented in Madagascar and Patagonia. And what shall be said of the even more remarkable occurrence of the opossum in the European Oligocene, and the representation of Galaxias at the Cape? Without alluding to further particulars, it may be briefly remarked that there is a great deal of weighty evidence in support of the distribution theory. Not only do we find many representative groups of extinct and existing animals scattered over regions that are now widely separated by vast expanses of ocean, but there is also a commingling of vegetable forms corresponding in a certain measure with the identical faunal types in their distribution. The question, however, naturally arises, Is the existence of these in localities remotely situated from the assumed ancestral home sufficient evidence of a former union? I should say, not necessarily. Plant life depends upon conditions of climate and soil for development; terrestrial animal life upon vegetation, climate, and configuration of surface features. All forms of life must therefore be preceded by the condition necessary for development. Without these essential elements, animated nature is nowhere possible. The seed may retain vitality for an almost indefinite period of time, but will only germinate in fruitful soil. It thus seems to me that animals and vegetables as well are merely products, nothing more, and their advent could only have occurred after the condition of life had been fully established upon the terrestrial sphere. Accepting this doctrine without any further qualifications, we should next enquire if terrestrial life appeared everywhere simultaneously. The past history of the earth, as revealed by the structural surface elements, and other considerations, indicate
that the life-producing and life-sustaining conditions did not exist concurrently in all parts. As a matter of fact, there must have been some remote period in the history of our planet when fertile regions gave birth to animated things, whilst other remote zones were sterile and desolate, the existence of anything except perhaps the very lowest forms of life being almost impossible. I think it may be fairly assumed that the earliest forms of life originated in the zones of the earth where the greatest amount of solar heat was concentrated. These torrid divisions would be governed in their position and extent by the degrees of eccentricity of the earth itself. That in point of fact the solar heat is not only unequally distributed over the surface of the globe, but there is a constant variation in the position of the poles themselves, which causes this inequality. It thus naturally follows that the conditions of life are not concurrently equal everywhere, and consequently simultaneous development of such faunal and floral species as depend upon these conditions could not have occurred. Nevertheless, it seems to me that complete continuity of land masses is not essential to the existence of animated nature. That in regions remote and completely cut off from the great current of life there not only may have been, but there actually has been, independent development of animal and vegetable types, apart altogether from such organisms as could have migrated thither. Indeed, this would actually occur in places where migration could scarcely have been possible. This view of the subject is fully borne out by such indubitable evidence as afforded by paleontological investigation. If, for example, we again allude to the pre-historic fauna of Australia we find in the remains of the Diprotodon, the Nototherium, and other associated types a group of extinct marsupial animals peculiar to the country.* These remarkable species were certainly not the product of a migratory movement in any direction, for they occur in no other part of the world. In this instance alone an independent creation of species must be admitted, for it can scarcely be assumed that these animals were produced by the process of evolution. Not only were they peculiar to the inland region of Australia, but they disappeared entirely during the age that gave them birth. They existed under conditions eminently favourable to life and became extinct when these no longer obtained.

It is of the very essence of the distribution theory that continuity of land masses must have existed from pole to pole, not necessarily concurrently, but the succession of unity must not have been long interrupted in either hemisphere. That the land surface was continu-

* Traces of the remains of pre-historic man have been discovered in South eastern Australia, entombed beneath the basaltic lavas, showing that there existed a race of people contemporaneous with the extinct marsupial fauna.
ous and unbroken from pole to pole during the earliest cooling stages of the globe, and probably long anterior to the advent of animal life, cannot be reasonably disputed nor denied. But with succeeding ages remarkable changes occurred in the configuration of land masses and surface features, as well as in the formation and distribution of seas. The conditions necessary for the distribution of animated life over the whole land surface of the earth no longer existed, and the development of specific forms was, therefore, regulated and controlled by heat and other varying and contributing causes of life. During the entire duration of the glacial epoch, in either hemisphere, life would most probably be both retarded and annihilated, but there is not sufficient evidence to support the theory that the distribution of the fauna or the flora of the period was controlled by the dominating ice sheets.

This now brings me to a brief consideration of the relative position of the Australian Continent during past geological ages. Its former southerly and easterly extension has been assumed on the evidence afforded by the relationship of many species of its fauna and flora to certain corresponding forms of adjacent countries. That such affinities actually exist or have existed has been clearly enough shown. Upon this point I have no doubt whatever. Still, not only must this distribution theory be dismissed for the reasons to which I have already alluded, but it lacks the support of geological evidence, which to my mind is essential to the consideration of such a vast subject. Assuming the distribution theory to be a feasible one, it seems to me that complete continuity of dry land is not at all necessary for the migration of plant life. Beyond a doubt, seeds are carried for enormous distances by the currents of the ocean, and they drift about by the force of prevailing winds from shore to shore as well. Some authorities hold to the opinion that the seeds of certain plants are not distributed in this manner. This view, I know, is fondly cherished by my esteemed friend, Mr. Charles Hedley, of the Australian Museum, respecting the cocoanut, the opinion being entertained that there is no such thing as a self-planted cocoanut palm, so to speak. Now this belief is so directly opposed to what has actually come under my own observations, that it is necessary in the interests of knowledge to protest against it. During a somewhat lengthy experience amongst palms and reefs, I may simply remark that I have actually watched the development of scores of self-planted cocoanut palms from the first stage of germination. The self-planting process occurs under two distinct conditions, of which I possess a very clear and undoubted knowledge. The drift cocoanut is washed up above ordinary high water mark where rootlets are thrown out into the soft soil deposits along the shore. Here the process of self-planting takes place, and development under ordinary, favourable conditions is rapid.
It is also common enough for the fallen nuts to develop into sturdy and vigorous palms in the soft alluvial or loamy soils at the foot of the parent tree. Instances of the kind have so frequently been noticed that their mere enumeration would result in weary and unprofitable repetition. But, to revert to the chief subject under consideration, it may be of interest to offer a few further remarks upon the extension of the continental lands of Australia. That they once stretched farther south than Tasmania, or farther east than the outer edge of the Great Barrier Reef, is the basis of a theory that can never be clearly established. There is not sufficient evidence to justify the serious consideration of such a contention, and its advocacy can only be regarded as the outcome of fertile imagination. There was in all probability an extensive development northerly and north-westerly some time during the Mesozoic period, when Australia and New Guinea were united with the southern portion of Asia, the intermediate islands being included in the union as well. The geological structure of the chain by which these now separated regions were formerly bound together in one vast continent, leaves little room for doubt upon this point. If in connection with the past history, as revealed by the rock structures, the affinities of the faunas and floras be considered it will be found that the evidence in support of this theory is abundant. It is a view which, in point of fact, will satisfy both the geologist and naturalist. The distribution of life over this great Austral-Asiatic continent was probably limited to comparatively small zones, where the physical and climatic conditions were favourable to the existence of some very remarkable species of animals. This was evidently the case with the central portion of Australia, where the huge marsupial forms were numerously represented. In India there was probably a somewhat restricted range also, but the New Guinea inhabitants were scattered over a much wider area. Mr. A. C. Gregory is, however, very decidedly of opinion that Australia was entirely separated from Papua before the development of mammalian life in the former country. This view is very clearly expressed by Mr. Gregory in his Inaugural Address to the Australasian Association for the Advancement of Science, to which I have already alluded. Assuming the theory to be a sound one, it very naturally follows that the marsupial fauna of Australia is the product of independent development. Whether this was really so in the case of the entire mammalian division it is impossible to tell, but is no doubt true of the gigantic animals, represented by the huge Diprotodon and associated fauna which were restricted to Australia exclusively. It may, however, be interesting to note that the common hedge-hog occurs in Australia and New Guinea as well. This, from the naturalist's standpoint, is an important piece of evidence in favour of the distribution theory, which would fall to the ground were Mr.
Gregory's views accepted. Be this as it may, it seems very clear to me, that no such theory can possibly stand the search-light of criticism which lacks the support of geological evidence. And true enough, it is indeed the entire absence of this vitally important factor which renders the discussion of the subject of a former vast southern continent, to which I have already alluded, so unsatisfactory. The mere affinity between the fauna and flora of regions far apart, and the existence of comparatively shallow submarine banks connecting these regions are not sufficient to warrant the assumption that they were formerly united by bridges of dry land. The physical conditions of the bed of the ocean, as likewise those of the land itself, must largely if not wholly depend upon the movements of the earth's crust. That in point of fact, the movements which cause a change in the one may or may not be concurrent with the changes in the other. Thus it sometimes occurs that the configuration of land masses is entirely altered, islands are formed and vast areas of the ocean bed changed in a few moments by the eruptions, convulsions, and earthquake movements that have played such an active part in shaping the surface of our planet. That these internal forces are not yet quiescent in many regions may be inferred from the comparatively recent coastal pulsations which brought about such remarkable changes on the eastern coast of Japan, in China, Samoa, and Java. Besides producing many very important changes in the surface features of our planet, there is abundant evidence to show that earthquake disturbances and associated phenomena exercise unlimited influence over the evolution of islands and continents, and the consequent distribution of the land and waters of the globe. In this connection it may, indeed, be safe to assume that the whole of the Pacific Islands within the tropic belt originated in these subterranean causes, to which also may be assigned the existence of the numerous submarine banks, scattered over the same region. There was doubtless a period of maximum activity beneath the surface of the earth, when great changes occurred throughout the zones of least resistance. Most of the islands and archipelagoes of the Polynesian and Melanesian areas as well are deeply branded by the volcanic fires that in many parts are not even yet wholly extinguished. Although Australia as a whole is altogether free from such deep seated subterranean disturbances as completely destroyed the picturesque Terraces in the North Island, New Zealand, and likewise brought about some remarkable changes in the surface features of the country there, it must not be imagined that this was always the case. As a matter of fact, there are several localities, notably in Queensland, where the lava beds and other associated indications show unmistakably that the eruptive forces have formerly been very active there, and that the country has already passed through the period of greatest seismic activity. From what has been
said in connection with the foregoing observations, it may fairly be assumed that the evolution of continental Australia was not in any degree influenced by such land masses as may have existed south of Tasmania. Furthermore, it is reasonable enough to conjecture that the huge prehistoric animals, whose remains have been discovered over many of the interior portions of the country, where they seem to have been completely extinguished, when the conditions of life were no longer favourable to their existence, were the product of independent development and not the result of migration.

In conclusion, it may be remarked that the theory of a former Antarctic continent, or a great Pacific one for that matter, will always remain unsatisfactory to the student of geographical knowledge so long as it is based upon purely assumptive evidence. It is all very well to advocate theories concerning the distribution of land masses in the Southern Hemisphere. The subject is one upon which there is indeed considerable difference of opinion amongst naturalists themselves who have endeavoured to account for several widely distributed species of the southern fauna and flora by assuming that formerly vast continents existed where there is now nothing but the ocean. The authors of these numerous theories should first of all agree amongst themselves before expecting others to fall in with their views. The subject would then be fairly discussed upon its merits. At present it is hopeless to attempt anything of the kind. The vast superstructure is already tottering upon a slender basis, which will become weaker and weaker as the highly imaginative mind pauses to reflect.

Before the reading of the paper, the President (Rt. Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), said:—Your Excellency, Ladies, and Gentlemen.—The business before us this evening, I may explain to you, arose out of a letter which was addressed to myself, as President, some months ago from the oldest Geographical Society in the world—that of Paris.* I think it may interest you if I read the letter, which has not yet been produced before our Society. It is from His Imperial Highness Prince Roland Bonaparte, to whom I have sent a reply. (Letter and reply read). Following upon that, it will interest you to know that our esteemed Hon. Secretary (Mr. J. P. Thomson) was appointed Correspondent for the Paris Geographical Society with the approval of all the members of the Council. In furthering the work which he has taken in hand voluntarily and without any remuneration whatever, he has been occupied for the whole of his time lately in preparing a series of papers, the first one or two of which have already been forwarded to Paris for “La Géographie,” and our Council considered that it was only the proper thing that we ourselves should also have the benefit of these valuable scientific papers, by having them read to us and published in our own proceedings. I may also mention that Mr. Thomson in carrying out the work

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* Mr. J. P. Thomson also was the recipient of a letter from Prince Roland Bonaparte, President of the Société de Géographie, and another from Mons. Charles Rabot, Secrétaire de la Rédaction, both soliciting literary contributions from Mr. Thomson to the columns of “La Géographie.”—Ed. “Q.G.J.”
has received the cordial support of the Governments of the various Australian Colonies, and I trust that when he afterwards comes to prepare a paper dealing more especially with Queensland, our own Government will render every additional assistance that is possible in the way of providing illustrations, photographs, charts, maps, and whatever else may be required. In doing this they will be conferring a benefit on the colony to which we belong, because papers of that nature being sent to the Paris Geographical Society will be published in their proceedings, and not only so, but they will be noticed in other parts of the Continent, and thus distributed over the whole of Europe. I anticipate that this will be the means of doing great benefit to our own colony of Queensland. I will not detain you longer. The paper to be read to you this evening should not only be most interesting, but extremely instructive. I am sure you will all be gratified with the papers which Mr. Thomson has prepared, and which will probably be published over a considerable portion of the world. I now call upon the Secretary to read his paper on the subject of "The Geographical Evolution of the Australian Continent." (Applause.)

After the reading of the paper.

His Excellency Lord Lamington said:—Mr. President, Ladies, and Gentlemen.—Mr. Thomson has to-night given us another instance of his continuous and laborious industry, which has been manifested in everything that concerns the work of this institution, and we must feel well satisfied to think that we have in our midst a gentleman who is ready to take upon himself the onerous work of preparing such elaborate papers for us. At the last meeting I had the privilege of attending here Alderman Jones gave a very long disquisition upon all that had been done for this Society by Mr. Thomson, and a large number of speakers, including Sir Hugh Nelson, also spoke of their appreciation of the value of his work. Acting on a certain resolution passed that evening that there should be some practical recognition of the great services rendered by Mr. Thomson to Geographical Science, there has been a suggestion made that a Foundation Medal connected with his name should be established by this Society. Mr. Thomson did not wish that anything done should be directed towards his own benefit, but as carrying on the idea connected with his work. He wished to give encouragement for zeal and industry on the part of any member of the community in directing attention to Geographical matters, and the establishment of a Foundation Medal met with his approval. Mr. Thomson has shown great disinterestedness in this matter. His past work, and the paper he has read this evening, which has already been transmitted to France, entitle him to our very cordial thanks for his energy and industry in preparing papers which will be for the benefit of Queensland. I have therefore much pleasure in submitting to you a vote of thanks to Mr. Thomson for giving such an able and exhaustive paper, which must have involved an enormous amount of research.

The Hon. A. C. Gregory said:—Gentlemen.—In seconding the vote of thanks which His Excellency has so kindly proposed to us, I wish to say a few words in regard to my experience on matters dealt with by Mr. Thomson in the paper he has just read, and to which I have listened with pleasure. A large amount of scientific information, which members could hardly attain for themselves, has been collected together in this paper, and many facts that otherwise must be scarcely known to the public generally, have been presented in a lucid and excellent form. There is no doubt that investigation of this kind must always rest upon a great variety of evidence, which it is difficult to bring together and present in so lucid a form. I feel the greatest pleasure in seconding the resolution to-night.

The vote of thanks was unanimously passed by the meeting.
The President (Sir Hugh M. Nelson) said:—Mr. Thomson, I have great pleasure in conveying to you the vote of thanks which has been passed, and hope you will continue to give us the benefit of your great talents. I also hope that when we come to listen to the succeeding papers, we shall be as much gratified as we have been this evening. I myself am longing most of all to hear the one which will deal more particularly with Queensland, and I have no doubt that when we come to that particular part of the subject it will even be more interesting than the one which has been dealt with this evening. It gives me great pleasure to convey to you the thanks of this meeting and of the Society for your exertions on their behalf.

Mr. Thomson said:—Sir Hugh Nelson, Your Excellency, Ladies, and Gentlemen.—I thank you very cordially for the kind expression of appreciation which you have passed upon my communication to this Society. It has given me great pleasure to appear before this meeting, and I consider it a privilege to be able to contribute to the work of the Society here. His Excellency has made a slight reference to the action of the Society at our last meeting. I may say it is one which I hope will be of great benefit to the Society. I suppress myself in the matter altogether. I have experienced great difficulty in obtaining suitable papers for reading before our Society, and I apprehend the same difficulty is found in the work of other societies. This difficulty promises to be increased rather than diminished, but I believe the action taken by the Council will result in great benefit to the Society and will be the means of stimulating it to renewed activity.

The President (Sir Hugh M. Nelson) said:—With regard to the Foundation Medal, which it has been arranged to establish in connection with the name of Mr. Thomson, I may say that the matter was left in the hands of a Committee of the Council. The whole matter has not yet been carried out, but we have made a considerable amount of progress, and in the meantime one or two of our members have voluntarily sent contributions for the purpose of establishing this Medal, which we propose to offer to members of the Society or to anyone else who will compete in the way of providing papers connected principally with Australia. At least we will give Australia the preference. The papers will be received, and the method of judging will be established, the Medal being awarded to the writer who contributes the most scientific and on the whole the best paper on the subject. If we raise the amount of about £200, by capitalising that sum, and receiving interest even at the rate of 3 per cent., we shall be enabled to provide for all time a valuable Medal for the object we have in view. I need hardly say that we hope to receive the co-operation of all the members of the Geographical Society in carrying out this object.
ON THE MITIGATION OF FLOODS IN THE BRISBANE RIVER.*

By the HON. A. C. GREGORY, C.M.G., F.R.G.S., Etc.

Colonel Pennycuick has published a letter in which he states that the conclusions set forth in my paper on the Mitigation of Floods in the Brisbane River have been based on a misreading of his report to the Government in November, 1899. And that my computations of the amount of flood water to be controlled were contingently incorrect.

Were it not that such large interests are involved in the elucidation of the practical details of the extensive works necessary and the immense value of the property affected by a flood of the magnitude of that of 1893, I should not have troubled the Society with another paper on the subject, but it seems important that there should be a full inquiry into details before such an important undertaking is commenced.

Some delay has occurred in referring to the Official Reports on the Hydraulic Works in Southern India, on which Colonel Pennycuick was engaged, as it was on this experience that he founds some of the important factors on which the proposed works on the Brisbane River have been designed, for differences in the climate and geological character in two geographically distant localities often involve the necessity of great variations in the construction of works such as are under consideration.

First, Colonel Pennycuick objects to my quoting his report as indicating that the loss of rainfall by absorption is one-fifth, and states that the proportion must have been taken from Mr. Henderson's estimate. But this is a mistake, as it was adapted from Colonel Pennycuick's own equation, $cM^2$, in which the factor $c$ is explained to represent the loss due to "physical, geological, and climatic conditions of the area," and this he states has been found to vary from 0.400 to 0.800. In the case of the Brisbane River the higher factor has been taken because its rocks, soil, and vegetation are not of an absorbent character, and had also been saturated by a rainfall of 9 inches during the preceding month.

The second factor of $\frac{9}{2}$ represents the decrease of flow from detention, and the filling of the flooded areas; but as the whole of the country above the Dam is exceedingly steep and the watercourses comparatively short, taking the mean of only two days would reduce this to zero.

* Read before the Royal Geo. Soc. of Australia, Queensland, Oct. 22, 1900.
Colonel Pennycuick states that he never said anything about averages of the four days of heavy rain, nevertheless he adopts the co-efficient of "two-thirds" to cover the irregularity of the times required for the water to reach the lower part of the river, and he must also have taken into his calculations the average rainfall during each 24 hours, and the average of the different stations of observation.

A very amusing illustration of Colonel Pennycuick's theory of the travel of rainfall down a river is then set forth in the form of asking, how if a man were stationed on each of the 2,500 square miles of the Brisbane watershed, how long would it take them to reach the city?

If the movements of the men were to be guided by the undeviating laws of gravitation, etc., which control the drops of rain, the problem could be solved with sufficient accuracy, but human beings are to a great extent guided by the incommensurable factor of reason, and therefore not even an approximate result could be counted upon.

However, taking a more serious view of the subject, Colonel Pennycuick's contention is, that taking his experience of rivers in Southern India, the decrease in the maximum flow down the lower parts of their main channels, caused by retardation and the filling of flooded areas, is about one-third, and that the resulting flow is reduced to two-thirds of four-fifths, or 53 per cent. of the actual rainfall.

In examining Colonel Pennycuick's method of computation, let us take his estimate of 240,000 cubic feet per second as the maximum quantity that passed the Victoria Bridge, and apply his equation \( cM^2 \) in order to find the equivalent quantity of rainfall on the 2,500 square miles of the watershed.

The equation stands thus, \( c \) is the numerical co-efficient less the absorption depending on the physical, geological, and climatic condition of the drainage area, and is estimated, in the case of South Indian rivers, to vary from 0.400 to 0.800, and in certain specified cases was found to be 0.714, 0.720, and 0.742; 0.800 has been adopted for the Brisbane River.

The second part of the equation is \( \frac{2}{3} \), indicating the balance of the water after deducting the decrease by detention and filling flooded areas, as for instance, in the Brisbane River it represents the decreased maximum of the flow down the 30 miles of channel from the Dam to the Victoria Bridge.

The value of \( M \) is the total area of the catchwater.

To put the question in a practical form, for any one day, 53 per cent. of the rainfall would pass the Victoria Bridge as the maximum flood. Or inverting the equation, for every 100 cubic feet passing the Bridge, there must have been a rainfall of 187 cubic feet.

Taking the estimate of 240,000 cubic feet per second as the maximum flood at the Brisbane Bridge, we find that 240,000 c.f. per second
is 20,736 millions c.f. per day, and multiplying this by the co-efficient, 1.87, we have 38,776 millions c.f. or 465,315 square feet one inch deep. The number of square feet in 5,200 square miles is 144,967 millions, which gives the result of 3.2 computed inches of rainfall. But the recorded actual rainfall was 7.3 inches, or more than double the computed quantity.

If we apply the co-efficient, 0.53, to the recorded rainfall of 7.3 inches on the 5,200 square miles, equal to 88,188 millions of cubic feet per day, or 541,000 cubic feet per second, or more than double the quantity Colonel Pennycuick estimates to be the maximum which could have passed the Brisbane Bridge.

If these two calculations had been based on correct values they ought to have agreed, but it is evident that there is some serious defect.

The material question at issue is not what is the exact number of cube feet which will flow past the City of Brisbane, but what is the quantity which has to be stored in the reservoir to reduce the flood level from 30 feet to 15 feet above mean tide level as suggested by Colonel Pennycuick for the relief of the lower part of the river valley.

For the reasons given in a previous paper it is evident that to reduce the level of the flood to one-half, at least one-half of the supply must be withheld, or if Colonel Pennycuick's view, that the river channel below mean tides is of little value in the transmission of flood waters, is adopted, then two-thirds of the flood waters would have to be kept back. One-half will, however, be adopted in the following calculation.

One important point as regards the quantity of water to be held back in the reservoir is that it will not be subject to the same reduction on account of retardation and the filling up of flooded areas as that which has the further flow of 50 miles down the main channel, and the co-efficient of two-thirds on this account disappears.

We may, therefore, safely take the co-efficient from Colonel Pennycuick's own observations of the three rivers in South India, the mean flow of which into the main channel being 0.725 of the rainfall.

The rainfall on the 4th February was 7.3 inches on the whole area, equal to 88,188 millions of cubic feet, and this multiplied by 0.725 becomes 63,935 millions c.f., or two and a half times the capacity of the reservoir. Of this, one-half, or 31,967 millions c.f., would flow down the river, 25,000 millions would be stored in the reservoir, and there would be a surplus of 6,967 millions of cubic feet, even if the reservoir were empty at the commencement of the day; but as on the previous day the rainfall (corrected) was 46,593 millions c.f., there was a surplus of 14,626 millions, making a total of 46,613 millions.

If instead of adopting the mean of the Indian rivers quoted by Colonel Pennycuick, we substitute the co-efficient he proposes for the-
Brisbane River of 0.8 to cover absorption, etc., then the case stands thus, premising that the corrected maximum rainfall was on the 4th February 70,545 millions c.f., of which one-half or 35,272 millions could pass down the river.

On the 2nd February the corrected rainfall was 34,742 millions c.f., and, therefore, the whole could pass down the river.

On the 3rd February the corrected rainfall was 51,412 millions c.f., of which 35,272 could have passed down the river, but the remainder, 16,140 millions, would have to be retained in the reservoir.

On the 4th February the corrected rainfall was 70,543 millions c.f., of which only 35,272 millions could pass down, and the balance of 35,272 millions added to that retained on the previous day, makes 51,185 millions, or 26,411 millions in excess of the capacity of the reservoir.

Though co-efficients may be computed for the determination of the flow of water resulting from definite periods and quantities of rainfall, yet in practical investigations it is found that the co-efficients of loss or reduction decrease as the period and quantity of rainfall increases.

Thus if there were a constant quantity of rainfall over the watershed or basin of a river, the discharge at any part of its lower course would from the commencement gradually increase till it almost equalled the rainfall, as there would be no progressive filling of flooded areas, soakage, or evaporation.

Thus we find that in actual practice the flow of rivers increases in proportion to the time of continuance of rainfall, and therefore no co-efficient of constant value is applicable to a particular day unless the conditions of the previous days are taken into account, and it is on this point that Colonel Pennycuick's equations, though they might be applicable for the determination of the average flow for a year, as in dealing with irrigation, are only misleading when employed for the determination of the maximum of flood.

The next step is to deal with the actual conditions of the flood of 1893. The rainfall in December, 1892, was seven inches, so that the ground was well soaked, all channels and backwaters filled to overflowing, and large quantities flowing down the river.

In January, 1893, nine inches of rain fell, and all the branches of the Brisbane River were in a state of flood. and when the heavy rain on the 2nd, 3rd, and 4th February fell, it would not be subject to any important deduction, while it would be in addition to the remains of the previous floods, so that the actual discharge of the river would practically equal the rainfall.

It is under these conditions that we have to ascertain what quantity of water has to be dealt with at the reservoir, in order to retain one-half.
On the 2nd February the rainfall was 48,438 millions c.f., of which 43,591 millions could pass the bridge and 4,848 millions retained.

On the 3rd February the rainfall was 64,266 millions o.f., of which 43,591 millions would pass the bridge, and 20,675 millions added to the previous surplus makes the water to be retained 25,523 millions.

On the 4th February there was 87,182 millions c.f. rainfall, of which 43,591 millions would pass the bridge, and 43,591 added to the 25,523 millions becomes 69,114 millions to be retained, being nearly three times the capacity of the reservoir.

Having endeavoured to determine the quantity of flood water passing the Brisbane Bridge on the basis of the rainfall on the catchwater of the river, it is desirable to seek some data which are independent of the rainfall and the area on which it is collected, and fortunately we find such data in the rise and fall of the tide and the area it covers above the Brisbane Bridge.

In computing the flow of the tide past the Brisbane Bridge we find that the tide rises 7 feet, and the breadth, 1,200 feet, giving an area or base of 8,400 square feet. The tidal water flows up 50 miles, the channel narrows, and the tide decreases so that the cubic contents of tidal water may be taken as a pyramid with a base of 8,400 square feet, and an altitude of 50 miles, equal to 739,200,000 cubic feet.

The period of one rise or fall of the tide is 6 hours, and the discharge varies from 0 to 68,444 cubic feet per second. Thus the flow at the Brisbane Bridge at its maximum is 68,444 cubic feet per second with a grade of 7 feet in 15 miles to the entrance of the river, or 6 inches per mile or 1 in 10,600.

In a flood of twice the height of the 7 feet tide the discharge would be three times as large or 205,322 cubic feet per second, and a flood of 14 feet would increase the quantity three times or 616,000 cubic feet per second actually passing the Brisbane Bridge.

It is, therefore, evident that the estimate by Colonel Pennycuick of 240,000 cubic feet per second being the maximum flow past the Brisbane Bridge is negatived by this independent method of computation, and that the results of observations of the velocity of the current come much nearer to the correct quantity.

As Colonel Pennycuick refers to his experience of rivers in Southern India, where he was engaged in the construction of highly important works for the conservation of the waters of the Periyar River, and their transference across the dividing range to the valley of the Vaigai River for the purpose of irrigation, it will be instructive to compare that work with that proposed to be constructed on the Brisbane River.

The great Dam on the Periyar River is situated about 60 miles below the upper end of its valley or watershed, which includes an area
of 600 square miles. The watershed of the Brisbane River is 5,200 square miles, or seventeen times the area of the Periyar watershed, the Dam is to be about 40 miles from the ranges which bound it.

The rainfall of the Periyar River is given as about 100 inches per annum, but it scarcely exceeded 50 inches during one of the years during the construction of the works.

The rainfall on the Brisbane River during the flood year of 1893 was 88 inches, of which 9 inches fell in January and 37 inches in February, so that the rainfall of the two districts do not differ materially.

The prevailing rock of the Periyar area is Syenite, which by decomposition forms a porous soil, covered with dense jungle, and except in long continued rains absorbs a large portion of moisture.

The prevailing rock in the Brisbane area, Devonian Slates, with a few outcrops of granite character, and on the southern or Bremer branch, Carboniferous shales are largely developed.

The vegetation is chiefly open forest of eucalypti, and absorbs but little rain. The soil is thin and non-absorbent, as is shown by the absence of springs, and the early cessation of the flow of water down the watercourses after rain.

Heavy rains on the Periyar caused an outflow at the Dam of 127,000 cubic feet per second, and the equivalent proportion for the Brisbane River would be 2,197,100 cubic feet per second, and this in excess of absorption of detention. The equivalent of rain being 16 inches.

If to this we apply Colonel Pennycuick's co-efficient for the Vaigai River (which is contiguous) of 0.72, which inverted becomes 1.4, the result is 3,065,490 cubic feet per second as the rainfall.

It appears difficult to reconcile the apparent differences between the estimated discharges of these rivers and the records of actual observations, but it appears that Colonel Pennycuick's observations were made during years of moderate rain, and that he had removed to another district before the year of maximum flood in the Periyar River.

The proposed Dam on the Brisbane River is of similar design and proportion, except that there are a series of sluice ways through the lower part, and a corresponding increase of thickness on the upper side which, giving a broader base, remedies a defect in that on the Periyar River, which is deemed to be defective in its equilibrium when the reservoir is empty and the upper side relieved from the pressure of water.

In a construction of a dam on the Vaigai River in connection with the Periyar works it was deemed expedient to give it a much broader base to ensure stability.
The Periyar Reservoir is not only provided with an outflow through the tunnel across the dividing range to the Vaigai River, but there is a by-wash across a ridge near the Dam.

No provision is made for the relief of the Brisbane River, except the sluices.

At the Periyar Dam it was contemplated to form a sluice through the base, but this was negatived by the Head Department, as it involved the risk of injury by drift timber striking the masonry or obstruction to the flow, so as to render it useless. The same objection applies to the Brisbane River, and is accentuated by the omission of a by-wash.

No provision is made for the drainage of the foundation of the lower side of the Brisbane Dam, nor was any such drainage contemplated in the Periyar Dam, but by accident the broken stone was not fully consolidated with the grouting, and rubble drainage resulted.

The omission of proper drainage for the foundation of the lower sides of dams has caused several serious accidents, but, unfortunately, few engineers have given this important detail of construction adequate consideration. My own experience on the construction of the reservoirs for the supply of the City of Brisbane has illustrated the importance of this detail of construction.

In conclusion, I have to express my concurrence with Colonel Pennycuick’s suggestion that a year’s experience on the Indian Irrigation Division would have been highly instructive and advantageous to me, but Providence ordained that I should have to execute the surveys, select the sites for the reservoirs and pumping station, and make the necessary computations for the water supply of Brisbane, some ten years before Colonel Pennycuick commenced somewhat similar operations of India. I have, however, endeavoured to avail myself of the valuable information contained in the Official Report on the Works he conducted on the Periyar and Vaigai Rivers for the purpose of comparison with Queensland Rivers, meteorology, and water conservation.

As an illustration of the cost of a somewhat similar work at Bradford (Yorkshire, England), a reservoir has just been constructed at a cost of £1,500,000 for water supply.

The area of the watershed is 50 square miles, or one-fifth of the Brisbane watershed above the Dam.

The Dam is 500 feet long in masonry, and 500 feet of earthwork, and 105 feet high.

The dam on the Brisbane would be 2,000 feet long, and the masonry four times the length of the Bradford masonry.

The heights of the dams are nearly equal—105 and 110 feet.

The capacity of each of the two reservoirs is:—Bradford, 250 millions of cubic feet; Brisbane, 25,000 millions cubic feet.
As works of less than half the magnitude in England, where every mechanical appliance for the economy of manual labor is available, cost £1,000,000, it is difficult to accept the estimate of £1,500,000 as the probable cost of the proposed reservoir on the Brisbane River.

Mr. C. B. Lethem said that he very much regretted having been unable to be present when Mr. Gregory read his previous paper on the same subject before the Society. Although he had perused the abstract published by the Press at the time, it was not until the Transactions of the Society for the past Session had been issued, that he had been able to study Mr. Gregory’s figures.

With reference to those bearing on the question of rainfall, he submitted, with all respect due to Mr. Gregory, that his estimate of the average rainfall over the watershed of the Brisbane River was too high. Mr. Gregory had taken the recorded rainfall at a number of stations above the site of the proposed dam and at seven or eight places on the remainder of the watershed, and calculated the average rainfall from this data, giving equal weight to each station, irrespective of their relative positions, the average thus obtained being nearly 24 inches. He thought a more accurate method was to ascertain the probable area affected by the rainfall recorded at each station, for if the map of the district were carefully studied it would be seen that while the enormous rainfall (over 83 inches) recorded at Crohamhurst probably was restricted to an area of about 50 square miles, the recorded fall at Fassifern (14 inches) extended very likely over 400 square miles. By calculating the volume of rain for each station on this basis, and then dividing by the total area of the drainage basin, he arrived at an average of 16 inches, which he thought would be more correct. It appeared probable, therefore, that the quantity of water flowing down the river in flood time was only about two-thirds of that estimated by Mr. Gregory.

He also desired to draw attention to the figures given near the foot of page 46, of the Transactions of the Society, 1899-1900. Mr. Gregory there referred to the average rainfall for the eight days of rain, which caused the flood, as 5.10 inches, this would give a total of over 40 inches. Surely there was some mistake here.

After all, however, there was not much use discussing whether the proposed dam would be of sufficient size or not to cope with a flood of the same volume as that of 1893, for, in his opinion, there was nothing to prevent a far greater flood than that one. As a matter of fact, it was only because the centre of the disturbance struck the coast opposite the Blackall Range, which caused the rainfall to flow northerly towards Maryborough, as well as southerly to Brisbane, that the latter town was saved from a much more disastrous inundation. He calculated, from the best data available, that the average rainfall over the watershed of the Mary River was about 32 inches, or just double that of the Brisbane watershed; consequently, although the area of the former was only about 3,000 square miles, it was evident that a greater quantity of water flowed to the north than to the south. If, therefore, the storm had been 40 or 50 miles further south, Maryborough would have been saved, but how would Brisbane have fared. It seemed to him, therefore, that a very much larger margin of safety should be allowed than Colonel Pennycuick had provided for.

In common with other cities he had thought that the discharge of the rain must be much more than 35 per cent. of the rain falling in such a short period, and would have thought it safer to allow for double that percentage, but he was diffident of appearing to find fault with such an eminent and experienced authority as Colonel Pennycuick.
With regard to the improvement expected from cutting off the bends in the river, he was very sceptical as to whether the result would be so satisfactory as was anticipated. It would be remembered by those present how high the water rose over the railway line at Breakfast Creek, and yet, what a splendid get-away it had down the long reach past the Hamilton. The fact was that the surface gradient of the flood water would remain about the same, and if it were lowered a little at any one place it would only steepen the gradient above, and so bring the upper waters down more quickly to fill up the vacuum.
THE MURRAWIN CEREMONY.*

By R. H. MATHEWS, L.S.

(Conres. Memb. Soc. d'Anthrop. de Paris, etc.).

Among the Thangatty and their allies on the Macleay River and tributary streams, New South Wales, there is a preliminary form of initiation ceremony known as the Murrawin. This rite is also found among the Koombanggary as far north, approximately, as the Bellinger River, and also south of the Macleay to about Hastings River, occupied by the Birralee and other tribes. Unlike the Burbung (1) or Keeparra (2) ceremonies, which involve summoning the entire community, the Murrawin can be proceeded with by two or three adjoining tribes, who assemble for this purpose, being brought together in the usual way by means of messengers sent round by the headmen.

When the tribes have met at the appointed place a number of the initiated men of each tribe go several miles into the bush and clear a small piece of level ground of all loose rubbish and grass. On this clear space they form a ring about twenty feet in diameter, bounded by a low embankment of the loose earth scraped from within. They next make two or three small bullroarers, called gheewarra or quarra, and return to the main camp. These proceedings, which are the commencement of the ceremony, are called Gheewarra balakny.

That evening, after dark, some of the oldest men go away about 200 or 300 yards from the camp of the rest of the people and form a small camping place for themselves, which is called Thoorapee, where they light a fire. They then swing a gheewarra, and beat their hielamons with a nulla nulla, singing the incantations usual on such occasions. When the initiated men at the main camp hear this, some of the eldest of them go and join the old men at their new quarters. These men do not all start at once, but a few go at one time and a few at another, and some of them carry food to the old men. Next day the men at the thoorapee go out hunting, and on returning they swing a gheewarra the same as before, and more men from the main camp join them. This procedure is carried on for a few nights, until all the initiated men from the tribes present have joined the old fellows at the new camp.

* Read before the Royal Geographical Society of Australasia, Queensland, October 22nd, 1900.

The men belonging to one tribe then commence to abuse those of the other tribes present for coming to carry off their sons. The men of each tribe take their turn in hurling invectives against all the rest. After the free use of heated language for some time, the matter is allowed to drop. A feigned quarrel of a similar character always precedes the taking away of the novices in all the initiation ceremonies with which I am acquainted.

The following morning early the gheewarra is sounded as usual, and after breakfast all the people shift camp to another locality, where the women, boys, and girls camp in one place, and the men in another. The men then go out into the bush to the ring they had previously prepared. They approach it in single file, tapping their boomerangs together, and having marched once round it they enter it and dance. During this time some of the men are standing outside beating a shield with another weapon. All hands then leave the ring and start homewards, hunting as they go. On approaching the thoorapee they walk in Indian file, carrying such game, honey, or roots as they may have obtained. This procession is called Ngooraykoo bimbinnie. The gheewarra is sounded as usual, and the men presently carry the game to the women's camp, where they have supper. They afterwards return to their own quarters, where they sing and beat their shields, and dance by the light of the camp fires, stamping on the ground heavily with their feet. The time has now arrived for separating the novices from their mothers, and handing them over to the headmen for the purpose of initiation. It will be convenient in some respects to describe the procedure as if applying to one novice, although there may be several boys to be operated upon at the same time.

At the conclusion of the preliminaries referred to, all the men at the thoorapee get small pieces of dry bark, which had previously been made ready, and place one end of them in the camp fire for the purpose of being ignited. They then each take one of these pieces of burning bark in their hands and swing them in the air, dancing and jumping about while doing so. They now start towards the women's camp, carrying the firebrands in their hands, and shouting. When the women hear the shouting and the stamping of the men's feet, and see the waving of the fiery pieces of bark, they strip the novice naked and put him standing near their own camp fire, with his mothers and sisters beside him. The men carrying the burning bark approach, and run up close to the boy, as if going to catch him, and then retire several paces. They do this again in the same

way, and on the third time one of the men, who stands in the relationship of brother-in-law to the novice, and is acting as his guardian, then steps out, and, catching him by the arm, leads him in amongst the men, who raise him astride his guardian's shoulders. All the men then start away back to their own camp, the man carrying the novice being in the middle. The mothers and sisters commence shouting "Wy! Wy!" and throw firesticks after the men.

On reaching their own camp—the thoorapce—the men place the novice lying down, face upwards, on the ground in the light of the camp fire, and two of them sit straddle-legs across his body. A couple of men then catch the boy by the shoulders, two more take hold of his feet, while one man supports his loins, and raise him from the ground as high as they can, with the two men sitting astride his body, and lower him down again. This is repeated two or three times, and at its conclusion the men participating in the performance catch hold of their genitals, inviting the boy to pay particular attention. Each man then rubs his hands over the nose and mouth of the novice, after which he is put lying down on leaves, with more leaves thrown over him, near the fire.

A number of the men then get each a stick, about the size of a walking stick, and stand in a row in the light of the camp fire. The boy is uncovered and placed sitting up, and directed to look at the men, who then all rush towards him, pointing the ends of the sticks close to his face, as if going to poke out his eyes. Two of the other men, one on each side of the boy, stand out, armed with nulla nullas, and pretend to defend him. The men with the sticks retive several paces and turn their backs in the direction of the boy. They then step backwards towards him, and when standing around him they bend their posteriors over him and state that it is their intention to evacuate upon him. The men with the nulla nullas again interpose, and apparently save the youth from this indignity. By this time it is getting late, and the boy is covered over with leaves near a fire, and is not permitted to move during the remainder of the night. If he should happen to want to attend to any call of nature, no matter what it is, he must do it where he lies. He is not allowed to scratch his head or any part of his body.

Early next morning two or more of the principal old women go close to the men's camp and throw each a boomerang, the weapon falling a little way short of where the men are. These old women then start back towards their own quarters, and when nearly there are met by all the other women, carrying each a small bundle of sticks in their hands, and waving their arms up and down. The old women join these, and all of them proceed in the direction of the men's camp, muttering incantations.
In the meantime the men lift the novice from where he has been lying all night and place him on a man’s shoulders—sitting astride the man’s neck, with his legs dangling down in front. All hands then start towards the women’s camp, and when about half way there the boy is let down, and stands beside his guardian, in the centre of the group of men. As soon as the women referred to reach this spot the novice is raised up so that he is standing with one foot on each shoulder of the man who is supporting him, and is exhibited to the women, who thereupon commence throwing their bundles of sticks at the men who have the boy in charge. The men then raise a shout and hold up their spears and other weapons vertically in the air all round the novice, so that he is hidden from the women’s view. He is now lowered astride the man’s neck as before and carried back to the men’s quarters, where he is covered up in the customary manner. The women also return to their own camp.

A number of the principal men now start to the quarters of the women, and on approaching it they pull handfuls of grass, which they take and give into the hands of little boys of all ages who are standing with their mothers ready to meet the men, and the boys hold the grass to their breasts. The men then retreat a short distance and collect handfuls of small sticks, which they bring up and give to the little boys, who throw the grass away and hold the sticks against their breasts. These lads are not yet old enough to be taken away for initiation, and this ceremony is gone through to make them grow up strong. The men then start back to their own camp, and on their way gather handfuls of grass, which they scatter over the novice where he is lying. As soon as the men go away the women and children shift their quarters to another locality, perhaps several miles distant. They are accompanied by some of the old men, and the mothers of the novices are required to sing certain songs morning and evening, and eat such food as is prescribed for them.

We must now return to the men’s camp, which has not been removed from where it was. During the day some of the men go out hunting to provide food. the guardian and the old men remaining all day with the novice at the thoorapee, singing the incantations customary on such occasions. On the return of the hunters in the afternoon they procure a pole about twenty feet in length and three or four inches in diameter, in preparation for the next performance, which is called Goorogaoonbang. The novice is then put sitting near the fire, with his head bowed, and his eyes cast down. About a dozen of the men then go and stand with one of their feet on each side of the long pole referred to, and stooping down simultaneously they all catch hold of it with both hands and raise it from the ground a little higher than their knees. They are all facing where the novice is
sitting, and the front man, who is chosen for his unusual strength, has another man, of small stature, sitting astride his neck, waving his arms up and down and contorting his face. The end of the pole is brought up quite close to the novice's face, and he is told by his guardian to raise his head and look. The men astride the pole are so placed that when the boy looks he can see the whole line of men one behind the other. The men then move the pole forward and backward between their legs, and tell the boy they are going to run it through him, uttering obscene remarks all the time. The scene before him is so very unlike anything he has ever been accustomed to that he is put into a great state of fear and awe. The youth's head is again bent down, while preparations are made for the next scene.

The men now get off the long pole, and turn it at right angles to its former position, and all stand in a line, with the pole in front of them, holding it in both hands, and swaying it from side to side in unison. The boy is again directed to look, and when the performance has lasted for a few minutes the men all let go the pole at once, and it falls with a thud upon the ground; they pick it up again, and after swaying it, let it fall in the same way. This is repeated several times, and then the pole is carried away and placed leaning against an adjacent tree. Some further singing by the old men brings the day's performance to a close, and all hands go to sleep by the camp fires.

Next morning before sunrise some of the men lay one or more shields upon the ground close to the novice's head, where he lies asleep. They then sit down alongside, with their boomerangs in their hands, and at a given signal commence hitting the shields with the flat sides of the boomerangs, making a terrible discord, which awakens the boy with a sudden start. When he shows the first sign of awakening, a man who is standing beside him for the purpose throws a rug over his head, so that he cannot see the cause of the great noise. The weapons are then put away, and the novice is allowed to sit up, half stupefied, and his ears still tingling with the harsh din.

One of the men had previously climbed a tree with tolerably dense foliage in the proximity of the camp, and got among the branches in such a position that he could extend his arms and catch hold of a branch in each hand, with his feet resting on another branch which is partially hidden. Some of the men now say among themselves that there is a stranger up in one of the trees. The novice is then helped to his feet, and brought out and told to look up the tree. On raising his head he sees the man among the branches holding on with both hands and dancing with his feet, which have the appearance of being unsupported. Some of the men pretend to throw weapons at the man in the tree, and while the novice is gazing at him
two other men a little way in the rear commence swinging gheewarras. The boy is then told to turn round and look at these men, and while he is doing so, some armed warriors step out in front of him and caution him in the usual manner against revealing this part of the ceremony, or any of the secret performances he has seen in the bush, to women or the uninitiated. The men who were swinging the gheewarras then approach the boy, and, having rubbed the instruments on parts of his body, place the string around his neck. After this the novice is painted as a man of his tribe, and is invested with the belt, kilt, and other regalia comprising a man's dress. The novice is next taken to the small circle in the bush already referred to. Some pieces of bark are stripped from adjacent trees, and on them are carved spiral, quadrilateral, and other designs such as are seen on trees at the Burbung and Keeparra grounds described elsewhere by me.(1) These strips of bark are laid on the ground near the ring, and the novice is directed to pay special attention to what is shown him, after which the obligation of secrecy is repeated.

The following day the novice is freshly painted, and all hands start towards the women's camp. On nearing it a number of the young men put up quarters for themselves and the novice, where they stop with him for the night—the rest of the men going into the women's camp. The next night the novice and his companions shift their quarters a little nearer to the main camp, and continue coming closer and closer every night until at length the novice is brought right into the single men's quarters. He is now allowed to associate with the men and accompanies them when they go out hunting, but he is not permitted to mix with the women and children during a term of probation, which is fixed by the head men, who also impose upon him certain restrictions in regard to his food. At the next Burbung or Keeparra which is held among his people, he will be present with his sponsors to receive further instruction in the initiatory rites, and will then be shown the Bahram, or white stones, and also the sacred pieces of wood, Kunygara, on which certain mystic carvings appear, which the natives say is the work of Dharroogan, or Gowang, a maleficent being, who is supposed to possess supernatural powers, and to exercise some mystic authority during the performance of the inaugural ceremonies.

It may be interesting to state that the tribe who practise the Murrawin type of inaugural ceremony possess a social organization consisting of four intermarrying divisions. The masculine and feminine forms of the names of the sections, showing how they intermarry,

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with the names of the respective sections to which the offspring belongs, will be readily understood in tabular form:

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Kurpoong</td>
<td>Wirrakan</td>
<td>Wirroong</td>
<td>Wanggan</td>
</tr>
<tr>
<td></td>
<td>Marroong</td>
<td>Wanggan</td>
<td>Womboong</td>
<td>Wirrakan</td>
</tr>
<tr>
<td>B</td>
<td>Womboong</td>
<td>Kooran</td>
<td>Marroong</td>
<td>Karragan</td>
</tr>
<tr>
<td></td>
<td>Wirroong</td>
<td>Karragan</td>
<td>Kurpoong</td>
<td>Kooran</td>
</tr>
</tbody>
</table>

On the Tableland of New England among the Anaywan and friendly tribes, the four section names are somewhat different, as under:

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Irpoong</td>
<td>Irrakedna</td>
<td>Irroong</td>
<td>Patyang</td>
</tr>
<tr>
<td></td>
<td>Marroong</td>
<td>Patyang</td>
<td>Iroong</td>
<td>Irrakedna</td>
</tr>
<tr>
<td>B</td>
<td>Imboong</td>
<td>Matyang</td>
<td>Marroong</td>
<td>Arrakan</td>
</tr>
<tr>
<td></td>
<td>Irroong</td>
<td>Arrakan</td>
<td>Iroong</td>
<td>Matyang</td>
</tr>
</tbody>
</table>

To each of the phratries in the above tables, there is an aggregate of totems attached, consisting of animals, plants, and inanimate objects, and descent is counted on the female side.

The two sections, Irpoong and Marroong, always marry the Imboong and Irroong pair, but the rotation of the intermarriage of the individual sections, constituting the phratries A and B, varies in different districts. For example, in some parts, instead of the rules of marriage following the order represented in the foregoing tables, an Irpoong, provided he is not barred by nearness of kin, may marry Patyang, and Marroong may take Irrakedna as his spouse. The descent of the children is not, however, affected by this variation. The progeny of Irrakedna being always Irroong and Patyang, whether she is married to an Irpoong or Marroong husband. This alternative law applies, mutatis mutandis, to the marriages of the sections in phratry B. Marriages between persons of the same totem are not permitted, unless the parties to the alliance belong to a widely separated lineage.

The organisation represented in Table No. 1 is in force among all the native tribes spread over that portion of New South Wales from the Hunter River to the Clarence, and extending back from the coast to the main dividing range. In some places, as in New England, Table No. 2, they reach beyond the range a little way down the western slope; whilst at other places, for example, on the tributaries of the Upper Hunter, they do not go as far inland as the dividing range. Within the geographic limits indicated there are a considerable number of tribes, among the principal of which are the Koombanggargy, Bunjellung, Thangatty, Anaywan, Birrapee, Bahree, Molo, Kutthung, Warrimee, Minyowa, Watthung, Gooringai, and others.
Mr. President, Ladies, and Gentlemen,—

At the request of your popular and energetic Secretary, Mr. J. P. Thomson, I have, with much misgiving, ventured to submit the following paper for your kindly consideration, and, I trust, general interest. At the outset I must disclaim any pretensions whatever to scientific attainments, and in consequence of my regrettable shortcomings in this direction it is only with a feeling of great trepidation that I presume to endeavour to attract the notice and address the members of a scientific body of such renown and prestige as that of the Royal Geographical Society of Australasia. Much of the ground over which I must necessarily travel in the course of this article has been previously traversed by far abler pens than mine, but as a subject often presents different degrees of interest according to the point from which it is viewed, it may be that I shall succeed in touching upon certain phases which have hitherto escaped any very prominent observation or mention.

The continent of Australia—this great southern land, as yet in the dawn of its subjugation and development—is differentiated from the other continents that go to make up this hemisphere in the most striking and emphatic manner by its topography and ethnology. The huge mountain systems of Europe, Asia, Africa, and America, which so potentially determine, even beyond normal latitudes, the climate, ethnology, and civilization of each find no corresponding counterpart in the fifth member of the continental quintette.

It is a generally accepted fact—amongst geographers, passed into an axiom—that the amount of rain diminishes from the equator to the poles, is regulated more or less by latitude, but careful and accurate meteorological observations have shown that elevated mountain systems greatly disturb the law of means and averages, and in many instances far more than compensate for the effects of latitude. To this great natural cause are largely attributable the many meteorological contrasts in Europe, Asia, etc., such climatic differences irresistibly affecting the races of mankind—their complexion, development of the brain, and consequent intellectual power. These causes and effect of climate on the human family constitute one of the most

* Read before the Royal Geo. Soc. of Aust., Queensland, November 27, 1900.
BY H. R. MAGUIRE, LIC. SURVEYOR.

absorbingly interesting and profound studies, and have long enjoyed the attention of scientific men in all parts of the world. But the seeker after ethnological knowledge and truth in the illimitable field of human research, after exploring the profundities and wealth of varieties in the northern hemispheres, passes through the portals into the youngest and most isolated continent, finds a vast difference—not in the materials for study and classification, but in the absence of any great and striking variations such as are found in more northern latitudes. Here he will find no huge mountain systems rising far above the snow-line and sweeping across the continent, warring with the moisture-laden clouds rolling in from the world's greatest condenser—the mighty Pacific—and fulfilling the functions of refrigerators of a magnitude before which the ambitious mind of man stands appalled. He will find no broad silver ribbons of water traversing the length and breadth of the continent, and serving as safe and reliable highways for the world's commerce. These glories and bounties of a profligate nature have been denied the last of man's conquest and colonization. And if the observer is an aesthetic and dilettante only, he will experience the keenest disappointment on his first introduction to Australia. But if he be a true student and lover of nature, with a mind free from the prejudice of first impressions, he will discern as he traverses the new field of research that leaving behind him the old world of mighty natural contrasts and impressive scenic grandeur, with its extremes of torrid heat and frozen rivers, he has emerged into a new creation—a land of glorious light, and sun, rolling seas of beautiful fertile plains and plateaux, and picturesque mountains; a continent upon which Plutus and Priapus, the gods of riches, fruitfulness, and gardens, have lavished their gifts with a profligate hand; and possessing that which perhaps above all is the greatest treasure to man, a climate of unrivalled salubrity and degrees of temperature. And the sunniest and richest in natural wealth of all the provinces will he find in the north-eastern section of the continent, that portion marked on the maps, and known to the world as Queensland.

For the tourist and sight-seer pure and simple, Northern Queensland affords the best field for exploration; but climatic extremes—in the shape of distressing heat in summer, and the phenomenally heavy rains in autumn and winter—greatly detract from the comfort of the tourist. Southern Queensland, on the other hand, though not possessing such beautiful scenery and wealth of tropical vegetation as the North, has an immense climatic advantage. The summer temperature is not so severe nor the autumnal rain so heavy or continuous, and the proximity of high tablelands within 100 miles of the capital affords at all times a convenient and refreshing retreat for those not
constitutionally fitted to bear the high temperatures generally registered in summer. Yet, strange to say, the latter fact is not nearly so widely known, or the opportunity for healthful relaxation so generally availed of in Brisbane as one would suppose. In the midst of summer, when the heat becomes overpowering, and, in many cases, dangerously enervating and depressing, the city man takes train for Toowoomba, where the superior elevation—Toowoomba is 2,000 feet above sea level, and Brisbane 58 feet—has the effect of reducing the temperature. But, with the exception of a fine view of mountain and valley, to be obtained from the heights close to Toowoomba, the provincial town does not afford any superior attraction to the enervated city-man in search of health, a cooler climate, and interesting panoramic views of nature. And yet, in addition to Toowoomba, there lie almost, as it were, at the very feet of Brisbane, far higher plateaux, easy of access, and clothed by nature with the most luxuriant draperies of rich tropical vegetation; elevated eminences, from which may be obtained some of the finest panoramic views in Southern Queensland; high lands, perpetually laid in cool, refreshing breezes from the Pacific Ocean; and abounding in wealth of lovely fresh water streams, which gush up from the bowels of the earth to the surface of the plateaux, run in rippling streams to the edges of the high, rocky precipices, that in almost every instance, form the boundaries of these plateaux, and there descend in glittering cataracts to the wild, rocky, picturesque gorges and valleys below. The principal of these plateaux are situated along the New South Wales border, easterly from Mount Lindesay, and extend for miles along the boundary line between the two colonies. One of the most beautiful constitutes the watershed between Camp and New Year Creeks—tributaries of Running Creek—which rise in the steep mountains that form the natural line of demarcation between New South Wales and Queensland.

* This "Natural line of demarcation" is known as MacPherson Range, a steep, rugged, and picturesque forest-clad chain of mountains, extending easterly to Point Danger, at the extreme south-east corner of Queensland, and culminating in Mt. Lindesay, over 4,000 feet above sea level, and other lofty peaks in the neighbourhood thereof. It is really a lateral extension of the Great Dividing Range that forms one of the most striking physical features of Eastern Australia, extending as it does from the Alpine heights crowned by Mt. Kosciusko, in the far south-eastern portion of the continent, along the entire seaboard to Cape York Peninsula.

Geologically the MacPherson Range is interesting to the student of geographical science; for here the plutonic forces of nature have operated with great activity in past ages when the porphyritic rocks, which form all the principal peaks of the range, were developed, and the associated strata tilted up at various angles. These porphyritic cappings, which often exceed 2,000 feet in altitude, and are found resting on the carbonaceous rocks of the Ipswich formation, reveal their columnar structure on
The boundaries of this plateau have been accurately defined and marked on the ground in the course of a recent survey by myself of some land embracing an area of over two hundred acres, at an elevation of between 2,500 and 3,000 feet above sea level; and from the summit of the tableland commands a truly magnificent view of the surrounding country. Immediately to the west and west-nor'-west lie Mount Lindesay, Mount Barney, and Mount Toowoonan, distant, in straight lines, ten, eleven, and eighteen miles respectively; whilst still further to the north-west, from 30 to 40 miles further off, are Mount Roberts, Mount Huntley, and Spicer's Peak, rising from 3,000 to 5,000 feet above sea level. The intervening country is one mass of steep, rugged mountain ranges, faced for miles with ascending terraces of bare basaltic cliffs. Along the sides of the ranges are dark lines of dense vine scrub, seemingly following no fixed law in its progress, but winding in and out in the most erratic and startling fashion. To the north stretches the wide valley of the Logan River and tributaries, the field of view being limited only by the thin blue line of mountains—where earth and sky seem to meet—to the north of Mount Tambourine. To the east are the high mountains, which jut out from the main border range. The spectacle on a clear, fine day is one of exceptional grandeur and beauty, and well repays the trouble of ascending the plateau. The latter is covered for the most part by very heavy gum, apple, and oak forest—some of the gum trees being veritable giants of the woods—but the south-eastern part is clothed with dark, dense vine scrub. A deep mountain torrent runs through this scrub, the water being clear as crystal, and even on the hottest days delightfully cool. Numbers of lovely tree-ferns and palms abound in this gorge, and, with innumerable other specimens of luxuriant tropical vegetation in abundance, go to make one of the prettiest glades to be found in the mountains. The soil in the forest is a dark chocolate loam, while in the scrubs mostly leaf mould. I have taken the liberty of urging upon the Surveyor-General—Mr. A. M'Dowall—the desirability of reserving this portion as a most suitable site for the establishment of a national sanatorium or park, and believe that Mr. M'Dowall has brought the matter under the attention of the Minister, who favours

the steep, vertical sides that are bare and exposed, and show that the greater part of them when erupted must have been less fluid than the basaltic rocks that occur on the flanks of the range. The general structure of the range proper is, however, of Devonian slates, which have been tilted up by the eruption of the porphyry after the coal beds were deposited in that part of the Moreton district.

The general character of the vegetation of the locality is similar to that which occurs in other parts of south-eastern Queensland.—Ep. Q.G.J.
the idea. I trust that this rare beauty spot will not be alienated from the people of Queensland, but held in trust for their pleasure and gratification in the future.

About two miles further east along the border, the MacPherson Range presents a very interesting spectacle. The crest of the range gradually narrows in from three chains to three links.

At this spot the mountain is faced by almost perpendicular precipices, on the south side, forming a semicircle round a high mountain torrent, which falls several hundred feet into this circular basin, and then rushes foaming and flashing down a deep gorge between almost perpendicular mountains into New South Wales. The falls, which are in New South Wales, are known in the locality as Waterfall Creek Falls, and, as far as I know, have been allotted no name by geographers and explorers, though well deserving of a distinctive title, as the water descends below 600 and 800 feet in less than four chains. The configuration of the mountains is very striking just here, and should form a fruitful field for a competent geologist. In places the mountains appear to have been split in two, the precipices disclosing clear cut faces of rock with varying geological strata showing out very prominently. I would strongly advise visitors to the first tableland to push along the crest of the mountain to this spot, where an unusually weird and beautiful scene awaits the intrepid explorer.

The second plateau, which merits attention is situated about 8 miles further to the east and 2½ miles north of Mount Gipps. This is known as Neglected Mountain, and has also been made the subject of a special recommendation by myself to the Surveyor-General as a suitable reserve for a national health and pleasure park. Neglected Mountain is the divide between the northern part of Christmas Creek and Chingee Creek, being a rectangular off-shoot from an isolated range of mountains running parallel to the MacPherson Range on the north side of Running Creek, and distant about two miles from the border. This latter range finally vanishes several miles further east in a huge tableland, which from its extent and importance will be specially referred to later on. From the highest point of Neglected Mountain a magnificent panoramic view of wild, rugged grandeur may be obtained. On a clear, fine day, with the aid of powerful glasses, a faint glimmer of Brisbane can be seen about 60 miles in a north-north-westerly direction, the elevation of the mountain being about 3,000 feet above sea level. On the eastern and western slopes the mountain is very steep and precipitous, but on the top widens up into a nice undulating, forest-clad tableland, with rich chocolate soil, abundant grass, and good water. On a winter's morning a glance out over the valleys stretching far to the northward reveals a surpassingly beautiful spectacle. As far as the eye can see, there appears to be nothing
but enormous glaciers, or better still, great rivers of snow, flowing between dark lines of mountains, which gradually fade away in the horizon fully 50 miles to the north. The spectator is held spell bound, and vivid visions of the frozen North, as depicted by Nansen, float before the mind. And then he realises that what appears in every essential—from the dense, foamy, snowy masses, to the glittering brilliance of the reflected rays of the sun—to be mighty snow drifts, is but a heavy Queensland fog, filling the valleys and penetrating far up into the mountains. But he is looking down upon the fog with the clear, blue sky above, and the mental transition is natural and easy. Even on the hottest day the temperature on this tableland, as well as the others, is modified by a cool breeze from the east; and while the thermometer is registering up to 100 degrees in the shade down in the valleys, the mercury does not rise above 85 degrees in the summit of the tableland. A good road has been surveyed on to the plateau, making it accessible to the merest tyro in bush exploration. The last plateau which I shall refer to is still further to the east, and is the largest and most beautiful of them all, though not nearly so accessible. It lies in that great elbow in the MacPherson Range, commencing at Mount Nungalba, and extends southward for ten or twelve miles along the range, taking in the country at the heads of Running, Christmas, and Widgee Creeks, and the Albert River, with a width varying from two to six miles. It is for the most part covered with dense vine scrub, taken with undulating—and at times abrupt—ridges, and on all sides splendidly watered. The finest view is to be obtained from the edge of the tableland, which faces Christmas Creek, these mountains rising up very steeply and precipitously from the Creek—especially a mile or two below its source—to the plateau on the crest.

Many of the precipices are from 800 to 1,000 feet, and consist of huge basaltic cliffs extending for several miles on the northern face of the mountains. These cliffs run round the heads of Christmas and Widgee Creeks and the Albert River, and can be seen for miles off, standing sharply out against the sky-line like mammoth fortresses. About three miles down from the source of Christmas Creek a mountain torrent springs over the precipitous walls of the tableland, and descends nearly 1,000 feet in two falls into a mighty gorge studded with giant boulders, which appear to have been hurled into the depths by some Colossus of bye-gone ages. These falls have been christened "Lamington Falls," and are the highest in Southern Queensland. Half an hour's climb up the gorge from a well-worn road, which runs up Christmas Creek, will land the sightseer at the foot of the falls; but if he wishes to ascend to the top, he will have a steep and hazardous climb of another 1,000 feet. The face of the mountain
approaching the falls on either side is perpendicular walls of rock running back into the shape of a semi-circle, and forming the great gorge beneath.

From the summit of the eastern crescent a magnificent view of the waterfalls, directly opposite, may be obtained. In fact, it is very rarely that nature provides such an admirable point of vantage from which to behold her marvellous works. The falls are seen at their best in wet weather, when the volume of water coming over is greatest, and the cascades of foam infinitely more beautiful.

It would be a very wise provision for the Government to reserve the whole of this plateau, together with the highlands still further to the east and north-east. In years to come, with the growth of settlement and increase in population in the valleys of the Logan and Albert Rivers, Running Creek, Christmas Creek, and Widgee Creek, access to these plateaux will be rendered much easier and less tedious and discomforting. Then their value as delightful summer retreats, natural health sanatoria, and beauty spots of nature will be more readily recognised and appreciated. A light line of railway could be constructed up Christmas Creek at a very small cost, and would bring the plateaux into complete touch with the outside world. This is a matter that should not be lost sight of by the people of these districts, and any such movement should secure the unstinted support of not only local residents, but every citizen in Brisbane and suburbs, who wishes to establish swift and cheap communication with some of the loveliest centres of healthful relaxation to be found in Southern Queensland.

In concluding this rather desultory paper, I must crave the indulgence of the members of the Society for its many shortcomings and defects. If I have succeeded in arousing even a modicum of interest in a subject which has long been dear to myself—panoramas of nature, wherever to be found—I shall be amply rewarded.

My best thanks are due to our worthy President of the Society, the Rt. Hon. Sir Hugh M. Nelson, who very kindly lent a valuable work of reference bearing on early explorations in Southern Queensland, and also to Mr. Robert Collins, who has taken an active interest in the subject.

Photographic pictures and appropriate local views, kindly lent for the occasion by Mr. R. Alton, were exhibited as illustrating the great attractiveness of the neighbourhood from a scenic point of view.

Lord Lamington said the language describing the scenery of the Upper Logan and Border Range was in no way exaggerating. The matter of bringing it into closer touch with Brisbane rested with the Government and the people most interested. All the country was exceedingly picturesque. Queensland was fortunate in having such fine mountain scenery. The other colonies did not possess anything like the vegetation with which our mountains were clothed. The valley of the Condamine he considered afforded some of the finest scenery in Australia. He thought he might draw
attention to the peculiarity that the peaks of the border, and indeed most other ranges in Queensland, were not specifically named. He had been given a different name for them every time. He thought there should be one nomenclature for this and all the ranges in other portions of Queensland, and that they might try and get back to the original names given by the first explorers. He had frequently expressed surprise that young men did not make their holidays the occasion of trying to get over this mountain scenery and make rough surveys of the parts over which they travelled. He moved a vote of thanks to Mr. Maguire for his very able paper.

Mr. R. M. Collins (former president of the Society) seconded the motion, and said that the Surveyor-General had recently engaged a civil engineer from one of the other colonies to make an examination of the means of access on to the eastern side of the plateau, now known as the Lamington Plateau, and also 10 miles further north. The engineer had found that it was practicable to make a road up with a slope not exceeding 1 in 7. Steps should be taken to reserve some of these portions, but not under the old system, when reserves were gazetted and afterwards cancelled and leased as selections. There were three ways of getting public access to the mountains—by the whole of this kind of country being reserved by the Government, by private enterprise, or by a system of co-operation on the part of the Government and private individuals.

The President agreed that such reservation of the high lands should be made. The Surveyor-General had spoken to him in favour of the project. The additional recommendation of this society would doubtless carry weight with the Government.

The motion was carried by acclamation, the Hon. Secretary, on behalf of the author of the paper, returned thanks, and the meeting then closed.
REMINISCENCES OF THE EARLY DAYS
Of the present Colony of Queensland—

WHICH IS NOW TO FORM ONE OF THE STATES OF THE AUSTRALIAN COMMONWEALTH.*


The great discoverer Cook, in 1770, and Flinders, about 1802, were the earliest of our own countrymen to touch the shores of Queensland, and I find in an old almanack, published in Sydney in the year 1825, containing a chronology of local occurrences, that, on January 2nd, 1823, His Excellency Sir Thomas Brisbane (Governor of New South Wales), accompanied by the Colonial Secretary (Major Goulburn), sailed in H.M. brig "Satellite" on a tour of inspection to the Northern Settlements, and returned to Headquarters, January 13th. I can discover no reliable information as to whether Moreton Bay was then visited, although in all probability it was; because in September, 1824, John Oxley, the Surveyor-General, sailed in the Amity, brig, with a civil establishment, prisoners, and stores to plant a new settlement in the vicinity of Moreton Bay, and Lieutenant Miller, of the 40th Regiment, was left there as Commandant. And on the 9th November following His Excellency the Governor (Brisbane), accompanied by the Chief Justice (Francis Forbes), the Surveyor-General (Oxley), and other gentlemen, sailed from Sydney in the same brig, the Amity, on a tour of inspection to the new Settlement at Moreton Bay, and returned in December following. And I have little doubt that the township of the new settlement was then named Brisbane out of respect for the Governor. Queensland at that time formed a portion of New South Wales, and continued to do so until 10th December, 1859, when it became a separate colony.

The settlement at Brisbane, Moreton Bay, was at first a mere convict settlement; little effort was made to explore the surrounding country, and no attempt was made to cross the great dividing range. Thus it continued for many years. But between April and July, 1827, Allen Cunningham, the celebrated Botanist, discovered the Gwydir, Dumaresq, and Condamine Rivers, and the Darling Downs.

In the years 1838, 1839, and 1840 the flocks and herds of sheep and cattle in New South Wales, having greatly increased, the squatters (as they were termed), or those who took possession of Crown lands and

* Read before the Royal Geographical Society of Australasia, Queensland, 17th December, 1900.
formed stations on them, were pressing out in all directions to take up new country. The three brothers, Patrick, Walter, and George Leslie, who came from Aberdeen, had made their first effort in Australian life in dairy farming on some land near Paramatta. Patrick Leslie was a very enterprising and energetic young man, and a great friend of Allen Cunningham, the discoverer of the Darling Downs, from whom he obtained a map of the country and a description of it.* Early in 1840. Patrick Leslie, a Bayard among explorers, started from New England, accompanied by one man, a prisoner of the Crown, named Peter Murphy, on his dauntless strike-out into the wilderness to explore the unknown Downs. His expedition proved a successful one, and on his return he expressed himself so well pleased with the prospect this newly found country afforded for stock that he, with his brothers, and those who wished to follow, started to drive out sheep and cattle and horses, and establish stations on the Darling Downs. The Leslies took the lead, followed by the three brothers Campbell, Fairholm, Gammie, St. George Gore, Sibly and King, Stuart and Sydenham Russell, Arthur Hodgson, Francis Forbes, Hughes and Isaac, and others who, on arrival on the Darling Downs, took up the country as follows:—The Leslies took Canning Downs, Goomburra, Toolburra, and the heads of the Condamine River; and, following down the South side of the river, next to the Leslies, came Fairholm and Hay; then Gammie at Talgai; Thane at Ellengowan; Ronald and Taylor (not the Taylor who was afterwards at Cecil Plains) at Tummaville; Gore Brothers at Yandilla; Stuart and Sydenham Russell at Cecil Plains (named after their sister, Cecil Russell); and Joshua Bell and his brothers at Jimbour. Then on the North side of the river came the Campbells at Glengallan; Sibly and King at Pilton; and opposite to them Joshua John Whitting; and further down the same creek Clifton, taken up by Francis Forbes; Eton Vale by Hodgson and Elliot; Henry Hughes and Fred Isaac took up Gowrie, and Dennis took up Jondaryan.

* The Darling Downs Country, situated west of the coast range in south-eastern Queensland, is famous for richness of soil and salubrity of climate, in which respect it is probably unsurpassed in any other part of the world. Extending over a wide area of territory these rolling downs form part of the great western plains that stretch far away to the west into South Australia, covering enormously extensive cretaceous beds in which artesian waters are stored at varying, though not inaccessible depths. The country is open pasture land, with patches of low acacia forest that impart to the landscape a most agreeable and picturesque aspect, whilst affording umbrageous protection from the summer sun. The rich soils are generally black, sandy, and brown loam, varying in depth from a few inches to ten feet or more, being eminently adapted for fruit growing and agriculture, as well as for grazing purposes. The great variety of nutritious grasses and herbage here renders the whole of this extensive country remarkably well suited to the requirement of pastoralists, by whom it has for a long time been occupied. [En. Q.G.J.]
These, so far as my memory serves, were the occupants of the several stations named when I first went to the Darling Downs early in 1843. I was in partnership with my brother Francis in Clifton Station.

The country taken up in this way was outside the boundary of New South Wales, and therefore in some degree beyond the reach of the law, and as there had been some conflicts with the native blacks, and for other reasons, it was deemed advisable to appoint a Government officer to supervise what was going on. Sir George Gipps was at this time the Governor, and he caused this new country to be included within the boundary of New South Wales, and appointed Mr. Christopher Rolleston, Commissioner of Crown Lands, with mounted troopers to assist him in performing his duties. Rolleston fixed his residence at Cambooya, part of the Hodgson's station, where he built a cottage for himself, a barracks for the troopers, and a Court House, in order to hold Courts of Petty Sessions there. Sir George Gipps also arranged that the expense of carrying out this object was to be paid by an assessment on stock, so much per thousand for sheep and so much per hundred on cattle, which law came into operation on the passing of the Assessment on Stock Act. That was all that squatters at that time had to pay for the occupation of these lands belonging to the Crown.

Up to the time when the Darling Downs was occupied there had been no communication between it and Brisbane, and as it was necessary to convey the wool shorn from the sheep to Sydney, it became an object of great importance to form a road from the Downs to Brisbane. The Leslies had found a pass called Cunningham's Gap, from the top land of the Downs to the other side of the Main Range, but this was a most difficult and dangerous road, and a much better one was formed over the range near what is now called Drayton (then named The Springs), over which road it was found practicable to drive bullock drays with wool and to bring back supplies; but between this and Ipswich, on the way to Brisbane, this road had to pass through an almost impenetrable scrub of gigantic trees interlaced with enormous vines. The squatters, however, in those days were not to be stopped by anything such as this; and they formed a party of some twenty of themselves, and cut and cleared a road through it about two chains wide and about a mile and a half long, and on this road almost the whole of the wool and other produce of the Downs was conveyed to Brisbane. Communication between Brisbane and the Downs, having been thus established, two steamers, the "Sovereign" and the "Tamar," became regular traders between the port of Brisbane and that of Sydney.

But while this had been going on on the Darling Downs many settlers had taken up squatting stations on the Brisbane side of the range. Henry Mort, brother of Thomas
Mort who was the discoverer of the freezing process for preserving meats for purposes of exportation, took up Laidley Plains; Pitts and Bonnifant, and Edmund Uhr formed stations between that and the Main Range, while the Bigges (two sons of Commissioner Bigge, sent to the colony to report on Governor Bligh's case) formed stations on the Logan River, as did several others. Dr. Simpson was the Commissioner of Crown Lands on the Brisbane side of the Range, who, with his friend Wiseman (afterwards Commissioner), and his mounted troopers, fixed his residence midway between Brisbane and Ipswich, on the banks of the Brisbane River.

This, then, is a fair description of Queensland as I found it when I landed at Brisbane for the first time in 1843 from the steamer "Sovereign," commanded by Captain Cape. Captain Wickham was then Police Magistrate and Commandant of the settlement, which was still a convict one, and as corporal punishment was then sometimes administered the Captain was usually called "Captain Wackum" by the lower orders of the community, although in reality he was a very kind-hearted man and an exceedingly good officer. Well, having landed, I went to a house of accommodation or hotel, which I was informed all the squatters frequented, kept by Mr. and Mrs. Bow, assisted by her sister. There I met a number of Darling Downs squatters, who were going to their stations, but who had been delayed in Brisbane, as the Brisbane River was in high flood, and it was still raining hard. We waited until the rain ceased, and then made a start, all riding, and we called at Dr. Simpson's on the way, where we were most hospitably entertained. We pushed on to Ipswich the same night, where we most unfortunately found the river in flood, and over the banks, making it more than half a-mile broad. It was impossible to cross, and we stayed at a house of accommodation kept by Mr. Thorn, an old soldier. The room in which we slept was like a barrack room, slab sides, bark roof, and earthen floor, and about twenty stretchers ranged along the side walls. The prospect was anything but cheering, as it commenced to rain again, and it looked like staying there for a couple of weeks before we would be able to cross the river. Among those who were there was Thane, who was most anxious to get to his station of Ellengowan, already referred to. He told me that he knew the way over Cunningham's Gap, and that if I would come with him we could head the waters of the Brisbane River and reach the Downs that way. So we started; he, however, could not swim; I bought a long piece of rope, and a fishing line which I carried with me. After a long ride we reached at night an old deserted hut, in which we camped, but we found it so swarming with fleas that we beat a hasty retreat and camped outside. In the morning we had to cross a swamp, which took us some hours, and we came to a creek which was in flood, with a station on the other
side. I took off my clothes and swam over with one end of the fishing line; Thane then tied the other end to the end of the rope, which I pulled over, and having tied the rope to a tree on each side, Thane had little difficulty when he took off his clothes in pulling himself over by the rope, and the squatter came down from the hut with one of his men and assisted to get the horses and clothes over, and we remained to rest for the night.

Next day we made an early start, and going over Cunningham's Gap reached Leslie's station, where we were most hospitably entertained by George and Walter, and passed a very pleasant evening talking of our adventures. The next day we went to Campbell's station, and remained there that night. There, we heard that the Condamine River was in flood, and as Thane had to cross it at Gammie's station, Talgai, I did all I could to persuade him to come with me to our station, Clifton, and I said I would go with him next day and see him safe over the Condamine. He, however, was very anxious to reach Ellengowan, his station, and I was equally anxious to reach Clifton on most important business. I then started for my station and he for Talgai, where he intended to cross the Condamine River to get to his station. I reached Clifton the same night, and two days after Arthur Hodgson called to say news had reached him that poor Thane had been drowned, and he was on his way to hold a magisterial inquiry, and to read the Burial Service over his grave. This was done, and the poor fellow was buried on his own station, where the mound and the rough fence around it marked the spot where he lay, and the howl of the wild dog and the shrill cry of the curlew sounded his requiem. On my arrival at Clifton I found my cousin, Milbourne Marsh, who had been left in charge of it by my brother, and we had a heavy task before us, for the whole of the sheep on the station were diseased with scab; my brother Francis had, however, invented a new mode of curing this disease, and I was there to try the experiment of curing the sheep by that means. The remedy we used was corrosive sublimate, dissolved in sal-ammoniac; this mixture was put into tubs and made blood warm; the legs of the sheep were tied, and they were held down in the tubs; the ewes one and a-half minutes, and the wethers two minutes. The sheep had previously been carefully shorn, and by this means I cured the whole of them in one dressing. This was the first time that any sheep in the world had been dipped for this disease, and this remedy was afterwards resorted to, and all the sheep in these colonies suffering from the scab were cured in this way.

All the sheep on the Downs at that time were in charge of shepherds, and the number of sheep in each flock was about 800. But as the grass and herbage was most abundant and the sheep in good condition, I put 1,500 sheep in each flock, and found that it answered
quite as well as the smaller number, and my lead was followed by all my neighbours. The native blacks had become somewhat troublesome when the Leslies, followed by the other pioneers, came to occupy the country and disturbed them in their hunting grounds, and several shepherds and stockmen had been murdered by them; but in 1843 they had become more tame, and made themselves useful on the stations in many ways. I use the word "tame" advisedly, because my experience of the Australian black is that they are incapable of civilization. I will give two instances to prove what I say, and those who have any experience of these aboriginals may know of others. I take the following from the old almanack, published in Sydney in 1825:

"On the 25th November, 1798, Bennelong, a young native, was captured and treated with the most hospitable kindness by Governor Phillip. He tried several times to escape; but, being always disappointed in the attempt, became afterwards more reconciled to his position. He was taken to England, where he received every encouragement; he dressed well, and was fed well, and yet on his return to the colony he fell off spontaneously into his early habits, and, in spite of everything that could be done for him in the order of civilization, he took to the bush, and only occasionally visited Government House."

Again, when Christopher Rolleston came to the Downs as Commissioner of Crown Lands, he brought with him a black boy, whom he got from the Williams River, a tributary of the Hunter River, where he had been with him some years. He continued with Mr. Rolleston at Cambooya as his servant; he was taught to cook all kinds of nice dishes, and became quite useful in that way. He was provided with a gin (or wife), and dressed like one of the troopers. Thus he remained for several years, but when Mr. Rolleston took him back to the Williams River on a visit, the moment he saw his old tribe he threw off his clothes and took to the bush with them and would not return.

The year 1843 was rather a disastrous year for those engaged in pastoral pursuits. Wool was low in price and there was no market for surplus stock, so that the pioneers of the new country could not afford much luxury in their homes. The slab huts with bark roof and earthen floor formed the usual dwelling, while mutton or salt beef, damper and tea, formed their usual fare; and yet they were happy; the free life and the prospects of doing something better in the future being sufficient to sustain their hopes. There were, however, some few stations where the accommodation and the fare were better. Mrs. Patrick Leslie was the pioneer lady, and she lived for a time at Canning Downs, where a large and prettily situated cottage had been built and fairly well furnished, and many a pleasant evening was spent by those who called in passing, or visited there from the neighbourhood; and when sometime afterwards George Leslie married Miss
Emmeline McArthur, the sister of Mrs. Patrick Leslie, their station was the most charming residence on the Downs. Arthur Hodgson married Eliza Dowling, daughter of Sir James Dowling, the Chief Justice. He had a long slab house with verandah in front and at the side, with a large store at one end, and his wife's apartments at the other; all surrounded by a high paling fence, with garden in front for fruit and vegetables. They lived there in great comfort and entertained all who called there most hospitably. The household party consisted of Arthur and Mrs. Hodgson, his brother Pemberton Hodgson, and his partner Elliot; and many of those who went to The Springs (Drayton), to get their weekly post, called in and spent the evening at Eton Vale. Christopher Rolleston, the Commissioner of Crown Lands, was a frequent visitor, and he, too, possessed a comfortable, well-furnished cottage, and gladly entertained any of his friends who came to visit him. The Russells had a good cottage at Cecil Plains, most of which they themselves had built, for both were good bush carpenters, a trade which they had taught themselves, and at Tummaville there was a nice residence built for Mrs. Ronald, the wife of Taylor's partner. There was also a good house at Yandilla, the Gores' station, but, except these which I have mentioned, the rest were little better than bush huts with very rough accommodation and equally rough living.

It may seem strange to some, that young men, many of whom had been highly educated and brought up, as it were, in the lap of luxury, would consent to lead the rough nomadic life which they led as pioneers of this newly discovered country. Yet, still, it was a life of freedom, where they were their own masters, and where, by intelligence and perseverance, they could, as many of them did, acquire wealth and independence much more easily than they could have acquired it in any other occupation.

After I had taken charge of Clifton and cured the sheep, my cousin Marsh left, and went to Sydney, and he did not again return to the Downs.

I have said that the year 1843 was a disastrous year, and so it was for the whole colony, but the next succeeding years were better, as wool had risen in price, and sheep and cattle could be managed cheaper in consequence of the fall in wages and the greater facility of obtaining supplies. Men could be hired at a fair rate of wage, and did not demand a fancy price for their labour from the fear of being attacked by the native blacks; and a fair market was found in Brisbane for such fat stock as were available.

I must not forget to mention two rather noted characters on the Downs at this time—Frederick Bracker, or "Fred, the German," as he was familiarly termed, and Neil Ross. Bracker had been employed among sheep in Germany, and was a good judge of wool and of sheep
generally—indeed, he was considered an authority, and was referred to in selecting sheep for breeding fine wool, and in the choice of rams. He was married, and he and his wife and daughter “Grace” lived at a small station which he had between Warwick and Gammie’s Creek, a creek which ran into the Condamine River opposite Talgai Station, and formed part of it. Neil Ross had been a Scotch shepherd with the Leslies, and he, too, had a small station near Warwick, and was well liked and highly respected.

After Marsh had gone I was left alone on the station at Clifton for nearly a year, and except an occasional visitor, I saw no one, and had quite enough to do to manage the station. My brother Francis was in Sydney, where he was joined at the end of the year by my cousin Philip Pinnock, who brought out to the colony a small capital to invest, and as poor Thane’s station of Ellengowan was then for sale he bought it and he and my brother returned to the Clifton Station, and glad indeed I was to welcome them, as my life had been a very lonely one. We also bought Pilton Station from King and Sibley, and added that and Canal Creek to our station, and all three went into partnership. I continued to manage the station and they both assisted. My brother was a very scientific man, and took great delight in geological research. He found gold in Clifton Creek, and also tin, and he discovered the bones of some antediluvian animals which at one time inhabited that part of the country.* These he sent to the Rev. Mr. Clarke, of North Sydney, to be examined by him and Sir Thomas Mitchell, the Surveyor-General, and well-known explorer of the Murray and Darling Rivers. These bones can now be seen in our Museum in Sydney, and very wonderful relics they are of a past age. I do not believe that any bones of this description had been discovered in the colony before, but since then similar bones have been found in other places. On the 1st October, 1844, Leichhardt started on his first exploring expedition from Bell’s station, of Jimbour. I rode over there to see him start, but when I arrived I found that his camp had gone on, and I was only able to wish him a safe journey. He was away nearly two years before he returned, having reached Port Essington, and having discovered the Dawson, Mackenzie, Burdekin, Suttor, and other rivers. On the 17th November, 1845, Sir Thomas Mitchell started on his expedition to the north-west and discovered the Fitzroy Downs, and the Culgoa, Warrego, and Barcoo Rivers. And in November, 1847, Leichhardt left on his last

* The Post-Tertiary deposits of Western Queensland, including the Darling Downs, have yielded abundant evidence in the shape of numerous fossil remains, to show that at one time in the geological history of the country this region was occupied by several remarkable types of gigantic animals, chief amongst them being the Diprotodon Australis, the marsupial lion, Thylacoleo carnifex, the great Kangaroo, Macropus titan, an enormous wombat, an immense alligator, and other associated fauna of a by-gone age. [En. Q.G.J.]
expedition, from which he never returned, and his unhappy fate is not even known at the present day. Thus was the country beyond the Darling Downs made known and afforded other adventurous pioneers an opportunity for forming additional out-stations for sheep and cattle, an opportunity which was soon taken advantage of, both by people in New South Wales and Victoria, and the magnificent future possibilities of Queensland began to be recognised. A question soon arose as to what was to be done with the surplus fat stock of cattle and sheep; a remedy, however, was found, namely, that of boiling them down and converting them into tallow, by which means the price obtained was sufficient to pay for the production. Large boiling-down establishments, as they were called, were erected and worked in Brisbane, Ipswich, and elsewhere, and although it seemed pitiful that such beautiful stock should be thus disposed of while thousands of the world's people were starving for meat, there was at that time no possibility of exporting this meat, except in a salted condition, which was found not to pay, so that nothing could be done until many years afterwards, when Mr. Thomas Mort conceived the idea and spent £100,000 of his private fortune in putting it in practice, of freezing the meat to enable it to be conveyed in that state to other far-distant countries—a noble invention indeed, and one which entitled the discoverer to the very highest distinction and praise.

But to return to my narrative: The years 1844, '45, and '46 were prosperous years; the sheep greatly increased on the Downs, and the price for wool was good. Most of the squatters had commenced their career heavily in debt, and many of them on capital borrowed at a high rate of interest; and now, as times were prosperous, all these debts were rapidly being paid off, and many of the homesteads were improved and made more suitable for indulging in hospitality, and social intercourse became more frequent. Eton Vale was a charming rendezvous for squatters on that side of the Downs.

The Leslies', at Canning Downs, was a great place of resort for those living on that side of the Downs. About this time (I am speaking of 1845), the two younger brothers of Hay, Fairholm's partner, came to the station and brought with them the accompaniments which globe-trotters usually supply themselves with—rifles, saddles, top-boots, leather breeches, et hoc genus omne, the majority of which were of course useless; however, there they were, and it so happened that a gang of bushrangers had started coming over from New England way, and one night they visited Fairholm and Hay's station. The three Hays and Fairholm and a friend—I forget who it was—were enjoying the evening pipe after supper; it was a warm night and the shutter of the window was open—there were no glass windows in those days—their rifles hung round the walls unloaded, when suddenly two guns were
pointed through the windows and the occupants of the room were ordered to throw up their hands or they would be shot; this they did, and the leader of the gang walked in through the door armed with a pistol and told them no harm would be done if they submitted quietly. The leader then took one of the company in charge, and made him hand down all the rifles and arms of all sorts and turn out all their belongings, while his two comrades kept guard, assisted by the fourth bushranger. The gang remained there all night, had a good feed, and in the morning after breakfast helped themselves to horses, Saddles, and whatever they required of the "new chums'" clothes and other things; and then, driving the other station horses before them so that they might not be followed, rode away. A party of squatters well armed was made up next day, with a view to follow and try to apprehend them, but their tracks were lost and they escaped.

At the end of the year 1845 I paid a visit to Sydney, leaving my brother and Pinnock to manage the station, and I remained away until March, 1846, when I returned with my wife to Clifton. Here I must relate a sad incident which happened at that time. We returned from Sydney in the "Tamar" steamer, Captain Allen, and came safely through the southern entrance to Moreton Bay. When we got into the Harbour we found the "Sovereign" steamer, Captain Cape, at anchor there waiting for the sea to go down, as it was blowing from the South-east and the sea was rather rough, before trying to go through that channel. I went on board the "Sovereign" and saw Robert Gore and his wife (Miss Baldock before marriage) and a little boy who was with them; and after staying a short time I left, and, the boat returning to our steamer, we proceeded across the bay and up the river to Brisbane. I remained there a couple of days, for my young wife to rest before commencing the journey, and before we started the "Tamar" had left on her return voyage to Sydney, and as we afterwards learned, went out by the North passage. Our first journey was only as far as Dr. Simpson's, who had kindly invited us to stay for the night, and there we met that delightful companion of his, Mr. Wiseman, and we passed a very pleasant evening; but after we retired, about the middle of the night someone arrived and we heard loud talking, and on going out I found that word had come that the "Sovereign" steamer had been lost, and all the passengers and crew except the captain and two or three of the sailors who had drifted on shore on parts of the wreck. It appeared that Captain Cape remained at anchor where we had met with him, waiting for a chance to go out, but when he saw the smoke of the steamer "Tamar" going past on her way to Sydney, she having gone out by the North Channel, he determined to start through the South Channel, which he did; but in going over one of the rollers (as the waves were called)—there were
three—he got safely over the two first, and was commencing to go over the third when the piston rod of the engine broke, and shortly after the steamer grounded and became a total wreck. The last seen of poor Robert Gore was that he was swimming with his little boy on a skylight. The sea carried those who were clinging to portions of the wreck across the channel on to Moreton Island; there were some native blacks on the beach, and they assisted those few who escaped drowning to land, and drew the dead bodies of those who were washed on shore high up on the beach. This was, I believe, the first wreck of any large vessel which had occurred at Moreton Bay, and the loss of so many well-known and highly respected people caused deep sorrow, both at Brisbane and on the Darling Downs.

On the following day I went to Ipswich, and after, by easy stages, reached the Downs, calling, among other places, at Eton Vale, where we remained for a few days, as the Hodgsons were great friends of ours, and we then went on to Clifton where we found my brother and Pinnock ready to welcome my wife on her arrival at the station. George Leslie was married a few months after, and took his wife to Canning Downs and made a most delightful home there, of which I have already spoken. Herbert Evans, son of Admiral Evans, came to Warwick with his wife (he had married a Miss Gordon) and his family, and had a small sheep station there. Some of his sons are still in Queensland engaged in pastoral pursuits. Philip Pinnock's mother, and sister Charlotte, who afterwards married Stuart Russell, of Cecil Plains, came to stay for a while at Clifton with Pinnock, and the advent of these ladies had a civilizing influence on the rough life of the pioneers.

Almost the whole of the stations at this time on the Darling Downs were stocked with sheep. Russell's Cecil Plains was the only cattle station, although the Leslies had some cattle, and so had Hodgson and ourselves; and the station furthest down the Condamine, or, in fact, furthest north, was Jimbour. How great a contrast between the Queensland of 1847 and the Queensland of to-day!

The seasons up to 1848 had been good, and the prices of wool and tallow kept well up, but after that in the following year prices fell so much that all our hard work seemed to have been expended in a useless undertaking; this has ever been the lot of the squatters in these colonies, rich to-day and poor to-morrow, and so all suffer alike.

In the year 1849 news reached Sydney of the gold discovery in California, and a large number of people left the colony to try their luck on the Californian Goldfields. My brother, who had always contended that gold existed in these colonies in large quantities if it was sought for, and had written a pamphlet to that effect, was one of those who went, but no sooner had he landed at San Francisco than
he caught the yellow fever and died. I was so disappointed at all this and so depressed that at the end of the year 1850 I sold what I had, and bid farewell to Clifton Station. Let me here, before I proceed with my narrative, say a few words as a tribute to the memory of my brother. He it was who discovered the remedy which cured all the sheep in the colony suffering from that fatal disease, the scab. He was really the first to discover gold and tin on the Downs. He discovered the bones of the antediluvian animals which at one time existed on the Darling Downs, and in a pamphlet which he wrote before the report of the Californian discovery reached Sydney, he strongly urged the Government to offer rewards for the discovery of payable goldfields which he assured them existed in these colonies; and at the same time pointed out that the fall in prices of all productions was caused by the want of increased circulating medium, or increased quantity of money. When afterwards gold was found in New South Wales, Victoria, and elsewhere, all he predicted was verified. The Rev. W. B. Clarke, M.A., Incumbent of the Church on the North Shore, Sydney, a man of great talent and ability and well-known, wrote of him as follows:—"This gentleman, a graduate of the University of Cambridge, and eldest son of Sir Francis Forbes, the first Chief Justice of New South Wales, contributed his share to the advancement of knowledge by publishing a paper in 1849 on the production of gold, in which he quoted from Sir Roderick Murchison's letter to Sir C. Lemon, and gave some useful statistical details. Having the honour of Mr. Forbes' friendship I had corresponded with him respecting some enquiries he made of me as to the metalliferous riches of his own neighbourhood on the Darling Downs. He was a man of great talent and scholarship, and taking a deep interest in the advancement of the discovery of gold in California he went thither, and, unfortunately, died." I crave pardon for making this digression, but in any history of the pioneers of the Darling Downs (and he was one of them) the name of Francis Forbes should not be forgotten. When I left the Downs in 1850 the squatters on the Condamine and tributaries were Leslie (Canning Downs), Fred Bracker (Manager for the Rosenthal Company, at Rosenthal Station, near Warwick), John Crowther (General Manager for the Company at St. Ruth, Lochinvar); John Gammie (brother and Manager for George Gammie, of Clifton and Talgai); Captain Mallard, of Felton (a station on Hodgson's run); Hughes and Isaac, of Gowrie and Westbrook; Fairholm and Hay, between Canning Downs and Talgai; Marshall, at Ellengowan; Ronald and Taylor, at Tummaville; Andrews, of Jondaryan; Russell and Taylor, of Cecil Plains; Gore Brothers, at Yandilla; Captain Vignolles, of Western Creek; Thomas De Laoy Moffatt, of Stonehenge, M'Intyre Brook; Beck and Brown, of Hamilton; and the Bells, at Jimbour, the lowest well-formed station on the Condamine,
although some had taken up country beyond that and at the Fitzroy Downs. The times were so bad then that it was as much as the squatters could do to hold on their stations.

In the year 1851 gold was discovered near Bathurst, and afterwards in Victoria; people rushed to these colonies from all parts of the world, and so great was the influx of people and such enormous quantities of gold were discovered that money became plentiful and stations and stock brought very high prices. Many of those who had held on their stations sold out at the rates of £1 a head for sheep and £10 for cattle—stations given in—(that is the right to occupy them as Government Lessors), and many of those who sold went to the Old Country. Of course the high prices given for these properties and the abundant capital caused a number of people from New South Wales, Victoria, and South Australia to go out to the more northern parts of Queensland to take up country and form stations there; I can, however, give no account of this, as I left Queensland in 1850 and did not return to it until 1898, when I found that the little township of Brisbane had grown into a fine and beautiful city, while a glance at the map was sufficient to show that Queensland had a fair prospect of becoming the largest and wealthiest colony of the Australian group. But when I looked around for my old and valued friends, the only one I saw was my cousin, Philip Pinnock. Where were the Leslies, the Campbells, Fairholm, the Hays, Hodgson, the Russells, the Gores, Roland and Taylor? Where were Rolleston and Wiseman and Harry Mort and Bigge? All gone; and I felt as Tom Moore has so beautifully described it—

"When I remember all
   The friends so linked together
   I've seen around me fall
   Like leaves in wintry weather;
   I feel like one who treads alone
   Some banquet hall deserted,
   Whose lights are fled, whose garlands dead,
   And all but he departed."

For an account of Queensland after 1850 I must refer you to other records than mine.
NOTES ON A GOVERNMENT EXPEDITION UNDER
Dr. J. A. BLAYNEY, Capt. J. R. BARTON, and Mr.
A. E. ENGLISH, to the MAIN RANGE, BRITISH
NEW GUINEA. *

By Sir FRANCIS P. WINTER, Kt.
(Chief Judicial Officer, British New Guinea).

The objects of the expedition were to endeavour to effect the arrest
of some men of the Puneaburu and Dorevaida tribes, and then to
travel eastwardly to the Keveri Valley; and after visiting the villages
of that district, to return to the coast. From a period anterior to
the Protectorate, the mountain tribes have made descents on the
people living near the coast. Some little while ago, a band, composed
largely of Dorevaida and Puneaburu natives, had attacked the village
of Merani, in Sandbank Bay (see map), and had killed some of the
people of that village.

The party left Cheshunt Bay on the 2nd September, and reached
the main village of Puneaburu on the 9th of that month. On their
way they made one or two halts and examined adjacent country. Puneaburu is situated at an altitude of some 2,300 feet above the
sea-level, on the first high range as you proceed inland from the coast.
There is apparently a large extent of well-watered, good agricultural
land between this range and the sea. From the village, a fine view
over this stretch of country was obtained. The village consisted of
four houses. It was defended by a stockade and three tree-houses. As
the natives had caught sight of the party the village was deserted.

Tree-houses have been so frequently mentioned in connection with
New Guinea, that a few remarks on these small buildings may be of
interest. The accounts given of them even by people who do know
something of New Guinea are apparently at times much over-tinted
by fancy. I read in one work that the tree-houses were the sleeping
quarters of the young ladies of the village who to avoid giving rise to
scandal, were always packed off to their aerial, and somewhat limited
apartments shortly after sundown. Tree-houses are used as a means
of defence. They have a solid floor and sides, made of poles, and
there is as a rule a small platform in front, from which missiles can
be cast down on the enemy. I have listened to some remarkable
accounts of the heights that some tree-houses are above the ground.
I have heard it asserted that tree-houses 150 feet from the ground

* Read before the Royal Geographical Society of Australasia, Queensland, 18th
April, 1901.
have been seen. I can only say that I went and had a look at one of these 150-feet houses, and that in my humble opinion the height was only a little over 50 feet. I estimated the highest one that I ever saw to be 60 feet from the ground, and it was in an unusually high tree. As a rule the trees along-side New Guinea villages grow no higher than iron-bark trees do in the bush near Brisbane, and the houses are rarely much more than half-way up the tree. Sometimes the tree is polled to a certain extent, before the house is built in it. A tree-house, even if it is only 50 feet from the ground, is a good protection from spears. The house is reached by a ladder made of vines, which can be easily cut away at the top if need be. There appears to exist a law of etiquette with respect to the mode of attacking tree-houses. I never heard of any attempt being made to cut down the tree in which the house was built. Some years ago a party from an inland tribe attacked a village at the back of the Astrolabe Range, killed some of the people, and forced the rest to take refuge in their tree-houses. The besieged soon exhausted their missiles, probably, native fashion, having been careless about providing a proper supply of them. The besiegers became aware of this, and went and sat for some time under the tree-houses, and amused themselves jeering at and taunting their occupants. Although they had iron hatchets and the trees were not very big, they made no attempt to cut the latter down, and finally departed leaving the people in the tree-houses unharmed. One of our officers who visited the scene shortly afterwards, remarked to the natives of the village that had been attacked, that he wondered the enemy had not cut down the trees. They were evidently surprised at his remark, and replied that such proceeding would have been quite contrary to native customs. The use of tree houses is by no means universal in British New Guinea. It does not seem to extend much west of Port Moresby, nor are there any, as far as I know, in the islands of the South-eastern Archipelagoes, although common on the coast and in the coast ranges eastward of Port Moresby; they are in further inland villages frequently replaced by platforms built on long poles. Their absence from a village does not always imply that its inhabitants are unacquainted with their use. A large village in Collingwood Bay, on the North-east coast, formerly had none, but immediately after they had been attacked and beaten by an inland tribe, they erected several. A native, as a rule, is a staunch believer in the philosophical maxim that you should never do to-day what you can possibly put off doing until to-morrow.

Leaving a detachment at Puncaburu, the leaders of the expedition proceeded with the rest of their people to a Dorevaida village, the position of which they had discovered. This village was not surrounded by a stockade as the other villages in that locality were, nor did it
possess any tree-houses. This was apparently a proof that the Dorevaida men had great confidence in their own prowess, or reputation for prowess, or that their enemies stood greatly in awe of them. The inhabitants of this village had run away into the neighbouring hills.

It may be mentioned that before the expedition quitted this part of the country, three Dorévaida and three Puncaburu men were captured without any bloodshed, all of whom were implicated in the attack on Merani. They are now all serving sentences of imprisonment at Port Moresby. Some of them had their hair dressed or done up, in what in those parts would appear to be the height of masculine fashion. The hair is allowed to grow very long; portions of it are then bound up tightly with a narrow band of thin, tangle bark, wound round and round the whisk of hair. The queues thus formed hang down behind the ears. The whole head of hair, however, generally hidden under a piece of native cloth. After these men had been sentenced to imprisonment, their queues were cut off, in accordance with the gaol regulations. If they should be disposed to become unruly, which is unlikely, the possession by the Government of a substantial quantity of their hair may have a restraining influence on them. A native as a rule dreads another person getting hold of a portion of his hair, because the possession of another person's hair gives the possessor the power of bewitching the original owner of the hair.

On the Puncaburu Range, large quantities of wild raspberries of good flavour were found. It might be thought that in a tropical country like British New Guinea, where vegetation is so luxuriant, a number of edible and palatable wild fruits would be found. But such is not the case. There are several kinds of very fair nuts. I have also seen fruits which the natives eat and appear to find some satisfaction in eating, and which can therefore be classed as edible. I tried them; some had about as much flavour as raw pumpkins, and the others were so extremely acid as to be disagreeable. I was rather surprised at the remark of an aboriginal lad from North Queensland whom we had here. He complained that there were no fruits in the bush of New Guinea, whereas in his country there were plenty.

After leaving Puncaburu village, the party travelled eastwardly for some little distance along the crest of the Puncaburu Range. They then turned inland, and took a course which they thought would lead them to the Keveryi Valley. Dr. Blayney and Mr. English had, during last year, visited this valley from Cloudy Bay. From the 16th to the 19th of September, the party travelled as well as they could by compass bearings, cutting a track through the wooded ranges. The country was frequently clouded by mist or rain. In country like that which the expedition was now passing through, it is very difficult
to keep a given course, as you must follow the track that for the time is the best. This track may be along the summit of a hill, or up a spur, or down a spur, or along the bed of a watercourse. The highest ascertained altitude reached during those days was 4,500 feet above sea-level.

On the 19th September the party emerged from the forest into grass country. Ascending the slopes of a hill, they came to a plateau, from which they sighted two villages on a hill, on the other side of the valley. A discussion was then held, but the conclusion come to was that they did not know where they were, although they began to suspect that they must have crossed over the Main Range. They then proceeded in the direction of the villages and halted on the top of a hill, not far from that on which the villages were situated. After some shouting the attention of the villagers was attracted. The startled villagers at once set up a yell, and there was a general call to arms, and war cries, and shouts were heard coming from different points in the valley. Our party sat patiently on their hill and waved red cloths and made signs of peace and amity. At length one youth ventured over to the party, who made him a present, and assured him of their pacific intentions. Then some more came, and from them it was ascertained that the party had crossed the Main Range, and were in the territory of a tribe called the Okaude. It was natural enough for the natives of Okaude to rush to arms on the appearance of our people, because in those parts of the country that are unacquainted with the Government, the stranger is prima facie the foe. They stated later on that they had mistaken the party for a band of their dreaded enemies, the Dorevaida people. This may or may not have been true, for the aspect of the expedition would hardly bear a striking resemblance to a war party from Dorevaida. Natives are very ready at making excuses, but not quite so ready in inventing probable ones. The most improbable excuse given by natives, that I have heard of, was made by some native boys to their master, who had accused them of purloining his candles, which used to vanish in the night time. The accused stoutly denied the charge, and volunteered as an explanation of the disappearance of the candles during the night, that probably the "Bogarts" (ghosts or spirits) had taken a fancy to eating candles.

The Okaude natives then invited the party to come to their villages, which the latter did. The natives led the way in a great state of excitement, constantly springing up into the air and breaking out at intervals into a weird kind of chant. On arriving at the villages they met a native who understood Motu, the dialect of Port Moresby, and as Mr. English knows this dialect well, this greatly facilitated intercourse with these people. The man who spoke Motu
and another native living at Okaude were survivors of the massacre at Merani already referred to, who had fled to Okaude, and had decided to stay there. Both of them had some years previously been arrested and imprisoned at Port Moresby. Our party remained a few days in the Okaude District, and were on the best of terms with the inhabitants. Political matters in that part of the country were in a troubled condition. The Okaude were in a state of amity with most of the tribes to the southward between them and the sea. They were always in a state of hostility with the Dorevaida and Punaubura natives; and the same state of affairs appeared to exist between them and their neighbours on the North-east, North, and North-west. They were much delighted to learn that the redoubted Dorevaida warriors had fled at the approach of our party, and that three of them had been captured.

Whilst the party were at Okaude and on the journey from thence back to the coast, they were able to examine the Domara and Adau Rivers. Mr. English had the previous year obtained some knowledge of the existence and course of the Adau River, and had heard the roar of its waters coming from the deep gorge in the range, through which it passes. But his time had been too limited to make any further exploration. He came to the conclusion that the Adau must finally flow into the Musa River, which debouches into the sea on the North-east coast. The map showing these rivers, that accompanies these notes, was prepared by Captain Barton. Positions, distances, etc., are of course, approximate. There was so much mist over the ranges that it was difficult to distinguish their salient features. The leaders of the party are not quite sure that the mountain set down on the map as Mt. Clarence is Mt. Clarence, nor are they prepared to guarantee that the Domara flows into the Adau, or the Adau into the Musa. The courses of these rivers given on the map are, to a certain extent, hypothetical. The party duly obtained a view of the Adau down to the point at which it turns to the North and enters the gorge in the range; and they did not actually see the waters of the Domara much beyond Okaude. But there seems to be but little doubt that the Domara is a tributary of the Adau, and the Adau a branch of the Musa. It is extremely unlikely that either of these streams turns and comes back through the range; assuming that they continue in the course they were following when last visible, they will flow in the direction of the Musa. The information obtained by Sir William MacGregor, in his trip up the Musa in 1895, confirms the view that the Adau is an affluent of the Musa, and that the Domara flows into the Adau. The names of these rivers, as given in the map, were those used by the Okaude natives. Sir William went up the Musa, until it divided into two nearly equal tributaries, the names of which,
according to the Musa natives, were the Moni and the Adaua. The Adaua was the eastern tributary of this river. Sir William writes: "The Adaua goes at first for a few miles East of South, when, as far as I can ascertain, it receives the Domara branch." The name "Domara" was the Musa name. It is improbable that the Adau, Adaua, and Domara would be bestowed by the natives on the Musa, and the natives of Okaude on different rivers. The late Mr. John Green, who accompanied Sir William MacGregor up the Musa, told me that so far as he could understand the natives, the Adaua emerged into the plain country from deep gorges in the mountains, and that it was impossible to navigate it in these gorges.
ETHNOLOGICAL NOTES ON THE
ABORIGINAL TRIBES of the NORTHERN TERRITORY.*

By R. H. MATHEWS, L.S.

(Memb. Assoc. Soc. d'Anthrop. de Paris.)

In 1890, the Rev. H. Kempe, a missionary at Hermannsburg, on the Upper Finke, completed a valuable grammar and vocabulary of the language spoken by the aborigines of the MacDonnell Ranges, Alice Springs, and the Finke River, in the Northern Territory of South Australia.† From careful inquiries made by means of friends who have resided in that part of the country I have obtained reliable information that there is a similarity in the construction of all the dialects along a wide zone of territory from Alice Springs northerly to Davenport Range, and from Alice Springs southerly to Macumba River. I am now engaged in obtaining particulars of the tongues spoken in different parts of the Northern Territory, which I hope to submit to this Society on an early date. For the present I shall content myself with adding, at the end of this paper, a vocabulary of the Chingalee dialect, spoken at Daly Waters, Powell's Creek, and Elsey Creek.

In the following pages it is proposed to deal briefly with the social organisation, rites, and customs in force among the native tribes of the Northern Territory.

Every tribe consists of two primary divisions, which may be called phratries—a word used for a similar purpose among the ancient Greeks—the men of one phratry marrying the women of the other. Among the native inhabitants scattered over about three-fourths of the Northern Territory we find that each phratry is subdivided into four sections, making eight partitions of the community. Every section has an independent name by which its members are recognised. And, moreover, the women are distinguished from the men by a feminine form of the name of each division.

All children, boys and girls alike, born into the tribe, bear the name of one of these sections, and also that of some animal, plant, or inanimate thing, which is their totem. These may be called ancestral appellations; in addition to which each person has an individual name, by which he is distinguished among the men and women of his tribe. Every youth who passes through the inaugural rites receives a

* Taken as read before the Royal Geographical Society of Australasia, Queensland, May 27, 1901.

secret name, which is known only to the initiated; and further, he possesses what may be called a titular name, which indicates the degree he has attained to in the initiation ceremonies of his people. Every woman likewise has a secret name, of which she herself is not informed—this knowledge being possessed by the initiated men only. There are also relationship names, which need not now be further referred to.

Along the boundary line between the Northern Territory and Western Australia, there are a number of tribes on the Negri and Behm Rivers, Stuart's Creek, Stirling Creek, and other watercourses, among whom may be mentioned the Mayoo, Jeelowong, Neening, Jarroo, Munga, and other tribes, possessing eight sections in their social structure. Four of these sections form a phratry, which may be distinguished as A, whilst the remaining four constitute phratry B, which can be clearly illustrated in tabular form, as under:

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Chungulla</td>
<td>Narbeeta</td>
<td>Chambijana</td>
<td>Nambijana</td>
</tr>
<tr>
<td>1.</td>
<td>Choolima</td>
<td>Nanagoo</td>
<td>Chapota</td>
<td>Nemira</td>
</tr>
<tr>
<td>2.</td>
<td>Changary</td>
<td>Nambijana</td>
<td>Chinuma</td>
<td>Nanagoo</td>
</tr>
<tr>
<td>3.</td>
<td>Chavalya</td>
<td>Nemira</td>
<td>Choongoora</td>
<td>Nambijana</td>
</tr>
<tr>
<td>4.</td>
<td>Choongoora</td>
<td>Nungulla</td>
<td>Chavalya</td>
<td>Nabajerry</td>
</tr>
<tr>
<td>B</td>
<td>Chaluma</td>
<td>Naola</td>
<td>Changary</td>
<td>Nhermana</td>
</tr>
<tr>
<td>5.</td>
<td>Chinuma</td>
<td>Naola</td>
<td>Changary</td>
<td>Nhermana</td>
</tr>
<tr>
<td>6.</td>
<td>Chaluma</td>
<td>Naola</td>
<td>Changary</td>
<td>Nhermana</td>
</tr>
<tr>
<td>7.</td>
<td>Chapota</td>
<td>Nabajerry</td>
<td>Choolima</td>
<td>Naola</td>
</tr>
<tr>
<td>8.</td>
<td>Chambijana</td>
<td>Nhermana</td>
<td>Chungulla</td>
<td>Nungulla</td>
</tr>
</tbody>
</table>

The above table shows the husband, wife, son and daughter belonging to each of the eight divisions, on the same line across the page. For example, Chungulla marries Narbeeta, and the progeny are Chambijana and Nambijana, and so on. This I have called the ordinary or "direct" rule of marriage. Chungulla can, however, in certain cases, exercise the right of marrying a Nanagoo woman. I have distinguished such a marriage as irregular or "alternative." Again, Choolima takes Nanagoo as his regular spouse, and his "alternative" wife is Narbeeta. Besides these irregularities there are others of less frequency. For example, Chungulla can occasionally marry a Naola woman, and Choolima can take a Nungulla as his wife, but such marriages may be designated "rare." Whether Chungulla marries Narbeeta, or Nanagoo, or Naola, his children are Chambijana and Nambijana, as in Table No. 1.

In the other pairs of sections, Changarry and Chavalya—Choongoora and Chinuma—Chapota and Chambijana—marriage and descent follow the same laws, mutatis mutandis. It should be stated, however,
that the majority of marriages are in accordance with what is here termed the "direct" law. Before a union can take place under the "alternative" regulations, or under those which I have called "rare," either the man or the woman must belong to a distant family, so as to guard against nearness of kin.

In examining Table No. 1 it becomes apparent that Chungulla and Chambijana are related to each other as father and son in continuous alternation; and it is also found that they have certain totems which descend with them; for example, Chungulla Opossum may be the father of Chambijana Opossum, and in the next generation Chambijana Opossum will be the father of Chungulla Opossum. The following table illustrates the pairs of sections possessing the relationship of father and son, together with some of the totems appertaining to them:

<table>
<thead>
<tr>
<th>TABLE No. 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chungulla</strong></td>
</tr>
<tr>
<td><strong>Chambijana</strong></td>
</tr>
<tr>
<td><strong>Choolima</strong></td>
</tr>
<tr>
<td><strong>Chapota</strong></td>
</tr>
</tbody>
</table>

In general the progeny, boys and girls alike, inherit the totem of their male parent, but in this matter irregularities have been observed, which I am now investigating. In treating of the "alternative" marriages in a preceding page, it was stated that Chungulla could also marry Nanagoo, or Naola, and in a similar manner Choolima could wed Narbeeta, or Nungulla. In consequence of polygamy being sanctioned, it is possible for either Chungulla or Choolima to take one wife from the direct section, and another spouse from the "alternative" division, and a third from the "rare" class, which increases the difficulty of tracing the totems. (See Table No. 1.)

Owing to the close blood relationship subsisting between Chungulla, Chambijana, Choolima, and Chapota, I have discovered that the same totems are more or less in use among these four sections,
whom I have accordingly called Moiety A in Table No. 2. In other words, the totems given in that table as belonging primarily to Chun-gulla and Chambijana, are also to some extent common to Choolima and Chapota. The same remarks will apply in all respects to the totems of the remaining four sections, which are distinguished as Moiety B in the table. Marriage between persons of the same totem is forbidden if they belong to families inhabiting neighbouring hunting grounds; but where the parties to the union come from remote districts, and, therefore, cannot be any blood connection, I have observed individuals of the same totem living as man and wife.

On Sturt Creek and on Victoria and Ord Rivers, certain totems appear to be invested with greater importance than others. Among these may be mentioned the White Crane and Eaglehawk, all the totems in the community being divided between these two birds. (See Table No. 2.) In other places, patches of country are said to belong to certain totems; for example, the kangaroo, white hawk, emu, eagle-hawk, etc., will each have a particular ridge, scrub, plain, waterhole, or the like. Every section is subject to certain restrictions as to the animals and plants which they may search for and eat. Certain foods are also tabooed to pregnant women and young people of both sexes.

Over the whole of the country drained by the Victoria River and its numerous affluents, extending northerly to the Fitzmaurice, Flora, and Daly Rivers, we find a considerable number of important tribes, including the Moodburra, Kangarraga, Cheeal, Tewinbol, Bilyanarra, Wartaman, Oolawunga, Muttangulla, etc., who have the same organisation as that given in Table No. 1. The following are the masculine and feminine forms of the names of each section—the numbers 1. 2, etc., corresponding to those in the table referred to:—


The country around Daly Waters, Newcastle Waters, and Powell's Creek is inhabited by the Chingalee tribe, between whom and the Victoria River are the Kwaranjee and other people. East of the Chingalee is the Koodanjee tribe. Their divisions have the following masculine and feminine names:—1. Chunkaleininja, Nunkaleininja; 2. Chulainja, Nalainja; 3. Tunkareenja, Nunkareenja; 4. Taraleenja, Naraleenja; 5. Jimmitcha, Namuininja; 6. Chumainje, Namainja; 7. Chemarainja, Nemarainja; 8. Tampachina, Nambajina. These eight names, with dialectic modifications, have been observed by competent friends who have made inquiries for me from the north-west corner of Queensland, along the shore of the Gulf of Carpentaria to the Roper River, and over all the country lying between there and the overland telegraph line, and are fully described by me in other publications.
Among the tribes on the Upper Roper and its tributaries, on the Katherine, and thence north-easterly to the Goyder River, the organisation is the same, but the nomenclature of the eight sections is as follows:—1. Yungalla, Inkagalla; 2. Urwalla, Imbawalla; 3. Uwungaree, Imbongaree; 4. Uwallaree, Imballaree; 5. Eemitch, Immadenna; 6. Uwanee, Imbannee; 7. Unmarra, Inganmarra; 8. Tabachin, Tabadenna.

From the point where the boundary line between the Northern Territory and Queensland meets the Gulf of Carpentaria, and thence, southerly to the junction of the Rankine and Georgina Rivers, extending westerly beyond Elkedra and Alroy Downs, and easterly into Queensland, is inhabited by the Inchalachee, Warkya, Wanyee, Kurrawar, Yookala, and several other tribes, possessing eight divisions, as under, all the rules of marriage and descent being precisely the same as in Table No. 1:—

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Kingilla</td>
<td>Nolangma</td>
<td>Akamaroo</td>
<td>Jummeenya</td>
</tr>
<tr>
<td></td>
<td>Naratyoo</td>
<td>Neenama</td>
<td>Komeranjee</td>
<td>Neemurrama</td>
</tr>
<tr>
<td>B</td>
<td>Warkoo</td>
<td>Nurrallama</td>
<td>Boolanjee</td>
<td>Nolyarama</td>
</tr>
<tr>
<td></td>
<td>Komeranjee</td>
<td>Nulyarama</td>
<td>Boolanjee</td>
<td>Nongaryma</td>
</tr>
<tr>
<td></td>
<td>Akamaroo.</td>
<td>Nongaryma</td>
<td>Kingilla</td>
<td>Nurrallama</td>
</tr>
</tbody>
</table>

A few of the above names are varied in different parts of the tribal districts. In some places Naratyoo is called Burralanjee; Warkoo is Narrabalanjee; Komeranjee is Boonangoona; and Akamaroo is known as Thimmermill.¹

The first author to report the existence of an organisation containing eight sections among the natives on the Finke River, Alice Springs and MacDonnell Ranges, was the Rev. Louis Schulze, a missionary at Hermannsburg.² They were next referred to by Dr. E. C. Stirling in 1896,³ and by Spencer and Gillen in 1897.⁴ Mr. Schulze, and the other writers who followed his classification, divided the eight sections into two moieties, which did not represent the phratries, nor give the correct descent of the offspring. On the 12th of June, 1898, I read a

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(3) Report Horn Exped., Part iv., p. 46.
paper before the Royal Society of New South Wales, in which, *inter alia*, I gave the following tabulation of the two phratries, and the sections composing them:

**TABLE No. 4.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ungala</td>
<td>Knarraia</td>
<td>Mbutjana</td>
<td>Mbutjana</td>
</tr>
<tr>
<td>A</td>
<td>Parulla</td>
<td>Panungka</td>
<td>Koomara</td>
<td>Koomara</td>
</tr>
<tr>
<td></td>
<td>Pungata</td>
<td>Mbutjana</td>
<td>Knarraia</td>
<td>Knarraia</td>
</tr>
<tr>
<td></td>
<td>Bultara</td>
<td>Koomara</td>
<td>Panungka</td>
<td>Panungka</td>
</tr>
<tr>
<td></td>
<td>Panungka</td>
<td>Parulla</td>
<td>Bultara</td>
<td>Bultara</td>
</tr>
<tr>
<td>B</td>
<td>Knarraia</td>
<td>Ungala</td>
<td>Pungata</td>
<td>Pungata</td>
</tr>
<tr>
<td></td>
<td>Bultara</td>
<td>Parulla</td>
<td>Ungala</td>
<td>Ungala</td>
</tr>
</tbody>
</table>

What has been said in explanation of Tables No. 1 and No. 2 regarding direct and alternative marriages, the descent of the progeny, and all other matters, applies equally to Table No. 4. Mr. Schultze had previously reported the occurrence of alternative marriages, and he states that "whether Bultara has a Koomara or Mbutjana for his wife is immaterial . . . . the children are Panungka." According to my investigations, his conclusions are correct.

In the Warramonga tribe about Tennant's Creek, the names of the eight sections, how they intermarry, and the resulting offspring are as under:

**TABLE No. 5.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jungulla</td>
<td>Numajillee</td>
<td>Ambajona</td>
<td>Lambean</td>
</tr>
<tr>
<td>A</td>
<td>Jooppalla</td>
<td>Naponunga</td>
<td>Takamara</td>
<td>Nakamara</td>
</tr>
<tr>
<td></td>
<td>Tapongatee</td>
<td>Lambean</td>
<td>Taponunga</td>
<td>Naponunga</td>
</tr>
<tr>
<td></td>
<td>Kubadjee</td>
<td>Nakamara</td>
<td>Jungaree</td>
<td>Numajillee</td>
</tr>
<tr>
<td></td>
<td>Jungaree</td>
<td>Nongillee</td>
<td>Kubadjee</td>
<td>Nabadjée</td>
</tr>
<tr>
<td>B</td>
<td>Taponunga</td>
<td>Narala</td>
<td>Tapongatee</td>
<td>Napongate</td>
</tr>
<tr>
<td></td>
<td>Takamara</td>
<td>Nabadjée</td>
<td>Jooppalla</td>
<td>Narala</td>
</tr>
<tr>
<td></td>
<td>Ambajona</td>
<td>Napongatee</td>
<td>Jungulla</td>
<td>Nongillee</td>
</tr>
</tbody>
</table>

Taking the first name in the table, we see that a Jungulla man takes a Numajillee woman, who is his regularly appointed spouse; and his family are Ambajona and Lambean; but he has the alternative of marrying a Naponunga maiden instead, and polygamy being allowed, he may select a wife from each of the sections mentioned.

A man of the Joopalla section, whose proper wife is Naponunga, can marry Numajillee—that is, Jungulla and Joopalla can exercise their choice over the same two sections of women. Similar privileges are accorded to the men of the other pairs of sections, who may reverse their wives in the same way. Everything which has been said in the explanation of Tables 1 and 2 applies to this table.

The Yorrawinga, Yoolanlanya, Yanindo, and some other tribes are located on the Upper Georgina, Woodroffe, Field, Hay, and other watercourses, and reach some distance within the Queensland frontier. Among them there are only four divisions, instead of eight, with rules of intermarriage and descent as indicated in the following synopsis:

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Deringara</td>
<td>Koomara</td>
<td>Belthara</td>
</tr>
<tr>
<td></td>
<td>Gubilla</td>
<td>Belthara</td>
<td>Koomara</td>
</tr>
<tr>
<td>B</td>
<td>Koomara</td>
<td>Deringarra</td>
<td>Gubilla</td>
</tr>
<tr>
<td></td>
<td>Belthara</td>
<td>Gubilla</td>
<td>Deringara</td>
</tr>
</tbody>
</table>

To the South-west of the people represented in Table No. 6, and on the South of the organisation described in Table No. 4, the region is occupied by the Arrinda, Andigariuña, Loorudgie, and other tribes, having the following intermarrying divisions:

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Husband</th>
<th>Wife</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Parulla</td>
<td>Panungka</td>
<td>Koomara</td>
</tr>
<tr>
<td></td>
<td>Bultara</td>
<td>Koomara</td>
<td>Panungka</td>
</tr>
<tr>
<td>B</td>
<td>Panungka</td>
<td>Parulla</td>
<td>Bultara</td>
</tr>
<tr>
<td></td>
<td>Koomara</td>
<td>Bultara</td>
<td>Parulla</td>
</tr>
</tbody>
</table>

Throughout the whole of the province of South Australia situated to the southward of the tribes represented in Table No. 7, I have described the social organisation of all the different communities in a paper on the "Divisions of the South Australian Aborigines," published in the Proceedings of the American Philosophical Society (Philadelphia, U.S.A.), Vol. xxxix., pp. 78-93, with a map of South Australia, showing the boundaries of every native community in the province.

In a tract of country reaching inland easterly and southerly from Port Darwin, marriages are arranged by the elders, who are well acquainted with the genealogy of the various families composing the tribe. The daughters of certain women are betrothed to the sons of certain other women, and on such children attaining puberty they become man and wife. The relationship subsisting between these two
women is practically that of cousins, and their respective progeny are second cousins. In determining the betrothals the old men are guided by the totem of the parents of the children, in addition to their pedigree. Although there are no sharply defined divisions, like those enumerated in Table No. 1, yet upon closely investigating both systems of marriage regulations, they are found substantially the same in their fundamental principles.

The initiatory rites of circumcision and subincision to which the youths are subjected, are practised over the whole of the Northern Territory, with the exception of the region lying north-westerly of a line drawn approximately from the mouth of the Victoria to the mouth of the Goyder River. In a portion of this district, from the Daly River round along the coast to the Liverpool River, circumcision only is in vogue. Even when associated with subincision, circumcision is the principal ceremony, and its celebration is attended with many formalities and repulsive practices, which are fully described by me elsewhere. The age at which it is performed varies from six to twelve years.

It may be explained that subincision consists of cutting open the penile portion of the urethra from the meatus unirarius towards the scrotum. The length of the incision varies in different localities, being in some cases continued nearly to the scrotum, whilst in other places it extends downwards about two inches. Again, there are regions where the incision commences below the glans, say an inch from the meatus, and extends towards the scrotum some two or three inches. In this form of mutilation the head of the organ is left intact, whilst in that last described it is split open. The incision of the urethral canal, in whichever manner it is performed, does not prevent either coition or procreation.

When the girls arrive at puberty the vaginal orifice is enlarged, the process varying in different tracts of country. In some districts it is accomplished by a man inserting his fingers and using sufficient force to stretch the parts. A smooth stick prepared for the purpose, or a smooth stone of the requisite size and shape found in a watercourse, are also used for this operation. Over a very large geographical area the enlargement is effected by lacerating, or cutting slightly into, the perineum with a stone knife. The mutilation, whether by forcible rupture or cutting, does not affect the uterus or ovaries in any way, and there is no apparent diminution of the woman's child-bearing power. No woman is allowed to marry until this operation, in one form or another, has taken place.

All over the Victoria River country, and reaching southerly to Lake Amadeus, the natives have an ingenious way of trapping hawks, which are very numerous and form an article of food. A blackfellow
and his family, or perhaps a few men who are friends, go out on aidge where there are rocks with bunches of spinifex (Triodia pungens)
growing in the immediate vicinity. They set to work and gather a lot
of moderate sized pieces of stone, say from 20 to 50 pounds in weight
or more, and lay them in the form of a square or rectangle about
three or four feet each way. A wall is built up by laying tier upon
tier of stones—merely balanced one on the other, without mortar—
to a height of about four feet, the height being less or more according
to the scarcity or otherwise of building material. The primitive
structure is roofed in by laying sticks horizontally from one wall to
the opposite one, and over these a few green bushes are thrown,
for the two-fold purpose of affording a shade to the occupant, and
hiding him from view. A small hole is left in this airy roof about
a foot or eighteen inches in diameter, and there is also an opening in
one of the walls large enough for a man to crawl through.

The hunter who is to do the trapping has provided himself with an
iguana, opossum, leg of a wallaby, or any suitable bait, which he
partially roasts to make it all the more readily scented by the birds
of prey. He then goes into the trap and sits down, holding the
broiled iguana or other bait up through the opening in the roof.
His companions now set a light to two or three bushes of spinifex,
growing some on one side and some on the other of the trap, and
go away to their camps, or into another part of their hunting grounds.
The smoke from the burning spinifex, which ignites slowly, soon
attracts the hawks, which come flying to the scene, because they are
accustomed to see and capture rats and other small game, running
before bush fires. Kangaree rats and bandicoots build their nests
at the bases of spinifex, which affords them a good cover. A hawk
will soar round and round close to the fires, and the man moves his
bait to attract attention. As soon as the hawk espies this, it
swoops down on the wing, and grasps the iguana in its talons. The
moment it does this, the man below instantly takes hold of the feet
of the bird in his right hand and pulls it down into the trap whilst
with the left hand he catches the head, and bites deeply into the
animal's neck with his teeth, near where it joins the skull, causing
instant death. He then pushes the bait up again through the roof
and waits for another hawk, which is caught in the same way. This
is continued either as long as any birds are in sight, or until the
hunter has caught sufficient for his present requirements.

To catch the larger game, such as kangaroos and emus, a hunter
will conceal himself behind a bush or screen of boughs which he has
prepared, near a track along which these animals are known to travel
to a watering-place. At other times a man will plant in a similar
way close to a rock-hole, and when the animal is drinking will knock
it over with a club or spear. Another way is for the hunter to carry a bush sufficiently large to conceal his body, and walk slowly and stealthily towards a number of emus, kangaroos, or other game, until he gets near enough to use his weapons.

To form a weir for catching fish, the natives of the Victoria and Roper Rivers select a part of the river which runs over a flat, rocky bar, and build a wall of loose stones from side to side, in the form of the letter V, but with an opening at the apex, which is down stream. The water can percolate freely through any part of the wall, but fish are carried by the current towards the opening. Men and women stand in the stream and catch the fish in their hands, pitching them out on the bank or into vessels. If a catfish is seen, one of the fishermen drives a spear into it and lands it in that way; it being dangerous to catch these animals with the naked hand on account of the projections on the head.

Fish are sometimes caught by throwing small leafy branches of bloodwood or gum trees into waterholes, and leaving them to soak. Next day the water is discoloured and tastes strongly of the leaves, causing the fish to come to the surface in a stupefied state, where they are caught by the natives, who are watching for them. In small waterholes, whose depth is not greater than up to a man's chest, the natives collect a quantity of spinifex, and fasten it together in a layer across one end of the waterhole, reaching from the bottom upwards close to the surface. A number of men then push this wall of spinifex before them towards the other end of the hole, driving the fish in that direction, where men and women are watching for them. Any of the fish attempting to turn back over the top of the spinifex wall are caught or speared by the men who are there.

The women carry yamsticks made of any very hard wood, between four and five feet in length, one end of which has a chisel-shaped edge, and the other a point—both these extremities being hardened in the fire, and are kept sufficiently sharp by scraping from time to time with a flake of hard stone. The weapon is used in searching for edible roots, grubs, and other insects, and also for digging out iguanas, rats of different kinds, porcupines, frogs, or any creature which burrows in the ground. In digging for yams of different kinds they do not pull the plant completely out of the ground, as a white man does a turnip, but loosen the surrounding soil sufficiently to enable them to break off the bulb—the top being left in the ground to take root again or run to seed.

A few different kinds of trees bear fruit, nuts, and edible berries. The Leichhardt pine and other trees produce a species of fig which furnishes good eating when ripe. There are some native vegetables called cucumbers, melons, and potatoes, which have some slight resem-
blance to the European products, and a small wild grape grows in the jungles. Seeds of the eucalyptus and grass seeds are used as food. The latter are ground on a flat stone by rubbing with a smaller one held in the hand. Water is used in grinding most seeds, which are usually very hard. The mee-uk'ka tree bears pods, each containing a number of seeds, which are pounded and ground fine. The pulverized mass, in either case, is made into a cake and baked on the coals.

The nut-wood tree grows on the downs, from ten to twenty feet high, bearing fruit resembling a nut which is much sought after by the natives, both for the fruit and the kernel.

When long periods of drought occur in any kind of country—and during very wet seasons and excessive floods in low-lying lands—game of all sorts, as well as fish, become so scarce that famines necessarily follow, and many people die of starvation.

Along the valleys of most of the rivers and creeks there are plenty of tea-trees growing, which have a soft outer bark which peels off easily without injuring the bole. This bark is largely used by the natives as a protection against the rain. In the desert country, where there are no tea-trees, the people make a kind of rug or covering out of long grass, which they cut off with stone knives near the ground, and plait it into a close mat. A breakwind is made by bending over the tops of the spinifex and laying a few bushes around the camp fire. The natives then cover themselves from the rain with the grass rugs.

Water-bags are made from the skin of one of the legs of a large kangaroo, or from the whole skin of a wallaby, or other small animal, for carrying water on hunting expeditions into waterless country. Wooden vessels (referred to in the next paragraph), are commonly used for bringing water into camp, and also for conveying it short stages—a few handfuls of grass, or small twigs, broken from a green shrub, being placed on the surface to prevent its splashing out as the bearer walks along.

Wooden vessels for holding water, honey, or in short, anything, are made, in the following way, out of the branch or trunk of a tree which has soft wood resembling the kurrajong, or cork-tree. A piece of timber of the required size, varying in length from one foot up to three or four, is cut off with a stone hatchet—a part of the branch which has a bend in it being preferred. The operator then commences on the concave side, and chips out as much wood as he can with his hatchet—cutting the chips parallel to the grain of the wood, not transversely. For finishing the scooping out of the utensil he uses a double-ended chisel. This tool is made of a slightly curved piece of very hard wood, known as "desert gum," from fifteen to twenty inches long, on each end of which is inserted a piece of hard stone, chipped or ground to a
cutting edge. The edges of the stones are at right angles to the plane of the curvature of the wooden handle. One end of this tool is provided with a narrow edged stone, and the other with a wider, for use in different portions of the vessel; and the bend in the handle enables the workman to use the implement with facility on the curved surfaces of the interior. The sharp stones are secured in the ends of the chisel by means of gum, which is obtained in some places from the roots of spinifex, in other parts from the beef-wood tree, and again in others from the grass-tree. There is more gum on the side on which the concavity of the handle occurs, to resist the greater pressure, or concussion of the blow, on that side. The gum, when first collected, is broken fine by pounding it either with a stone or a piece of hard wood, and is then held close to the fire, causing it to run together into a lump, which is carried about until required. When they want to use some of it they soften it before the fire. In many tribes a chipped or ground stone is fastened in the end of the throwing stick, and used as a chisel.

To protect their feet from the sharp stones in rugged country, or from the hot sand of the desert, the natives sometimes make shoes, or sandals, from the bark of the tea-tree, with a string tied over the foot to keep it on. This string is made from the bark of a shrub with a yellow flower which grows on the sand hills. In some districts the shoe itself is made with strands of the bark of the same tree, worked in the manner of netting, and is fastened on the foot as just stated. In other parts these shoes are made of animal fur, woven into a net with very small meshes.1

Shoes are also sometimes made of emu feathers matted together to form the soles, which are fastened on the foot with string in the usual way. It has been erroneously said that such shoes, which are worn only by old conjurors, do not leave any tracks on the ground which could be detected by others, but the real explanation of their immunity from pursuit is because no man would attempt to follow the tracks of an individual using shoes of this character, from a superstitious dread of the magical powers of the wearer.

Tufts of feathers of the common brown hawk, emu, or plain turkey are sometimes worn by the men under their belts, as a charm against their enemies, or for the purpose of adding valour to the wearer. Some men possess waistbelts made from the hair of a deceased warrior, which are supposed to preserve those who use them from their enemies or evil spirits. The fat of such a warrior is often mixed with coloured clays, and rubbed over the bodies of the young men. Belts are also

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(1) Captain Cook states that he saw natives in Tasmania who had their feet protected from the rough stones by means of pieces of animal skin.
made partly or wholly from the hair of a man's mother-in-law, supplied by her to his wife at various times. Remnants of food are destroyed or buried in the sand to prevent their falling into the hands of mystic creatures, or enemies from another camp. If a man fear that his wife, or one of his wives if he have several, wishes to get rid of him, he never lets her see where he defecates, because she might take some of his excreta and give it to an old sorcerer, and get him to "point a bone," or work some other magic for the purpose of destroying her husband. In some tribes it is a universal rule that the women never see where the men evacuate; if within view, the women must turn their faces in the opposite direction while a man is so engaged.

If they see a whirlwind passing along, catching up leaves, small twigs and dust, or if a violent thunderstorm is imminent, an old man will collect a handful of long grass and micurate upon it—or perhaps several men may join in the latter act—after which he sways the grass to and fro in his hand in the direction of the approaching danger, muttering some incantation the while, by which means he thinks the storm or whirlwind will be stopped, or at any rate be bereft of its baleful influences. If the whirlwind turns off in another direction, or the storm clouds disperse, both of which are very probable contingencies in that arid country, he believes that his efforts have been successful. If, however, this expedient is ineffectual, then he considers that the evil spirit is more powerful than himself.

Some of the old men, the Shamans of the tribe, profess to have the power of causing the supply of animals, fruits, vegetable roots, and other sources of food to increase. If an abundance of wild ducks is desired, a man of the wild duck totem officiates as the Shaman; if iguanas, an iguana man is supposed to take charge of the enchantment, and so on.

On the upper Georgina and Field Rivers, the Yorrawinga natives have a tradition that there was once an enormous snake-like creature, called Wakâna, endowed with supernatural powers, whose trail marked out rivers and watercourses wherever it went. At every place where there is a big waterhole at the present day, they aver that Wakâna camped at that spot after having done a hard day's work. They likewise believe in an evil-disposed being in human shape, called Arênga, who prowls about the camp at night; he is covered with feathers, and has claws like the eaglehawk, and can fly like that bird. These natives have names for the four quarters of the compass; the south is vilga, the north aralinga, the west atugrabinga, and the east erañina. The moon is algunda, and when a new moon appears they sing a peculiar chant for the occasion. The Southern Cross they call waubara, the sun awigela, the planet Venus warjera.

Rock paintings are fairly numerous in the Victoria River basin, especially on Gordon and Jasper Creeks, the Wickham and elsewhere
The watercourses are bounded by rocky escarpments, the bases of which are hollowed out in places by the action of the weather and other causes. In these depressions, which are more or less sheltered from the rain, the natives draw pictures of alligators, fish, human beings, flying foxes, kangaroos and other things, in pipe-clay, red ochre and charcoal. In some places where there is a sufficient rock surface the natives delineate an immense snake-like monster, twenty or thirty feet in length, which is said to have dug out waterholes and formed rivers in olden times.

Mr. Michael Costello gave me the following account of some rock paintings on the Valley of Springs Station, on the Limmen River. There are four remarkable flat-topped sandstone hills, called "The Archers," all about the same height and shape, looking like ancient castles. They consist of immense blocks of Desert Sandstone, and are shown on the Government maps of the Northern Territory as Mount Thomas, Mount John, Mount Charles, and Mount David. Nine miles up a valley, and at a part of it where there is a narrow gorge, there are some native paintings. The gorge is about a mile and a half south of the Limmen River, and a stream of fresh water runs through it all the year round. On both sides of this gorge there are some interesting paintings on the bare rocky walls, many of them being done fairly well for the natives. There are pictures of alligators, snakes, fish, blackfellows in fighting attitudes, and some painted hands. Their favourite drawing was the snake,¹ some of the representations being of fabulous forms and sizes. In riding through the bush on the Limmen River, Mr. Costello informs me he has frequently noticed rough outlines of large snakes cut into the white bark of gum trees. The natives also sketch boomerangs and shields on the bark of trees, and paint them on rocks.

If there is a man in the general encampment who has two or more wives, and an unmarried fellow takes a fancy to one of them, or comes to the conclusion that he will annex her, he watches till some night that she is sitting at her camp fire, her husband being absent in some other part of the camp, when he suddenly seizes her and carries her off to his own fire. As soon as the husband learns what has occurred there is a row, consisting of much angry recrimination between the two men, but none of the other people interfere. If the husband thinks the usurper is stronger than himself he lets him retain the woman, otherwise there is a fight, after which the victor takes final possession of her. This method of securing a wife is called jarrada, but the women thus appropriated must belong to the section from which the man can lawfully select a spouse.

¹. Serpent worship—or the fear of serpents—has been observed in almost every land of which we have any knowledge.
When a man dies, a platform is made by placing sticks horizontally across the spreading branches of a low tree, and on this the corpse is laid, covered with bushes, paper-bark or grass, and is left there till the flesh decomposes and the bones fall to the ground. The relatives of the deceased now visit the spot, breaking the bones of the arms and legs in some cases, and eating the marrow. They have a superstitious belief that eating marrow confers strength and superiority upon them. The bones are carried away and placed in caves or clefts in rocky places, or interred. In many districts the bodies of deceased persons are buried in the ground, in others they are burnt. In rocky country, instead of laying the dead body on an arboreal platform, it is placed on a projecting shelf of rock on the face of a cliff. In all cases the weapons of the deceased are placed with his remains, and if, as sometimes happens, the body is not disposed of in any way, his weapons and effects are left at his camp, and are never touched or used by any one. Like other Australian natives, when a man dies his death is attributed to some designing person in another tribe, and the injury must be avenged. This retaliation is called *warrung-arree*.

The rainy season commences about December every year, and the hierarchy have observed that certain conspicuous stars are in particular parts of the eastern sky on the evenings of that period. The old head men, therefore, avail themselves of this knowledge, and muster their tribe on the approach of such times, for the purpose of going through certain ceremonies for producing rain. The old Shamans also know from tradition and experience that the rainy season comes to an end when the same remarkable stars are in the western sky early in the evening, which is generally about the beginning of March, and consequently if there is too much rain in any given year, these men work somewhat similar enchantments to bring fine weather. The gatherings for the production, as well as for the cessation of rain, may continue for some time with intervals between them.

I have observed that the men of certain sections of a phratry or moiety will have charge of bringing the wet at one corroboree, and the men of a different set of sections of another phratry will be the prime operators at the succeeding ceremony.

Periodic journeys are made into the territories of adjoining and distant tribes for the purpose of exchanging manufactured or natural products. The routes along which the people travel on these occasions seem to have been fixed and acknowledged from time out of mind. The period of the year is usually the autumn, because then the rockholes, springs and watercourses have been replenished by the annual rains. For example, the natives of the Upper Victoria travel eastward to Newcastle Waters; thence northerly to Daly Waters, Birdum Creek and Katherine River, returning by way of Delamere and
Gregory Creek. Residents of the Wickham River go westward to the Negri and Ord Rivers, which they run down a long way, coming back by Auvergne on the Baines, and thence up the Victoria River home. There are several of these bartering or trade routes in different districts, and the journeys, which occupy a long time, are marked by good feeling and festive corroborees throughout.

The principal weapons in use are the barbed spear, fish spear, womera, tomahawk, boomerang, a two-handed waddy, stone knife, double-ended chisel, and yamstick. The natives are very dexterous in making stone spear-heads. They get the jaw of the crocodile, either upper or lower, and break it into flakes by means of a heavy stone held in the hand. The bones of these animals are very hard and do not break easily; with them the workman chips suitable stones into the requisite shape for spear heads. When, after much patient labour, the necessary form is attained, the serrations are made by pressing a small sharp piece of crocodile bone against the edges, chipping out small gaps at regular intervals all the way along. The warreeddilla, a hunting boomerang, a little over two feet long, is made on Sturt Creek, with a hook projecting from one extremity, on the convex edge, or back, of the weapon. The hook, which is about five or six inches in length, extends backwards, forming an angle of thirty or forty degrees at the point of juncture. This implement is in use among all the tribes from the Western Australian boundary right across the Northern Territory into Queensland, where it was met with, under substantially the same name, by Dr. Roth. It is mentioned by Mr. D. W. Carnegie, who saw it among the natives in Western Australia.

Flat sticks, or boards, called mirral'loo, varying from five feet to nearly twice that length, from three to six inches in width, and thin, are used by the natives of Sturt Creek and elsewhere in different important ceremonies. Bullroarers and message-sticks are also employed. All these instruments and their uses, which are of a secret character, form the subject of another article.

Marks are formed on the bodies of men and women by means of cuts with stone knives. Soft sandstone, ground fine, or charcoal powder, in either case mixed with grease, are rubbed into the cuts to raise scars. Ashes mixed with soft animal fur or the down of birds, are also applied to the incisions to keep them open. Long horizontal scars are made across the chest and stomach; short vertical lines, either straight or slightly curved, being cut on the shoulders, back and limbs.

(1) "Ethnological Studies, etc., Queensland Aborigines," p. 145, Fig 353.
(2) "Spinifex and Sand," p. 343.
Cannibalism is practised over the whole of the territory treated of in this paper. A man's body is cooked in a hole dug in the ground in the same manner as a kangaroo, emu, or other large game. It is a common belief among these natives that infants reside in rocky hills, and in the dense foliage of forest trees, before they enter the bodies of the women who give them birth.

The inhabitants of all the islands in the Gulf of Carpentaria are virtually the same people, in language and customs, as those on the adjacent mainland.

In the following tabulated list of fourteen members of the Chingalee tribe, I have in each case given the section and totem of the individual, the totem of his or her father, the totem of his or her mother, and the totem of the offspring:

<table>
<thead>
<tr>
<th>No.</th>
<th>Individual (man or woman)</th>
<th>Totem of Individual's Father</th>
<th>Totem of Individual's Mother</th>
<th>Totem of Individual's Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Charlie Chuna</td>
<td>Blk. striped snake</td>
<td>Fish</td>
<td>Blk. striped snake</td>
</tr>
<tr>
<td>1a</td>
<td>Lucy (wife) Nala</td>
<td>Native bee</td>
<td>Native bee</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Harry Chuna</td>
<td>Earth-worm</td>
<td>Nut-grass</td>
<td></td>
</tr>
<tr>
<td>2a</td>
<td>Nora Nala</td>
<td>Iguana</td>
<td>Earth-worm Iguana</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Palmer Chula</td>
<td>Honey</td>
<td>Honey</td>
<td></td>
</tr>
<tr>
<td>3a</td>
<td>His wife Nana</td>
<td>Large water-snake</td>
<td>Nut-grass</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rowley Chula</td>
<td>Kangaroo</td>
<td>Kangaroo</td>
<td></td>
</tr>
<tr>
<td>4a</td>
<td>His wife Nana</td>
<td>Streculia</td>
<td>Streculia</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Toby Tunkaree</td>
<td>Watersnake</td>
<td>Ground honey</td>
<td></td>
</tr>
<tr>
<td>5a</td>
<td>Belle Nemara</td>
<td>Honey and Kangaroo</td>
<td>Bandicoot</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Jack Chula Nungalee</td>
<td>Iguana</td>
<td>Streculia</td>
<td></td>
</tr>
<tr>
<td>6a</td>
<td>Mary Chula Nungalee</td>
<td>Streculia and Wallaby Watersnake</td>
<td>Iguana</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Jumbuck Tunkaree</td>
<td>Watersnake</td>
<td>Iguana</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Brumbie Tunkaree</td>
<td>Plain-grass</td>
<td>Iguana</td>
<td></td>
</tr>
</tbody>
</table>

It will be observed that No. 5 is married to a woman of the "alternative" section, that is, Nemara instead of Nabajina. No. 6 has taken a spouse from the "rare" section, his present wife being a Nungalee, instead of a Nana or Nameinja. The parents of Jumbuck, No. 7, are both of the same totem.

According to this table, the children of Nos. 1, 3, 4, 5, 7, and 8, take the totem of the father; but the offspring of Nos. 2 and 6 have the totem of the mother. The wives of Nos. 5 and 6 have each two totems. Examination of the totems in the fourth, fifth, and sixth columns shows that some of them follow the father and some the...
mother, whilst others inherit the totem of neither parent. In other instances, not included in this table, I have found that among the offspring of the same parents there is considerable irregularity—some of the children having one totem and some another. I am inclined to think, however, that if one had time to prepare tables of genealogies for two or three generations, taking into account the "alternative" and "rare" as well as the "direct" rules of intermarriage, the totemic laws of descent might be found to be more fixed than at present appears. This and other matters connected with the totems will be further dealt with when certain investigations on which I am now engaged shall have been completed.

In many of the tribes dealt with in this article the section to which the offspring belong is determined through the mother. If Chuna marry Nala, his children will be Tunkaree and Nungaree; if he take an "alternative" wife, they will be Taralee and Naralee; and if he choose a partner from the Namecinja or "rare" section, they will be Tampachina and Nabajina.

Again, in some tribes although a man may marry into three different sections, he cannot do so concurrently. For example, Chuna can marry Nala, or, polygamy being in vogue, he may take two or more Nalas, but until they die, or are "divorced," or run away, he cannot marry a woman belonging to either of the other two sections over which he has marital rights. In like manner, while he possesses a "rare" or an "alternative" wife, the same law will apply to him. It is, perhaps, unnecessary to add that, moreover, marriages within the prescribed sections are more or less regulated by betrothals in all aboriginal tribes.

VOCABULARY.

This vocabulary contains a first instalment of about 210 words in the language of the Chingalee tribe, whose boundaries I have already stated. Substantially the same tongue is spoken along that portion of the overland telegraph line from Adelaide to Port Darwin, comprised between the Katherine River and Tennant's Creek. On the west of the telegraph line, including the Victoria River, Camfield Creek, Sturt Creek, the Negri and Ord Rivers, and extending onwards far into Western Australia, the structure of the language is the same as the Chingalee. This will also apply to the dialects in all the country between the part of the overland telegraph line referred to and the Gulf of Carpentaria, comprising Playford Creek, Cresswell Creek, and the rivers Calvert, McArthur, Limmen, Roper, Hodgson, and Strangways.

Throughout this enormous region, with very few exceptions, the grammar of the language is substantially the same, although a large number of words may differ more or less widely, or although the
vocabulary is almost quite divergent. The following is a synopsis of
the grammatical elements of the dialects analyzed from a mass of
information on this subject collected by me within the geographic
limits indicated.

Nouns have the singular, dual, and plural numbers, and the usual
cases; they are declined for number and case by means of postfixes.
Adjectives are declined similarly to the nouns they qualify. Pronouns have the same numbers as the nouns, and are declined for pre-
sent, past, and future time. The verbs have three numbers, with the
usual persons and tenses; and three moods—the indicative, impera-
tive, and subjunctive. A verb and the suitable pronoun are merged
into one word, which can then be inflected by suffixes for all the tenses,
as well as for number and person. Adverbs and prepositions have
their places in the language, but there are few conjunctions and inter-
jections. There is no article corresponding to a or the.

As the equivalent of English words will be most frequently re-
quired, I have put them first throughout the vocabulary. The spelling
is as nearly as possible the same as in English. Words of the same
character are placed together under separate headings, thus:—Family
terms.—Parts of the body.—Natural objects.—Animals.—Weapons.—
Adjectives.—Verbs.—Miscellaneous.

**Family Terms, Etc.**

<table>
<thead>
<tr>
<th>English</th>
<th>Lusitana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man, Pia</td>
<td>Husband, Unbeah</td>
</tr>
<tr>
<td>Old man, Mullaga</td>
<td>Wife, Kabinnee</td>
</tr>
<tr>
<td>Woman, Nay-annee</td>
<td>Elder brother, Bapa</td>
</tr>
<tr>
<td>Old woman, Immakinnee</td>
<td>Younger brother, Burdatdah</td>
</tr>
<tr>
<td>Boy, Ahwah</td>
<td>Elder sister, Beebinnee</td>
</tr>
<tr>
<td>Girl, Weewinnee</td>
<td>Younger sister, Burdatannee</td>
</tr>
<tr>
<td>Baby, Korragulla</td>
<td>Children, Wawalla</td>
</tr>
<tr>
<td>Father, Keeta</td>
<td>Copulation, Yanganu</td>
</tr>
<tr>
<td>Mother, Bellannu</td>
<td>Masturbation, Jeepanu</td>
</tr>
</tbody>
</table>

**Parts of the Body.**

<table>
<thead>
<tr>
<th>English</th>
<th>Lusitana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head, Tummungu</td>
<td>Breasts (female) Abbulluh</td>
</tr>
<tr>
<td>Hair, Tatagura or Mela-bana</td>
<td>Arm, Peannee</td>
</tr>
<tr>
<td>Eye, Ahbanjuhu</td>
<td>Hand, Munda—munda</td>
</tr>
<tr>
<td>Face, Ejeeju</td>
<td>Finger-nail, Meelinjee</td>
</tr>
<tr>
<td>Ear, Lungah</td>
<td>Thigh, Tarramullu</td>
</tr>
<tr>
<td>Nose, Kullamee</td>
<td>Calf of leg, Illikbee</td>
</tr>
<tr>
<td>Smell, Bijwanggetju</td>
<td>Foot and foot-mark, Yunku</td>
</tr>
<tr>
<td>Mouth, Ajarahgoolu</td>
<td>Toe, Ubanna</td>
</tr>
<tr>
<td>Teeth, Abbinju</td>
<td>Skin, Kurranu</td>
</tr>
<tr>
<td>Cheek, Kukunda</td>
<td>Blood, Borajah</td>
</tr>
<tr>
<td>Forehead, Wuddaru</td>
<td>Bowels, Billa-billa</td>
</tr>
<tr>
<td>Beard, Jinteemee</td>
<td>Excrement, Oomee</td>
</tr>
<tr>
<td>Tongue, Talana</td>
<td>Urine, Myaggu</td>
</tr>
<tr>
<td>Stomach, Tunardgu</td>
<td></td>
</tr>
</tbody>
</table>
Natural Objects.—Nouns.

Sun, Olajennee
Moon, Badungarra
Stars, Kommaranjee or Chinkachee
Clouds, Medeye
Sky, Kullamarra
Rain, Eepilkinnee
Rainbow, Kingmee
Light, Ellabarungoo
Dark, Kommaru
Morning, Warrarunga
Day, Adajudaju
Night, Warraru
Heat, Adalagu
Cold, Korramunmulla
Fire, Pooba
Water, Eepilka or Kalarunga
Milk, Choomoolka or Ahpulluh
Food, Kundru
Demon, Warrajee
Shadow, Eeleechinku
Wind (strong), Myamba

Breeze (light), Looarkoo
Mist, Illeebanku
Smoke, Ookalu
Thunder, Dundunbeeaju
Lightning, Dojamee
Ground, Korralu
Stone, Ketcheeulu
Hill, Kuncharu
Creek, Churkulu
Grass, Peekarra
Nut-grass, Appajimme-
Plain-grass, Urpajinghee-
Streculia, Maekemmee
Trees, Toranku
Bark, Koranu
Wood, Pooba (same as fire):
Camp, Maruli
Hole, Kwawah
Path, Karratbee
Honey, Wungoorah
Ground honey, Onkarooone

Animals.

Porcupine, Kallamijee
Fish, Kagwag
Native dog, Wolloggu
Bees, Burrungah
Tail of animal, Bundamee
Kangaroo, Kunchalowree
Wallaby Kallamah
Opossum, Chukalajeet
Bandicoot, Pathkoclah
Emu, Kinnee-injinnee
Iguana, Wollanja
Eaglehawk, Dundaninguh
Crow, Onkalay
Wild turkey, Kunnainju or Korkabadee

Pelican, Looimnee or Belladee-
Laughing-jackass, Karkanah
Native companions, Dallywa
Black cockatoo, Larikpinnee
Butcher-bird, Kudparenkee
Fly, Konninga
Mosquito, Konamaru
Earth-worm, Eepurooh
Black striped snake, Wahlachabinee
Water-snake, Eddengaddah
Large water-snake, Kawalajah
Kite-hawk, Dedinguna
Galah. Kila-kiladee

Weapons.

Wood-spear, Kunnarinju
Shield, Tarramee
Tomahawk, Warra-warra

Stoneknife, Taperree
Boomerang, Kurrabadu
Club, Kudru
Adjectives.

Alive, Wunga
Dead, Bellenneegunna
Big, Mullaga (also Head-man)
Small, Kullagulla
Long, Breeja
Short, Mummaringee
Good, Badwarrah
Bad, Akkeeabudah
Hungry, Tummundurra
Thirsty, Wunjunganu
Black, Kubbreekubbra
Full, Pada-bada
Empty, Dayloonga
Quick, Kala
Slow, Wahdruku
Blind, Kummumurra
Deaf, Longajitchah
Strong, Tatahla
Weak, Mumnumbeeku
Wild, Eeminjeek
Frightened, Illawollennee
Heavy, Bundundara
Light, Tumundara
Afraid, Elleewala
Sweet, Wungurra
Right, Walanbalu
Wrong, Areenama
Straight, Wajankaka
Crooked, Kitteelagu
Tired, Whyabbee

Verbs.

Eat, Tarrangiju
Drink, Eepilka tarrangiju
Sleep, Munundigu
Sit, Ajoo
Go, Wirree
Come, Unkoo
Speak, Ambanaju
Walk, Adu
Run, Tarkandammee
Bring, Abawah
Take, Espeere
Lift, Eepandammee
Carry, Tallada
Make, Unkalammee
Break, Larkamijee
Strike, Myammee
Fight, Myanunkummmee
Kill, Myanwarrajinnee
Fall, Udkanna
See, Ahtanganu
Hear, Unkanaju
Know, Lanunknanu
Give (request), Mawa
Give, Winnanagme
Like, Alkitbee
Sing, Annainkaja
Weep, Uhkanaju

Miscellaneous.

Yes, Yoo-yoo
Alright, Walle-walle
No, Kabee
Exclamation, Ahwoo!
I, Ihya
 Eh ? Nah ?
 Mine, Arrana
 To-day, Talangnu
 Yesterday, Eetaju
 To-morrow, Wetanagah
 That one, Eeninneekee
I don’t know, Ayununku
Where ? Wahjanay
Why ? Ahdanana
One, Tuukabennu
Two, Ukadilla
Three, Morkunbilla
Four, Tatawalla
Five, Daru
Cutting the private parts of woman, Beebajana
Lamentation, Keening
APPENDIX.

ABORIGINAL ROCK-CARVINGS.

In 1894 I contributed an article to this Journal on the "Aboriginal Rock Pictures of Australia," in which I suggested that search should be made for carved rocks in the valleys of Queensland rivers and on the coast. Since then I have learnt of some interesting aboriginal carvings on the Burnett River, parish of South Kolan, county of Cook, in Queensland. These drawings are cut on some flat rocks situated in the wide channel of the river mentioned, at the junction of Pine Creek, and about four miles south-easterly from the township of South Kolan.

The rocks containing the carvings are a kind of hard sandstone, which are quite dry during the greater part of the year; but in time of floods are totally submerged. Owing to the latter circumstance, and long exposure to the weather, many of the drawings are now scarcely distinguishable. Most of the figures are small, varying from a few inches in length to upwards of two feet, representing native weapons, animals, human footmarks, and nondescript devices. The outline of each figure is marked out by a groove cut into the hard surface of the rock to a depth ranging from one-eighth to one-quarter of an inch, the width of the groove varying from less than half-an-inch in the smallest, to about an inch and a-quarter in the largest specimens.

The mode of execution was to make a row of indentations or punctures along the outline of the drawing, by repeated blows with sharp-pointed pieces of hard stone. The distance between the indentations varies from about a third of an inch to half-an-inch or more, being farther apart in the larger objects. After the punctures were completed, the spaces between them were also chipped out, thus making a complete groove around the exterior of the drawing. The positions of these punctures are still easily discernible, being somewhat deeper and wider than the other portions of the outline, thus remaining as a witness of the method adopted in carrying out the work.

Old residents of the district have known of the existence of these rock carvings for twenty-five or thirty years, but very little attention has been given to them, and so far as I know, no definite description of them has hitherto been published. By the kindness of a friend I succeeded in getting a portion of the rock chiselled out, on which is carved the representation of a human foot. The block of stone is now in my possession, and will be exhibited to any one desirous of examining it.

AN ACCOUNT OF LORD LAMINGTON'S TRAVELS
IN MEXICO, 1887.*

By J. P. THOMSON, Hon.F.R.S.G.S., etc., etc

Mr. President, Your Excellency, Ladies, and Gentlemen,—It affords me very great pleasure indeed to have the honour of appearing before you on this auspicious occasion to give an account for the first time of Lord Lamington's journey in Mexico, which I have had the special privilege of preparing from his own interesting manuscript journal, kindly placed at my disposal for such purpose.

First of all let me here remark that the feeling of pleasure to which I have given expression is greatly intensified by the consciousness that His Excellency is really an active fellow-worker in the fruitful field of our activity, and as such is fully entitled to our greatest esteem and admiration. From the time when he first landed on the shores of Queensland he has closely and consistently identified himself with our Society, entering into our discussions and deliberations with spontaneous enthusiasm and exercising with freedom and genial consideration the privileges of membership. His regular and self-imposed attendance at our periodic meetings has afforded great pleasure and gratification to the Society, stimulating us to renewed activity and promoting the best interests of our cause, whilst the noble example thereby furnished is worthy of emulation by all placed in high authority or in the ordinary position of citizenship, whose duty it is to foster the intellectual life of the community and promote human knowledge. To my own secretarial and geographical work His Excellency has given unsolicited countenance, encouragement, and moral support, and his kindly influence has been helpful to me in doing much under congenial conditions that would otherwise have been tedious and laborious. In these respects alone has he rendered great service to our Society, for which we can only thank him with feelings of deep gratitude and expressions of profound regret at the great loss which we will sustain by his early departure from Queensland.

Mexico is a country of which very little is known or heard in Queensland, although it supports a large and increasing population of over 14 millions of people, and possesses a total length of 6,560 miles of railroads, 35,827 miles of telegraph lines, 5,134 miles of telephone lines, 1,410 post offices, 12,358 schools, 130 public libraries, 30 museums, several scientific and literary societies, three very fine astronomical observatories and over 500 newspapers.

* Read before the Royal Geo. Soc. of Australia, Queensland, June 15th, 1901.
The Government of the Mexican Republic is representative, democratic, and federal, and the Constitution recognises that all citizens are free born. Freedom of education, of thought, and of the Press is guaranteed by the Constitution, and there is also freedom in the exercise of all professions. There is an established independence between the State and the church, and all religious corporations and denominations are denied the right to possess or to hold or to administer any mortgage upon real estate.

Marriage is considered to be a civil contract entered into between a single man and a single woman before a civil magistrate appointed for the purpose. There is no legal sanction given to divorce by the Law Courts of the country, but separation may be obtained according to certain prescribed forms, the opinion of the lawmakers being that men and women should bear in mind the Spanish proverb, "Before you get married, think of what you are doing."

The Federal authority is divided into Legislative, Executive, and Judicial, each exercising independence of action in its own particular sphere, but all three unite to form the supreme Government of the Republic. The Executive power is vested in the "President of United States of Mexico," who is elected by popular vote for a term of four years. Associated with the President in his Executive capacity are seven State secretaries, whom he may appoint or remove from office at will. The present supreme head of the Republic is General Díaz, whose fifth term of office will expire on the 30th November, 1904. Although not in accordance with orthodox republican ideas the Mexicans consider that in re-electing their President they have yielded to the dictates of common sense, thereby retaining in office a person who has performed his duty with marked ability and integrity, believing that such cannot be very easily found. About 19 per cent. of the entire population of Mexico are European and Spanish-Americans, 38 per cent. being natives, and 43 per cent. mixed races. Statistical data show that for many years past the Indian race has decreased very rapidly, whilst the mixed race maintains a steady increase, the former being more numerous in the South than in any other part of the Republic. The females of all these classes and races of peoples combined outnumber the males by some four per cent. The present prosperity of the country is said to be largely attributable to the rare good judgment and splendid administrative abilities of the President, and in no phase of public life is the influence of these more widely felt than in the confidence at present existing in the financial condition of the Republic. "The revenues," said the United States Minister to Mexico, "which before (the election of General Díaz) had been barely 20,000,000 dollars annually, soon doubled, then trebled, and within ten years had increased more than sixfold, reaching
as high as 120,000,000 dollars."* This resulted in the abolition of the old system of inter-state taxation, and the consequent diminution of the national revenues to 60,000,000 dollars, which supply all the requirements of the Government, leaving a surplus for contingencies or for special purposes.

The national debt amounts to something like 177,178,000 dollars, which only comes to about 13 dollars per head of the whole population of the country.

The physical structure of the Mexican territory is rendered interesting by reason of the elevated and mountainous character of the country, the picturesque valleys—abundantly watered by the pure streams that fertilise the rich soils, which sustain an enchantingly beautiful flora—the precipitous ravines, lovely cascades and salubrious upland regions, the whole lending charm and beauty to the landscape. From a low coastal fringe there is a continuous and rapid gradation of slopes, terminating in the central tableland, from 6,000 to 10,000 feet above sea-level. This lofty region, although somewhat different in structure, is really a continuation of the Great Cordillera or Andean chain of mountains that traverses the entire length of South America, from Patagonia to Mexico, with its numerous lateral ramifications. Penetrated in places by passes that give access to the vast tableland of the interior, this stupendous range culminates on the East and West sides in a succession of lofty, snow-clad peaks, with mighty buttresses and rugged, precipitous faces. Owing to the general configuration of the land the country, although traversed by numerous rapid streams, possesses no navigable rivers, a condition which has no doubt contributed very largely to the development of railroad enterprise in the Republic.

The geological features of the territory present some interesting points that have been carefully and systematically elucidated from time to time. It is found that the porphyries, basalts, sienites, and limestones predominate in the mountain ranges, whose peaks are chiefly composed of enormous porphyritic masses, enclosing metallic veins. The basalts, usually associated with immense lava streams occupying the valley slopes, are sometimes represented in masses or prismatic columns, forming the sides of ravines, whilst some of the mountains are found resting on bases of sienite, overlaid by slate and chlorite.

Volcanic forces are still actively represented in some parts of the country, especially in the peaks of Colima and San Andres Tuxtla, whose convulsive movements have been frequent and recent, or in the slightly less active craters of Popocatépetl and Orizaba Peak, where

the permanent fumaroles are continually producing sulphur deposits of excellent quality. The zone of greatest volcanic activity occupies a strip of country of some 56 miles in width, extending across the territory from east to west, where plutonic action has manifested itself in the numerous streams of basaltic lava that have been poured into the neighbouring valleys from the numerous active and extinct craters that are there met with.

Situated as it is between the Atlantic and Pacific Oceans, the Republic of Mexico possesses an extensive coast line of 5,486 miles, of which 1,603 belong to the Mexican Bight and Caribbean Sea, and 3,883 to the western side. The area of the entire Republic, including the islands, is 767,231 square miles.

Mexico is rich in minerals, and mineral waters are abundantly met with in the numerous thermal springs that occur in many parts of the country. The metalliferous deposits are distributed over an enormous area of country, extending from the State of Sonora to that of Oaxaca, a distance of 1,243 miles from north to south-east.

Except in the low coastal regions the climate of the country is salubrious and delightful, the city of Mexico, situated at an elevation of over 7,000 feet above sea level, enjoying agreeable and healthful temperatures throughout the year. Here a tropical summer is never experienced, and the citizens, although only removed about 19 or 20 degrees from the Equator, are obliged to wear an overcoat in the evening, to protect themselves from the cold air of the tableland region. There are three well-defined climatic zones, known as the hot, temperate, and cold country, the southern portion of the Republic being included in the first, the northern part in the second, and the extensive highlands in the third. In the torrid zone there is a tropical vegetation flourishing in the fertile soils abundantly watered by numerous streams and continual dews, which contribute so largely to the unhealthy nature of the climate there.

Lord Lamington's voyage to Mexico was undertaken in 1887, nearly three years before setting out on his well-known journey in Indo-China, the interesting personal narrative of which has been read before our society by His Excellency himself, and published in the last issue of our "Journal." Setting out from Liverpool in the Cunard liner "Servia" on October 22, the trip to New York was accomplished without any unusual adventures. After resting for a day in New York, the journey was continued by rail, via Niagara and Chicago. I got out at Niagara, said Lord Lamington, in his fascinating manuscript journal, visited the Falls on either side, down to the Cavo of the Winds, etc., and to the Whirlpool Rapids. A beautiful day, and the Falls appeared to me to have more actual grace and charm than I had expected from the stiffness of the pictures
one sees. The Whirlpool Rapids were very exciting, once the great depth of water could be realised. The thundering of the waters and the spray backward driven into the Cave of the Winds held me for long entranced. The great city of Chicago was reached in due course, on November 4th, and here the traveller was afforded an opportunity of seeing the place under the hospitable guidance of Mr. Devine, State Treasurer. Of the several industrial establishments visited, none was perhaps more important or remarkable than the extensive stock yards there. Here my pleasure in eating tinned meat, said his Excellency, will be detracted for the present, having seen the men thrusting in the meat; then the slaying of 4,000 pigs a day and their well-known rapid conversion extraordinary, the rapidity of hitching them up by a hind leg, one cut in the throat, passed through the straining process, splitting, etc. In the cattle yard about 2,000 beasts are killed a day by a man shooting them with a rifle standing above the pen, where they are very neatly done. The smell from the boiling-down establishment was too horrible altogether, and many nasty and unpleasant incidents were experienced on the occasion. From Chicago the next stage of the journey was continued by the Central American Railway Line, at the special invitation of the Vice-President, Mr. Symon. On November 8th we crossed the Tornala del Muerto, which was formerly covered with the bones of horses, and travellers who, in attempting to face the dangers of the desert, had perished for want of water or been killed by Indians. Arrived at El Paso, on the northern frontier of Mexico, where a dozen of the prominent citizens had come as a committee of the inhabitants to show Mr. Symon the increased prosperity of the place. It was curious to notice the immediate change in the population on either side of the Rio Grande del Norte. Several Chinese in El Paso.

On the following day we arrived at Chihuahua, where the bridge had not been repaired after an extensive wash out, so each car had to be taken separately over a line constructed across the dry bed of the river. Taking a real steep plunge, the engine gave a snort and went with a rush up the other side. A curious formation of the country is here met with, the long plateau being almost always quite flat, with hills on either side. There are considerable differences of level, but gradual, the steepest grade on the line being 1\(\frac{1}{2}\) in 100. The people here were hardly prepossessing in appearance, but very picturesque, muffled up in plaid of brilliant colours called 'Fresados.' The country with irrigation would be very rich; already the railway has caused great development. On passing one of the towns hereabouts my fellow travellers armed themselves, as on their last journey shots had been fired at the train. An American, of Santiago, who boarded the car in the evening, related instances of the extraordinary progress of his town.
An island off the mainland had been bought about 1¼ years ago for 50,000 dollars, and part of it already sold for 3,000,000 dollars, leaving enough to fetch 20 million dollars more. It is supposed the traffic to New Zealand will go that way. Cotton, maize, and wheat are the only crops I have seen about as yet. On the following day (November 10) we passed Zacatecas, over 8,000 feet high, situated in a great mining district of the same name. After leaving this high neck of land, we descended to the cultivated plain of Central Mexico, called El Bajío. At Aguascalientes we had a delightful bath of natural hot water from the thermal spring there. The bath itself, located in a building of Moorish style, was about six yards square and four feet deep, open to the air, with an adjoining covered-in dressing room. I was here pointed out, by Don Pedro de Rincon, a fellow-traveller, a house on the mountain side near by, the home of a former robber-chief, who kept the whole district in awe, having 500 men at his command. Don Pedro had to interview him during the Civil War to offer him a command, but both were in danger from the brigand crew, who thought they were to be handed over to some general, who might give them their deserts. On the last day of the train journey we were accompanied by a military guard to protect us from hostile (engine!) drivers, who, having struck, had been turned off. The city of Mexico was reached on November 11, and Don Pedro called me to see the deep cutting or canal for draining the lacustrine basins around the place a couple of centuries back. Many subsequent attempts have been made to drain the city, the latest being in 1890, when very extensive works were commenced by an English firm. These comprise a tunnel of 6½ miles long through the surrounding barrier range, and an open channel of 30 miles. The following day I visited the cathedral, a magnificent building occupying the site of the principal temple of the ancient Aztec empire, but was somewhat disappointed with the interior. I remarked, what I had never before seen in any country, two men in a large congregation standing the whole service with outstretched arms, as though they were doing an act of penance.

Great Britain seems to stand highest in Mexican favour here of any other country, not excepting the United States of America, although she has fewer representatives, certainly not nearly so many as formerly.

The city itself, with a population of about 327,000, is situated in the lowest dip of the Anahuac plateau, which is practically the southern termination of the great central tableland of the Republic, at an elevation of 7,347 feet above sea level. Here it is somewhat difficult for one unaccustomed to the place to ascend a staircase rapidly, owing to failing breath, occasioned by reduced pressure of the atmosphere and consequent rarefaction of the air. The place is rather handsome,
fairly well built, and prettily located, but the streets are generally uneven, and not infrequently broken, in consequence of the bad foundations. The principal thoroughfares radiate from the Grand Square, or Plaza Mayor, as it is called—which is one of the most striking features of the metropolis—and some of the public promenades, delightfully placed, give a fair indication of the condition of city life there. Enclosing the metropolis area is an annulating range of mountains, culminating in numerous lofty peaks and ridges, the greatest and most beautiful of all being the stupendous snow-clad crater peak of Popocatepetl, towering 17,784 feet above sea level, and the somewhat less elevated volcano of Iztaccihuatl, or the "White Woman," as this dead giantess is locally called.

After resting for two or three days in the city, most of the time of which was occupied in sight-seeing, a party of nine was got together, and we started away from the station of St. Lazaro, in a special train, on an excursion through some of the sugar districts, South of the metropolis. We soon obtained some beautiful views of Popocatepetl, with the mountainous country in the neighbourhood; and, passing a pine-clad hill, on the summit of which was a small chapel, crossed the watershed, and at a station were shown the ruins of the home of a Mexican poetess, who flourished a century ago. Entering the Tierra Caliente, or Torrid Zone, the train meandered about in sugar-cane plantations, and at last reached the terminus, on a waste piece of ground, occupied by a roofless building that had formerly been a church, the walls still bearing traces of stone-carved crosses, coats of arms, etc. Here we were met by a crowd of people, both Mexican and Indian, and introduced to the Governor, the Town Council, and other local authorities, who welcomed us to the town of Cuautla, a noted place in a tropical district, famous for its extensive sugar plantations and luscious fruits. The town was decorated for the occasion and the people were demonstrative and lively, guns being fired and fireworks displayed. There was a band, and we marched arm in arm down the narrow pavement, the streets being anything but even. We reached the plaza, which was prettily decorated, the public buildings lining one side, and ascended into a long, open corridor, adorned with banana and palm leaves. Chairs were arranged; we sat down on one side, with the Town Council on the other, and addresses of welcome were read, after which dinner was served, and we were very hospitably entertained in true Mexican fashion. Most of the assembly seemed inspired, but, unlike at home, the speeches were brief. We afterwards returned to the station, and entering a train, drawn by mules, proceeded to the largest sugar plantation in the Republic, where some 750 labourers are employed at all times, and 1,200 during the harvest, besides 600 mules, 400 oxen, and 40 horses. Here some good adobe,
or sun-baked mud-brick, houses were being built for the people, who have them rent free. The buildings were very romantio-looking at night, being situated in dark groves, where fireflies were numerous. We next visited the hacienda of St. Ives, where sugar-making was going on, and I saw the whole process of crushing the cane and extracting the juice. At the hacienda of St. Carlos, a little way farther on, there was a delightful garden watered by a running stream. Here were groves of bananas, orange trees, and palms, one of which I could not get my arms round by two feet, with magnificent leaves of about 18 feet in length. The orange trees yield about 1,000 oranges apiece in the year, and are sold for 5 dollars 80 cents. The railway runs right into the hacienda, with a charming brook and trees by the side. I believe that this will be part of the projected main Inter-Oceanic narrow gauge line from Vera Cruz to Acapulco. The town of Y antepec was next visited, and there ice-creams are made with ice brought all the way from the peak of Popocatepetl. From the station a lovely view of the country was obtained, grand amphitheatre of hills, some quite green and others exhibiting remarkable rocky spurs, from 3,000 to 4,000 feet high, leading out from loftier wooded ridges in the back ground, towards Popocatepetl. Y antepec is a pretty quiet-looking town with a river running through it, spanned by a bridge without a parapet. We visited a large grove of orange trees and plantains by the side of the river, and then drove on to the hacienda of Atlihuayan, where for the first time some of the ladies of the establishment were seen. The chocolate and coffee grown on the plantation here were of excellent quality, and the tropical plants, that flourished in the pretty garden at the back, added beauty to the scene. We rode in the country hereabouts, which was covered with a lovely blue convolvulus and a tree with a white flower, and bathed in a sulphur spring bursting out of the rock. Here, it may be remarked, that unless when rising from the ground, I could never see one of the turkey-buzzards flap its wings, but would always soar high or direct its flight in any direction with outstretched wings. We saw two real Aztecs, who were brought for inspection; the woman was in prison for drunkenness, and appeared to be greatly frightened. Their faces were very broad at the cheek-bones. The Indians in general are not good looking, with the exception of some of the girls when quite young. The railway is used as a kind of public plaza; as soon as the train passes Indians emerge from the groves and seat themselves on the line. Continuing our excursion, we next left by carriage for St. Gabriel hacienda. It was early morning and the sun was just rising to the right of Popocatepetl—a magnificent sight to behold. The country was smothered with convolvulus, white flowers and great yellow daisies. Now and again we would pass a pretty hacienda embowered in palm
groves and bananas, the whole combining to animate and beautify the country. At one of the farms we stopped for a drink of excellent cocoa-nut water, and then went on to the village of Xoxiiltepec, where we were received with the musical honours of two bands outside, and one of native instruments inside. It must be said that all the people are musical, for the village bands so frequently met with play wonderfully well; indeed. We were presented with some little Toltec images found in one of the gardens. Resuming our journey we forded a clear river, and passed a pretty village situated on its banks. The road from here was very bad, and at one lovely spot a guard of half a dozen nondescript soldiers was drawn up; arms were presented, that is to say, one of them did so, another tried to, another took off his hat, another smiled, and so on. We arrived at St. Gabriel after dark, and some of us rode off a couple of miles to bathe in a natural warm spring. It was a lovely starlight night, and pleasant riding through the tall sugar-canes, with the water trickling through and the fireflies and glow worms all around. We saw many of the Organo Cacti on our way, there being hedges of them in places. The expressive name organo is given to this variety of cactus, ranging all over the country, because it grows straight up, having fluted hexagonal sides, and when the stems are growing close together in the form of a hedge, for which purpose they answer admirably, they resemble the pipes of an organ. Some varieties of the cacti bear edible fruit, and are full of water; but for economic purposes the cactus falls very far short of the maguey or agave plant, from which the famous national beverage pulque is made—a plant formerly put to almost as great a variety of domestic uses as the cocoa-nut palm.

The sugar industry of the Republic is of great extent and importance, producing as it does between 14 and 15 million dollars annually. The sugar-cane is cultivated very extensively over the whole of the tropical region, and a great deal of the temperate zone as well, more particularly the State of Morelos, which is especially noted for the extent and importance of its sugar plantations. The other famous sugar-producing states include Colima, Southern Jalisco, Michoacan, Mexico and Puebla, part of Guerrero, Vera Cruz, Oaxaca, Tabasco, Chiapas, Campeche, and the State of Yucatan. Cortés was the first to introduce the cultivation of the valuable sugar plant, after the Conquest, experimental trials being at first made in the coastal region of Vera Cruz, and subsequently at Morelos, where his own plantations were situated.

On November 17 I went off on horseback attended by a large cavalcade of about 30 or 40 riders to explore the famous cave of Cacahuamilpa, on the northern frontier of the State of Guerrero—an enormous limestone cavern, which, with its numerous and extensive
galleries, its sublimely beautiful formations, and its fantastical aspect, under electrical illumination, is one of nature's greatest marvels. Following an intricate track at first, we afterwards traversed a long plain with single trees, bearing a kind of yellow gourd, more like an excrescence, which the people make into cups. We then crossed a range of hills, and were in the valley of the cave, which was steep and clothed with a beautiful mantle of tropical vegetation. Before arriving we espied some Indian musicians hurrying away in front, but we were too quick for some of them, as we met the trombone proceeding down the clear mountain stream which we had to cross to get to the cave, the opening of which is a little way up the far side. The opening is about 30 yards wide, with an easy descent into the vast cavern. The groups of Indians within, with their white dresses, looked like spirits; the band from behind a mass of debris in the centre of the cave played up, and the whole scene, with the weird shaped stalactites, reminded one of Irving's scene in "Faust," only more realistic. However, the band became rather a nuisance. Whilst some preliminary preparations for lighting were being made, I went a little way in by myself, and then, looking towards the light, the effect was magnificent, and the forms of the people looked unearthly. We afterwards began our examinations of the 17 different caverns, with a corresponding number of more or less appropriate names. In such a place it is easy to give play to one's imagination, and see every conceivable form one might wish, many of snowy whiteness, beautiful columns, thrones, organs; in one cave the light is put behind so as to show the tracery of a church, or so it appeared to me. The first cave is to be remembered as being called "Chivo," or He-goat, from a stalactite of that form in the entrance, and was feared by the Indians as the guardian of the place. It has been mutilated, and now looks like a cochin-china hen.* Another cave is named del "Muerto," in consequence of a human skeleton having been found there.† The breadth of one cave I stepped measured 64 yards; this I don't believe was the broadest; the height is often 150 feet, and the length, I daresay, 200 or 300 yards. It is certainly magnificent and beautiful; my imagination is perhaps sometimes too powerful, but on this occasion my expectations were surpassed entirely. The Indians were very effective in their white dresses; it was pretty to see a long trail of

* "Este primer salon se llama del chivo, porque entre las estalagmitas que hay en el, se encuentra una, de un metro de altura, que remedia la forma de un macho-cabrio, que hoy está muy mutilado." Las Grutas de Cacahuamilpa; Cecilio A. Robelo, page 7.

† "El principio de esta galería se llama el salon del Muerto, porque en él se encuentra un esqueleto humano, recostado sombre el lado izquierdo; el cráneo, por el lado en que se hallaba inmediato al suelo, se veía cubierto de una brillante cristalización. Ibid. pp. 10-11.
glimmering lights winding along, there must have been nearly 100 or more. The length of the caves is about four miles, and not, I believe, all explored; certainly we never saw the river which comes out of the mountain a little lower from where we crossed the last stream. The heat is considerable, and adds to the fatigue, otherwise the walk, excepting in places, is not rough. All lights were extinguished in one place, and the silence was wonderful till broken by someone who said "I guess the gas is gone out!" After a long day's work we returned to St. Gabriel when darkness had set in, the distance both ways being about 40 miles.

Owing to the development of the limestones in the plains, and their occurrence in some of the mountain masses, there are several other places in the country where caves are met with, the running waters having corroded the limestone formation, leaving enormous caverns beneath the surface, such as those of which a brief description has been given, but probably less extensive.

The following day I set out with a party in a diligence for Cuernavaca, a town west of the capital, from which it is separated by mountains. The road was abominable, and part of the journey had to be done on foot. On arrival we met with a great reception, being entertained at the Governor's house, where all the civic and military authorities were introduced. The fuss on the occasion was really extraordinary, there being civil speeches and great demonstrations of politeness. I rode to have a look at Maximilian's house, but there was nothing to see except an attendant who used to be with him.

The town is charmingly situated in an almost impregnable position, between two long and deep barrancas, or ravines, spanned by pretty bridges, at an elevation of some 4,000 feet above sea level. In returning, part of the way of which I walked, we passed through a splendid pine forest, often marked with crosses, where men had been murdered by brigands, who had formerly infested the district. We halted for lunch at El Guardia, said by a fellow traveller to be the highest inhabited village in the world, nearly 14,000 feet above the sea, but I fancy it is something under 10,000 feet. On the descent a lovely view of the city of Mexico was obtained. This was followed by a railway journey to Maravatio, a large and populous city of over 13,000 inhabitants, some 134 miles north-west of the metropolis. At one place the railway line ascended to nearly 10,000 feet above the sea, the grades being steep and the curves very sharp. Here the scenery was beautiful. From Maravatio a waggon trip of 35 miles was made to Las Trogis, a very pretty hacienda, situated on the side of a steep and densely-wooded valley, up which a narrow track led to a beautiful waterfall, issuing from a cavernous twist in the rocks. A ride to an interesting place in the neighbourhood followed, where numerous pretty
orchids were obtained with long pink flowers of about two feet. These were found growing on oaks in the many forest glades there. The following day, being November 24, I donned miner's dress, and with Mr. Symon and party started off to examine the mines in the neighbourhood. Entering the railway car, our way lay up a stream of water almost concealed by briars, the rails being covered by 8 inches of water, and in through a tunnel, only 4 1/2 feet high with sides nearly touching, that serves to drain the mine. This was penetrated for a distance of about 1 1/2 mile to the lodes, which varied here from a few inches to 3 or 4 feet. The water squirted down on one in places, and occasionally the party was warned of these by a miner who would shout out "Aqua." On returning, the car ran off the track continually, occasioning a great deal of jolting and unpleasantness, in pitching and tossing about like a ship at sea. The mine was well ventilated, but at the face of one of the workings the candles would hardly burn, the pressure of air being inadequate there.

In the maize fields one sees little sheds on poles, for watchers, who shoot at anyone attempting to steal the maize when ripe.

As indicating the low value of human life, in this particular part of the country at least, it may be interesting to mention that some two years ago the porter of the hacienda here had a quarrel with a friend, whom he killed; and managed to escape, but afterwards returned, having compounded with the widow for a sum of 25 dollars. The district, too, was infested with robbers, who go about in bands of perhaps 30 or more, interfering with the affairs of the country, and disturbing the social and industrial life of the people. It was said on very good authority that some 4,800 of these daring robbers were killed in the State of Morelos by a general who had been deputed to organise the district. The scenery of the locality was extremely delightful, there being lovely woods on the opposite side of the valley, with tall fir trees of probably 160 feet in height and perfectly straight.

On the return journey, by way of the pleasant town of Morelia, we passed the fine lake of Del Salo, whose waters bore an animated appearance in consequence of the bird life there, including big white geese and cranes. Morelia—a city in the midst of a rich and populous district—is famous in the annals of Mexican history, as being the home of the pious and illustrious patriot, Morelos, who suffered martyrdom, at San Cristobal, at the hands of his captors, in 1815. After visiting Patzcuaro, one of the ancient centres of oboriginal life, where the Indians talked about the gold in the locality, we returned to the metropolis, stopping on the way to pick up some red slag of volcanic origin, and looked at a pretty waterfall by moonlight.
I next set out with some of the railway officials in a special car for Vera Cruz, the journey being full of interest. At one of the stations some curious sticks, offered for sale, were carved with representations of snakes, said to be really good for certain diseases. So much for the superstitious ideas of the people!

At Esperanza a special engine was attached to the train, and at the head of the great descent a trolley was provided, which enabled us to see in every direction, and stop when required. The views were magnificent, both looking at Orizaba's snow-clad peak, towering some 17,300 feet above sea level, and over the great barranca to the right. The wind, locally called "Norte," bringing a thick mist, was just too late to spoil the view, and as we descended below it rather added to the effect, creeping into the ravines and over the high border lands of the plateau. We descended the latter part of the journey at great speed, and the wonderful climb of the railway was then even yet more apparent. Especially interesting was a narrow gorge, called El Infernillo, or "Little Hell," where the line is suspended over the bed of the stream. On arrival at Orizaba we strolled about the town admiring the natural beauty of the place, and inspecting an interesting gorge there with palms in the centre, and a graceful spruce fir in the plaza, with palm-shaped branches in the centre. The women here were prettier than seen elsewhere in Mexico. The City of Orizaba, said to be built on the site of an old Aztec village, conquered by Montezuma in 1457, is situated in a valley about 4,000 feet above the sea, within the hot zone. The journey to Vera Cruz was resumed, and we stopped on the way to explore a waterfall, midst rocks covered with vegetation, that disappeared underground and emerged half a mile farther on, at 350 feet lower level. We then walked along the edge of the great barranca of Metlac, and over the wonderful curved bridge that spans it at a radius of 350 feet, suspended about 95 feet above the foaming river beneath. The gardens at Cordoba were very beautiful, situated, as the town is, in the very heart of the coffee region of the Atlantic coast, in the midst of typical scenery and tropical vegetation. Here there were all manner of palms and orchids, pine apples, flowers, banana plants, oranges and tuber-roses. On the 4th December we arrived at Vera Cruz, a hot and unhealthy sea-port town, where yellow fever and other diseases peculiar to the place are of frequent occurrence.

Vera Cruz, a city which received its privileges from Philip III. in 1615, is the principal sea-port of the Republic, on the shores of the Gulf of Mexico, and was established by Cortes early in the 16th century, on the spot where he had landed, April 22, 1519. It surrendered to America during the war between the United States and Mexico in 1847, but was restored when peace was concluded. Situated as it is in the lowlying region of the East coast, the place, although carrying a popula-
tion of some 29,000 souls, is unhealthy, the heat and moisture being considerable.

The following day saw us on the road to Jalapa, the first 17 miles by train, then mules took the place of the locomotive for the remainder of the journey. We passed the site of a great battle between the American and Mexican forces, at which St. Anna was present, and through a picturesque region commanded by hills and mountains on either side, clothed with a lovely mantle of thick tropical vegetation, and inhabited by beautiful plumaged birds of various colours and sizes. We followed the old Spanish road, yet in many places perfectly good, and over the beautiful barranca, crossed by the Puente National (National Bridge), with old forts crowning the heights on either side; then St. Anna's Palace, in ruins, on the left; and on past another historical battle ground at the famous pass of Cerro Gordo, where ten thousand American soldiers under General Scott got through, although the hill crests and high mountain tops on both sides were occupied by the Mexican forces. To the left of this is the "Mal pais," or bad lands; glassy rocks that cut, in places slippery flats 12 feet broad. We met cars going to Vera Cruz, and had to perform the usually impossible feat, on a single line, of passing them, but this was effected by our car being bodily removed from the track. The town of Jalapa, over four thousand feet above sea level, is charmingly situated amongst magnificent mountain scenery. The women here are celebrated for their beauty and personal charms. The gardens are noted for great variety of fruit and flowers, and taken altogether the conditions of urban life here seemed to be congenial and agreeable. The town was very clean, and the interior of the houses seemed to be so also. The big church had a black and white marble pavement on a steep slant from the altar. There were capital new free schools, gymnasium, and pretty court yards, the board of very poor children being paid for. On the following day we left by return special. The great peak of Orizaba looked beautiful, and the whole panorama of the town was splendid. First we passed over excellent pasture ground, undulating and lovely looking, but thinly peopled. At one of the sharp turnings of the road stood a tree, where some 48 men had been hanged at one time and another. There appeared to be great danger of the Puente National falling down through mismanagement and carelessness of the local authorities. After a delay of three days at Vera Cruz, I was obliged to abandon a contemplated trip from Tampico to St. Luis Potose, and had in consequence to return to the city of Mexico.

A short trip to Guadalupe, Hidalgo, afforded an opportunity to have some shooting there, and of witnessing the Indians dancing in their attire of feathers, the dances being those, it is said, of the old Aztecs.
The next journey lay South of the capital of the Republic, through the mountainous Pacific States of Oaxaca, and on to the city of the same name, which lies in the beautiful Atoyac valley, some 5,000 feet above the sea. The country looked very beautiful, almost like an English park on a large scale, the mountains being clothed with vegetation to the very tops, and abounding in lovely birds that added life and beauty to the landscape and interest to the traveller.

On arrival at Tehuacan, a town famous for grapes and pomegranates, the traveller was met by the Colonel of the Rural Guards, who hospitably entertained him. "In the evening many young ladies came in to celebrate the second night of the Christmas festivities. The singing was pretty, though high and rather harsh. Then all had candles and perambulated about the house singing some carol, and carrying a representation of Joseph and the Virgin Mary, the end being that Joseph and the Virgin Mary were supposed to ask admittance at the inn, and were refused for a long time, till, when permitted to enter, all the singers came in and knelt down and prayed. Afterwards there were games—hitting blindfolded at a case filled with fruits. "I had a try," said Lord Lamington, "to the great approbation of the others. A window was smashed and a child nearly whacked on the head in the endeavours of the competitors. We then danced, after which I was glad when they retired out of what was to be my bedroom for the night."

At Oaxaca, an electrically illuminated city of over 29,000 inhabitants, a visit to the market place revealed one of the most characteristic sights ever seen. Dirty Indians, all kinds of articles for sale, cooking on brick stoves, and so forth. The people seemed greatly amused at the appearance of the explorer, but were quite civil withal. This was followed by a call on the General to thank him for having thoughtfully provided means of transport on the journey thither; and subsequently a visit was paid to the Governor of the place, who courteously furnished a "rural guard" to show the visitor over the Monastery of St. Domingo. This cathedral church, a magnificent pile of building—the finest seen in the country—dating back to 1729, was richly decorated with gold, the most accessible of which had been removed from the walls and used. Some of the roof decorations were really remarkably pretty.

On the top of a hill in the neighbourhood stood the remains of an Aztec Palace, much overgrown with local vegetation; but the ground plan was quite distinct, there being one very large court, high towers, and some passages remaining, from the principal one of which a "zopilote," or vulture—the great scavenger bird of the country—
was disturbed in nesting on a large egg. Some pieces of pottery were seen about the place when exploring the remains. It seemed very remarkable how the original dwellers on these hill tops managed to obtain an adequate water supply. By the Governor of the city, Lord Lamington was presented with a small, genuine Aztec idol, found near by.

It was now Christmas Eve, and the plazas were filled with booths and people marketing, the whole place being in a state of lively animation. Here gambling was carried on by "lotto" with pictures in place of numbers. There was no pretty dancing, but merely a shuffle of the feet. Bands were parading the streets during celebration of mass in the churches, and boys were blowing whistles, only used at Christmas festivities. The Mexican "Danza" was danced a great deal, the participants merely going slowly round in couples and then two couples joining hands.

At this stage of the itinerary a projected expedition to Guatemala had unfortunately to be entirely abandoned, as a horse could not be procured for the overland stage of the journey to Tehuantepec. This occasioned much disappointment, as the trip had been greatly looked forward to, and all other plans given up in consequence.

On December 26 an early start was made for the town of Tehuantepec and an opportunity of exploring the intervening country was happily afforded. At Tule a visit was paid to the wonderful cypress tree there (150 feet in height), whose trunk, though not symmetrically round, is about 40 feet by 20 feet. A little way further on, at Tlacochameca (?), a church was seen with a curious figure over the entrance, representing the Almighty, and inside were some quaint and painful images, with a man and woman in modern dress on either side of the altar. These, the priest said, were "Pastores."

The ruins at Mitla, a place situated in a wide amphitheatre of hills, were certainly very wonderful indeed; Cyclopean blocks of stone for door lintels, sculptured about 20 feet by 4 and 5 feet, many of the patterns resembling the figures of a game of dominoes. There were two large courts, and another built into the church, much of it being used for stables, and the plaster with Aztec drawing thereon, was rapidly coming off. One of the door lintels would very soon fall unless supported. The floors were cemented, and on the walls were seen the remains of a good glazing. Some of the plaster was ornamented by roughly executed drawings of horses and other animals, said to be ancient. Close by here was a pyramid, with steps, once used as a fort, and some adobe Aztec buildings comfortably lodged behind a shop. About a league off, the subterranean Aztec remains there were inspected and proved to be interesting. What seemed to be
A very perfect tomb was shaped like a cross, with arms about 5 yards long, there being an idol carved on one stone. The entrance was discovered about 40 years ago. After exploring this locality the journey was continued by day and by night, mostly through a continuous, uninhabited forest, the evenings all the time being perfectly glorious, and the mountain scenery, with the shimmering hills in the moonlight, most bewitching. The village scene at Tehuantepec, which was reached on New Year's Eve, was novel and animated. Here the boys were swimming in the river and going about in a state of nature. All the women wore a curious head-dress of lace, which is worn differently according to whether they are going to or coming from church, or for general wear. They all wear gold chains, and the hair is done in two plaits, encircling the head like a coronet. The town, situated in a most picturesque position in the midst of palm groves some 10 miles above the mouth of the Tehuantepec River, was nice and clean, the streets being fairly well paved, or, at least, pretty even. On Sunday the churches were crowded to overflowing, and in the evening the excellent village band played valse outside the church, while the women were praying within. The barracks here were formerly a very old convent, the bells of which had figures on them. After a short halt of some two or three days here a start was made to cross the isthmus to the Atlantic side, in the immediate neighbourhood of the projected ship railway over this part of the country, from the Pacific to the Atlantic Ocean. At first the track lay through woods with big forest trees, up steep glens, on to green hills, over the pass—where strong winds are ever blowing—through wild and interesting country, across an undulating region, past the ruins of a large church, whose foundation bore the appearance of great antiquity, and on to a large village of 5,000 inhabitants, with mud houses, between bamboos. Still moving onwards, the path stretched over country at first covered with jungle, rich-looking soil; then through real tropical forest, with some magnificent trees, many lovely orchids, and all kinds of plants and creepers. to La Puerta, on the banks of a river bordering the States of Vera Cruz and Oaxaca. Here the Indians are Castiliana and pretty. A fire had to be lit at the door of the house of accommodation to drive away the flies and mosquitoes, which were terrible. On the following day the escort said farewell, and the journey was resumed down the river in a dug-out canoe of about 35 feet in length, with a man paddling in the bow and another at the stern with a steering oar. The river was very intricate, but the canoe was kept steady, and the men managed very well. At the junction of the Taltepeque River, the stream was 150 to 250 yards wide, deep, and slow current. Several alligators, turtles, and a monkey were met with during the canoe journey, and the bird
life was chiefly represented by ducks and geese with other smaller forms common to the woodland region. After changing canoe at one of the stopping places the river journey was continued and the village of Minititlan reached without mishap or unusual adventure. This place is really prettily situated on a curve of the river, the site being undulating, but the streets and houses were very dirty and dilapidated, with which unsatisfactory condition the inhabitants appeared to fully sympathise, living, as they were, in decaying dwellings, in the midst of filth. It may be interesting to remark that the village dogs here are born with stumps or with no tails at all. Here a delay of about a week was occasioned vainly awaiting the expected arrival of a steamer for Vera Cruz. After all, the overland trip had to be undertaken on horseback, with two fellow travellers, along a bad muddy road, in many places the rider being often so overcome by sleep as to nearly fall off. The ride was continuous for two days and a night in doing what was thought to be an impossible journey across broken country after heavy rain. Whilst riding along, a great number of large ape-looking monkeys were noticed feeding on the grass, outside the wood, with their tails up, which made them appear like large birds. Many wild geese, ducks, and other birds were also seen, and on a previous occasion, when travelling down river to Minititlan, some duck or geese passed overhead in the night time, making a noise exactly resembling a paddle steamboat. On arrival at St. Nicolas the journey was continued down an uninteresting river by canoe, but although this was large and comfortable it proved to be very slow, and the chance of catching steamer at Vera Cruz seemed remote, even hopeless. However, after great trouble and exertion the large village of Tlacotalpa was reached, whence a passage by steamer was obtained to Alvarado, and on to Vera Cruz, by tram and rail. Here Lord Lamington joined the Transatlantique steamboat "Washington," and after a farewell salute to Orizaba peak the shores of Mexico were left behind on the road home to old England.

"Not altogether sorry to leave Mexico," said the explorer, "though I have not visited several places in the south that I desired, and my travels through the country have been a source of great pleasure to me. However, I yet more wished to see some of our West Indian colonies and compare their government. Government in Mexico seems firm, but I have doubts as to what might follow if General Diaz were not President; he is a resolute man, and the Deputies merely his nominees. It is really an autocracy, their custom duties being always changed.

"Mr. Baker (our Consul at Vera Cruz) says that Manchester cottons to the value of £700,000 were entered last year in spite of the import duty of 180 per cent.

"Truthfully or falsely, it is said that Ministers are not always free from suspicion of taking money from both parties; Protectionists apparently pay the best.
"The etiquette of the country is extreme—if anyone has done the smallest service, on leaving one bows and shakes hands at least three times, perhaps embraces. The Indians in the South of the Republic seemed to be always washing, and the women take pride in their hair. Mexicans, I fancy, are dirtier. Food on the whole is not bad, consisting as it does of sun-dried meat, 'Frijoles,' or beans and cakes of Indian corn, called 'Tortillas'; but people ought to be educated to want more and use advantageously what lies at their feet. To show that anomalies exist in the country, a letter to the U.S. is five cents, whilst internal postage is 10 cents. I saw one man cutting up wood with a table knife, and another chopping up sugar with an axe. There must be room for more English trade, and we are the favoured nation.

"My travelling was a subject of curiosity, as I was apparently about the first who had travelled with only pleasure as a motive, and the first British M.P. to visit the city of Mexico."

Owing to the improved condition of Government, of public education, of interstate communication, the introduction and development of railways, telegraphs, and steamboat service in the Republic, the intellectual, social, and industrial life of the people has advanced greatly during recent years. It is true that the influence of climate has a very marked effect on the inhabitants of the low-lying regions along the Pacific and Atlantic coasts of the country, where apathy and indifference to the requirements of life are a characteristic feature of the race. But taken on the whole, the Mexican people are progressive and fully sensible of the many advantages of stable and enlightened administration. The intellectual life of the country will bear favourable comparison with that of any other part of the world, there being several scientific and literary institutions established under favourable auspices in the principal centres of population, whilst the wonderful results attained under the educational system bear eloquent testimony to the part borne by the State in improving the public mind. Commerce and industry, too, have shared in the general progress and development that have characterised the Government of the Republic under the present executive authority. Mining has greatly increased in extent and importance, agriculture has advanced far beyond the limits of former local anticipations, and colonisation has progressed steadily and securely throughout the territory. "When these advantageous conditions become universally known," said a recent authority, "the current of immigration will flow into Mexico, where nobody can starve, where the poorest, with some exertion, can arrive at a comfortable situation—the middle class become rich, and the rich can increase their capital by millions; and all this with a beautiful climate, salubrious everywhere, except the coasts, and among a peaceful, indus-
trious people, who have well earned the reputation of being one of the most courteous and hospitable upon the face of the earth.”

The national costume of the Mexican is quite picturesque and admirably adapted to the climate and life of the people. The general dress of the male consists principally of the characteristic sombrero, with a great broad brim and ornamentation, a large pouch, leather gaiters, and huge Mexican spurs. The upper classes closely resemble Europeans in style of dress. For ordinary wear the ladies are dressed in black with the usual Mantilla and veil. There are, however, special occasions, such as holidays and public events, when this gives place to garments of gay colours and expensive material, that would do credit to an English race meeting or Flemington Racecourse on Melbourne Cup Day. These same gay frocked dames and signoritas, when reclining back in their luxurious carriages along the boulevards or Pas-seo, bear a remarkable contrast with themselves when in their own homes squatting on the floor, stockingless and exhibiting other visible signs of a completely careless toilet, coupled with the national custom of smoking or eating cakes out of dirty earthenware vessels.

The adobe houses of Mexico are built of sun-dried mud bricks, many of them being mere huts, occupied by the Indians or lower classes of the people. Mats are used for sleeping on. In the cities the houses are spacious and substantial, being built of large blocks of stone with flat roofs, heavy ponderous doors, and massive window shutters, with loop holes, protected by iron bars.

The bird and insect life of the country is very beautiful, numerous, and of great diversity of colours and variety of species. The butterflies are especially remarkable for their great numbers, variety of forms and enchanting colour, particularly in the tropical region, where animated nature seems to be developed to its fullest extent, not infrequently to the discomfort of domestic life.

VOTES OF THANKS.

The Hon. A. Morgan said: As a member of the Council of the Society, I rise for the purpose of moving that a hearty vote of thanks be accorded to His Excellency, for the paper which has just been read. It is one more evidence of the interest His Excellency has taken in the society during his sojourn in Queensland. Mr. Thomson just told us of the thoroughness with which the journal was kept by His Excellency, and this, I think, is only another evidence of the thoroughness and carefulness which we in Queensland have come to recognise as some of His Excellency’s characteristics. Most of us were, I believe, inclined to look forward to an interesting paper on an interesting country, and you will agree that we have not been disappointed in

* "Mexico of To-day." By Senor Dr. Don Juan N. Navarro, Consul-General of Mexico in New York. The National Geographical Magazine, April, 1901, p. 157.
that anticipation. We could hope that the Spaniards had displayed the same
care in the preservation of the records which they had of Mexico that they
show in preserving their own deeds in that country. If they had done so history
and literature would be much the richer to-day. I ask that you shall accord to
His Excellency a hearty vote of thanks.

Sir SAMUEL GRIFFITH seconded the motion. For his own part, he would like
to hear His Excellency a little on the subject of the paper, so he would content
himself with formally seconding the motion.

The PRESIDENT said he had much pleasure in presenting to His Excellency the
thanks of the members and others who had heard the paper. It had afforded
them all great pleasure and gratification to listen to the notes prepared from His
Excellency’s private journal, and in the name of the society he thanked Lord
Lamington for the kindness always displayed in trying to promote their interests
and welfare.

LORD LAMINGTON’S REPLY.

His Excellency said that when Mr. Morgan had risen he thought he was
going to propose a vote of thanks to Mr. Thomson, who had prepared the paper.
He (the Governor) had really not looked at the journal for the last 14 years, and
when Mr. Thomson had come to him, and he had tried to explain some of the
notes, he had to marvel at the patience and industry of Mr. Thomson—such as
had indeed characterised all that gentleman’s labours in the Society—in trying
to make something of that bit of history of 1887. The Secretary deserved all
the more credit seeing that he had had to work without a detailed map of the
country. No doubt Mexico was a most interesting territory through which to travel. There were rich and interesting remains, some of them, perhaps, the
finest in the world, and some history might be made out of them yet. The
scenery was of a charming character, and teemed with historical reminiscences.
There was hardly a notable man in the country who had not at some time been
in a revolution, attacked by brigands, or had an experience full of other romantic
incidents. Mr. Symon (the vice-president), whom he had met, had been mixed up
in some revolution, and told him of some rather marvellous escapes from shooting which he had had. Up till the reign of the then President, Porfirio Diaz,
the country had always been in a state of great disorder. When General Diaz
took up the work it became more tranquillised. His ideas had been a bit rough
and his ways somewhat harsh, certainly, for he had had 4,000 brigands shot in
one year, but he had changed things considerably. He had begun by instituting
a good telegraphic system all over the country, and thus had command of what
was going on in the whole of the territory. Every now and then an ambitious
general might get together a number of followers, gradually augment his forces,
and march on the capital with the idea of proclaiming himself dictator. When
Diaz heard of this he would simply muster all his forces to oppose such a man,
overcome him, and take him prisoner. The next thing the people would hear
was that he had tried to escape and had been consequently shot, and as nobody
dared question the statement it was all right, and they heard no more
about it. And so with Parliament. If the President wanted a certain matter
put through, and there seemed to be any doubt about its safe or speedy passage,
he simply sent a message down that it was to go through, and it was done with
no further bother. This was a system which might be very conveniently
adopted in some other countries nowadays. The trip through Oaxaca had
been made in the company of an American journalist, who generally proved him-
self a nuisance and a bore. He used to make long speeches to the natives, who
did not understand him, and the only thing he really did was to get in the way
on every occasion. Porfirio Diaz was truly a remarkable man, and the note
quoted by Mr. Thomson in the paper as to what might happen to the country if he was to give up the reins of Government he had seen exemplified in a statement he had seen in a newspaper the other day. However, Diaz had been in power ever since, and had been responsible solely, it might be said, for the march of civilisation in Mexico, which had been noticeable during recent years. He was a trifle autocratic, perhaps, but a very good man. To show how determined Diaz was and how much value he placed upon preserving a complete telegraphic system, any man found tampering with any of the lines was immediately shot, whereas a criminal could do a great many worse things than that and escape with a fine of a few pounds. In some of the mining towns the people were a bit wild, and it was an ordinary thing that four or five deaths should have occurred during a Sunday's festivities, or rather brawls. The English manager whom he had met at one of the mining places had begun to lose his nerve with the constant terror of sudden death all around him. Thus it was all the more remarkable that things had so quietened down under the Government established by Diaz. Brigands had disappeared, and people could go quietly about. The great central plateau referred to, running for about two-thirds of the length of the country, offered some magnificent scenery, with the two great volcanoes mentioned. The high mountain peaks and deep gullies were a sort of grand mixture. The town of Orizaba, situated at the foot of the plateau, on the eastern side, and towering above the great peak of the same name, was one of the most beautiful sights in the world. It was true that when he was there British trade had been the most favoured in Mexico; but it seemed that it was declining. A peculiar contrast was evidenced in the city of Oaxaca, where a fine electric light system was in vogue, and yet the only means of getting to it was on horseback. Now, he believed, the railway was being carried there. The ship-railway over the isthmus he had seen mentioned in print recently as a very possible rival to the canal, the idea being to build four or six permanent lines of rails on which a ship would be carried bodily across on some kind of a huge car. He had enjoyed his visit to the country most thoroughly, for it was one of the most interesting lands through which to travel. Anybody would find plenty to do and admire; the people were original, and had a history, and surely its future history must be of supreme interest to our country and to the United States. (Applause.)
ANNIVERSARY ADDRESS TO THE ROYAL GEO-
GRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND.*

By the Right Hon. Sir HUGH M. NELSON, K.C.M.G., D.C.L.,
President.

LADIES AND GENTLEMEN,—

The Science of Geography is one to which, you are aware, I have only but recently had an opportunity of devoting any attention; but I can assure you that the more I study it, the more interesting I find it, and I have lately been particularly impressed with the vast range of subjects, of extreme importance to mankind, which it now takes within its purview, as a natural result of the enormous development it has undergone in recent times,—not that I can make any pretensions to assume the title of "geographer," but rather that my desultory studies have convinced me of my own ignorance, and led me to that state of mind which Socrates was in when he was wont to say "All that I know is, that I know nothing."

Like any of the other sciences, Geography may be looked at from two points of view, namely as a means of supplying us with a compendium or store of the truths or objects of knowledge and useful information on the subjects with which it deals; or, secondly, as a means of education, for the purpose of cultivating the mind,—enlarging, expanding, disciplining and calling into healthy exercise its various faculties.

Looked at from the standpoint first mentioned, I think there can be little hesitation in admitting that it is a Science of the utmost utility. The knowledge which it embraces is useful alike to the sailor, the soldier, the historian, the politician, the diplomatist, the merchant, the traveller,—in fact it enters more or less into every pursuit of life, whether of a public or a private nature; so much so, that when it has not been gained by early tuition, some of it, at least, must be acquired in some other way during later life, by all who have to do with the world at large. It lays the foundation for the progress of exploration and discovery, which, in their turn, develop the colonisation and commerce of the habitable globe. It deals with the form, dimensions and measurement of the earth's surface, and the delineation of the features thereof; with the materials of which the crust of the earth is composed; with the configuration of ocean beds—now of so much importance in connection with electric cables; with hydrol-
graphy in all its ramifications; with the seasons and other meteorological phenomena, as they affect various countries; with the distribution of animals and plants, terrestrial and aquatic; with national life and racial conditions, and so on. When, for instance, a country is first explored, it becomes of consequence for every one to know what are the conditions under which it exists. Foremost in our inquiries are the questions:—What kind, or manner of men, if any, inhabit the place? To what degree of civilisation have they attained? What political institutions have they developed? For, as the poet Pope says, "The proper study of mankind is man." Next we endeavour to ascertain the character of the products of the country; whether they consist of commodities which it would be of benefit to exchange for others of our own growth or manufacture; and this would of necessity include the means of transit for effecting such interchange. This, also, leads to the study of animals, other than man, of which the region may be the natural habitat. The final result of all this, as applied to various countries, is that an interchange of commodities over the entire habitable world is established, and this constitutes that branch of the Science usually denominated "Commercial Geography." It will consequently be seen at a glance that the scope of geographical research is of almost boundless extent, enlisting as it does, in its service, various other sciences, such as geology, botany, zoology and ethnology, history and astronomy. It might be thought from what I have said that it has become necessary for the geographer to aim at the acquisition of general knowledge, and be an accomplished adept in all the sciences enumerated. As a matter of fact, however, as has been often remarked, there is a mutual connection between all the different arts and sciences, and progress made in one branch throws light upon all the others, although their relations may be apparently remote. What the geographer really does is to make use of all the kindred sciences as handmaidens, and to accept the data furnished by the biologist, the geologist, the ethnologist, the physiologist, the analyst and statist, and the astronomer and meteorologist—when based upon good authority—and, from a comprehensive view of such data, generalise his own conclusions for the benefit of the intellectual, social, and industrial life of the world.

Looking at Geography from an educational point of view, I think I have said enough to show how admirably it is adapted for that great purpose. I take it that the primary aim and end of education is to develop the mental faculties, and to so train and exercise those powers that they may be readily exerted, when called upon, to their fullest capabilities. The object of education is not simply to communicate information, but to do so in a way that will awaken in the young a vigorous
London, marked Geography large not. But Geography more Germany the colonisation principles, Indeed, educational this Geography was have Universities the wav any faculty any must an beneficent the Joint both. Unfortunately, sadly the world-wide generation good be schools. very- only is life), Oxford. not brings in many ago. number that published not this Geographical largishly mainly, Chaii's received much it advance to geography, for of the Society of London, for the prominent forefathers, the University of Oxford. There has not been time for any great results to ensue, but I notice with pleasure that already the University has received applications from a large number of secondary schools throughout the Kingdom to be supplied from that source with trained teachers. This Chair has been estab-

lished mainly, if not entirely, through the influence of the Royal Geographical Society of London, which has not only contributed largely to its foundation, but exercises a beneficent control over it, the Chair being under the regulation of a Joint Committee consisting of four members of the University and three of the Royal Geographical Society. It is only fitting that an Empire which has sent forth the ablest and most intrepid of explorers, both by land and sea, which has established a world-wide reputation for itself in colonisation in all parts of the globe, and whose commercial enterprise and activity
is phenomenal, should now put forth a concentrated national effort for the promotion of this great Science; and although it is true that we seem to have done very well up to the present with only limited attention to geographical study and training, we confidently hope that our progress and successes will even excel in the future what they have been in the past.

The study of Geography, such as it has been up to our time, is due almost entirely to the exertions and stimulating influences of “Geographical Societies.” Of these, there are now throughout the world considerably over 100, the great majority of which are in Europe, and all, with the exception of three, founded during the reign of our late lamented Queen, with a membership of something like 60,000, all maintaining cordial relations with each other, and mutually assisting in the promotion of human knowledge. And this reminds me that another exceptional feature connected with this subject is, that, notwithstanding the hostile feelings which may animate nations in other respects, in the field of exploration, and the dissemination of geographical information, the prevailing spirit is one of friendship and reciprocity, often marked by an underlying current of self-sacrificing enthusiasm which begets an emulation that materially assists in the march of progress. These societies have, since their establishment, undoubtedly created a widespread and daily-increasing interest concerning this Science amongst their members and in the minds of the people generally, from which we may conclude that the intimate relationship of Geography to the business of life is becoming more and more generally recognised.

Our own Society was established with the object of promoting the study of Geography in all its branches of research, which is being done by the collection and dissemination of information concerning the physical conditions of the Australasian regions, their natural and artificial resources, the character and habits of their original inhabitants, and the industrial life of the people. And so far your Council is pleased with the results. We started in the year 1885, and since that time our membership has grown very largely, and we have published some 16 consecutive volumes of proceedings, which, besides being issued to our own members, have been circulated to all the principal kindred institutions, public libraries, State departments, etc.—I may say, all over the civilised world. And I may here mention, as showing the growing interest in our proceedings, that there is an increasing demand, often from unexpected quarters, for many of the back papers. We have also established a valuable library, containing extensive collections of geographical literature, maps, atlases, and other works which are always available for reference, not only by our own members, but by the public desirous of obtaining information, not otherwise available. And in this connection, I may
state that as the rooms we now occupy do not supply us with space enough to exhibit our maps in a useful and convenient way, application has been made to the Government for the use of the second floor of the building in William Street, containing the Public Library, and I am pleased to be able to announce that the Government have complied with our request, it being understood, of course, that when the exigencies of the Public Library require it, some fresh arrangement will have to be made. Being located in the same building as the Public Library, facilities will be afforded to students and the general public for making full use of our maps, atlases, and books of reference, which arrangement will, I am sure, be duly appreciated. The space to be allotted is just for the present occupied by the Registrar-General's staff in arranging the census returns, but will be available in a few months.

In the course of our endeavours to promote the Science of Geography, by attracting the attention of the youth of Australia to the importance of the subject, and encouraging our fellow Australians to devote their talents to geographical research, and as a stimulus to arouse independent, vigorous and continued energy in that direction, it was determined last year to establish a prize in the form of a Gold Medal to be awarded periodically to the author of the best original paper on such subjects as the Council may from time to time prescribe, and the first subject selected (for which papers are to be sent in not later than October next), is the "Commerce of Australia," the subject for the next competition being "The Pastoral Industry of Australia." The first recommendation the Society received to adopt this course was from the late veteran explorer and eminent scientist, Sir Ferdinand Von Mueller; on which occasion he pointed out the important bearing it would have on our work, and the stimulus it would give to exploration and discovery.

We are also following the example of our parent Society, the Royal Geographical Society of London, of which the late King William was the founder in 1830. His Majesty having bestowed upon the Society an annual grant of £50, it was decided to provide a gold medal, styled the "Founder's Medal," which should be regarded as the "blue ribbon" of the Society for meritorious service. Her late Gracious Majesty, who also took great interest in matters geographical, as indeed she did in all subjects affecting the welfare of her people, soon after her accession to the Throne, supplied the means for founding a "Patron's Medal," and we learn quite recently that His present Majesty King Edward VII. intends to continue this under the title of the "Victorian Medal," while he himself will practically contribute the "Patron's Medal." On a late occasion the honored President of that institution, Sir Clements R. Markham, when referring to the progress of Geography during the reign of Her late Gracious
Majesty Queen Victoria, pointed out that the award of their medals had been most successful in inciting some of the best men of our time to undertake exploration, and otherwise assist in the development of Science. We have further received the congratulations of several kindred societies, as well as individually of many eminent men. It has also met with the approval and support of all the oldest members of our Society; and I feel that under careful and judicious administration the scheme will soon tend to arouse interest,—bring more workers to our ranks,—and thus largely extend our influence and usefulness. The honour and distinction conferred by this Medal for meritorious work will, we hope, be sought after with wholesome zeal. But I do not forget that its value will be measured by the estimation it holds in public opinion, and it will be our duty to see that the prizes are awarded with the strictest impartiality, upon sound judgment as to merit, and that the scheme in all things be managed in such a way as to inspire and maintain public confidence. I hope I am not too sanguine in looking forward to the time, not, I trust, very far distant, when we may have a University established in Queensland. We may also cherish the expectation that it will give Geography a place of importance in its list of studies, and that it and this Society may find it to their mutual benefit to co-operate with each other, each lending the other the weight of its powerful influence, and if, when awarding prizes. we can couple them with the "authority of the University," it will doubtless enhance their value in a most marked degree.

Leaving now the general subject, on the present occasion, when we, in common with the whole Empire, are mourning the loss of our beloved Queen, and have, moreover, just entered upon a new century, under the auspicious rule of King Edward VII., it seems fitting that we should briefly allude to the more important occurrences in our own department of enquiry during the Victorian Age.

At no time in the world's history has geographical progress been so great and sustained as within the era now under review. Contemporaneous with the wonderful advancement in the life history of the geographical societies to which I have referred, is the even more remarkable development of Geography from a mere school subject to a Science. Indissolubly bound up also with the growth of such an essential department of knowledge, is the creation and enormous increase of geographical literature, now probably greater and of wider extent and significance than that produced by any other branch of scientific enquiry. In map making, too, there has been corresponding progress; the art of projection, construction, and execution having undergone many important changes during the same period. But of all the elements which have contributed so largely to the success of our geo-
graphic activities, none is, perhaps, of greater interest than the improvements which have been effected in *instrumental appliances*, so indispensable to success in the fields of exploration and discovery. Not only has there been an almost complete revolution in the art of manufacturing such instruments, so as to meet modern requirements, but there has been corresponding progress in the compilation and construction of mathematical tables and astronomical ephemeris, rendering them more useful in their application to celestial or terrestrial observation in the determination of geographical positions. Depending to a very great extent on these advances, because of their wide influences on other branches of industry, have been the improvements effected in the *compass*, and our increased knowledge of its variations,—the conditions of terrestrial magnetism,—and of magnetic declination in both hemispheres; thereby enabling the whole maritime trade of the world to be conducted with comparative safety. But marvellous as, indeed, have been the gigantic strides in the direction to which I have merely pointed, few there are amongst us who fully realise the stupendous advances during the last century in the field of exploration and discovery. A hundred years ago there was not more than thirty per cent. of the whole land surface of the entire globe examined, but of the remainder of the unknown territory some sixty per cent. has been explored during the nineteenth century, leaving a balance of but ten per cent. of unexplored lands at the beginning of the new one. This seems very wonderful indeed, but the actual importance of such phenomenal progress is scarcely capable of realisation. We cannot adequately comprehend, for instance, the far-reaching influence of African and Australian exploration on the development of European colonisation, and the commercial enterprise of the world; nor is it possible to grasp the actual significance and importance of the last century’s investigations in North America and Asia, and their bearing on the future of the British Empire. We know that these regions have yielded many secrets hidden for untold ages, and we are also aware that the searchlight of exploration has revealed to the astonished gaze of civilisation many geographical conditions, which have led us to a better understanding of natural phenomena, but it is only by the exercise of the faculty of imagination that we can picture the actual extent or rightly gauge their far-reaching influence on the march of empire, and their ultimate effect on the race. For many years the problems of Arctio exploration and discovery have occupied the best attention of some of the most eminent scientific explorers and navigators, one of the last in the field having advanced to within some 207 geographical miles of the Pole. It is almost needless to remark that many, if not all, of the greatest achievements in this vast inhospitable polar region of the globe, have only been accomplished under the most trying
conditions of life, in which great physical endurance and the exercise of consummate skill and scientific ability have been conspicuous. And many valuable lives have at the same time been sacrificed in the endeavour to give us a clearer understanding of the physical conditions there, and so add to the store of human knowledge. The results have contributed largely to the development of commerce, to the extension of industrial enterprise, and the elucidation of important subjects of international concern and scientific value. Furthermore, they have set at rest many doubtful questions concerning climate, the Arctic flora and fauna, the physical and geological structures of the land areas, the circulation of ocean currents, and the occurrence and distribution of ice masses. In the regions farther south, including part of North America and the numerous islands adjacent thereto, we find that human energy has been well sustained by the pioneers of exploratory enterprise, who have paved the way to colonisation, and helped to plant the flag of progress on the remote borders of the Empire. These explorers have unfolded to us a vastly extensive territory, endowed with immensely rich resources of natural wealth of gold and other precious metals, which occur in remotely situated regions, where considerable areas yet await examination. They have laid open the gold-bearing strata of the great Yukon basin, resulting in the establishment of new trade routes to that part of the continent, and the formation of important centres of population in places where formerly their existence would have been considered impossible. Preceding the detailed examination of the Yukon region were the discoveries of many important geographical features along the northern shores of the continent, the exploration of the Rocky Mountain region, and the opening up to settlement and colonisation of vast areas of fertile country. The latest exploit of all in exploratory work here has been the first successful ascent and detailed examination of Mount St. Elias, in Alaska, by an Italian expedition, whose recent explorations have greatly increased our knowledge of the hydrographical conditions of the Arctic Ocean and the geography of the ice-bound regions there.

In South America, too, we find many traces of the widely distributed influence of colonisation, which has distinguished the Victorian Age from all preceding ones,—such as the extended investigations of the great river systems of the country, the stupendous cordillera of the Andes, and its numerous lofty peaks and volcanic cones. Although affected in but a slight degree by the march of British Empire, as compared with North America, there are, nevertheless, many indications which point to our extensive commercial relations with the country, and our influence in developing its resources and industrial life.
Extending this rapid survey to regions further afield, we come to a part of the world teeming with historical reminiscences, and associated with the activities of ancient life, as well as the conflicts and conquests of modern civilisation. In no part of the habitable globe is there a greater diversity of climate, soil, animal life, and people, than are to be met with in the plains and highlands of Asia—the great cradle of civilised life—a country of fabulous riches and commercial enterprise. Russia and Great Britain have mainly contributed to the geographical development of Asia, since the end of the 18th century, and both these nations have exerted a potent influence on the political condition, as well as on the intellectual and industrial life of the people there. One of the results of our increased knowledge of the geography of Asia stands up in gigantic proportions, in the shape of the great Trans-Siberian Railway, indicating unmistakably the progress of colonisation and commercial enterprise, which have rendered the overland journey from St. Petersburg to the Pacific Coast by rail possible, and likely to be accomplished in a comparatively short time. The great Siberian plains have been opened up, the Ural regions investigated, the Amur Valley, the Caucasian and Aral-Caspian areas explored, as well as the scientific exploration of Central Asia, Mongolia, and Western China. Nor is this all, for we have also greatly increased our knowledge of the physical and industrial conditions of many other parts of this immense territory, including the extensive divisions of Manchuria, Turkestan, and Khorassan, as well as the lake regions, the Lena basin, and Western Siberia. On the northern coast of the continent there has also been great and sustained activity in the field of geographical industry. The New Siberian Islands have received much attention, the Kara Sea and Siberian Ocean have likewise been mapped out, and other great exploratory works accomplished. Ever since the beginning of the last century, when one of our intrepid travellers was driven out of Tibet, many attempts have been made to elucidate the physical conditions of the vast Tibetan Plateau, and to obtain a better knowledge of its people. But failure has in most instances been the only reward for great perseverance and determination on the part of some of the best explorers of the day. The northern edge of "The Roof of Asia" has but recently been delineated by a European traveller, who also investigated the extensive basin of Lob Nor, besides making many other important additions to our knowledge of the physiography of that elevated region of moving sand hills between the rivers of Yarkand and Khotan. The Himalayan ranges have always offered many attractions to the accomplished officers of the Indian Survey Department, who have contributed greatly to our knowledge of the physical structure of those stupendous mountains, their operations also extending across difficult country into Afghanistan and Tibetan highland.
But, much as has been done, in the face of numerous political ob-
stances and religious prejudices, the mysteries of Tibet are not yet un-
folded, for we have even now a great deal to learn about the country and people, although future investigations will, no doubt, be conducted under more favourable auspices, especially when the advantages of civilised life become better known and understood by the people there.

The geographical development of Africa has been almost pheno-
menally rapid and permanent during a period of unprecedented activ-
ity in field exploration and commercial progress, with which British colonisation has gone hand-in-hand. Except for a narrow strip of country fringing the coast line and the Nile Valley, there was nothing known of Africa before the last century, our conceptions of the vast regions of the interior being altogether vague, and mostly erroneous. It is true that certain maps of earlier date have been discovered in the recesses of public libraries, which show many of the internal physi-
cal features of the continent, but their origin is obscure, and their authenticity not wholly free from doubt. In Africa we have a con-
tinent of vast extent, in which the climate is as varied as the flora and fauna, the conditions of soil, and physical features. Here the geographical enterprises of the Victorian Period have revealed to us the remarkable fluvial and mountain systems of the country; their structural elements have been elucidated, and the great lake basins mapped out with tolerable accuracy of detail. The desert sand region of the Saharan barrier has been conquered, and the extensive terri-
tory beyond has been traversed. The great Niger and Congo valleys have been examined, the Zambesi basin has been investigated, the country traversed by the Upper White Nile opened up, and the immense forest areas of the equatorial zone have been penetrated. The whole combined efforts of a century's ex-
ploration have resulted in a complete transformation of the map, from a mere aggregation of hypothetical representa-
tions to delineations of clearly defined geographical features, accurately representing the physical structure of the continent. Rail-
ways have been constructed in many parts of this great African terri-
tory, telegraph lines have been erected in the very heart of the continent, the latest being the line from Capetown to Cairo, of which over 3,000 miles have already been laid down to a place some 50 miles north of the town of Kasanga, on the shores of Lake Tanganyika. British and European enterprises are being rapidly pushed on over most of the equatorial provinces, the remote parts of the continent are now being opened up to trade and commerce, and our sphere of influence continues to extend from ocean to ocean in the rapid march of empire, whilst a gratifying amount of success has attended our endeavours to ameliorate the conditions of
the native races and destroy the slave trade, which has for so long been a curse to the aboriginal life of the country, and a reproach on civilisation.

Our pre-Victorian knowledge of Australia was chiefly acquired from the early Dutch navigators, who, with Dampier and Cook, had explored the northern, western, and eastern shores of the continent, and indicated its true geographical position on the map of the world. The great discoveries then made were followed up by others no less extensive or important in their bearing on the future of the country, until now there are but a few remote patches of waste lands in the central regions that have not been explored, or opened up to occupation. Most of the prominent topographical features have been mapped out, the desert areas traversed in several directions, the great water-bearing beds of the lower cretaceous formation tapped, and the geological features of extensive areas delineated. The theory of a great inland sea, to which some of the early pioneers so fondly clung, has long been superseded by a clearer conception of the physical geography of the central basin, and the desert country, to which our former ideas assigned no reasonable limit, has been found to contain extensive areas of fertile country and mountain ranges inhabited by tribal communities. Indeed, we have now acquired a very fair knowledge of the physical conditions of the continent, except some limited tracts of desert country in the remote interior of Western and South Australia. The coastal districts have mostly been settled, and their resources are in the course of development. The vast rolling downs have been opened up to pastoral occupation, the great mineral areas have been investigated—their far-reaching influence on colonisation now being felt,—great cities have sprung up on sites formerly occupied by aboriginal tribes in the midst of primeval forest,—flourishing townships extend far and wide into places previously entirely unknown and uninhabited, and railroads traverse many thousands of miles in all directions throughout our Commonwealth territory.

And for all our progress and prosperity we are greatly beholden to the brave little band of pioneer explorers, who went out into the vast unknown with slender resources, and but little hope of success. Some there are who perished in the attempt. Such, indeed, was the fate of Leichhardt, Burke and Wills, Kennedy, and others, who sacrificed their lives to the cause of colonisation. But their names and deeds will long live in the history of the country, and so will those of Mitchell, Sturt, Eyre, Warburton, Forrest, Giles, and our good friend Gregory, who have contributed so largely to our knowledge of Australian Geography, and otherwise rendered eminent service to Science, Commerce, and Settlement in this part of the British dominions.

 Everywhere do we see signs of progress, and prospects in the peaceful development of our richly endowed territory are unlimited.
The present has been preceded by an age of unprecedented activity in the field of geographical exploration and pioneering effort during one of the most glorious and successful reigns known to history—an age unequalled in the life of the race for progress in Science, and Literature, and Art, and the development of all other departments of human industry, and we have every reason to indulge in the confident assurance that the century upon which we have just entered will be no less distinguished in the annals of history for the progress of civilisation and the amelioration of the conditions of life for the human race.

In moving a vote of thanks to the President, Mr. A. Muir said: The address is one which is very instructive, valuable and highly interesting, for which the best acknowledgment of the Society is due. There are several things to which the President has alluded, that one would like to mention did time permit. I will just refer to one, and that is the cordiality and friendliness with which nations, sometimes at variance in other respects with one another, join in geographical research and exploration; as, for instance, in the great work of Polar investigation, now occupying the attention of British and European Geographers. It is a singular thing, and shows far better than anything else the mutually helpful spirit in which such exploratory enterprises are usually undertaken. The address is a most excellent one, and requires to be read to be thoroughly appreciated.

Mr. A. S. Kennedy, in seconding the motion, referred to the address in very complimentary terms, stating that the subject dealt with by the President had been presented in a very attractive form, both as to general arrangement, dictation and composition. It was a masterly deliverance, and worthy of the man, and he had never listened to a more interesting discourse.

The motion was supported by Messrs. John Cameron, M.L.A., and R. M. Collins, and carried by acclamation.

The President briefly responded and said his thanks were due to Mr. Eggar for preparing the Map.
PROCEEDINGS
OF THE
Royal Geographical Society of Australasia,
QUEENSLAND.

[Unless otherwise stated all the Meetings are held at the Rooms of the Society, Brisbane.]

AUGUST 17th, 1900.


There was a large and distinguished company present, including His Excellency the Governor, His Excellency the Hon. G. R. Le Hunte, Lieut.-Governor of British New Guinea, and the Hon. A. C. Gregory.

The minutes of the previous Annual General Meeting were taken as read, and confirmed.

Elections: Ordinary Members, J. A. Robertson and W. E. Stopford.

Apologies for non-attendance were received from Lady Lamington, Sir Samuel and Lady Griffith, and Ministers of the Crown.

The Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), read a paper on "The Geographical Evolution of the Australian Continent," with maps and pictorial illustrations. (See page 1.)

The vote of thanks to Mr. Thomson was moved by His Excellency Lord Lamington, seconded by the Hon. A. C. Gregory, C.M.G., and carried by acclamation. (See page 24.)

Mr. Thomson briefly responded.

OCTOBER 22nd, 1900.


The minutes of the previous Ordinary Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), and confirmed.


The President read a paper by Mr. R. H. Mathews on the "Murrain Ceremony." (See page 35.)

A very cordial vote of thanks to the author and to the reader of the paper was carried by acclamation.

The Hon. A. C. Gregory, C.M.G., F.R.G.S., etc., then read a paper "On the Mitigation of Floods in the Brisbane River." (See page 26.)

The vote of thanks to Mr. Gregory was moved by Mr. C. B. Lethem, C.E., seconded by the Hon. Secretary, supported by Lieut-Col. James Irving and R. Gailey, and carried nem. con. (See page 33.)
NOVEMBER 27th, 1900.

The President, Rt. Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., in the chair, supported by His Excellency the Governor, who was accompanied at the meeting by Capt. Feilden, A.D.C.

The minutes of the previous Ordinary Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.) and confirmed. Lieut. Curtis was elected an ordinary member of the Society.

Letters of apology for absence from the meeting were read from Messrs. L. A. Bernays, C.M.G., F.L.S., J. H. Bean and J. Spires.

Communications were also read from Hon. John Douglas, C.M.G., F.R.G.S., and the Hon. Wm. Allan, F.R.G.S., M.L.C., offering congratulations to the Hon. Secretary on the success of the issue of the "Journal" of the Society, and cordially supporting the medal scheme.

The Hon. Secretary read a paper by Mr. H. R. Maguire on "Panoramas of Nature as Viewed from Picturesque Plateaus in Southern Queensland." (See page 42.)

The vote of thanks to the author of the paper was moved by His Excellency the Governor, seconded by Mr. R. M. Collins, and carried by acclamation. (See page 48.)

The Hon. Secretary responded on behalf of Mr. Maguire, who was absent in British New Guinea.

DECEMBER 17th, 1900.


The minutes of the previous monthly meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.) and confirmed.

Mr. E. A. Gaden was elected an ordinary member of the Society.

Correspondence was read:—From General Sir H. W. Norman and A. Wyon, F.S.A., London, re "The Thomson Foundation Medal," and from the Société de Géographie, Paris, acknowledging the first instalment of Mr. J. P. Thomson's series of scientific articles on the geographical conditions of the Australian Continent; thanking the Queensland Government for assistance rendered in connection with same, and congratulating Mr. Thomson on the "well-merited recognition which the Society had accorded his work."

Several scientific publications, including "Nature," and the "Geographical Journal," were laid upon the table, in which notice was taken of "The Thomson Foundation Medal" scheme.

The President read a paper by Ex-Judge D. Forbes, B.A., on "Reminiscences of the Early Days of Queensland," etc. (See page 50.)

The vote of thanks to the author of the paper was moved by the Hon. F. H. Holberton, M.L.C., and seconded by Mr. H. W. Coxen.

APRIL 18th, 1901.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), in the chair. His Excellency the Governor, accompanied by his A.D.C., was present.

The minutes of the previous Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), and duly confirmed.

The President moved: "That the Council, Fellows and Members of the Royal Geographical Society of Australasia, assembled and desirous of respect-
fully expressing and according their very deep feelings of sorrow at the universally-lamented death of Her Majesty Queen Victoria, for over sixty years the illustrious and beloved Sovereign of the British Dominions, under whose benign rule the Empire has developed to an extent hitherto unknown in the history of civilised life, whilst human knowledge has likewise increased so greatly as to make the period of Her Majesty's glorious reign memorable as an age of unprecedented progress in Science, Literature and Art. The Council, Fellows and Members are further desirous of humbly giving expression to their profound feelings of loyalty and devotion to His Majesty King Edward VII., and sincerely pray that His Majesty and Queen Alexandra may long live in health and happiness to rule over the Empire."

This was seconded by the Hon. Arthur Morgan, M.L.A. (Speaker), and carried by the members present rising in their places and bowing their heads.


The Diploma of Fellowship of the Society was granted to Mr. E. M. Waraker, an old and valued member.

An apology for absence from the meeting was read from Mr. A. S. Kennedy.

Letters were read from Sir H. W. Norman and A. Wyon, London, giving particulars of "The Thomson Foundation Medal."

The President read a paper by Sir Francis P. Winter, Kt., on a "Government Expedition to the Main Range, British New Guinea." (See page 63.)

The vote of thanks to the author of the paper was moved by His Excellency the Governor, and seconded by Mr. R. Gailey.

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_JUNE 15th, 1901._

This was a Farewell Meeting to His Excellency the Governor (Patron), and Lady Lamington, on the eve of their departure from Brisbane for London.

The occasion brought together the largest attendance that has ever been seen in the rooms, the accommodation being altogether inadequate. His Excellency and Lady Lamington were accompanied by Captain Feildcn, A.D.C.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), occupied the chair, and among the others present were: Sir S. W. Griffith, P.C., C.J. (Lieutenant-Governor), Mr. Justice Cooper, the Hons. A. Morgan (Speaker), J. F. G. Foxton (Home Secretary), J. Murray (Minister for Public Instruction), A. C. Gregory, M.I.C., F. T. Brentnall, M.I.C., Mr. S. Grimes, M.I.A., Alderman T. Prose (Mayor of Brisbane), Messrs. W. E. Parry-Okeden (Commissioner of Police), A. B. Brady (Under-Secretary for Works), A. J. Carter (President of the Brisbane Chamber of Commerce), J. Hughes (Registrar-General), Her Von Ploennies (German Consul), J. Cameron, W. J. Coakes (Finnery, Isles, and Co.), R. Fraser, J. S. Badger, Dr. Hirschfeld, Lieutenant-Colonel Irving, Aldermen Jones and Davies (South Brisbane), and many other ladies and gentlemen. Apologies for absence were announced from the Hon. W. Allan, Mr. R. M. Collins, R. Stratheast, and J. H. Bran.

The minutes of the previous monthly meeting were taken as read, and confirmed.

The President read the following address of welcome presented to His Royal Highness the Duke of Cornwall and York on the occasion of his visit to Brisbane:

"To His Royal Highness the Duke of Cornwall and York, K.G., etc., etc.; Honorary President, Royal Geographical Society, London; President Manchester Geographical Society."
"Sir.—May it please your Royal Highness. On behalf of the Council, Fellows, and Members of the Royal Geographical Society of Australasia, Queensland, we are desirous of giving expression to our very deep feelings of pleasure at the safe arrival of your Royal Highness, and of Her Royal Highness the Duchess of Cornwall and York, on the Australian shores; and we heartily extend to you, as the august representative of the parent and sister Societies in London and Manchester, a most cordial welcome to Brisbane.

"In expressing our profound loyalty and devotion to the King's Most Excellent Majesty, and the Royal Family, we earnestly pray that under the guidance of Divine Providence your Royal Highness may long be spared to further, by the influence of a gracious patronage, the interests of Geographical Science, so largely developed throughout the world during the glorious reign of Her Majesty Queen Victoria, and we sincerely hope that the future will be pregnant with many pleasurable reminiscences of your present visit to the Australian Commonwealth.

"J. P. THOMSON,
Hon. Secretary.

Hugh M. Nelson,
President." (Seal).

The following reply was taken as read:—

"Gentlemen,—In the name of the Duchess and for my own part I sincerely thank you for the kind words and good wishes to which the several Addresses that you have presented to me give expression.

"I am deeply touched by the sympathetic allusions which many of them contain to the memory of our late beloved Sovereign.

"I have read with deep satisfaction your assurances of fidelity and attachment to the Throne, and I shall lose no time in communicating these sentiments to His Majesty the King.

"Queensland, indeed, gave ample proof of her loyalty when she came forward—the first of the Australian Colonies—and offered assistance to the Mother Country in the South African War.

"I well remember the cordiality with which my dear brother and I were received here twenty years ago, and it is especially pleasing to revisit your State with the Duchess, and to be welcomed with such demonstrations of affection and enthusiasm as we have experienced this afternoon.

"I regret that it is not possible to further prolong our stay in Queensland, but I am glad to know that we shall have an opportunity of seeing some of the varied products of its fertile soil as well as of its industries.

"I heartily sympathise with you in the severe trial which you have experienced during the past six years of drought.

"I congratulate you that it has partially broken and I earnestly trust that through Divine Providence prosperity may be speedily restored throughout the land.

"Since my last visit I find that the Trade and Commerce of Queensland has increased beyond all expectations, and I feel sure that your authorities will in the future do all in their power to foster and promote the commercial relations between the State, the Mother Country, and the Empire at large.

"To Royal Geographical Society."

"George."

It was mentioned that the President, the Vice-President, the Hon. Treasurer, the Hon. Secretary, and the Hon. Wm. Allan had presented the Address to His Royal Highness at Government House on May 20th (1901),
The Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), then read a paper which he had prepared, on "Lord Lamington's Travels in Mexico, 1887." (See page 91.)

The vote of thanks to Lord Lamington for having supplied the material for the paper from his own private manuscript journal was moved by the Hon. Arthur Morgan, and seconded by the Rt. Hon. Sir S. W. Griffith. (See pp. 110, 111.)

The President conveyed the vote of thanks to His Excellency, who responded at some length. (See pp. 111, 112.)

The President said that, with the full assurance that they were carrying out the unanimous wishes of the Fellows and Members, the Council, in order to put on record their appreciation of Lord Lamington's good services to the Society, had prepared an address (which was presented to him) as follows:—

"Brisbane, June 15, 1901.

"To His Excellency the Right Honourable Lord Lamington, G.C.M.G., etc., etc.

"(Patron).

Sir,—On behalf of the Council, Fellows and Members of the Royal Geographical Society of Australasia, Queensland, we are desirous of expressing to your Excellency our very high appreciation of the great benefit which our Society has enjoyed under the fostering and stimulating influence of your distinguished patronage, as well as of the signal services that you have rendered to our cause by the active interest and practical sympathy at all times evinced by you in our proceedings, and the progress of geographical science.

In giving regretful expression to our keen sense of the loss which we will sustain by your early departure from Queensland, we very respectfully desire to tender to you our cordial thanks, for the spontaneous manner in which you have, by your countenance and example, helped us in our endeavours to promote human knowledge.

"From the time we were privileged to welcome you on your arrival in Brisbane, some five years ago, we have recognised your exceptional claims to our regard as a geographer and scientific traveller, and we shall always look back upon the time during which you have been so closely and actively associated in our geographical labours, with feelings of pleasure and deep gratification. In wishing your Excellency, Lady Lamington, and children god-speed, long life, and happiness, we feel confident that, as one of our distinguished representatives, you will still continue to advance our interests in the mother-country, and we beg to assure you that you will carry with you from the shores of Queensland our grateful remembrance and hearty good wishes for the welfare of yourself and family."

(Seal.)

"J. P. Thomson,

"Hon. Secretary."

"Hugh M. Nelson,

"President."

His Excellency said in reply: I thank you extremely for your kind address and for the honour you have done me, and also for your recognition of the small services I have been able to give to the Society in Brisbane. I esteem it a very high honour to be the recipient of such an address, and shall always value it. I have done very little to further the Society. I only hope that it will impress a large number of persons with its interest in geographical research, and prove to be beneficial to the cause of science. I cannot thank you enough for giving me this address, and for coming here to listen to the paper. I shall always retain very pleasant recollection of this evening. (Applause.)

The President said he had been asked to present to His Excellency a group of photographs, taken by Mr. W. L. Crompton, the librarian of the Society,
in accordance with the suggestion made by Lord Lamington that the beauty spots of Queensland should not be neglected nor allowed to go unpreserved. All the pictures had been taken within one day's journey of Brisbane.

The President then handed to the Governor a very handsomely bound album of local views, taken by Mr. Crompton, a great many of them consisting of sketches near the Albert River plateau and around Lamington Glen.

Lord Lamington accepted the gift with thanks, and said he should keep the album and always look at it with pleasure, as reminding him of many happy days spent within the environs of the Brisbane district. Some of the pictures were new to him, while others he knew well, and he would retain grateful recollections of the gentlemen who had taken the trouble to collect such a number of beautiful sketches.

The meeting then adjourned to the Library-room for refreshments. His Excellency the Governor and Lady Lamington afterwards took leave of the Fellows and Members.

ANNUAL GENERAL MEETING
JULY 26th, 1901.


The minutes of the previous Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), and duly confirmed.


The Hon. Secretary reminded the meeting that all ordinary members of the Society were eligible to become Fellows of the Society under certain conditions. The Council had decided to confer the Diploma of Fellowship—under subsection (a) of section iv, clause 3, Constitution and Rules—upon Mr. Robert M. Collins, who had been a life member since the foundation of the Society, and was a Past President, in addition to which he had rendered great services to the Society, by contributing valuable papers and otherwise identifying himself with its active life. The Council had great pleasure in recommending that the Diploma of Fellowship—under subsection (b) of section iv, clause 3, Constitution and Rules—he also conferred upon the following gentlemen, who had likewise served the Society well: Hon. Wm. Allan, F.R.G.S., M.L.C., one of the oldest members, and a Past President; Mr. Alexander Muir, J.P., one of the Foundation Members, and a valuable contributor to the literature of the Society; Mr. C. B. Lethem, C.E., a Past Hon. Treasurer, and one of the oldest members of the Council; and Mr. D. S. Thistlethwayte, C.E., Hon. Treasurer, who had contributed some papers of great interest and value. The conferring of the Fellowship on these members was unanimously agreed to.

Messrs. Muir and Thistlethwayte, being present, returned thanks, and expressed their deep sense of honour.

Apologies for absence were received from Hon. W. Allan, Lieut.-Colonel J. Irving, and Messrs. C. B. Lethem, E. Muller, and W. L. Crompton.

A letter was received from Mr. Allan Wyon, F.S.A., stating that he had completed the engraving of the dies for the Society’s "Thomson Foundation Medal," and that he was sending the first gold medal struck from the dies. Sir Henry Norman had seen the medal and expressed entire satisfaction.

The President then read the Annual Report of the Council.

Mr. A. Muir said: In moving the adoption of the Report of the Council, as read, I would like to take the opportunity of making one or two remarks on some of the matters therein dealt with. The scheme of the medal referred to in it is one which, I think, will commend itself to the Society as being the beginning.
of a plan which will give fresh vigour and enthusiasm to the affairs of our Society and to geographical research. The giving of medals by societies similar to our own to deserving recipients in recognition of work performed is no new thing. I hold in my hand a volume from our library, dated this year, "The Bulletin of the Society of Commercial Geography," of Paris, the first paper in which is an address on a "Report on the Medals of 1900"—a Report prepared by a special commission of sixteen gentlemen appointed for that purpose. It is very interesting in its bearing on our own medal scheme, as it contains the names of no fewer than twenty-one medals and prizes awarded in 1900 to geographers and explorers, for valued services rendered, as well as a short description of the work performed by the recipients, together with their portraits. Again, I have here "Monthly Notices of the Royal Astronomical Society" (London), dated February, 1901, in which is an address delivered by the President on the occasion of presenting the gold medal of the Society to Professor Pickering, the distinguished Director of Harvard College Observatory, "for his researches on variable stars and his work in Astronomical Photography." This address, which deals at great length with Professor Pickering's investigations, concludes with these words: "The history of the award of the Gold Medal is the history of men who have made an indelible mark in astronomy—whose labours have stimulated and pioneered others in the path of success, and whose disciples have expanded and developed the principles which they enunciated, to the realisation of such progress in astronomical science as we are witnessing at the commencement of the twentieth century. Among such a roll of distinguished men, Professor Pickering will surely take an honourable place, as a brilliant leader, who, with rare skill, unwearied energy, and consummate ability, has known so well how to instigate, how to organise, and how to accomplish." The President, addressing the American Ambassador, said: "In handing you this medal for conveyance to Professor Edward Charles Pickering, I beg you to assure him of our high appreciation of his remarkable labours in stellar astronomy, and our continued interest in the important institution he so ably directs. We do not suppose that one who has displayed an unwearied activity throughout his whole career can need any such stimulus to nerve him to increased efforts for the advancement of our science; we only trust he will believe that, in offering him the highest honour in our power, we feel that we shall be equally honoured by his acceptance of it." In addition, I find that the June number of the parent (Parisian) Geographical Society's volume, just to hand, contains a long descriptive list of gold medals and prizes awarded by it during the year for eminent and successful enterprise in exploration and research. In commencing the medal scheme, therefore, it is obvious that we here are only doing that which has already been done, and is now being annually done, by cognate societies elsewhere. And why? Because the awarding of medals by such societies as ours for signal services performed, besides being a recognition of these services, stimulates and encourages others to the performance of like eminent work. That has, in point of fact, been the result elsewhere, and why not here? I have myself, indeed, already had a thrill of desire to win the distinction at some time or other, if I could find the time and could acquire the necessary industry, to perform some investigations of a useful character to the Society and to the public. How much more so, then, must others feel who possess the ability, the time, the knowledge, and the industry to pursue useful enquiry? I must say, Sir, that I am filled with high hopes of the consequences which will inevitably follow the awarding of an annual medal where it is merited, and I think the Society, in initiating the plan of offering a medal, has done honour as well to the founder of this Society, by associating his name with it, as to itself. The future of the Society will, I am sure, receive an accelerated
stimulus of a most beneficial nature by the offering of medals, and the recipients will be suitably rewarded by acknowledgment of their effort and their industry. There are other matters referred to in the Report of the Council which deserve notice, and which other members present will no doubt make reference to. It is sufficient that I now conclude by stating that the Report as a whole indicates a most vigorous and successful year's operations, on which the Society may well be congratulated. I have much pleasure in moving that the Report, as read, be adopted.

Mr. A. S. Kennedy moved: "That the Report of the Council be amended, so as to include the name of the Hon. Wm. Allan, as an Hon. Councillor and Referee, and the following concluding paragraph, namely:—'The Council cannot conclude its Report without recording its obligation to the Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., for the assiduity and keen interest evinced by him in the affairs of the Society during two years' occupancy of the Presidential chair. The Council, feeling deeply thankful to Sir Hugh for his untiring efforts to promote the welfare of the Society, desires to express its appreciation of the value of his services, as well as of the most excellent manner in which he has discharged the duties of office, at the same time regretting that the Rules of the Society do not admit of his re-election for a third term.'"

Mr. E. A. Gaden seconded this amendment, referring to the great work done by Sir Hugh Nelson during his term of office.

Dr. E. Hirschfeld supported the amendment, remarking that a good deal of the good accomplished by the Society had been due to the guiding hand of the President.

The amendment was heartily agreed to, and the following Report, as amended, adopted.

THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND.

REPORT OF COUNCIL.

SIXTEENTH SESSION, 1900-1901.

It is with pleasure the Council submits the Sixteenth Annual Report to Fellows and Members of the Society. The year just ended has been a most eventful one in the Society's history—perhaps the most eventful since its inception. Not only have the proceedings during the year been characterised by unusual enthusiasm on the part of Members and the public, but they have, it is believed, been such as will cause the Society to engage even more energetically than in the past in eliciting the results of scientific research.

The Council, being of opinion that very much useful information lies hidden with people, which information it would be advantageous to have made known, conceived the idea in July of last year to discover it, and to continue the discovery of it from year to year in future. It has already been widely acknowledged that Mr. J. P. Thomson, the founder of this Society in Queensland, has performed eminent service to geographical science by a life-long devotion to research—research embodied in no fewer than eighty-seven (87) published works. And it accordingly occurred to the Council that, in order to
perpetually place its gratification and acknowledgments to Mr. Thomson on record for eminent services gratuitously rendered to the Society, and to further develop and stimulate research, it would be desirable to follow the example of cognate bodies in other parts of the world and establish a Foundation Gold Medal, with which Mr. Thomson's name would always be associated—the Medal to be awarded annually to the author of such literary contributions to Geographical Science as may be approved and deemed of sufficient merit by the Society. It will not, the Council thinks, be denied that the scheme is a most excellent one; it serves the dual purpose of giving perpetuity to the name and services of the founder of the Society; and—what it is believed our founder most of all wishes—will furnish an incentive to effort and interesting inquiry which will, later on, appear in very valuable papers, or in other words, as has already been stated, in the disclosing of information which may otherwise probably remain hidden.

The proposal which eventuated in this Medal Scheme was made by the retiring Vice-President (Alderman Wm. Jones, F.R.G.S.A., Q.) was cordially supported by his successor (R. Fraser, Esq., J.P., F.R.G.S.A., Q.), and was received with acclamation at the Annual General Meeting of the Society in July last. The plan of awarding the Medal was referred to a Committee of the Council, who, after mature consideration, recommended as follows, viz.:—

"(1). That there be instituted by the Society a Medal, to be designated 'The Thomson Foundation Medal.' (2). That this Medal shall be awarded annually, or at such other times as the Council may approve, to the author of the best original contribution to Geographical Literature, provided it be of sufficient merit, approved and accepted by the Society (the subject of such contribution to be named by the Council). Special awards of the Medal may also be made from time to time to such persons as have gratuitously rendered eminent services to the Society. (3). The Council may award a silver or a bronze impression of the Medal to the author of a contribution, deemed to further the interests of the Society, and add to the value of Geographical Literature. (4). The Council shall name from time to time the subject of such contribution, for which the Medal is to be awarded, preferential consideration being given to the Geography of Australasia. (5). All contributions for which the Medal may be awarded must be written in the English language, and will become the property of the Society absolutely. (6). It shall not be competent for any officer of the Society or member of the Council for the time being to compete for the Medal. (7). The administration of the Medal shall be entirely in the hands of the Council of the Society, who will make such additional rules and regulations for awarding the Medal as from time to time may seem necessary."

"We recommend that the initial cost of the die and the first impression thereof be borne by the Society. In order to give the members and friends of the Society, many of whom have known Mr. Thomson personally for years, an opportunity of identifying themselves with this scheme, we further recommend that a Special Medal Fund be forthwith opened, and contributions thereto invited. We beg to suggest that this Special Fund be placed in the hands of Trustees, to be

* See ante Vol. XV., pp. 133-134.
deposited as a capital account, the interest of which would ultimately pay the cost of each impression of the Medal. We further suggest that the first impression of the Medal be presented to Mr. Thomson."

This recommendation was unanimously adopted by the Council, and following up the recommendation a subscription list was immediately opened to provide a special fund for the purpose, as it was ascertained the scheme would probably require a capital fund of about £300. Nearly half the amount has already been contributed, and the Council, being satisfied with the cordiality with which the scheme was received by the members of the Society—and by numerous others from distant places—decided to have the Medal designed. Mr. A. A. Wright, with the able assistance of Mr. C. W. de Vis, M.A., both of Brisbane, executed the design to the entire satisfaction of the Council, who, in order to secure the very best work, resolved to engage the services of the famous London medallist, Allan Wyon, F.A.S., medallist to Her late Majesty. Our Honorary Member, Sir Henry Norman, very kindly consented to assist as consultant with the medallist, who adjusted the design in such points as seemed desirable, and the result has been the reception by the Council of a first-class medal, which, as an initial proceeding, it is proposed, as was recommended by the Committee, to bestow on Mr. Thomson himself.

It may here be stated that the wreath on the reverse side of the Medal is composed of typical Australian plants, viz.—the Wattle, the Bottle Brush, and the Sturt's Desert Pea, all very artistically intertwined.

The Council deems it necessary to thus fully enlarge on the subject of this Medal Scheme, because of the fruitful results which are expected to flow from its being awarded. Correspondence and literature received from kindred societies in Europe, Great Britain, America, and Asia, encourage the Council in this expectation, as indeed has also the Australian Press. The Council has accordingly lost no time in issuing subjects for competition in 1901 and 1902, as follow:

"1. 'The Commercial Development, Expansion, and Potentialities of Australia'—or, briefly put, the Commerce of Australia.—This subject belongs to the department of Commercial Geography, and should be treated in such a manner as to indicate very clearly and fully the present commercial life of the Continent, its development under constitutional Government, and future possibilities. (To be sent in not later than 15th October, 1901).

"2. 'The Pastoral Industry of Australia, Past, Present, and Probable Future.' (To be sent in not later than 15th June, 1902).

The conditions applying to the competition will appear as an appendix to the ensuing issue of our Journal, and it is to be hoped members of the Society and others interested will assure the success of the scheme by contributing the amount still required for its
proceedings. apart from the eighty guineas which the dies are expected to cost, it may be stated as an indication of the intrinsic value of the gold used in the medals themselves, that each will cost twelve guineas in London. the following illustration of the medal as struck has been sent by Mr. Wyon from London:

As stated, the past year has been most eventful. The Council thinks it unnecessary to do more than refer to some of the more outstanding events: the lamented death of Her Majesty Queen Victoria, the consequent accession of King Edward VII., the visit of their Royal Highnesses, the Duke and Duchess of Cornwall and York, all of which were duly noted by the Society in the order of their occurrence. An address of welcome from the Society was presented to the Duke and Duchess on their arrival here, and was graciously replied to by His Royal Highness.

The departure from Queensland of His Excellency Lord Lamington, Patron of the Society, was made the occasion of a valedictory meeting on June 15th, when a paper was read by the Hon. Secretary, Mr. J. P. Thomson, which he had been requested by His Excellency to prepare from a private manuscript journal kept by Lord Lamington on his travels through Mexico in 1887. His Excellency Lord Lamington, who was himself a successful explorer, always evinced the warmest interest in the Society, as did his predecessor, Sir Henry Norman, and it is with regret that the Council records the loss of his valuable counsel and patronage. A valedictory address, expressive of this sentiment, which had been engrossed, was on this occasion presented from the Society to Lord Lamington, as was also a book of views taken in the neighbourhood of Brisbane by one of our members, Mr. Wm. L. Crompton.

The membership of the Society has been increased by the addition of twelve new members since last year. It is desirable, however, that the membership be extended, and the Council hopes that its efforts to
infuse additional interest in geographical science will appeal to the public so forcibly as to cause a still further increase in numbers.

On application, the Fellowship of the Society has been conferred on a very old and valued member, Mr. E. M. Waraker.

The funds are reported by the Hon. Treasurer to be in a satisfactory condition—that is, so far as concern general purposes. The fund for the medal scheme (contributions to which are hereto appended) is kept quite separate, and, as already stated, requires urgent aid to make the continuance of the scheme assured.

The Library is being constantly replenished by donations from all parts of the world; and the Council desires to record its indebtedness to kindred societies and to individuals for the very valuable additions made to its literature during the past year.

Publications—The fifteenth volume of our Proceedings and Transactions, under the new title of the "Queensland Geographical Journal," Royal 8vo. size, was issued to members and others at the beginning of the Session, and contains a comprehensive description of the work of the preceding year.


The Council has pleasure in again recommending the suspension for the ensuing session, of so much of the Rules as provides for the payment of an entrance fee, the experience of the last two years having fully justified this recommendation. It is also respectfully recommended that the Hon. A. C. Gregory, C.M.G., F.R.G.S., Messrs. C. W. de Vis, M.A., and Alexander Muir, J.P., be re-appointed as Hon. Councillors and Referees, in association with the Hon. Wm. Allan, F.R.G.S., M.L.C.

The Council cannot conclude its Report without placing on record its obligation to the Right Hon. Sir Hugh M. Nelson, K.C.M.G.,
D.C.L., for the assiduity and keen interest evinced by him in the affairs of the Society during two years' occupancy of the Presidential chair. The Council, feeling deeply thankful to Sir Hugh for his untiring efforts to promote the welfare of the Society, desires to express its appreciation of the value of his services, as well as of the most excellent manner in which he has discharged the duties of office, at the same time regretting that the Rules of the Society do not admit of his re-election for a third term.

For the Council,

HUGH M. NELSON,
President.

17th July, 1901.

List of Contributions

To the Thomson Foundation Medal Fund of the Royal Geographical Society of Australasia, Queensland. (In the order in which they were received, and as referred to on page 186.)

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<td>W. A. Wilson, Esq.</td>
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<td>A. B. Bright, Esq.</td>
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<td>Alfred Starcke, Esq.</td>
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<td>Hon. A. H. Barlow, M.L.C.</td>
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<td>His Excellency Lord Lamington, G.C.M.G., etc.</td>
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<td>R. M. Collins, Esq. (Past President)</td>
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<td>Hon. Arthur Morgan (Speaker Legis. Assembly)</td>
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<td>Hon. F. H. Holberton, M.L.C.</td>
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E. M. Waraker, Esq., F.R.S.A.Q. 1 1 0
R. Edwards, Esq., M.H.R. 2 2 0
I. I. Melver, Esq. 1 1 0
A. M. Hertzberg, Esq. 1 1 0
James A. Foot, Esq. 2 2 0
Robert Fraser, Esq. F.R.G.S. 1 1 0
W. V. Ralston, Esq. 1 1 0
L. A. Bernays, Esq., C.M.G. 1 1 0
D. S. Thistledthwayte, Esq. 1 1 0
Sir Francis P. Winter, Kt. 1 1 0
Capt. T. M. Almond, F.R.A.S. 1 1 0
W. G. Henderson, Esq. 0 10 6
Sir Anthony Musgrave 1 1 0
Hon. George Fish 1 1 0
H. R. Maguire, Esq., L.S. 1 1 0
J. T. Embley, Esq., L.S. 1 1 0
G. W. Eggar, Esq. 1 1 0
Hon. John Douglas, C.M.G., F.R.G.S. (Thursday Isld.) 2 2 0
Mr. D. S. Thistlethwayte gave notice of motion for the adjourned meeting, "That so much of the Rules of the Society be suspended as to allow the President to be re-elected for a third term."

The balance-sheet for the year was adopted on the motion of the Hon. Treasurer (Mr. Thistlethwayte).

It was resolved that the election of the President and Vice-President be deferred till the adjourned meeting.

The election of the other officers was proceeded with. Mr. D. S. Thistlethwayte was re-elected Hon. Treasurer, and Mr. J. P. Thomson Hon. Secretary. Council: R. Fraser, Lieutenant-Colonel J. Irving, Hon. T. B. Cribb, C. B. Lethem, R. Galley, A. S. Kennedy, E. Muller, and Dr. Hirschfeld. Hon. Auditor: C. W. de Vis.

On the motion of the Hon. Secretary, seconded by Dr. Hirschfeld, the thanks of the Society were accorded to the retiring officers and Council.

The meeting adjourned till Friday, August 9.
## BALANCE SHEET, 1900-1901.

THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

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<td>By Balance brought forward, Subscriptions and Donations</td>
<td>294 15 3</td>
<td>To Expenditure as per Accounts—</td>
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<tr>
<td>&quot; Government Endowment</td>
<td>100 0 0</td>
<td>Printing, Stationery, Postage, etc.</td>
<td>130 19 7</td>
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<td>&quot; Government Grant</td>
<td>50 0 0</td>
<td>Advertising, Reporting, etc.</td>
<td>5 9 3</td>
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<td>&quot; Interest on Government Savings Bank Account</td>
<td>1 6 4</td>
<td>Pharmacy Board of Queensland, Joint Expenses in Rooms</td>
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<td>Incidentals</td>
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<td>&quot; Balance in Royal Bank</td>
<td>189 6 3</td>
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<td>&quot; Balance in Government Savings Bank</td>
<td>46 1 11</td>
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£446 1 7

Examined with Bank Pass Books, Vouchers, etc., and found correct.

C. W. DE VIS, Hon. Auditor.

D. S. THISTLETHWAYTE Hon Treasurer.

Brisbane, July, 1901.
ADJOURNED ANNUAL GENERAL MEETING AND CONVERSAZIONE.

AUGUST 9th, 1901.


The attendance was large, there being many ladies present.


The Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.) read the following correspondence:

"Government House, Brisbane, Queensland, August 2nd, 1901.

"Sir,—I have the honour to inform you that the Address of the Royal Geographical Society of Australia, Queensland, expressing sympathy with His Majesty and the Royal Family, on the loss sustained by them in the death of Her late Majesty Queen Victoria, was duly laid before His Majesty King Edward VII., who has commanded that His sincere thanks may be conveyed to the Royal Geographical Society for their sympathetic and loyal message.

"I have the honour to be,

"Sir,

"Your most obedient servant.

"S. W. Grieffith.

"The President, the Royal Geographical Society of Australasia, Queensland.

"Government House, Brisbane, Queensland.

"To the Council, Fellows and Members of the Queensland Branch of the Royal Geographical Society of Australasia.

"Mr. President and Gentlemen,—Among the expressions of personal regard which have been called forth by the near approach of my departure from Queensland, there are none to which I attach more value, or which have afforded me greater pleasure than the Address presented to me by the Council, Fellows and Members of the Queensland Branch of the Royal Geographical Society of Australasia. My sympathy with the object of the Society, and my interest in the class of subjects which are its special matter of investigation, make it all the more gratifying to me to be assured that my connection with the Society has tended to its advantage. For any small services I may have rendered to your Association, I may say that I have already been amply rewarded not only by the increase of my own knowledge of the subjects alluded to, but by the pleasure it has given me to participate in the labours of a body of men who are so sincerely enthusiastic in the promotion of human knowledge in a direction which has for myself a very special attraction. I thank you most sincerely for your kind appreciation of the interest I have taken in your proceedings, which I need hardly assure you will not terminate with the severance of my official connection with the Society.

"I am deeply grateful for your kind wishes on behalf of my family and myself, and will gladly welcome any opportunity which the future may bring to me of being of service either to the Society as a whole or to any of its members.

"June 15, 1901."
The Hon. Secretary intimated that the President (Rt. Hon. Sir Hugh M. Nelson), and Vice-President (Mr. Robert Fraser), had been elected members of the Royal Scottish Geographical Society. As an Honorary Fellow of that body, he offered them his hearty congratulations. (Applause.)

The Hon. Treasurer (Mr. D. S. Thistlethwaite, C.E.) moved, and Mr. R. Gailey seconded—"That so much of the rules be suspended as will admit of the re-election of the President for a third term." The mover said he did not know why such a rule had been made; in kindred societies the rules were much more liberal.

The President said he felt some diffidence in putting the motion, as he was entirely against it. He did not believe in making rules only to break them. They could have altered the rule if necessary; that would have been preferable to its suspension. However, if it was the wish of the Society, he would put the motion. (Applause.)

The resolution was then put, and carried with acclamation.

The President then delivered the anniversary address on "The Progress of Geographical Science during the Victorian Age." (See page 113.)

The vote of thanks to the President for his able address was moved by Mr. A. Muir (who also proposed that the address should be printed), seconded by Mr. A. S. Kennedy, supported by Messrs. John Cameron, M.L.A., and R. M. Collins, and carried with acclamation.

The President, in responding, said: "I have now a very pleasant duty to perform. I have told you of the origin of the foundation of our Gold Medal. We designed it to be an everlasting incentive to persons, young or old, in any part of the world, but principally in Australia, to devote their talents and energies towards the Science of Geography. When the medal was first instituted it was agreed that it should not infringe very much upon the ordinary revenue of the Society; the idea being to collect, by means of donations, a sum of money which, upon being banked, would render interest sufficient to purchase one medal per annum for all time. The medal, as you see, is of gold, and beautifully got up, and as it is, cost 12 guineas. We reckon that in order to have the thing established on a permanent footing, we shall require a capital fund of about £300. Already we have received from very nearly all the old members of the Society, including His Excellency Lord Lamington, donations and support, and just the mail before last, I received a very nice letter from Sir Henry Norman, with a contribution of £5 towards this fund. (Applause.) Within the last week we have also been greatly encouraged by a letter from one of our oldest members and past president, Mr. R. M. Collins, who originally gave a donation of five guineas, and has now supplemented that by an amount which will pay for the cost of one medal, namely, twelve guineas. (Applause.) Mr. Gregory has also doubled his subscription, also Mr. R. Fraser, and to-day I received from the Hon. John Ferguson a further donation, covering the cost of one medal, so that on the whole, the fund is progressing very satisfactorily. The sooner we make up the amount necessary to provide for an annual medal—I think we have about £170 or £180 now in hand—the better for the Society. It was agreed when first instituted that the cost of the dies and first impression of the medal, should be paid for out of the funds of the Society, for the purpose, mainly, of its being presented to our worthy Honorary Secretary, to whom this Society from its inception has been so very much indebted. By referring to the resolution that was passed at last Annual Meeting, you will note the high appreciation with which Mr. Thomson's services have been received by the whole Society. I can bear my testimony to his indefatigable zeal in carrying out his duties, and without flattering him to his face, in any way, I can say that I hardly believed any man could devote himself to the duties of his office
as Mr. Thomson has done. Under those circumstances, then, it gives me the greatest pleasure to now present him with the first impression of the Thomson Foundation Gold Medal of the Royal Geographical Society of Australasia, Queensland (Applause.)

In receiving the Medal, Mr. J. P. Thomson said: Sir Hugh Nelson, Ladies and Gentlemen,—The greatest honour that any humble worker can hope for is to receive an acknowledgment of his labours from those who are specially qualified to express their appreciation of same. The award of a medal is the very best that any scientific society can bestow upon anyone, and it would be superfluous for me to say that I esteem it a very great honour indeed. More especially do I esteem it by reason of receiving it from the hands of the President, with the entire concurrence of the Council of the Society, the members of which have been able to judge of any services I may have rendered to Geographical Science. But apart from the value of the medal, to have the good wishes and the fellowship of the officers and members of the Society, is a reward in itself. I have been very deeply touched by the numerous communications which have reached the Society with regard to the services I have rendered. I have already alluded to the special pleasure which it gave me to hear what the President said. I apprehend that the greatest benefit that will accrue from the medal, I believe now established, will be the stimulating influence which it will have upon those who may aspire to receive the same reward. There is one thing stands out clearly before me, and that is, that the medal is within reach of any and every member of the Society, as well as to non-members. It is a wise provision that has been made with regard to the medal—that it shall be awarded to those who have rendered eminent services to the Society, besides those who might excel in their literary contributions. By applying themselves to the work of the Society, and doing as one had to do in all conscientious work, members may gain the prize. This is one of the features of the Medal Scheme. The Council will be as ready to recognise the services of others, as they have been to appreciate what little I have done. I can assure you, however, that this award is unnecessary, in my case, so far as stimulation to further effort goes, for I shall always do what I can to advance the Science of Geography in any way possible. I have been engaged in Geographical work now for considerably over 25 years, and let me say that the greatest reward of all is the knowledge that I have been working for a good object and a cause that will last for all time. He who would undertake work of this kind need not aspire to anything. His reward will come if he works conscientiously. I thank the President most sincerely, and the Council, for their acknowledgment of my services in this way. (Applause.)

In moving that the President be re-elected for a third term of office, the Hon. Secretary alluded to the great interest evinced by Sir Hugh Nelson in the work of the Society, and the cordiality existing between the President, Officers and Council, for so long. From the very first, Sir Hugh had shown himself to be an enthusiast, and everything he did had been for the good of the Society, and to the great approbation of all the members.

The motion was seconded by Mr. R. M. Collins, and carried by acclamation.

Sir Hugh Nelson responded, repeating his objection to the step that had been taken, but saying he accepted the honour as being the genuine wish of the Society. He did it, however, on the strict understanding that they did not do it again.

On the motion of Mr. D. S. Thistlethwayte, seconded by Mr. R. Fraser, the Hon. A. Morgan was elected Vice-President of the Society.

The meeting then adjourned to the Library Room for light refreshments.
The Royal Geographical Society of Australasia,
QUEENSLAND.

DIPLOMAS OF FELLOWSHIP.

The following gentlemen have been awarded the Diploma of Fellowship under Section IV, of Clause 3, Constitution and Rules (See page 2 of cover):

Honorary:
His Excellency Sir William MacGregor, K.C.M.G., C.B., M.D., D.Sc., Hon. F.R.S.G.S., etc.
Hon. A. C. Gregory, C.M.G., F.R.G.S., M.L.C., etc.
His Excellency The Right Hon. Lord Lamington, G.C.M.G., B.A., F.R.G.S., Hon. F.R.S.G.S., etc.

Under subsections (a and b):
J. A. Baxendell, Esq.
William Jones, Esq., J.P.
Charles Buttersby, Esq., J.P.
Robert Fraser, Esq., J.P.
Rev. W. M. Walsh, P.P.
E. M. Waraker, Esq.
R. M. Collins, Esq., J.P.
Hon. Wm. Allan, F.R.G.S., M.L.C.
Alexander Muir, Esq., J.P.
C. B. Lethem, Esq., C.E.
D. S. Thistledthwayte, Esq., C.E.

LIST OF MEMBERS.

(P) Members who have contributed papers which are published in the Society’s “Proceedings and Transactions.” The numerals indicate the number of such contributions.

(PP) Past President.
A dagger (†) prefixed to a name indicates a member of the Council.
Life members are distinguished thus (*).
Should any error or omission be found in this list, it is requested that notice thereof be given to the Hon. Secretary.
Foundation Members:


Daniell, E. N., Survey Department, Brisbane.

† Gailey, R., J.P., Courier Building, Brisbane.

P8PP † Gregory, Hon. A. C., C.M.G., F.R.G.S., M.L.C., etc., Mary Street, Brisbane.

Marks, Hon. C. F., M.D., M.L.C., Wickham Terrace, Brisbane.

P1 * Moor, T. B., F.R.G.S., F.R.S. Tas., Strahan, West Coast, Tasmania.

P1 † Muir, A., J.P., F.R.G.S.A.Q., Queen Street, Brisbane.

P29PP † Thomson, J. P., Hon. F.R.S.G.S., etc., Hon. Secretary “Alsatia,” Dornoch Terrace, South Brisbane.

Members:

Ahern, John, L.S., Charters Towers, Queensland.


Almond, T. M., F.R.A.S., Marine Department, Brisbane.


Armstrong, L., J.P., Normanton, Queensland.

Alton, Ralph, Survey Dept., Brisbane.


B.I. and Q.A. Coy. (The Manager), Mary Street, Brisbane.

Bonar, W. M., J.P., Herberton, Queensland.

Borton, Mark W., Lands Office, Barcaldine, Queensland.


Brier, James F., “Royston,” Albion.

* Bright, Allan B., J.P., Charters Towers, Queensland.

Bright, C. E., Inspector Post and Telegraph Dept., Brisbane, Queensland.


Broadbent, Kendall, Museum, Brisbane.

Burkitt, Horace, Corinda, near Brisbane.


Cameron, John, M.L.A., Courier Buildings, Brisbane.

Cameron, W., Geological Survey Office, Brisbane.

Cameron, Charles Christopher, “Coolabah,” Ipswich.

* Campbell, A., J.P., Glengyle Station, Birdsville, Queensland.

Carter, Hon. A. J., M.L.C., Royal Swedish and Norwegian Consulate, 35 Eagle Street, Brisbane.


Craig, Robert, J.P., Cairns, Queensland.
LIST OF MEMBERS.


* Crockan, T., J.P.

Cunningham, J. S., Mundingburra, Townsville, Queensland.
Cunningham, M. W., J.P., Rannes, River Dee, via Rockhampton, Queensland.

Davies, John, J.P., West End, South Brisbane, Queensland.
De Vaux, R. H., Birdsville, Queensland.

PI † De Vis, C. W., M.A., Museum, Brisbane.

Earle, Horace, Johnsonian Club, Brisbane, Queensland.

Eggar, G. W., Survey Dept., Brisbane.

PI Embley, J. T., Liec. Sur., Richmond, Queensland.

Finlay, Miss Laura Lucie, 17 Craven Hill Gardens, Hyde Park, London.
Ferguson, Hon. John, Senator, Rockhampton, Queensland.
Fish, George, Stanley Street, South Brisbane, Queensland.

Fletcher, Victor O., J.P., Talgai Station, via Clifton, Queensland.


Forster, C. E., J.P., Goondi, Johnstone River, Queensland.
Frackelton, Rev. W. S., Ph.D., etc., Presbyterian Manse, Ann Street, Brisbane.

† Fraser, Robert, F.R.G.S.A.Q., J.P., Charlotte Street, Brisbane.

Fullerton, Alex. Young, B.A., L.R.C.P., M.R.C.S.
Gilligan, John, Parliament House, Brisbane.

PI PP Griffith, His Excellency Rt. Hon. Sir S. W., G.C.M.G., M.A., etc., Lieut-Governor, Brisbane.

Grimani-Smith, H. W., J.P., Canmaroo Station, Dalby, Queensland.

Gross, Capt. G., Boys' Grammar School, Brisbane.

Haldane, A.C., P.M., Herberton, Queensland.

Hamley, Henry Hubert, Railway Dept., Brisbane.
Hannafor, S., J.P., Marble Hills, Glenlyon, Stanthorpe, Queensland.
Harbord, H. H., J.P., Maytown, Queensland.

* Harcastle, F. W., J.P., Wyndham, Western Australia, via Port Darwin.

Hartley, S. W., J.P., Rockhampton, Queensland.

Heindorff, H., Messrs. Heindorff Bros., Elizabeth Street, Brisbane.
Heindorff, W., Messrs. Heindorff Bros., Elizabeth Street, Brisbane.


Henderson, W. G., Dental Rooms, Queen Street, Brisbane, Queensland.


Hillcoat, Reginald E. R., J.P., Boomaarra Station, via Donaldson, Q'land.

PI † Hirschfeld, Eugen, M.D., etc., Wickham Terrace, Brisbane.


Hogarth, Mrs. William, Strathmore, Toowoomba.

Holberton, Hon. F. H., M.L.C., Toowoomba, Queensland.


Hughes, J., J.P., Registrar-General, Treasury Buildings, Brisbane.

Hughes, E. F., Dental Rooms, Treasury Chambers, George Street, Bris.
LIST OF MEMBERS.

Hutchinson, L. H., Post and Telegraph Dept., South Brisbane.
Innes, S. N., L.S., Cresswell Downs, Camooweal, Queensland.
Janson, Laurens, J.P., Eastern Boyne, Gladstone, Queensland.
Kemnitzer, K., Grammar School, Townsville, Queensland.
Kenealy, P., Albion, Brisbane.
† Kennedy, A. S., Kingsholme, Fortitude Valley, Brisbane.
Kennedy, Thomas, J.P., Allora, Queensland.
Kelly-Cusack, William George, P.M., etc., Ravenswood, Queensland.

P1 Lamington, His Excellency The Right Hon. Lord, G.C.M.G., etc., Lamington, Lanarkshire, Scotland.
Lee-Bryce, R., J.P., Town Hall, Brisbane.
Lissner, Isidor, J.P., Norman Chambers, Creek Street, Brisbane.
Macdonald-Paterson, Hon. T., M.H.R., Brisbane.
Macintosh, H., Survey Department, Brisbane.
Mackie, Robert, Fairy Meadow, Chinchilla, Queensland.

P1 Maguire, H. R., L.S., Gibbon Street, New Farm, Brisbane.
May, T. H., M.D., L.S A., Bundaberg, Queensland.
* Mathieson, John, Railway Commissioner's Office, Melbourne, Vic.
Matthews, G. S., Imperial Insurance Co., Queen Street, Brisbane.
* McConnel, J. H., J.P., Cressbrook, Queensland.
McDonald-Terry, A. J., J.P., Kirknie Station, Clare, via Townsville, Queensland.
McIver, J. I., J.P., Bulgroo, Adavale, Queensland.
Minto, A. T., Royal Insurance Coy., Queen Street, Brisbane.
Morison, D. N. McKenzie, J.P., Concurry, Queensland.
Moran, R. W., Police Magistrate, Tambo, Queensland.
† Müller, Edmund, 118 Elizabeth Street, Brisbane.
Munro, Jas., J.P., Webster and Co., Mary Street, Brisbane.
Murray, C. W., J.P., Hughenden, Queensland.
Mylne, Thomas, Public Service Board, Brisbane.

P3† Nelson, Right Hon. Sir Hugh M., D.C.L., K.C.M.G., President, Legislative Council, Brisbane.
Nicholas, C. E., J.P., Matlock, Victoria.
Noble, John James, M.A., "Mount View," Red Hill, Brisbane.
O'Donohue, M., C.P.S., Bowen, Queensland.
O'Reilly, Charles, Dornoch Terrace, South Brisbane.
Outridge, P. P., Redland Bay, Queensland.
Owen, Capt. E. C., Railway Department, Brisbane.
LIST OF MEMBERS.

Parker, Francis, J.P., St. Albans, via Monkira, Queensland.
Peek, F. W., J.P., Ferndale, Loganholme, Queensland.
Pennacott, C. E. de F., Prisons Department, Brisbane.
Petrie, Andrew Lang, M.L.A., Sandgate, Queensland.
Potts, John, J.P., 172 Queen Street, Brisbane.
Poulsen, Poul C., Queen Street, Brisbane.
Quaid, J. D., J.P., 101 Queen Street, Brisbane, Queensland.
Queale, Robert, J.P., Dornoch Terrace, South Brisbane, Queensland.
Radcliffe, O., Inspector of Schools, Maryborough, Queensland.
Ralston, W. V., J.P., Queensland National Bank, Brisbane.
Rutledge, Charles Schaefer, c/o Wm. Schaefer, Esq., 12 Wallace Road.
London, X.
Sorrell, John Arnold, Survey Department, Brisbane, Queensland.
Spiers, James, Toowoomba, Queensland.
Starcke, A., Land Commissioner, Rockhampton.
Stuart, A., Queensland National Bank, Brisbane.
* Stevens, Hon. E. J., M.L.C., Southport, Queensland.
Stopford, W. E., Warwick, Queensland.
Strathdee, Robert, “Maudsleigh,” Bundaberg, Queensland.
Sword, T. S., J.P., Land Board, Brisbane.

* Thomas, J. S., Bondi, Sydney, N.S.W.
Thomson, A. A., 198 Pitt Street, Sydney.

P4 Thomson, Capt. W. C., Swan Hill, Brisbane.
Trouton, W. J. J.P., Queen Street, Brisbane.
Uhr, John Frederick, J.P., Wigton Station, Gayndah, Queensland.
Vivian-Williams, J., P.M., Charleville, Queensland.
Waddell, W. A., Tate Tin Mines, via Cairns, Queensland.
Walsh, A. D. Dalgety and Co., Elizabeth Street, Brisbane.
* Walsh, Rev. W. M., P.P., St. Joseph’s, Townsville, Queensland.
Walsh, Nugent, c/o Robertson, Tait and Co., Adelaide St., Brisbane.
Waraker, E. M., F.R.G.S.A.Q., Staff Surveyor, Survey Department, Brisbane.

* Weedon, W., Oxley, near Brisbane.
* Weedon, S. H., C.E., L.S., Box 44, G.P.O., Sydney, N.S.W.
Welsby, Thomas, Darragh’s Buildings, Queen Street, Brisbane.

P1 Williams, Capt. J., c/o Burns, Philip and Co., Sydney, N.S.W.
Williams, Sidney, J.P., Rockhampton, Queensland.
Queen Street, Brisbane.

LIST OF MEMBERS.

**Honorary Members:**


H.I.H. Prince Roland Bonaparte, 10 Avenue d'Iena, Paris, France.

**Honorary Corresponding Members:**

His Excellency Sir William MacGregor, K.C.M.G., C.B., M.D., D.Sc.,
Hon. F.R.S.G.S., etc., Govt. House, Lagos, W. Coast Africa.
John Tebbutt, Esq., F.R.A.S., etc., etc., Private Observatory, "Peninsula," Windsor, N.S.W.
P1 S. P. Smith, F.R.G.S., Surveyor-General, Wellington, New Zealand.
The Observatory, Sydney, N.S.W.
Sir Sandford Fleming, K.C.M.G., LL.D., C.E., Ottawa, Canada.
Major J. W. Powell, Hon. F.R.S.G.S., etc., Director Bureau of
Ethnology, Washington, D.C., U.S.A.
Hon. W. T. Harris, Ph.D., I.L.D., Commissioner of Education, Wash-
ington, D.C., U.S.A.
His Excellency The Hon. G. R. Le Hunte, C.M.G., Govt. House, Port Moresby, British New Guinea.
APPENDIX
(To which reference is made in Annual Report, page 134).

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND.

CONDITIONS OF COMPETITION FOR THE THOMSON FOUNDATION MEDAL.

The Thomson Foundation Medal of this Society (in Gold) will be awarded to the Author of the Best Original Paper (provided it be of sufficient merit) on each of the following subjects:

To be sent in not later than 15th October, 1901.

1.—The Commercial Development, Expansion, and Potentialities of Australia—or, briefly put, The Commerce of Australia.

Note.—[This subject belongs to the department of Commercial Geography and should be treated in such a manner as to indicate very clearly and fully the present commercial life of the Continent, its development under constitutional Government and future possibilities].

To be sent in not later than 15th June, 1902.

2.—The Pastoral Industry of Australia, past, present and probable future.

The competition is open to Members and Non-members of the Society alike, whether residing in Australasia or elsewhere, but not to any Officer of the Society or Member of the Council for the time being. No award of the Medal will be made for a mere compilation, no matter how meritorious.

All competitive communications for the Medal should be written on one side of the paper only, with marginal space on the left hand side thereof. Instead of the writer's name each paper must be identified by a motto. A sealed envelope with such motto written outside, and the writer's name and address inside, should accompany each paper.

The successful papers will be printed and published in the Journal of the Society, fifty reprint copies of each being supplied to the author, free.

All communications, with illustrations for which the Medal may be awarded, must be written in the English language, and will become the property of the Society absolutely.

Papers may be illustrated by such maps, diagrams and pictures as are considered by the authors thereof to be necessary and useful.

Additional subjects for future papers will be announced from time to time.

All communications should be addressed to the Hon. Secretary of the Society, Brisbane.

Hugh M. Nelson, President.

J. P. Thomson, Hon. Secretary.
QUEENSLAND GEOGRAPHICAL JOURNAL

(NEW SERIES).

INCLUDING THE PROCEEDINGS OF THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

17th SESSION,

1901-1902.

J. P. THOMSON, Hon.F.R.S.G.S., Etc., Etc., Honorary Editor.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. XVII.

PUBLISHED AT BRISBANE BY THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

NOTE.—All communications should be addressed to the Hon. Secretary, at the Rooms of the Society, Brisbane.
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NOTE.—All Communications should be addressed to the Hon. Secretary, at the Rooms of the Society, Brisbane, Queensland.

NOTE.—In reference to his paper on the "Discovery of the Darling Downs" (see page 87 of this issue of the "Journal"), the Hon. Arthur Morgan, M.L.A., says:—"Mr. Maiden, Director of the Sydney Botanic Gardens, wrote me in July asking where the statement was first made that Allan Cunningham was buried in St. Andrew's Churchyard." I advised him that I had obtained the information from Heward's memoir. Writing on the 19th August Mr. Maiden says: "I am now able to explain how the statement you make that Allan Cunningham was buried in St. Andrew's Churchyard came about. I have visited St. Andrew's Scots Church (which is the old Presbyterian Church), which, being in a poor neighbourhood, has fallen on bad times and now is rarely open. As a rule chains are on the gates except on Sundays, but I made an appointment with the church officer and obtained admittance. It contains a mural tablet in memory of Allan Cunningham, and with the inscription as stated in Heward's memoir. St. Andrew's never had a churchyard, but was at the corner of the old general churchyard on which the Town Hall is now built. Hence one not familiar with the topography of the place might readily confuse the mural tablet in St. Andrew's Scots Church with the grave in the churchyard alongside. As a matter of fact he was buried in the Church of England portion of the Devonshire Street Cemetery, whence his remains were removed by me to the obelisk in the Gardens. By the way, I also found in the church a mural tablet erected by Allan in memory of his brother Richard, who was killed by the blacks on the Bogan River in 1835, and who preceded him in the superintendence of these Gardens. The presence of the two mural tablets in the Scots Church seems to be evidence that the Cunninghams were really Presbyterians, in spite of the fact that Allan was buried in a Church of England place."—A.M.
THE CLIMATE AND ARTESIAN WATERS OF AUSTRALIA,*

By J. P. THOMSON, Hon. F.R.S.G.S., etc., etc.

The potent influence of climate on the inhabitants of the country as well as upon most of the natural and cultivated products thereof renders it necessary that a consideration of the subject should follow the preceding observations, which I have had the honour of contributing to our Society here, on the physical structure of the Australian Continent.† Few themes are of greater concern to the race than this one, although it is perhaps not always very clearly understood. And yet it forms a very common topic of conversation. Most people will readily express an opinion of the climate of this or any other country, although climate and weather are often spoken of without distinction. The physical constitution of man, as well as the power of conception, varies so greatly in different individuals that mere opinion is of little value upon this important subject. Hence the necessity for its study by an independent department of inquiry. It is most discreditable, nay even humiliating, to the race to find how little this fascinating branch of human knowledge is understood by most people. The air we breathe is the very essence of life and we are so influenced by atmospheric pressure that without such life would be impossible as we are now constituted. Notwithstanding that these vital elements—air and atmospheric pressure—constitute the very core of our existence, as it were, very few take the trouble to understand their composition and the laws by which they are regulated. Although great activity has been displayed in the field of Australian meteorology during comparatively recent years, especially in connection with the widely-scattered

* Read before the Royal Geographical Society of Australasia. Queensland, September 16, 1901.

B—Royal Geo. Soc.
ramifications of the Queensland Weather Office, the climate of the country as a whole has not yet been satisfactorily elucidated. This must be attributed to the difficult nature of the subject rather than to lack of material. As a matter of fact the Australian weather service is a most complete one and will compare very favourably with anything of the kind elsewhere. The records of the Sydney Weather Office extend over a great number of years and are in the hands of one of the most accomplished meteorologists of the day. It is, indeed, Mr. H. C. Russell to whom Australia is indebted for having made the first elaborate attempt to deal with seasonal weather forecasts. The attempt, it is true, may not have been altogether successful, but the material acquired by Mr. Russell in his exhaustive discussion of an admittedly difficult subject will no doubt be useful when again considered. The weather offices in Melbourne and Adelaide have long been established and for very many years the meteorological work there has been carried out under the able and enlightened direction of Mr. R. L. J. Ellery and Sir Charles Todd, gentlemen who have rendered distinguished services to this department of human knowledge alone.

New South Wales has been especially fortunate in having, besides the Government Astronomical and Meteorological Observatory, a private one conducted by Mr. John Tebbutt, of Windsor. It is perhaps safe enough to say that of all native-born Australians none has rendered greater service to astronomical and meteorological science than my good friend, Tebbutt. His whole life and much of his own private means have been devoted to these two departments of human knowledge. Meteorological stations were first established in Queensland about half-a-century ago, the initial centres being at Brisbane and Rockhampton. This State has now a splendidly organised weather service, conducted by Mr. C. L. Wragge, who is probably one of the greatest enthusiasts in our meteorological field. Few indeed can equal, certainly none can surpass Mr. Wragge in his unusually dramatic and realistic weather descriptions, with which the Australian public is now so familiar. These descriptions Mr. Wragge has sometimes supplemented by a series of unique and highly amusing, if not scientific, meteorological prose poems, in which this branch of science is shown under entirely new lights!

Thanks to the progressive and enlightened policy of the Queensland Government, much has been done during recent years in the way of recording atmospheric phenomena at numerous stations spread out over an enormously wide field, extending even beyond what is usually considered the geographical limits of Australasia proper.

One of the latest developments in connection with the weather service of Australasia is the establishment of high level stations.
The movement originated in Mr. Wragge, whose early association with similar experiments on top of Ben Nevis (Scotland) has often enough been alluded to by that gentleman himself. Mt. Wellington, Tasmania, was the place selected for the first of these stations. Here we find the enthusiastic Government Meteorologist of Queensland half buried in the summit snow of this Alpine mountain, the name of which has for so long been associated with some of Britain's greatest achievements. And even now Mr. Wragge is on his high-level-station errand to the Weather God of the Australian Alps. Here, on the very summit of Mt. Kosciusko, an observatory has been established, at an elevation of 7,256 feet above sea-level, where the rain-gauges, thermometers; barometers and other impediments—even to sleeping-bags—of our weather-worn Aëolus are being spread out to the full exposure of the elements. Mr. Wragge, it is almost needless to say, has unlimited faith in the value of these stations, but, somehow or other, his views upon the subject are not shared by his Australian colleagues. It is contended that high-level stations are of little or no practical value in their bearing upon the issue of weather forecasts. And this contention appears to receive a good deal of support from the experience gained elsewhere. It is, of course, admitted that much valuable information may be obtained from elevated positions, bearing upon the circulation and general condition of the atmosphere, and that such would be useful in the discussion of the more complex problems of meteorology. On the other hand, Mr. Wragge maintains that these high-level stations are of great utility, or, to put it in his own style, "of the very first importance," in connection with weather forecasting. In Australia, however, the movement has received very little support outside the Queensland Weather Office. It will be interesting to watch the future developments of this really interesting experiment and to see how far the results will justify the undertaking. If they contribute, even in very small measure, to the success of an already successful weather-forecasting service, then the movement will no doubt be considered a very timely one indeed, deserving of the fullest sympathy and support from all.

Daily forecasts and weather charts are issued from the chief inter-State weather offices, as well as synoptic tables of the temperature and rainfall. The forecasts cover a period of twenty-four hours and are usually supplemented by briefly-written notes upon the general condition of the weather. These are very widely published through the columns of the morning and afternoon newspapers and are thus brought within reach of everybody. The forecasts issued by the Queensland Weather Bureau differ from the ones published by the other Australian offices, in so far as they cover the whole of Australasia, or, as Mr. Wragge will have it, "Australasia and Oceania."
But why this double designation should be so used is certainly not apparent. Perhaps the idea is a revival of the Ptolemaic doctrine, in which it is intended to show that Australasia occupies the centre of the universe. Surely our weather service is comprehensive enough to embrace the whole of the Southern hemisphere. Then why limit ourselves to "Australasia and Oceania"? In a paper contributed to the Australasian Association for the Advancement of Science, at the Adelaide meeting, in 1893, Sir Charles Todd, in referring to the work of the Queensland Weather Office, said: "Following the example of Mr. Ellery, Mr. Russell and myself, Mr. Wragge commenced the system of publishing daily reports of weather and rainfall, and a synoptic map similar to the map we had for some time been issuing in Adelaide. He also co-operated with us in publishing forecasts of the probable weather during each ensuing twenty-four hours with this addition, that he issued forecasts not only for Queensland, but also for the other Australian States; and, as these latter were made without regard to those published at an earlier hour by the several local authorities, it has occasionally happened that the two forecasts for the same colony differed from each other. I will not venture an opinion as to the desirableness of this independent action. Beyond remarking that supposing the judgment and qualifications of the other meteorologists to be equally good, their local experience, and the possession of more detailed information in regard especially to prognostics, clouds, etc., gives them an advantage, and their forecasts should be of equal value and be more frequently justified."* Be this as it may, it is generally considered that the forecasts issued by the Queensland Weather Office have been successful. In this connection, I may just remark that notwithstanding the very complete and widely scattered ramifications of our Australasian weather service, no fundamental law has yet been established, by which meteorologists can foretell any remarkable seasonal changes, which so largely influence our pastoral and agricultural industries. Nor yet indeed has any satisfactory explanation been given of the probable cause of protracted droughts or seasons of maximum rainfall. Meteorology, it is true, is yet in its infancy, in this part of the world at least, and if an elucidation of our climatic changes is to depend upon an accumulation of recorded data rather than upon purely abstract scientific principles, based on deductive premises, then a generation of observers must pass away before we can even hope for satisfactory results. These remarks are not intended to in any way question the value of the very excellent work of the Australian weather offices—work that will bear very favourable comparison with anything of the kind in other countries.

* Report of the Fifth Meeting of the Australian Association for the Advancement of Science, Adelaide, 1893, p. 251.
They are simply offered with the intention of showing that meteorological observations will not only have to be greatly multiplied over the whole of the Australasian region, but longer time is needed to render their results of more practical value. For instance, Central Australia, New Guinea and the many island groups included within the geographical limits of Australasia, have not yet been meteorologically investigated. We know just a little of the climatic conditions of these widely scattered regions, but a very great deal has yet to be known. For instance, we often enough feel the effects of the Equatorial and Antarctic disturbances that sweep across the greater portion of our continent and cause our shores to be lashed by the waves of a tempestuous ocean. But fuller information is needed of how these disturbing atmospheric movements originate, their distribution, duration and final termination.

In connection with weather changes, an interesting and at the same time vitally important subject awaits consideration. I refer particularly to the influence of our Australian climates upon the European inhabitants of the country, more especially upon the native-born British Australian. In this land a distinct Austral-branch of the race has been planted and nothing will be more interesting than to note the extent of climatic influence upon the physique and character of the people. The subject has already received some little attention at the hands of a few of the more progressive and enlightened members of the medical profession. But no generally accepted conclusions have as yet been arrived at.

The geographical position of Australia places it within the influence of two powerful atmospheric zones of unequal temperature. Two-thirds, if not the whole of the continent, is affected more or less by the widely circulating equatorial air currents—to which I have already alluded—that frequently sweep down upon our shores with rapidly developing energy across the Indian Ocean. These strike our seaboard with enormous cyclonic force, carrying with them great dense masses of vapour clouds that condense and empty themselves in the form of heavy precipitations, which sometimes produce abnormal floods over the low-lying portions of the country. It is natural enough that the northern or tropical division of Australia should be more largely influenced by these equatorial disturbances than the southern portion of the continent, although at times their extreme southern limit reaches a high parallel of latitude. On the other hand, we are sometimes, although less frequently, visited by the cold Antarctic cyclones that overlap extensive southern regions of our country. The opposing equatorial and Antarctic disturbances often coalesce and pour out the vials of their combined wrath over land and sea. These great storms usually occur in the summer months only.
That the climate of at least the southern portion of Australia is influenced to some extent by the south Polar air and ocean currents as well, there cannot. I hold, be any reasonable doubt whatever and in the interests of science and commerce it is greatly to be desired that this interesting subject be very fully investigated. Towards the solution of this important problem much will doubtless be done by more extended knowledge of the Antarctic regions, when further exploration of far southern latitudes is accomplished by the expeditions now sent out. The presence of enormous masses of Polar ice in Australian waters is by no means uncommon, and when it is consider how comparatively narrow the belt is which separates us from the actual northern limit of the Antarctic ice-drift, it will probably be admitted that there is really some affinity between our own climate and that of far southern lands.

The Australian continent as a whole is very compact—the physical structure and general outline being little broken or distorted—and the range of climate fairly wide. There are three distinct and primary climatic zones—tropical, sub-tropical and temperate—and these may be subdivided into local regions, representing the climate of the sea-board, the mountains, the table-lands and the great central desert division. On the whole, the tropical climate is by no means unhealthy to Europeans, although it has often been hastily condemned. On some of the low-lying coastal regions in the immediate neighbourhood of swampy and marshy lands, malarial fever is readily contracted by people who are not acclimatised, and by those who rashly expose themselves. The subject, however, is a difficult one with which to deal; so many contributing causes have to be considered—physical condition, food, clothing, mode of life and other predisposing factors requiring special elucidation before the extent of absolute climatic influence can be properly estimated. Individual opinion, even individual experience itself, is by no means satisfactory in a matter of this kind, for the opinions as well as the physical condition of man rarely harmonise. It has been said by those who have lived for some time within the eastern tropical coastal region of Australia that "the climate is very trying to white men, who must rapidly deteriorate in physique should they live there continuously."* On the other hand there are others of equal experience who hold the opposite view, maintaining that the tropical climate of north-eastern Australia is exceptionally healthy to Europeans. Unjustifiable prejudice operates very considerably in this respect, but all things considered, I am inclined to the belief—and I speak in the light of several years' experience of professional life in the tropics—that continuous domicile in any tropical country is not

favourable to perfect health; this is especially so in the case of females, who seem to be particularly susceptible to the influence of climatic changes. Within the tropical belt there is certainly a feeling of uncomfortable inertia, which seems to insinuate itself upon those who are even physically healthy, and this has a persistent tendency to increase rather than to diminish.

Many of the old climatic troubles associated with the early pioneer colonization of the country have partially or almost wholly disappeared with the extension of settlement, and localities that were formerly considered unhealthy are not so now. In fine, Europeans of temperate habits may live in tropical Australia in the enjoyment of very good health. They of course require to be acclimated. It should, however, always be borne in mind that a tropical climate is never so salubrious as a temperate one.

Within the temperate zone, the climate, of course, varies greatly with the latitude, the elevation and local physical conditions of the country. Thus, in the southern and south-eastern portion of the continent the climate is cool and remarkably healthy throughout the whole year. There are only two or three summer months when the temperature is sometimes abnormally high and hot winds more or less prevalent. Along the sea-board of this division there is a larger percentage of moisture in the air than is experienced in the inland regions, where extreme dryness is the chief climatic feature. The effects of humidity are felt more keenly on the low-lying and deltaic lands of river valleys, where the alluvial soils absorb and retain a larger percentage of the rainfall than in regions where good natural drainage exists. On the table-lands of the New England, the Monaro and other highland districts, the climate is at all times salubrious. In the upland mountain regions of the southern Alpine chain, on the Blue Mountains and the Liverpool Range, the cold is severe in winter, but during the summer months the air is sharp and bracing and the climate most delightful. In the great central basin of the continent the atmosphere is excessively dry and intensely hot. There is little or no rainfall there and most of this part of the country is a vast, arid desert, altogether uninhabitable in its present natural state. Some very remarkable experiences are recorded of the excessive heat and dryness of the climate of central Australia. In the shade the temperature often rises to 120° and 125° Fahr., the heat waves at times being terrific, and humidity practically nil. At such times the scanty vegetation withers up and the birds drop dead from the trees, whilst animated nature in general is suspended. The experience of some of the early explorers in this connection is often enough amusing, although greatly trying. On one of his exploring expeditions, my friend, A. C. Gregory, had several hard gutta-percha drinking mugs.
One day these were left in camp on top of the table. When the explorer returned to camp in the evening the greatly-valued mugs had disappeared altogether—well, not exactly altogether, for a deposit remained in the form of a liquid glutinous substance, on the spot where the mugs had been left standing. On another occasion Gregory was camped about a quarter of a mile from a creek, which had to be swum. The explorer at the time wore a pair of thick, heavy moleskin trousers, which were completely saturated in crossing the watercourse in question. But, when the camp was reached it was found that the whole of the absorbed water had disappeared altogether and Gregory's trousers were quite dry. This it should be borne in mind occurred within a quarter of a mile's walk to camp.

The western plains of New South Wales are remarkably fertile, especially for grazing purposes, and with a good supply of artesian water the soil would be eminently suitable for agriculture.

The Riverina climate is now famous for its healthfulness, especially so for weak-chested subjects, the air being exceedingly dry and the temperature uniformly high. In Queensland, the Darling Downs and the western districts possess one of the finest climates of the world, certainly the very best of Australia. For consumptives and those with weak respiratory organs, it is unsurpassed anywhere; there are, indeed, several recorded cases of actual cures having been effected in this part of the country—cases which were considered hopeless. The curative properties of this western climate have been so fully recognised by the medical profession and by the Government that provision has now been made for the separate and special treatment of consumptive patients at Dalby and Roma. The climate is characterised by the extreme dryness of the air, which renders the summer heat endurable and much less oppressive than within the coastal region, where the humidity is sometimes uncomfortably great, especially in the tropical zone. The winter months of the inland districts are delightfully cool and bracing; light frosts sometimes occur, but they are never severe nor of long duration. Of all parts of the world the climate here most resembles that of Italy.

There is nothing extravagant in the statement that the prevailing climate of the great tableland region extending from the Main Range at Toowoomba, in Queensland, to the southern limit of the New England plateau, in New South Wales, is unsurpassed anywhere. Over the whole of this most extensive tract of elevated country, which culminates in Ben Lomond, the climate is of the most perfect type. During the hot summer months of the coastal region the temperature of this great upland zone is comparatively low, the mean for the whole year being about 56° at Armidale and during the winter about 46° Fahr. Most of the country towns along the overland railway line,
that traverses this portion of the continent, are now well-recognised health resorts.

For some unaccountable reason, most probably arising out of a combination of ignorance and prejudice, the climate of many of the settled and habitable portions of Australia is too often alleged to be uncom-
fortably hot and enervating, especially so in the coastal districts of Southern Queensland. That this is not the case must be fully apparent to those familiar with the published records of the weather offices and with the vital statistics that are issued to the public from time to time. The midsummer months are naturally warm, even hot at times, but there are few, if indeed any, sudden changes during that period. In point of fact the temperature here is remarkably uniform in range, the nights are comparatively cool and hot winds are almost entirely unknown. In winter the weather is most delightful. the climate then being even superior to that of Naples. Beautifully clear skies and a dry atmosphere are the ruling climatic features of the winter season in south-eastern Queensland. The westerly winds sometimes occur about this time in the Moreton Bay district, when some slight discomfort is felt, but each visitation is seldom of longer duration than three days.

The most important factor of our Australian climate is that of rainfall. Land without an adequate water supply is useless for either pastoral or agricultural purposes. A vast portion of the continent has a mean annual rainfall of less than ten inches and consequently it is of little or no value whatever, unless artificially watered by irri-
gation; this is especially the case with the great central depression, where immense areas of waterless desert country obtain. Considering the great extent of the continent and its wide climatic range, the rainfall of Australia is very unequally distributed over the whole of the terri-

tory. This even occurs in localities where wet and dry seasons prevail. A glance at a rainfall map will readily show that this is indeed very marked along the eastern Pacific slope, where the greatest pluvial measures have been recorded. The Cardwell and Mackay districts top the score, the former with a mean annual rainfall of some 148 inches. Arnhem’s Land follows with about 60 inches. The Australian Alps, the Tweed and Mary Rivers come next, each with 50 inches. These isolated and somewhat limited regions are distributed over a wide geo-

graphical range, extending from the northern to the southern limits of the continent, and they are, moreover, separated by extensive tracts of country, or distinct climatic zones, over which the mean annual rainfall is not greater than 30 inches. At Cardwell and Mackay, which lie wholly within the tropical rain belt, the isopluviose lines of 40 to 70 inches are very closely packed together. The heavy rains in these latitudes seldom extend beyond the coast range, but they are mostly
precipitated over the deltaic lands of the rivers and valleys and on the
eastern slope of the range. In these districts there is a regular wet
and dry season—the former occurring in the months of December,
January and February, when the atmosphere is heavily laden with
moisture; and the shade temperature, of from 80 to 90 degrees, exceed-
ingly oppressive. During this period there is a prevailing north-east
wind, which changes at the end to south-east and continues in that
quarter throughout the remaining nine months of the year.

In the Cardwell district, the tropical scrubs sometimes ascend the
ranges to a height of over 2,000 feet, where the temperature is lower
than that to which they naturally belong. But such cases only occur
where the volcanic soils are exceptionally rich.

In Arnhem's Land, or all that high tableland portion of the
Northern Territory of South Australia, north of the 16th parallel,
the annual rainfall averages about 60 inches, and is more equally and
generally distributed than in any other portion of the continent.
The climate of this upland region is, of course, tropical all the same,
but the mornings and evenings are generally cool, and the usual
discomforts of the moist air of the low-lying eastern and northern
costlands are not so much felt here. On the lowlands of this North-
erm Territory the climate during the wet season is very damp and hot,
the shade temperature ranging from a maximum of 96° Fahr. in the
day time to a minimum of 65° during the night. The dry months,
from the beginning of May to October, are, however, comparatively
cool and agreeable. The humidity during this season of the year is
not excessive nor is the heat intense, the maximum shade temperature
of the day time being 89° Fahr., and the minimum at night 56°.

A remarkable feature of the prevailing climate of Australia is
exhibited in the rapidly diminished rainfall across the Great Dividing
Range of the southern and eastern cordillera. There is an immense
belt of country comprising the western plains of New South Wales
and Queensland, Cape York Peninsula, the whole of the country
bordering upon and extending far south from the head of the Gulf
of Carpentaria, most of the southern portion of the Northern Terri-
try, and the Glenclog and Kimberley districts of the western side
of the continent—most extensive regions in all—where the mean
annual rainfall does not exceed from 10 to 30 inches.

Except in the extreme south-west corner of Australia, where the
isopluviosé lines of 20 and 30 inches are fairly well established, the
rainfall of the western division of the continent is very scanty. It is,
in point of fact, limited to a narrow belt along the sea-board, where
the mean annual precipitation averages no more than from 10 to 20
inches. In the Murchison and Gascoyne districts, extremely heavy
dews occur, which, no doubt, compensate to some extent for the lack
of an adequate rainfall. In the northern portion of Western Australia, the wet season commences in December and usually ends in March. And it is during this season the destructive cyclonic storms are experienced. These are of the true equatorial type and move along with enormous velocity, often causing great damage to property and not unfrequently loss of life. The wet season of the southern district of this State is from April till October, during which time most of the annual rainfall is recorded. The climate here is temperate and in every respect congenial to Europeans; fruits and agricultural products are plentiful and the forests yield an abundance of very valuable timbers. In the Kimberley district the heat of the summer months is intense, but during the cool season the climate is in all respects agreeable. In some of the northern districts of this western side of the continent, the temperature, although very high, is by no means inimical to health. The atmosphere, as a matter of fact, is remarkably free from moisture, and the heat less oppressive than in other parts, where the humidity is great and the thermometer lower. On the tablelands of the interior of this part of the country the climate during the greater portion of the year is delightful, but of the far eastern or central districts little is known beyond mere report, which in most cases is unreliable.

The territory of South Australia is by no means abundantly watered, the rainfall throughout being probably less than in any other part of the continent. The reason for this is not far to seek. As a matter of fact the colony occupies a central position, sandwiched as it is right in between all the others. Geographically it lies within the region of least rainfall, except in the extreme North and South, and it is fanned by the heat waves of the interior. All the same, the climate is very healthy and agreeable. The atmosphere is exceedingly dry, the mean degree of humidity at Adelaide being no greater than 57. For purity and dryness it equals that of Algeria. The skies are very beautiful, even surpassing those of Italy. On the whole, the climate more closely approaches that of the South of Spain than anywhere else. In the upland or highland regions there is a genial temperature, the winter months being free from excessive cold. It is, however, on the plains where the heat of the summer is most severely felt, the temperature here often exceeding 100° Fahr. The hot winds, too, are most oppressive and very trying to animal and vegetable life. The great heat waves usually occur in the months of December, January, and February, when the thermometer sometimes rises to 110° and 115° Fahr. in the shade. After the rainy season of the winter months the dry weather sets in and the country assumes the peculiar thirsty appearance characteristic of drought. In the neighbourhood of Adelaide, the annual rainfall is from 20 to 30 inches. the average
being about 22 inches, in the wettest districts. Along the shores of
Spencer's Gulf, over Eyre's Peninsula and the country about Flinders
Range the rainfall is very scanty, probably from 10 to 20 inches an-
nually.

During the cool months of June, July, and August, when the
lowest mean temperature is about 51.5°, the weather is very delightful.
Frosts are only of occasional occurrence on the plains and hilly country,
whilst the shallow surface pools of water are sometimes covered by a
thin sheet of ice. There has been an occasional fall of snow on the
high mountain ranges, but such a thing is of very rare occurrence in
this part of the continent.

Taken all through, then, the climate of this South Australian
Province is very healthy and most agreeable to Europeans. It is not
a well-watered country—not indeed so well as the eastern provinces—
it is true, and the summer heat is not always appreciated, even by
those most accustomed to it. But the same may be said of almost
any place, and the bare assertion standing by itself really means very
little, after all.

The geographical position of the south-east corner of the continent
contributes very materially to the superior climatic conditions which
prevail there. The climate of Victoria is indeed most congenial to
European life. The maximum shade temperature is about 111° Fahr.,
the minimum 27°, and the mean 57°. The highest temperature ever
recorded in the sun here was on the 4th January, 1862, when the
thermometer registered 178.5°. For about three nights during the
year the mercury falls below freezing point, and on an average of four
days it rises above 100°. The mean atmospheric pressure for some 29
years was 29.94 inches. The average annual rainfall here is about
25½ inches.

This State, as a matter of fact, possesses all the advantages of a
temperate climate, a condition which has no doubt contributed greatly
to the largeness of its European population and consequent develop-
ment of its resources.

In dealing somewhat briefly with the subject of climate, upon which
the industrial life of the continent so greatly depends, I may just re-
mark, that a good pastoral country requires an adequate water supply,
either derived from rainfall or from artesian sources. The former is
natural, inexpensive and permanent; the latter costly and limited.
The wants of the pastoralist and agriculturist are unequal, although
both are equally dependent upon the products of the soil. Grass or
any other form of vegetation can only grow in soil where there is
sufficient moisture to sustain it, and this necessary want can only be
supplied, naturally, by rainfall. The more uniformly this is distributed
throughout the year the better will the country be for pastoral occupa-
tion. On the other hand, the agriculturist requires sufficient rainfall during six months of the year, but his crops of grain and his vines would be little affected if the other six months were rainless. But too much rain is injurious to grain crops, for while it requires more than 20 inches of rainfall in the summer, for maize, such a climate would be unsuitable for the successful cultivation of wheat.

To the agriculturist, nothing is more important than climate, and reliable information upon this vital subject is essential to the successful cultivation of the soil, both here and elsewhere. Although Australia is pre-eminently a grazing country there are, nevertheless, extensive agricultural areas where grain crops may be profitably raised. In the eastern portion of the continent especially, there is a long belt stretching northerly from Jervis Bay along the coast to Broadsound, where the rainfall is more than 20 inches during the summer months, which is the rainy season there. Here we have an extensive climatic zone, lying between the 22nd and 35th parallels, favourable to the cultivation of maize. Outside and to the west of this region, including all the coastal country from Adelaide north to Toowoomba, the rainfall is more than 10 inches during the six winter months, which represent the agricultural season there. These are merely the natural agricultural regions in eastern extra-tropical Australia, or that portion of the territory where the climate is favourable to the cultivation of maize and wheat. In many other districts there are enormous areas of rich soil, whose highly-productive qualities could be profitably utilised by irrigation, were adequate means provided for the conservation of water. But this is a subject upon which comparatively little attention has hitherto been bestowed, although it is of the most vital importance to the nation, and one that cannot be much longer neglected if the resources of our country are to be adequately developed.

Hasty and ill-informed writers have often spoken of Australia as an intensely hot and drought-stricken country, and such statements have usually gone forth to the world unchallenged. As a matter of fact, such highly-coloured and often sensational portraiture are not only misleading but most erroneous. They are for the most part the outcome of ignorance, prejudice, or of preternaturally excited imagination. We have droughts in Australia, but they are by no means the ruling climatic features of the country. They occasionally occur here as in other countries, and do a great deal of damage whilst they last. But, fortunately, these droughts are not common. They pass away, leaving the vegetation in places parched and withered, and the water supply greatly diminished, but not wholly exhausted. The herbage, however, possesses great vitality, the soils are rich and exceedingly fertile, so that after the return of the regular rains, nature again smiles upon the face of the country and the vegetation is restored to wonted luxuriance.
The heat waves that sometimes sweep across portions of the continent are very distressing whilst they last. It is during such happily rare and phenomenal occurrences that the thermometer has been known to register 120° Fahr. in the shade, at some of the inland towns. The waves of heat develop very rapidly, and within such comparatively brief periods the air is nearly always dry, though abnormally hot.

The summer months usually commence with heavy thunderstorms accompanied by abnormal precipitations, and sometimes destructive falls of hailstones. These last are mostly in the shape of great pieces of jagged ice, with sharp angular edges, that are occasionally hurled to the earth with dangerous force. They smash up the roof tiles and slates of houses, and often pierce sheets of galvanized iron roofing, as well. Fortunately these phenomenal hail storms are purely local, being distributed over very small areas of country, and consequently their ill-effects are only felt within narrow limits.

ARTESIAN WATERS.

The subject of this section is one of the very first importance to the Australian public in general; to the great pastoral and agricultural industries it is more particularly so. Were the rainfall equally distributed over the whole of the continent there would be little need for artesian wells. Unhappily this is not the case; there is, indeed, a very unequal distribution of the annual rains, a condition of climate to which I have already alluded in the preceding remarks. Whilst the coastal regions, with but few exceptions, are abundantly watered, the great inland plains have suffered greatly from a thirst that could only be quenched at long and uncertain intervals. Such was indeed the state of the country only a few years back, before the discovery of artesian water, and it is even so still in many parts. Formerly, and even now the pastoral industry was heavily handicapped in dry seasons, the loss of stock through severe droughts being very great and in many cases ruinous. Happily those days of unpropitious omen are slowly passing away, and the uncertainty of the seasons is to some extent no longer associated with doleful forbodings and unpleasant recollections.

One of the first to publicly express an opinion in favour of the existence of artesian water in Central Australia was the late J. E. Tenison-Woods. This was done as far back as 1863, in a paper read at a meeting of the British Association. Tenison-Woods, who was a most intelligent observer, had travelled a good deal in Central Australia, and from an enlightened study of the rock structures and certain surface indications there he was led to believe that an underground supply of water existed in that portion of the country. It was by no means an easy matter to confirm this view by actual experiment, and so the matter was allowed to rest for some considerable time. Mean-
while the Geological Survey Departments of the several States were in
the field collating all available information having any direct or in-
direct bearing upon the subject. Indeed, so vitally important was
this single branch of inquiry considered to be that large sums of money
have been expended in pursuing it, to say nothing of the enormous
consumption of human energy in the field of exploration whilst search-
ing for artesian supplies. Had failure attended these efforts, the loss
to the country, both directly and indirectly, would have been very
great indeed. It is, however, most gratifying in the highest degree to
allude to their complete success, so much so that the water-bearing
beds, which were at first believed to occupy a comparatively limited
range, have been found to extend over an enormously large area of
the continent. How much further these water-carrying strata may be
developed, outside the region already mapped out, can only be con-
j ectured at the present stage of the inquiry, which has yet to be greatly
extended ere the field of investigation has been completely exhausted.

Although the whole of the Australian States have taken an active
part in the somewhat minute and altogether elaborate search for
artesian water, it is to Queensland the greatest credit is due for having
discovered the existence of an unlimited and practically inexhaustible
supply in the lower cretaceous formation, that underlies the vast rolling
downs of the western portion of that State. It is, perhaps, safe to
say that no greater service could have been rendered to the pastoral
and agricultural industries of Queensland than that performed by the
enlightened and progressive Government of the country in connection
with the artesian water supply.

The examination of the great Western Plains has been conducted by
the late Government Geologist, Dr. R. L. Jack, and his assistant at the
time, Mr. A. Gibb-Maitland, who, with the Hydraulic Engineer, Mr. J.
B. Henderson, have found the water-bearing beds of the lower creta-
ceous formation extending over some 374,358 square miles of country.
Although this discovery greatly exceeded the expectations of those
interested in it, there is reason to believe that the formation in which
the artesian supplies are stored extends far beyond the western bound-
dary of the State. Indeed, the evidence in support of its extension over
the whole central region of the continent, formerly occupied by the
cretaceous sea, is by no means inconsiderable. Dr. Jack found the
lower cretaceous beds cropping out at several places on the surface, and
observed that these were crossed by some important rivers. He
further ascertained that the outcrops consisted of a highly porous rock,
now called Blythesdale Brays tone, capable of absorbing water greedily,
and these bibulous beds at the base of the formation constitute the
intake of the great underground water supply. The artesian area ex-
amined by the Government Geologist of Queensland has been mapped
out in detail, the result of the examination having first been made public through the medium of an interesting paper contributed by Dr. Jack to the Brisbane Session of the Australasian Association for the Advancement of Science, and subsequently published as a bulletin by the local Department of Mines.

Several of the inland towns and many parts of the extensive rolling downs of Western Queensland are now watered by the numerous artesian wells, or bores, as they are more correctly called, that are scattered over that portion of the country. Many of these are located far away back to the western boundary of the State, in places where formerly the water supply was both scanty and uncertain—where in times of drought the country was little better than a desolate wilderness. Although several of the wells are of the sub-artesian class, a great number yield a true artesian supply of water derived from very great depths. The water from many of the bores is of a fairly high temperature and some is suitable for irrigation purposes. About the middle of 1896 there were altogether some 473 artesian bores in Queensland, the aggregate depth of the whole being 543,532 feet, according to the official returns. The overflow from 317 of these wells amounted to over 193 million gallons of water daily. There are now about 440 true artesian wells in Queensland, yielding 266,377,056 gallons per day—1900. Some 27 of these bores are located in the coastal districts, east of the Great Main Dividing Range, and the balance in the Western regions. Of the latter the more important ones are at Bimerah Run, Charleville, Winton, Charlotte Plains, Burrandilla, Coongoola, and Cunnamulla. These have been put down at from over 1,000 to 4,800 feet in depth. At Charleville public baths have been erected, in which the luxury of a dip into hot artesian water may be indulged.

It ought, perhaps, to have been mentioned, that of the immense territorial area over which the lower cretaceous formation is developed in Queensland alone, some 106,000 square miles are known to be water-bearing. This area is altogether exclusive of some 13,200 square miles of country in the south-west corner of the colony, which have not yet been examined.

Our knowledge of the extent and conditions of the water supply of Queensland justifies a most pronounced belief in the future possibilities of the State as a fertile field for successful irrigation. And this is not all, for it be found that the water-carrying beds of the lower cretaceous formation extend into the central basin of the continent, then there is the happy prospect of converting the great desert areas of the interior into fertile regions for the production of the grape vine and grain, as well as other cultivated products of the soil. This is a view the realisation of which may be considered altogether impracticable, but if it be considered that some twelve million acres of barren land
in the Sahara Desert have been rendered fruitful by artesian wells, the idea of utilising the waste areas of Central Australia by similar means will probably be looked upon as feasible enough. As a further example of enlightened human enterprise in the cultivation of the soils and rendering them fertile by artesian water, we are told that in 1886 Algeria sent ten and a half million gallons of wine to France, the grape vines in the former country having been cultivated in irrigated fields. For richness of soils and dryness of climate the great inland plains and table-lands of Australia are nowhere else surpassed. An adequate water supply is all that is needed to render them fertile, and this may now be obtained from the effective artesian wells to which I have alluded, and from others, where the underground storage reservoirs of the far interior have been tapped. Indeed, it is only a matter of time when Australia will be able to send out to the markets of the world large stores of grain and enormous supplies of the choicest wines. Already the South Australian and Victorian wines are becoming favourably known for excellence of quality, and even some of the wines produced in Queensland have acquired a capital local reputation. Indeed, it is considered by competent judges that the Stanthorpe district is one of the very finest localities in the whole of Australia for the cultivation of the grape vine, although the industry has barely been established there.

Well-boring in New South Wales, Victoria, South Australia, and Western Australia is not so far advanced as in the western districts of Queensland. In point of fact the prospect of obtaining any important artesian water supply in Victoria is by no means encouraging. The same may be said of some parts of New South Wales, for it is almost certain that no artesian water-bearing beds exist in the great central basin of the Darling River, South of Wilcannia; experimental wells have been sunk there, but with indifferent success, the water being invariably salt.

The absence of an adequate water supply in this important part of the country has been a serious drawback to settlement. This, indeed, has been so fully recognised by the Government that an elaborate scheme of water conservation is now being carried out to supply the want. It chiefly consists of the construction of a series of weirs across the Darling River and some of its tributary streams. The scheme seems to have a two-fold object in view, one to conserve or dam back the waters of the river, which may thus be rendered available for irrigation; the other to render the main stream more efficient for navigation purposes. The whole work itself is of gigantic proportions, and its ultimate utility will be watched with interest should the Government decide to carry out the undertaking to a successful termination.
The prospects of an artesian water supply for the northern and north-western plains of the colony of New South Wales appear to be very favourable indeed. Here we probably have a development of the water-bearing strata that crop out in Queensland, as it has been estimated by Professor David that within these regions the cretaceous rocks extend over an area of about 62,000 square miles. The borer’s drill has already pierced the porous strata, and news came to hand some time ago through the Press that “water has been struck at a depth of 2,585 feet in the Finger Post Bore, situated on the Angledool-Cadooga Road, near the Queensland border, the bore yielding 200,000 gallons daily.”

What is known as the Mallee Country, in Victoria, has recently been subjected to geological examination. This was undertaken by the local Government Geologist, who was at the time assisted in the work by Dr. R. L. Jack, of Queensland, the object in view being to ascertain if artesian water could be obtained there. It has, I believe, been reported that there is little prospect of finding any considerable underground supply in that portion of the State at least.

The province of South Australia, bordering as it does upon the western limits of the water-bearing beds of the lower cretaceous formation in Queensland, and embracing a very large portion of Central Australia, is a State where in places large supplies of artesian water will probably be found. This view, which is based upon something more than mere conjecture, rests chiefly on the evidence afforded by the physical conditions and rock structures of the central depression of the continent, as well as the numerous thermal and cold springs that are scattered over hundreds of square miles of the country, to which the late J. E. Tenison-Woods alluded, many years ago.

In Western Australia the physical and geological conditions differ somewhat from those to which I have just referred. Here the palaeozoic rocks are pretty largely developed and the auriferous areas extensively distributed over large portions of the State. In the mining districts, where the granite rocks exist, a large supply of artesian water has not yet been obtained, although the strata on the Coolgardie Goldfield have been pierced by the borer’s drill to a depth of 2,600 feet. The principal water supply to the mining centres is chiefly obtained in the numerous shafts that are sunk in searching for minerals and in the lake basins. In both sources the water is salt, and for domestic use it has to be condensed. In the country west of the Darling Ranges the occurrence of artesian water-bearing rocks has been noted, and it has been proved beyond doubt that a large underground supply of fresh water exists there. At the Perth railway terminus the municipality workshops and township near the city derive their water supply from a couple of effective bores there. Besides these there are several overflowing artesian wells in this western portion of
the State, notably the ones at Guildford, Melville Park, Geraldton, Onslow, and Bunbury. In the northern portion of Western Australia, where the pastoral industry has been established, the water supply is obtained chiefly from natural springs and shallow wells.

Notwithstanding all that has been said in favour of the existence of artesian water-bearing beds in this great country there seems to be little doubt but that the conservation of water is a subject having a very material bearing upon the resources of the State of Western Australia. In most places the rainfall is but scanty there, and the water-courses are, consequently, insignificant and almost dry in the dry season. This, in point of fact, is one of the peculiar features of the inland rivers of Australia. They are abnormally large after the annual and sometimes exceptionally heavy rainfalls, but the water soon dries up or disappears altogether, and then the country assumes a very dry and parched up appearance.

Inseparable from this subject of water-supply is the one which deals with the distribution in the lower cretaceous beds and ultimate destination of the artesian water itself. The theme, besides being interesting and important, is also a controversial one. For some reason difficult to understand, Australian geologists have conceived the idea that because the porous strata, which underlie the surface at varying depths, are capable of absorbing and are known to actually absorb large quantities of water, there must be some compensating outlet. The theory—for the subject is purely theoretical if not indeed chimerical—has lately occupied a good deal of attention in geological circles. It has, in point of fact, been seriously discussed before learned societies and in the public prints, and this discussion has not always been free from excited animation, though friendly enough in its way, or at least professedly so. The view most persistently insisted upon is that there is a subterranean channel of communication between the cretaceous water-bearing beds and the sea, through which large volumes of underground water pass to the ocean. That the theory in its very inception was based upon no solid grounds is clear enough from the fact that the outlet of this alleged channel has been conveniently shifted from time to time from one locality to another until the whole southern and a portion of the northern coast of Australia has been pretty well sampled. First, the artesian water was said to leak out into the sea west of Cape Otway, then again between Warrnambool and the mouth of the Murray River, next in the Gulf of Carpentaria, and lastly all these old happy hunting grounds have been abandoned in favour of the Great Australian Bight. This, indeed, is the very latest development of the time-worn theory, and is an outcome of the recent geological examination of the Mallee Country, in Victoria. There was at one time some hopes of the theory dying out altogether, and this would indeed have
been its fate long ago but for the well-merited success which attended the search for artesian water in Western Queensland. After the splendid work carried out by Dr. R. L. Jack in this successful search it was only natural that his views upon the subject of underground water should meet with very general acceptance. Thus it was that when he expressed a decided opinion in favour of the leakage theory at the Science Association's meeting, to which I have alluded in the preceding remarks, it was considered by most people that no further proof was needed. This unquestioning acceptance of a view, the hypothetical basis of which even its author himself would freely acknowledge, is but one of the very many examples in life of how fairly intelligent and well-informed people will go through the world with their eyes shut—it helps to show that, taking the human race as a whole, there are really very few men who think for themselves. Unfavourable as this statement may appear, it is the only reasonable conclusion one can arrive at after due consideration of what seem to me to be the facts of the case. The resurrected leakage theory, as promulgated in the public Press by a gentleman much interested in well-boring, seemed to me so greatly opposed to our geographical perception of the physical structure of the continent, that I was obliged, in the interests of geographical knowledge, to challenge it. This was done by me in a short address delivered from the chair of our Society, at the January meeting, 1896.* The substance of this address, which formed the subject of a critical paper contributed by Dr. R. L. Jack to the Royal Society of Queensland, is here given with such additional information bearing thereon as subsequent events have brought to light.

"I spoke," said Dr. Jack, "of two kinds of leakage which might possibly affect the bivalve beds at the base of the lower cretaceous formation: First, a leakage into the sea—suppose the beds to dip seaward and beneath the sea, and either to rise to the ocean bed or to dip at a lower angle than the slope of the sea bed, there would be a leakage into the sea. And, again, suppose (what we believe to be actually the case) the outcrop of the beds to occur at gradually lower levels till it attains the sea level, there would be a leakage in the form of springs, or into river beds all along the line."† He then goes on to refer at some length to the "evidence" in favour of the first kind of leakage, and in the same critical paper, of which I have spoken, advances a step further by making the rather sweeping assertion that, "In the case of Australia the only possible escape" (for the surplus artesian water) "is beneath the ocean, and although we cannot observe this leakage with the bodily eye, we may believe in it as we believe in

many things which we cannot see." The idea of a second kind of leakage is dismissed altogether with the remark that there is no evidence in its favour.

Now, no one entertains a higher opinion of Dr. Jack's views than I do, and it is with feelings of much regret that I am reluctantly obliged to differ from him on the subject now under consideration. First of all let me remark, that the evidence in support of the second kind of leakage is probably much stronger than geologists like to admit. "In the central depression of the continent and in North Australia," said the late Father Tenison-Woods, "there is a line of groups of thermal and cold springs covering several hundred square miles. These send forth water from great depths, and are, no doubt, derived from a central underground reservoir, whose sources are on the slope of the table-land. That the waters come from great depths is seen from the fact of the temperature and the mounds of sinter and travertine around them." In addition to these, some twelve groups of natural artesian springs have been examined in the northern districts of Queensland, the most important of which are located near the west bank of Spring Creek, at an elevation of about 500 feet above the sea level. In this sub-group there are about 100 or more springs, the waters from which are made to flow through a surface channel for some twenty miles to a lagoon three miles in length that is thus kept constantly filled. The temperature of the water in the largest spring is slightly over 100° Fahr. at the surface. It has been estimated that the whole of this sub-group of springs yields about 609,240 gallons of artesian water daily. The next in importance of the twelve groups are the Warenda Artesian Springs, which extend in an irregular line northerly and southerly for a distance of some fifty miles. Probably half of this sub-group lies within the basin of the Hamilton River. Besides all these, it is well known that numerous natural springs are scattered over the great lake regions of Central Australia and other portions of the continent not yet fully examined. It is not submitted that these springs occur at the known outcrop of the water-bearing formation, but that they are fed by an extensive and probably inexhaustible underground supply is evidenced by the indubitable fact that they yield enormous volumes of true artesian water. To say that this yield "is insignificant compared with the intake of the bibulous beds at the base of the (water-bearing) formation" is merely the expression of an opinion unsupported by evidence.† In any case the hard facts remain, that we have primâ facie evidence of the leakage of true artesian water in the interior of the continent—a leakage in the shape of numerous groups of springs. On the other

* Australian Handbook, 1895, p. 119.
† The quotation is from R. L. Jack's paper referred to on p. 20.
hand, as I shall endeavour to show later on, there is no direct evidence that "the springs of fresh water rising up from the floor of the ocean"—to which geologists have so frequently alluded—emanate from an artesian source at all. From what I have seen of the Australian coast line it seems to me to be far more likely that such unimportant leakages as have been reported from time to time are from the local tertiary strata, and have no connection whatever with the true artesian water supply in the interior of the continent. The great rim of impervious paleozoic rocks, by which the water-carrying beds of the central basin are hemmed in, furnishes the strongest possible evidence in support of this view.

In any case, it ought to be borne in mind, that the subject of the alleged leakage of artesian water is one about which there is really nothing definitely known outside the region of conjecture. All the same the theme is fascinating enough to open up an interesting field for the expression of speculative views, and these views must always be regarded as flights of fancy until such time as extended observations have furnished more reliable data than it is now possible to obtain. Theories are easy enough to conceive, but the sometimes truly wonderful speculations of prolific imagination are scarcely likely to contribute largely to the advancement of human knowledge.

To those who hold fast to the view of the leakage of artesian water into the ocean many contributing causes have suggested themselves. The alleged rapid disappearance of flood-waters in the channels of water-courses has been accepted as evidence in support of the opinion that a very large percentage of the rainfall finds its way into the water beds of the lower cretaceous formation, and it has been seriously contended that the capacity of these beds would be inadequate to contain the enormous volumes of water absorbed annually if no subterranean leakage existed. Upon this hypothesis, it has been asked, with some apparent reason too, it must be confessed. Where does all the water go to—all that has accumulated in these natural underground reservoirs for ages—if there is no leakage into the ocean? It has been stated—without confirmatory evidence—that the quantity of water drawn off by the artesian wells is nothing in comparison to that annually absorbed by the ribbed rocks of the water-bearing beds, from which it is assumed that submarine leakage of the surplus water exists.

It is almost unnecessary to point out that the alleged rapid disappearance of the waters of a river, in any portion of its channel, need not necessarily have any direct bearing upon the water-bearing beds beneath. None of the inland rivers have been critically examined, consequently our knowledge of their capacity and the condition of the beds of the rivers themselves, is very imperfect. It is an easy matter to say, that the volume value of a stream is greatly decreased over any
given section of the channel, but such a statement unsupported by the
practical value whatever. Mere rumours are too frequently admitted into the discussion of im-
portant subjects, and far too much importance has been attached to
the oft-repeated story of the magical disappearance of the waters of
some of the Australian rivers. Supposing that, in the nature of things,
there is something more than an imaginary decrease in the volume of
these streams; it would not conclusively prove that the water-bearing
beds of the lower cretaceous formation are benefited thereby. Would
it not be far easier to believe that the decrease is due to the existence
of low-level arteries through which the waters flow and reappear again
at some point in the main channel of the stream? This is by no means
an uncommon occurrence in many parts of the world. For argument's
sake, let us for the moment assume that the artesian water beds derive
their supply, or a portion of it, from the numerous important rivers, or
"several large water-courses," that cross "the outcrop of the Blythes-
dale Braystones."* There would then be periodical decreases in the
volume of these streams. But what would this prove? It would cer-
tainly not prove that there is submarine leakage of artesian water. It
would, however, fulfil the natural conditions necessary for the exist-
ence and maintenance of an adequate underground water supply. It
would, moreover, mean a supply of the annual loss sustained by the
water-bearing beds through the numerous natural artesian springs that
are constantly operative, and the large volumes of water drawn off by
the numerous bores and wells, besides the water forced out by pres-
sure through the porous strata and evaporated. It would likewise
mean (what I believe may actually occur) that after the water beds
beneath and the bibulous rocks at the intake are filled to their utmost
capacity the absorbing process ceases, and the rivers assume their
normal condition. As compared with the flow of a flooded river the
process of absorption is very slow, even in highly porous rocks, and
consequently the streams have greatly diminished in volume by the
time the absorbing strata are filled—the flood waters, which pass
away rapidly, will have disappeared altogether. It has been stated
that Blythesdale Braystone, which constitutes the intake at the
base of the water-bearing formation, absorbs enormous volumes of
water, and that, moreover, important rivers disappear in crossing
this intake. To put the matter to a practical test I have experi-
20. mented with an example of highly porous sandstone. The result
of this experiment leaves no doubt in my mind whatever, that although
capable of absorbing water freely, when not highly charged with
sediment, the capacity of the rock forming the intake beds of the water-
carrying formation has been largely over-estimated, to the extent of

* The quotations are from R. L. Jack's paper referred to on page 20.
probably 70 per cent. Adopting the same line of experiment with a
given quantity of water filtered through this highly absorbent rock,
and comparing the results with the mean volume of water passing
through the channel of an ordinary sized river, the fact seemed to be
clearly enough demonstrated that the "numerous important rivers,"
which are said to "disappear in crossing the outcrop of the lowest
beds of the lower cretaceous formation," must be swallowed up by
some other undiscovered medium. The experiments moreover con-
firmed the view to which I had formerly given expression in my anni-
versary address to the Royal Geographical Society of Australasia,
Queensland, in 1895, that the efficiency of the absorbing agent was
perceptibly impaired by the presence of sediment in water—such as
usually occurs in river flood waters.

In this connection, it ought to be borne in mind that in the case
of the inland rivers of Queensland, there has been no systematic gaug-
ing carried out. Their capacities are as yet unknown, and the quantity
of water discharged by them in proportion to the rainfall over the
catchment areas has not been estimated by any reliable means, and in
the very nature of things many years will no doubt elapse ere we
can hope for any useful knowledge of the subject. It is only by the
proper gauging of rivers, and a detailed examination of the channels,
that any fairly reliable estimate can be formed of what proportion
their discharge bears to the rainfall over the catchment area. Until
this is done, and the meteorological conditions of the region investi-
gated, it is not possible to establish any connection between the
alleged rapid diminution of the inland rivers—if indeed, such a thing
actually occurs—and the artesian water supply of the interior.

In connection with this subject, there has been a revival of the
thread-bare theory of the loss of water in the basin of the Darling
River. In a paper contributed to the Journal of the Royal Society of
New South Wales, in 1899, on "The Source of the Underground
Water in the Western District," Mr. H. C. Russell furnished some
interesting figures in support of the opinion that there is an enormous
underground water supply in the Darling basin, of "at least, equal
to sixteen times as much water as passes Bourke now." "The mean
rainfall," said Mr. Russell, "on the Darling River catchment for the
past ten years has been 22.14 inches, and of this only 1.5 per cent., or
0.33 inches of rain, passes Bourke in the river." Now, as these figures
have been freely quoted and used as evidence in support of the
artesian water supply theory, as affected by the greatly diminished flow
or disappearance of some of the Queensland streams, I have taken
some little trouble to test them, with interesting results. It was
found that the total effective catchment area of the Darling River

* Quoted from R. L. Jack's Paper, referred to on page 20.
above Bourke is equal to 74,760 square miles, the mean annual rainfall being about 20 inches. At Bourke, the mean discharge of the river is equal to 6.557 cubic feet per second, or say, 6 per cent. of the rainfall. The earlier gauging of the river was no doubt defective, and the contributing catchment area, upon which the original calculations were based too great. To both of these factors, the error is doubtful attributable. It has been seriously contended that this would not impair the value of Mr. Russell's argument. To this I can only say that an authoritative argument based upon erroneous data, is not only impaired thereby and rendered valueless, but its incidence falls with dangerous and most pernicious effect upon the discussion of many important kindred subjects.

The Murray River discharges a larger percentage of its waters than the Darling, and this too has been alluded to as evidence in favour of the downward percolation of the rainfall in the basin of the latter. As a matter of fact, the physical and climatic conditions obtaining in the upper valleys of both rivers are so dissimilar—notwithstanding what has been said to the contrary—as to render such evidence of no practical value whatever. The basin of the Darling consists in most part of extensive thirsty plains where the summer heat is intense and the loss of water, from tanks and wells of considerable depth, by evaporation is very great indeed. The quantity of water evaporated is known by actual measurements, and it has been estimated that if Lake Narran were filled, it would require a constant flow into it of about 166 cubic feet per second, to compensate for the loss by evaporation. The climate of the Bourke District, and the great Western plains of New South Wales, is one of the hottest and driest in the whole country, and it will not be difficult to understand that a very large percentage of the scanty rainfall is lost by evaporation. Apart from this altogether, the barrier of impervious rocks which extend across New South Wales from the neighbourhood of Cobar to Broken Hill, and through which the Darling River passes at Wilcannia, prevents the circulation of the artesian water found under the northern and north-western plains of that colony, into the central Darling basin. This in itself is sufficient to account for the absence of artesian water within that region, and satisfactorily disposes of the fallacious theory of a large underground supply augmented by the greatly diminished flow of the Darling. But it has yet to be intelligibly explained how flood waters could be absorbed rapidly through, what is believed to be impervious strata.

If it be admitted that surface water will percolate freely by mere gravitation through hundreds, even thousands of feet of porous strata, surely it is not unreasonable to suppose that a portion, at least, of the artesian supply, when under great pressure, will be forced to
the surface through this superimposed pervious strata, and dissipated by evaporation.

The great loss sustained to the rainfall and rivers of Australia by evaporation, never seems to have entered into the mind of those who have theorised upon the subject of the disappearance of rivers and lakes, and the leakage of artesian water. In the haste to go far afield for elaborate explanations of local phenomena, geologists have overlooked many important, though simple reasons to be found in Nature, nearer home. There has been a constant shifting of ground all along—a sort of hide-and-seek game. Not so very long ago we were told that the source of our artesian water supply lay far and away outside Australia, in the great Himalayan chain or the Alpine regions of New Guinea, and none were perhaps more surprised than the geologists themselves when the source was discovered nearer home.

Simple experiments are all that is needed to demonstrate the conditions, under which the process of evaporation goes on. If for example a large sponge be filled with water and exposed in a dry atmosphere, the whole contents will evaporate very rapidly. Extend the experiment to a highly porous rock of any size, even a piece of timber or any other absorbing agent, and similar results may be obtained. The time occupied in evaporating a given quantity of absorbed water will, of course, depend upon the size and density of the material, and the condition of the air. In green timber, for instance, sap is always present, but will disappear during the process of seasoning. In the case of rocks and soils, there is likewise rapid evaporation, under favourable atmospheric conditions. With the rainfall and impounded water the same thing will occur. For instance, at the Enoggera Reservoir, near Brisbane, the water evaporates at the rate of \( \frac{1}{4} \) inch per day, and in the central regions of Australia it has been estimated by experiment that under favourable conditions, the process of evaporation goes on at the rate of an inch per diem. This latter quantity, it may be noted, is a very low estimate indeed, for evidence is certainly not wanting to show that at times it is far greater. It will, however, be sufficiently striking to convey to the mind some idea of the very serious loss sustained to the, at all times scanty, rainfall of the far inland regions of Australia by evaporation alone. Just imagine what this means in places where the annual rains are not greater than from 10 to 12 inches. It must be borne in mind, too, that these rains do not fall as they do in well-watered country, where the seasons are regular, but are mostly precipitated in the form of very irregular and spasmodic thunderstorms, when simultaneous sunshine and rain are not uncommon. The experiences of most of the pioneers of Australian exploration, and early enterprise in the march of British Empire, furnish abundant evidence often sad and distress-
ing enough in detail, of the excessive heat and intensely dry air of the interior of the continent. There are long and most trying periods of several months’ duration when the great heat waves, that are generated in these regions, are abnormally high and the dryness of the atmosphere beyond conception. In the shade of a tree, protected from the wind, the mercurial tube of Captain Sturt’s barometer burst at 127° Fahr. For three months at a stretch the mean temperature was over 101° Fahr. in the shade, the drought at the same time being such as to cause great injury to the explorer’s instruments. Under these climatic conditions it is surely not difficult to believe that the quantity of water abstracted from the soil by evaporation must be very great indeed. But no stronger evidence is needed than the numerous striking monuments that occupy large middle areas of the continent. These stand out in bold weird relief on the face of our maps, in the form of extensive salt lakes, salt bush, and salt pans, as they are locally designated, indelibly stereotyped traces of the influence of evaporation. All the so-called lakes of Central Australia are salt, and these, with the immense deposits of salt and soda formed there, bear silent testimony to the great quantity of water drawn from the thirsty surface soils, and the porous strata beneath, by a dry hungry atmosphere.

If we wish to go outside our own country for further information upon this subject, a typical example may be found in the drying-up of the Dead Sea. There we have a vast natural reservoir, whose waters have been reduced by evaporation to considerably over a thousand feet below sea level, in addition to the drying-up of the waters of the River Jordan, and other streams that are continually poured into it.

I am not disposed to say that there is absolutely no leakage of artesian water into the sea—in favourable localities where water-bearing beds exist in coastal regions, there may be an oozing out of water through the porous strata along shallow shores—but I am certainly of a very decided opinion, and there is abundant confirmatory evidence, that the leakage is comparatively insignificant, and does not extend to, nor affect the great inland water-bearing beds of the lower cretaceous formation. As formerly remarked the physical structure of the continent is such as to prevent any extensive leakage of the kind. Except a spot at the head of the Great Australian Bight, where the limestones are developed, and on the southern shore of the Gulf of Carpentaria, the whole outer rim of the great central basin consists of the older palæozoic rocks, and it is scarcely possible that the artesian waters could circulate through this barrier by gravitation. A careful study of the configuration of the continental mass and its internal physical structure, as a whole, will be sufficient to support this view.

In discussing the subject before our Society in April, 1896, the Hon. A. C. Gregory said “The elevation and
impervious character of the older rocks which so nearly surround the basins (the basins of depression that occupy the interior of Australia). preclude any outflow (of artesian water) by gravitation, except at the mouth of the Murray River and Spencer’s Gulf; but in neither case is there any indication of any subterraneous outflow, while the geological structure of these localities, and the extremely low level for many miles inland, are strongly adverse to its existence. On further investigation we find that the lower parts of the basins show a thinning of the clay beds and exposure of lower strata of more avenaceous character, through which the water might slowly percolate to the surface, and that in some instances it forms small springs of a character which might be termed artesian, while in the greater part it has assisted in the formation of the enormous areas of salt marsh which occupy so much of the central depression of the Australian interior, the immense quantity of salt and soda being the result of the long continued evaporation contingent on the arid climate."

"Thus, we may resonably assume that there is an exceedingly slow movement of artesian water from its elevated intake to the lower region of the salt marshes, which has been sufficient to prevent its becoming so much impregnated with mineral salts as not to be potable."* Mr. Gregory, who is one of the very few surviving Australian explorers, and formerly Government Geologist of Queensland, has had more opportunities than usually falls to the lot of most men, of studying the physical and geological structures of the continent.

In the discussion of this subject, it must not be forgotten that the whole central basin is barely above sea level—the margin of Lake Eyre being actually 39 feet below it—and it is difficult to conceive how large volumes of artesian water can circulate by gravitation through such a region and find an outlet in the nature of leakage into the ocean. The geological evidence itself shows that to leak into the sea the waters must pass beneath the surface of this central depression. The advocates of the theory of submarine leakage, however, consider these conditions highly favourable to their views. They contend "that the low levels of the surface of the interior, implying still lower levels for the strata in which artesian water is actually met with, coupled with the fact of the high altitudes at which the strata crop out," afford "the most favourable conditions possible for the circulation of water."† I am not prepared to deny that such might indeed be the case, were the implication borne out by local physical and geological conditions. But it is not so. That the artesian water-bearing strata in the central basin are comparatively thin, and do not dip to great depths beneath the greatly depressed surface itself, is

† Quoted from R. L. Jack's Paper, referred to on page 20.
amply demonstrated by the large quantity of artesian water that rises to the surface in the form of natural springs. Indeed, the local conditions are highly favourable to a thinning out of the water beds as they fall away and retreat from the high level intakes towards the central depression and consequent circulation of the underground waters towards the great salt lakes or marshes, where, rising to the surface of the level plane, they are dissipated by evaporation. But I will, however, allude to this more fully later on.

In the meantime let me again revert to the theory of submarine leakage.

It has been stated that, "as the strata are periodically filled up with water they must first have lost a certain amount by submarine leakage." This means that an equilibrium has been established between profit and loss, as it were. That, in fact, the quantity of water drained off by the compensating arteries communicating with the ocean, is just about equal to that absorbed by the bibulous rocks of the intake beds. Upon this hypothesis we must conceive an absolutely inexhaustible underground reservoir of artesian water, with an outflow, in the shape of submarine leakage, so nicely regulated that the reservoir will receive and contain the whole volume of water greedily absorbed by the intake beds during periods of rainfall and flood. Moreover, we must believe, upon the same supposition, that the waters confined within the walls of this great reservoir, under enormous pressure, never reach sea level, even during times of prolonged drought, when the contributing rivers have long ceased to run. Is it not a fact that the storage waters never do reach sea level, as evidenced by the constant and undiminished flow of the artesian wells? It would, indeed, be a remarkable natural process by which an artesian reservoir affected by extensive submarine leakage, could be so regulated and controlled that its waters would never fall to the level of the sea, even during long periods of intense dryness—common enough in the interior of Australia—when there would be no possible local supply with which to replenish an ever decreasing store. It must be borne in mind that the erosive action of the waters, combined with the enormous pressure of the superimposed strata, would tend to constantly increase this leakage, rather than diminish it, and it is not easy to see how supply and loss could be so regulated under these conditions that the one would balance the other.

The submarine leakage of artesian water is necessarily contingent upon the outcrop of the base beds beneath the ocean. But no explanation is given why the synclinal trough of the ocean bed has been selected for the purpose in preference to the synclines of the earth's crust that are free from the great hydrostatic pressure of the enormous body of water which constitutes the ocean—a pressure which would
probably operate with more telling effect against the theory of the leakage of artesian water, through an outcrop of strata in a deep trough of the ocean, than geologists are disposed to recognise.

Taking into account what seemed to me to be the natural conditions of the case, the following considerations are submitted:—

1. That the great central basin of Australia as well as the lateral valleys of depression, that occupy the interior, are almost wholly surrounded by an impervious rim of granitic palaeozoic and mesozoic rocks, except at the head of Spencer’s Gulf, and at the mouth of the Murray River.

2. That on the south, the east, and the north, this annulating border consists of mountain ranges of from several hundred to over 5,000 feet in elevation, and on the west the side of the rim is occupied by the auriferous goldfields of Western Australia, which are situated on a plateau of a thousand feet above sea level.

3. That during the cretaceous period the lateral valleys were filled up, and the level of the central depression raised by the detritus carried down from the adjacent mountain ranges by numerous streams and heavy rains.

4. That extensive beds of sand and gravel were at the same time formed with the degraded portions of the older rocks, and these were followed by a covering of finer grained material, forming stiff clays and shales, which, spreading out over the central parts of the beds, left the higher and more pervious margins exposed.

5. That the sand and gravel beds—now known as the water-bearing beds of the lower cretaceous formation—vary in thickness, from a maximum at the remote limits of the great central depression to a minimum about the middle of it—a condition resulting chiefly from the varying energy of the natural causes by which the sands and gravels were distributed.

6. That for a similar reason the superimposed beds of stiff clays and shales are comparatively weak, and not wholly impervious within the central region of the basin.

7. That a comparatively small percentage of the rainfall over the interior of the continent is absorbed by the exposed marginal outcrops, and carried to the retaining gravel beds that underlie the clays, and when these overlying impervious strata are pierced by the borer’s drill, at lower levels than the source of supply, the impounded waters beneath the clayey strata flow to the surface.

8. That from the elevated intake beds there is a very slow circulation of the underground waters towards the lower levels of the central portion of the continent, where there is leakage in the form of natural artesian springs and marshes—such being favoured by the local conditions to which I have alluded.
9. That, besides these natural springs at the bottom of the great central trough, there are others where weak portions of the strata occur within the region.

10. That the great storage beds are periodically replenished by the quantity of water absorbed at the outcrops.

11. That the absorbing process is temporarily suspended when the water-carrying beds have been filled.

12. That there is upward as well as downward percolation of artesian water.

13. That by far the greater portion of the rainfall over the inland regions of Australia and the leakage waters from the storage beds are evaporated.

14. That there is no available evidence of submarine leakage of the artesian waters of Australia.

15. That, on the contrary, the balance of evidence and of reasons is directly opposed to the theory of such leakage.

Hon. A. C. Gregory said the paper was a valuable one. He referred to the importance of studying the influence of the South Polar ice on the seasons in Australia, and pointed out that at the time the mail service was by sailing ships which traversed a higher latitude than the steamers of the present day, information was obtained as to the drifting of Polar ice; and he had noted that when there was an extensive flow of ice into the warmer latitudes the cooling of extensive areas of the Southern Ocean was accompanied by a larger rainfall on the adjacent portion of Australia. Comparing this with the recorded results of the periodic drifts of ice in the Northern Hemisphere it seemed to afford a clue to at least approximate forecasts of our wet and dry seasons. In the Northern Hemisphere, the result of many years' experience is that, on the western coast of Greenland, the annual fall of snow accumulates for about twelve years, when the glacial mass, becoming overloaded, slides off the steep coast into the ocean breaking up the floe ice, the whole being drifted through the straits into the North Atlantic where the great variation in the adjacent areas of hot and cold water cause atmospheric disturbances, with heavy fogs and rain, on the east coast of North America. On the eastern side of Greenland the breaking up of the ice has a longer period, of about twenty-five years, when it bursts through between Greenland and Iceland, resulting in wet and stormy weather on the coasts of France and England. Thus it is reasonable to assume that as the cycles of ice drift greatly influence the seasons in the northern regions, it may be found possible from equivalent data to formulate useful forecasts of the humidity or drought of the seasons in Australia. Attempts have been made to prove that the variation of different years depends on astronomical conditions, but though we know that the divergence of the earth's axis from that of its orbit are the direct cause of summer and winter seasons, yet, if there was no disturbing element, the seasons would not vary, so that, for instance, if there were a wet season in Australia it should be equally so in South Africa and South America, but the fact is that the seasons in each of these localities more frequently widely differ than agree. Referring to the question of rainfall, he related how at one time he and another caused a fall of rain in Queensland by lighting a considerable area of dried reeds. A mass of smoke arose, and spread out and formed a rain cloud, which presently broke, and the rain descended. Such opportunities were too rare to be of utility in the matter of rainfall. All they could do in predicting the weather was to get as many facts as possible by telegraphic communication, while some more information might be obtained about the breaking up of the South Polar ice.
The President (Rt. Hon. Sir Hugh M. Nelson), replying to Mr. T. Owens, stated that the bores put down by the Government were principally as an experiment, and to encourage boring by private enterprise. Since then hundreds had been put down by private persons. He did not think they could be said to have saved the stock in the present drought, for it was an entirely exceptional one. Had it been a drought like that of 1868, for example, when he was on the Warrego, he had no hesitation in saying that, by the water now artificially obtained, stock could have been saved. Then there was plenty of grass, but in the present case grass was absent, and that caused the great disasters. The bores did not supply sufficient water to irrigate the land; that was far beyond their power. Some irrigation experiments had been tried, and reported on as successes, but it would take a greater number of artesian wells to irrigate on a large scale than they were likely to have for some time. Mr. Thomson’s paper would be printed and circulated.

A vote of thanks to Mr. Thomson, proposed by Mr. R. Mackie, seconded by Mr. T. Owens, and supported by Mr. R. Fraser, was carried with acclamation, Mr. Thomson returned thanks.
Mount Coot-tha Reserve.

From any part of the city of Brisbane, whence a view not interrupted by buildings is open towards the west, the prospect is seen to be bounded, in that direction, by a range of hills not of great height. These are known to-day as Taylor's Range, and while northerly they stretch unbroken till out of sight, they terminate abruptly towards the south in a bare knoll. This is Mount Coot-tha, formerly called One Tree Hill. As far back as anyone now living can remember it, that knoll was a prominent object in the landscape on account of its showing bare, while all the rest of the range was covered, as now, with forest. But there used, not so many years ago, to be one lofty tree on the very crown of the otherwise bare patch, and from that solitary tree the older name of the spot was derived. No one can now state with certainty when One Tree Hill was first so called. It is believed, however, that its obviousness dates back to the very early times when the site of Brisbane was occupied by a penal establishment, the furthest north on the east coast of Australia. The very road by which excursionists on a trip to Mount Coot-tha usually start, known, near the Victoria Bridge, as North Quay, and a little further on as Milton Road, which skirts the Brisbane River for over a mile, was, the story goes, cleared and formed by the prisoners for the enjoyment of the officials, who were in the habit of taking their drives along that way, in the cool of evening, inhaling the freshened air wafted up the stream from the bay.

When, in the year 1880, the place was put in charge of trustees, it was not indeed a bare knoll such as it is at present. But, as compared with the rest of the range, it then carried but a young growth of saplings, so that it is probable that it was stripped of the original forest about the same time that the road mentioned was cleared, and


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by the same class of labourers. This probability is supported by the fact that when the present clearing was being carried out on behalf of the trustees, some irons, such as were worn by the road gangs of convict establishments, were found on the place. Anyhow, it has been a favourite, though not a very commonly visited, place for picnicking excursions as long as Brisbane has been a town, and probably during many years before. There is no place within an equal distance of the city from which views so widely reaching and so far extending can be commanded. The height is just about right for affording a really interesting view. Great elevations are disappointing in that respect. The country and even lower hills beneath them appear flattened, and such objects as houses and other adjuncts are too distant to show any interesting details. From some of the lower buttresses of the Alps, for instance, 6,000 feet or so above sea-level, the extent of view is magnificent, and the snow-clad peaks and ranges at a distance very beautiful. But the valleys, with the towns, lakes, villages, roads, railways and so on, show little except dots and streaks. Now, from Mount Coot-tha, one can distinguish almost every feature of the near landscape, which makes the view much more interesting, while there is no lack of beauty in the distant prospect, varying as it does from the seascape in the east to the bold outlines of the Main Range in the west, and detached peaks with a melting background of mountains far in the southward.

"Coot-tha" is a word in the aboriginal tongue, and means "honey." When in 1880 "One Tree Hill" was, together with a surrounding area of 1,500 acres, placed in charge of a body of trustees, as a Reserve for Public Recreation, the question of an appropriate name arose. "One Tree Hill" had its antiquity and traditions to commend it. But the antiquity was slight and the traditions few. Besides, the single tree, whence the name was derived, was seen to be doomed to speedy disappearance. Thoughtless and selfish people, among those who visited the place and enjoyed its attractions, were in the habit of lighting their picnic fire at the foot of the tree, thus slowly burning the life out of it. The process was complete years ago, and the notable tree, so long a landmark from the city of Brisbane, and for places much more distant, for miles around, decayed, fell, and its fragments had to be cleared away.

Mr. H. W. Radford, Clerk of the Parliaments, who had, during many years admired and oft-times enjoyed the charms of the knoll, had been fitly appointed Honorary Secretary to the Trustees of the Reserve. He took trouble to cast about for a suitable name, and questioned, among others, an aged aboriginal of the tribe, even at that time all but extinct and now entirely so, which once flourished as occupants of that locality. It must be understood that before the
white man intruded, the country was parcelled out among different native tribes, each having exclusive rights over particular tracts, the limits and borders of which were well understood by the aborigines all about. Questioning this old survivor whether the knoll or range of which it forms part had an- name, Mr. Radford learned that it had been known as "Coot-tha"—honey; the place of honey. There, in the good old days, when there were no white men to trouble people, bees abounded and "plenty sugar-bag sit down." In other words, hives abounded in the hollow trunks and limbs of the trees. The coast tribes had no share in this part of the country. They lived along the seashore, and had game and lots of fish. How plentiful was their supply of fish we know from the accounts given in 1823 to Mr. Uniacke, one of Lieutenant Oxley's companions on his first visit to Moreton Bay; by Finnegan and Pamphlet, the two castaways then rescued after living over a year among the natives. They had plenty, and weren't mean with it. The castaways were generously supplied by them with all they could eat. But honey was not plentiful so near the coast; and, of course, salt-water fish was not in the bill of fare of the tribes inhabiting the inland hills. So, according to this old blackfellow's story, at certain seasons the different tribes arranged to change places. The inland blacks left their district and trooped down to the seaside for the benefit of their health, and the seaside natives took a jaunt to the hills for the nice fresh air. The first mentioned had a good time fishing and sea bathing, and the latter were braced up by hill-climbing and bee-hunting. A pleasant memory of early reciprocity! Of course, the bees of those days were not the European honey bees since spread by swarms through the Queensland bush. They were the little stingless, fly-like, native bee, with their comparatively small stores of sweet but insipid honey, and they only nipped one's brown naked skin instead of driving one crazy with venomed darts.

Enough of the name, however. The excursionist, arrived at the boundary of the Mount Coot-tha Reserve, finds before him a road with a pretty steep gradient, and which winds, following the course of the ridges, upward for about one mile and a quarter. If a vehicle be used, the horses draw it at walking pace. The road seems a clever bit of engineering. The easiest ascents have been artfully chosen. But in reality, the smart engineering in this respect was done by cattle. The road, in fact, was formed to follow, generally, an old cattle track. It was not found possible to improve much upon the guidance of brute instinct. Keeping mostly along the crown of a spur overlooking the low country, amidst the original forest, here and there glimpses are obtained through natural vistas among the trees of the extensive prospect in one direction—southward—which is presently to be disclosed in its full beauty when the knoll above is reached.
It is quite likely that this knoll was cleared of trees at the instance of Captain Logan, who was Commandant at Moreton Bay from 1825 till 1830, when he was murdered near Mount Esk, a long way up the Brisbane River. Logan was a severe man and much hated by the convicts, of whom in one year alone, 1828, about 130 escaped into the bush, out of an average of 500 prisoners under his charge, and close upon half of the absconders are not known ever to have been heard of again. Logan was out exploring and was knocked on the head. It is supposed that natives, egged on, and probably assisted, by some escaped convicts, did the deed. But there is a lot of mystery about the affair. Anyhow, Logan was a very energetic and active explorer, and a very likely man to have caused this projection of the hills to be cleared of trees so as to afford a good view over the country. Every man who is familiar with the bush knows how tantalizing it is to climb to the top of a hill in forest country and find, after one's trouble, that no prospect can be seen on account of the trees on its summit. Besides, there are no bare-topped heights near Brisbane. The Glasshouse Mountains, away towards the north, are the only hills of that sort within a wide circuit. From Observatory Hill, on Wickham Terrace, in Brisbane itself, there is a fine and extensive view; and as the Observatory Tower was early built for a windmill, no doubt that nob had been cleared as far back as Logan's time, and the partial prospect from it would just serve to make a man like Logan, with the instincts of an explorer, long for a more commanding look-out place.

That Captain Logan resorted to this spot for the sake of the prospect it afforded is not merely supposition. Mr. Frazer, Government Botanist, in his journal recorded a visit paid by him to Moreton Bay in 1828, when Logan took him, and Allan Cunningham, a botanist, but better known as an explorer, and who had just a year before discovered the Darling Downs, to this elevation. Frazer mentions by name various distant peaks and mountains which were observed. His journal is printed in a volume of Sir Wm. Hooker's "Botanical Miscellanies."

A few Moreton Bay fig trees have of late years been planted on the crest of Mount Coot-tha, and give a pleasant shade. They have been so placed as not to obstruct the view, and people seated on benches which have been placed under them can enjoy the lovely prospect, while protected from the sun and fanned by the cool breeze from the ocean, which in summer seldom fails to temper the heat after noon. A few paces in front of these trees the trustees have caused to be erected a stone pillar, on the flat top of which is a metal disc engraved as shown opposite.

The engraved lines radiating from the centre to the circumference of this plate, direct the eye straight towards the distant objects
named on it. Little more than half of a circle is indicated on the dial. The hills, of which Mt. Coot-tha is the projecting end of one spur, cut off the view in other directions. Those hills are themselves off-shoots from the D'Aguilar Range, which forms the northern watershed of the Brisbane River, and westerly separates it from the heads of the Burnett; while they throw off, a good way to the north, another chain, trending easterly towards the Pacific, known latterly as the Blackall Range, beyond which are upper waters of the Mary.

If one stands at the pillar and looks in the most northerly direction, where the view is unobstructed by the hills, it is just possible, in clear weather, to make out the situation of Sandgate and the glimmer of the waters of Moreton Bay beyond that watering-place. This is the least picturesque of all the scenes commanded from Mount Coot-tha. The intervening tract offers no prominent features for the eye to dwell upon. It is, in fact, a stretch of undulating forest country, with no marked characteristics. Yet, when one is familiar with details of early settlement in the Moreton Bay district, there is a disposition to dwell on this rather monotonous scene, for a moment or two. With-
out being able to fix upon the exact spot, from this distance, one seeks to distinguish the locality, now known as Nundah, a not very populous outlying suburb on the Brisbane-Sandgate railway. It was formerly known as German Station. Here a missionary party of Germans, after being compelled by the hostility of the aborigines to abandon the place of their first settlement at Humpybong (Redcliffe), on the shore of Moreton Bay, established a mission station, and dragged along an isolated, painful existence, still harassed by the natives, whom they found utterly indifferent to their endeavours at proselytizing, and whom they were constrained on more than one occasion to repulse with musket-shots. At Sandgate, also, which to-day is studded with marine villas, hotels and cottages, and to which numerous railway trains daily run from Brisbane, the late T. Dowse and his son were wounded by the aborigines in 1853, or perhaps the late T. Dowse—"old Tom Dowse," as he liked naming himself—was the son. As recently as the sixties, several murders by the natives of lone fishermen and other white men occurred, and a detachment of black troopers was consequently stationed there for some years.

Cape Moreton is next indicated on the dial. A fine day, good eyesight or a good telescope are necessary to distinguish this northern headland of Moreton Island. Capt. Cook was the first man to sight this projection and to chart it, so far as maritime history tells. Following him came Capt. Baudin of the French Navy, then Lieut. Flinders entered the Bay, and thenceforth it was doubtless sighted by the people on numerous vessels which, after discharging at the Sydney settlement, voyaged to China or India. Some vessels also at the very beginning of the last century sailed from these places in Asia to Port Jackson, and their people may have sighted this among the other projections of the coast. One such vessel was dispatched from India, expressly to convey to the penal establishment at Sydney there to serve a sentence of transportation. a young officer, Lieut. Bellasis, convicted of having killed in a duel another who had insulted a lady of his family. On arrival at Sydney, however, the Governor appointed him to a military command, and a curious complication ensued. The officers of the New South Wales corps refused to associate with the "convict," and protested. A peculiar feature of their repugnance was that at least two of them had, not long before, themselves been duelling. Capt. Macarthur, who before sailing from England had fought a bloodless duel with the master of the ship in which he was embarked, had challenged, fought and wounded in Sydney the commander of his regiment, Col. Paterson, a very short time before this offender arrived under sentence.

But, although other old traditions are associated with Cape Moreton, it is necessary to pass on.
Indicated next on the dial is Moreton Island. The bearing points also to the South Passage, between Moreton and Stradbroke Islands. The dimly-visible land on the horizon is that of Moreton Island. The South Passage can scarcely be distinguished. That was the entrance to Moreton Bay used by nearly all shipping from the South for many years subsequent to the creation of a penal outpost at Brisbane in 1824. A crooked channel, rendered dangerous by sandbanks, which altered their shape after every gale. The wreck of a passenger steamer, the "Sovereign," in 1847, attended by terrible loss of life, and subsequently the stranding of an immigrant ship, the Phœbe Dunbar, resulted in shipowners avoiding this perilous short-cut, although it was occasionally taken, in fine weather, till quite a recent date.

The visitor to Mount Coot-tha will, however, not overlook what is nearer. Along the same line of direction his vision travels over a portion of the general cemetery at Toowong, of which the white monuments and gravestones arrest the attention. Beyond these, to the left, cluster the buildings of metropolitan suburbs, and straight ahead lies the very heart of the city, partly hidden, however, by the ridge along which runs Petrie’s Terrace. A little more to the right gleams one of the reaches of the Brisbane River, and other more remote reaches can be perceived in part, even to the lowest, where the river joins the bay.

Whichever way one faces to look in the directions indicated in the dial, the Brisbane River is so prominent a feature of the landscape that it is natural to follow its course and to interest oneself in its story. When first seen by white men, this beautiful river had been, as far back as even imagination can carry one, short of geological conceptions, simply a haunt of aborigines. First visited by Europeans, when three castaways from Sydney, their boat bilged on Moreton or Stradbroke Island, had been humanely succoured by the aborigines there, it was ascended in 1823 by Lieut. Oxley. That gentleman, then Surveyor-General of New South Wales, was on a voyage of discovery on the coast, his object being to find a suitable place for an outpost for convicts. Falling in with one of these castaways among the blacks at Bribie Island, and learning from him of the existence of such a river, he sought and found its mouth in the Bay, and ascended in a boat as far as Goodna, naming some of the reaches as he went. The first, from the mouth to Breakfast Creek, he named Sea Reach; the next name on his chart is Long Reach. This is the Milton Reach of to-day. The old name is preserved by a hotel at the corner of Queen Street and North Quay.

Between this line and that marked "White's Hill," the whole course of Milton Reach can be seen by the glint of the water. The name is
comparatively modern. Between Mt. Coot-tha and the river the scattered buildings are residences at Toowong. Beyond Milton Reach, one overlooks the whole of South Brisbane, across the flat portion of which the Parliamentary Building and Government House can be made out. The elevated parts, at Hill End and Highgate Hill, from this height look of less altitude than they actually are. One can scarcely realise the fact that those ridges are lofty enough to command, as they actually do, facing westerly, over the low-lying point of alluvial land which the next higher reach of the river can be plainly seen curving round, one of the loveliest and most extensive views conceivable, with the river in the foreground, forest ridges dotted with occasional white buildings in the middle-distance, and the bold outline of the great Main Range on the horizon. This view, in its nearer portions, has, owing to the similar relative position of the Highgate Hill and the river reaches overlooked with that of Richmond Hill and the course of the Thames, a striking resemblance to that prospect so famous for its beauty wherever the English language is spoken. But this South Brisbane view is the finer of the two. From Richmond Hill no such majestic mountains bound the prospect, and, as it were, serve as frame to the picture, and at low tide the Thames exposes on each side a broad strip of ugly mud.

That bare, low point just mentioned is known as the Santa Lucia Estate. It is difficult now to realise that all such plateaus of alluvial land bordering the river were, when first seen by Europeans, covered with dense scrubs, amidst and above which numerous noble pine-trees reared their lofty heads. On Oxley’s chart, drawn from observations made during his first boat-ascent of the river, the lower portion of the area now covered by South Brisbane is noted as “rich land and fine timber.”

Looking beyond the St. Lucia Point, and a little to the right, in the direction given by the line on the dial, marked White’s Hill, two lines of high ridges are visible, beyond which the view melts away to dimness. On a knoll of the nearest of these ridges a building can be distinguished. That knoll is White’s Hill, deriving its name from the present occupant of the building. It is often resorted to by excursionists. The further eminence beyond it is known as Mt. Cotton, named after Major Cotton, who was Commandant over the Moreton Bay Establishment from 1837 to 1839.

The clustering buildings in the foreground, a little to the right of this line, are part of the pretty railway suburb, Taringa.

Mount Gravatt, indicated by the next directing line on the dial, can easily be identified, as it stands out boldly, and the clump of trees which crown its summit cannot be mistaken. This again derived its name from one of the commandants—Lieut. Gravatt.
The buildings which intervene between the spectator and a river reach, which here is distinctly visible, are in the suburb of Indooroopilly. The fine railway bridge which crosses the Brisbane River at this point, can just be perceived as a delicate tracing. The reach of river thus spanned, known now as Indooroopilly Reach, was by Oxley named Canoe Reach, and is so set down in the copy of his chart which has been preserved by the intelligent foresight of ex-Judge Barron-Field, who was a contemporary of Oxley. The tributary, of which the mouth where it joins the river, is easily noticed, and has cast up a bank or island of silt opposite to its junction, was also named by him Canoe Creek, and is so set down in a chart of subsequent explorations in 1829 by Allan Cunningham, who was in the boats with Oxley when the latter for the second time ascended the river in 1824. The old name was worth preserving, if only because it suggests a circumstance otherwise lost sight of in consequence of the disappearance of Oxley's journal of his first exploratory trip up the Brisbane, in 1823. It may be supposed that in that reach he saw a native canoe, a thing nowhere else mentioned in connection with the Brisbane River or Moreton Bay, except by the castaways, Pamphlet and Finnegan, when telling their story to Oxley's companion, Mr. Uniacke. The northern point, where the river flows into Moreton Bay, was named after this Mr. Uniacke, on Cunningham's map, of 1829. Canoe Creek has, for a longer period than can be readily traced, been known as Oxley Creek, a meagre and insufficient tribute to the memory of that energetic and successful explorer.

The line which, on the dial, indicates the direction of Point Danger, points over rather featureless country, and the white, dotted buildings of Rocklea, a suburb extending beyond South Brisbane, on the ridges between the river and the old Ipswich road, are about the only objects for the eye to rest on, before the prospect melts into a dim succession of undulating, timbered country, amidst which, and in about the same course, the South Coast Railway from Brisbane to Nerang and the N. S. Wales border runs, invisible from this point of observation. Point Danger is the place where Macpherson's Range, separating Queensland from New South Wales, runs down to the Pacific, and there in the earliest times a sharp lookout was kept to intercept runaways from the penal stations at Brisbane and Dunwich, and from the boats' crews of prisoners who were stationed down the Bay. A good many absconders were caught at Point Danger and brought back to Brisbane town to receive the inevitable flogging of from 25 to 200 lashes.

The course of Macpherson's Range, which was named, probably by Captain Logan, after the Colonel of the 39th Regiment, then in Sydney, can be dimly seen, and guided by the line marked on the
dial, a mass standing out, known as Tambourine Mountain, can be distinguished. Tambourine Mountain, however, is, like Mt. Warning, not a hump on the main backbone of the Macpherson Range. An offshoot of that range, parting from it at right angles, nearly north and south for many miles, brings Tambourine Mountain, its northerly knoll, much nearer than the Main Range. Tambourine Mountain is worthy of particular notice, and probably destined, in time to come, to be a place of resort for people from the lowlands, who may desire an invigorating change of scene and of air. The summit of the range here is not difficult of access, spurs of moderate gradient leading up. When the top is reached, a plateau of considerable extent is found to exist, formed of rich volcanic soil, seamed with running brooks and clad with forest and scrub. The elevation here is sufficient to give an agreeable coolness to the temperature. Most of the land has been parted with to selectors, and until complete railway communication is provided, the place as a health resort is not likely to be spoilt by over-crowding. The access to it is capable of much improvement.

Just a little to the west of Mt. Tambourine, the lofty head of Mount Warning thrusts itself towards the zenith. This eminence was so named by Capt. Cook because when it came in sight from the ocean it was time for the seaman sailing from the south to look out for the dangerous reef which juts out from Point Danger.

It is doubtful, however, whether any prominence on the line of mountains here forming the horizon is actually the summit of Mt. Warning. There is visible just a little knob, in the direction of its bearing. But the crest of the Macpherson Range in that part of its course is lofty and probably intercepts the view to Mt. Warning. Were Mt. Warning visible, the visitor to Mt. Coot-tha, who looked upon it, would view part of "New South Wales." This mountain is situated, not on the backbone of the dividing range, but at the extremity of a spur which strikes to the southward. The Tweed River has its source around the base of Mt. Warning. Along this line the eye glances over the middle portions of the valleys of the Logan and Albert Rivers. Nearer, and, as it were, at the feet of the gazer, a long, sinuous reach of the Brisbane shows its shining surface, like a couple of lakes connected by a scarcely perceptible channel. This appearance is, of course, due to the ridges shutting out the view of its course here and there. This is the highest point at which the river itself is visible, although its course can be readily traced a long way further westerly.

Carrying the glance still further in a westerly direction, there begins to rise, in the middle distance, a nearer range of hills, which culminate in the striking peak, Mt. Flinders, presently to be particularly referred to. Before reaching that eminence, however, there may be seen, with an unassisted eye, beyond a dip in the backbone
of that range, between two mounds, far beyond them, a remarkably shaped mountain-top. This appears to rise on both sides in sheer precipice. Somewhat further to the west, and about equally far away, two great peaks tower skyward, and the dial points to them by the names of Mounts Lindesay and Barney. The names of these three lofty mounts have been the occasion of much confusion, which has only while this paper was in course of preparation been reduced to order by investigations undertaken by Mr. R. M. Collins, himself a resident of the Logan district since early childhood, and familiar with every feature of the district. The first mountain just mentioned is now ascertained to be beyond reasonable doubt Mount Hooker—so named by Frazer and Cunningham during an exploratory trip with Logan in 1828, in honour of their mutual friend, Sir Wm. Hooker, then Mr. Hooker, Regius Professor of Botany at the Glasgow University. On all modern maps the name of Mt. Lindesay is set against it. But on an old map of 1829, by Allan Cunningham, it is shown with the original name—Mt. Hooker—set against it; and Mt. Lindesay is one—the highest—of the two detached peaks just indicated, and is marked Mt. Barney on modern maps. Mt. Lindesay was first noticed and named after Major Lindesay, of the 39th Regiment, by Oxley, in 1824, during his second local exploration of the Brisbane River, when he saw it from a high peak, called by him Bellevue Hill, by Cunningham styled Mt. Arucaria in his 1829 map, and now named Goat Mountain. This eminence is a part of the D'Aguilar Range, near Mt. Crosby.

Logan ascended to the top of Mt. Lindesay and thence perceived to the S.W. some open country—evidently patches of the Darling Downs up Killarney way, at the head of the Condamine.

The wild and rugged country upon which these lofty peaks look down, mutely challenging all beholders to storm their formidable ramparts, has attracted, at long intervals, adventurers with spirit and disposition for the enterprise. Some years ago, Mr. Borchgrevinck, more recently associated with antarctic exploration, successfully scaled, in company with a Mr. Brown, the Mt. Lindesay of the maps (actually Mt. Hooker). But Mr. T. de M. Murray-Prior, of Maroon, a station in the neighbourhood, accompanied by Mr. Pears, now police magistrate in Rockhampton, had preceded him. As for the Mt. Barney of the maps (the true Mt. Lindesay of Oxley and Logan), before Mr. Borchgrevinck's feat, that had been ascended by a party of four, consisting of Mr. R. M. Collins (already mentioned), Mr. G. A. Kingsley (son of Chas. Kingsley), John Smyth, and J. G. Collins. These noticed the open country to the S.W., as seen by Logan, and also that they were on the highest mountain in the vicinity. These facts set Mr. R. Collins thinking and led him to the investigations
which have disclosed the confusion of names, locally as well as on maps. There seems also to have been an earlier ascent, subsequent to Logan's, of which no written account has been preserved, or perhaps was ever penned. Local tradition, current as far back as 1865 and even then believed to relate to a time long antecedent, told of an ascent of the Mt. Barney of that time, accomplished by some daring climber, who found a perilous way up certain clefts by availing himself of rope-like vines which hung and clung to the crevices. The story went on that since that feat, a bush-fire had destroyed the vines and precluded any repetition of the exploit. On modern maps the real Mt. Hooker is (under the name of Mt. Lindesay) figured to be 4,046 feet high, and the real Mt. Lindesay (under the name of Mt. Barney) at 4,500 feet. Allan Cunningham's observations gave for the latter a height of 4,700 feet.

Mr. R. M. Collins has, in a paper read in Aug., 1897, before the Royal Geographical Society of Australasia, very aptly called attention to a fact which may well be present to the minds of visitors gazing from Mt. Coot-tha on those distant peaks. That is, that they are not mere inconsiderable mounts, but generally higher than the loftiest mountains in the British Isles. Thus, Ben Nevis is only 4,406 feet above sea-level, nearly 100 feet less than Mt. Lindesay. Snowdon is but 3,570 feet, and the highest mountain in Ireland—a point of the Macgillicuddy Reeks—only 3,414 feet. Now, the whole chain of the Macpherson Range between Mt. Hooker and the Pacific, as it stretches before the vision of an observer on Mt. Coot-tha (the last 14 or 15 miles towards the sea are not in sight, the view being intercepted by Tambourine Mount) has a general elevation varying from 2,500 to 3,500 feet above sea-level.

Past the foot of Mt. Hooker a track leads over a low point in the range into New South Wales, emerging near the extreme head of the Richmond River, the first station come upon being Unumgar. It was in the wilder country towards Mt. Lindesay that twelve years later than Logan's exploration. Surveyor Stapleton and an assistant named Tuck were killed by the blacks, and a third man, Dunlop, left for dead.

Standing on the summit of Mount Coot-tha, looking forth over the undulations of the forest-clad country away to the Main Range, the visitor at the commencement of the 20th century can easily revive the impressions which may have moved his predecessors, no further back than two generations. That tract, now parcelled out among graziers and farmers, was then a land of mysteries and dangers. Where railways advance towards its centre in 1901, no man could venture even in 1840, except at peril of his life. Could the romances connected with the working out of the change be but collected, they would furnish thrilling reading.
Mount Coot-Tha Reserve.

But it is necessary to push on. "Flinders' Peak" is the next eminence to which a line of bearing points the direction. This remarkable hill, the highest of several conical peaks of a secondary range between the spectator and the Main Range, was first perceived by Lieut. Flinders (H.M.S. Reliance), during his visit to Moreton Bay in the year 1799. He showed it in his chart, marked "High Peak." Copies of that chart were in the hands of every subsequent official explorer. Oxley evidently was familiar with it. From "Termination Hill," or from Bellevue Hill already mentioned, he saw the Mount, and identified it as "the High Peak of Flinders." Hence by easy process the present name, "Flinders' Peak." In Adelaide, South Australia, there is a monument to Flinders' memory, and in Melbourne a street, but this striking peak must be the grandest and most enduring memorial of this, the greatest of Australian maritime explorers, a worthy successor of Cook. The adventures of Flinders would suffice to fill a volume with romantic incidents. He seemed born to adventures and misadventures, and survived but a few years his detention at Mauritius as a prisoner of war by the French governor of that island, under circumstances scarcely justifiable. But he died in his bed in his own mother country, being in that respect more fortunate than Cook, killed by savages, and still more so than his own sometime shipmate, Surgeon Bass (H.M.S. Reliance), with whom and a boy he explored the ocean coast of New South Wales, southerly, in a boat eight feet long! Poor Bass, voyaging homeward, and calling in at a South American port, was arrested as a foreigner and heretic and never heard of more. It is believed that he thereafter lived and died a slave at the diamond mines.

The lesser peak on the continuation of the range from Flinders' Peak is Mt. Goolman. A little further to the westward, following the dipping slope of the same line of hills, a low knob will be noticed, beyond and exactly over which, at a great distance, another knob of almost identical shape will be seen topping a cone with sides of gentle slope. This distant knob is Wilson's Peak, the lofty mountain which rises at the point of junction of Macpherson's Range with the main Dividing Range.

Carrying the observation now along the latter, Cunningham's Gap cannot be mistaken, looking in the direction pointed on the dial. When Allan Cunningham, in June, 1827, pushing north from New England, discovered the Darling Downs, he sought further to find some route by which the coast could be reached; and making for a remarkably excavated part of the Main Range, he discovered this opening, whence the Moreton Bay district is overlooked. The high mounts which stand sentry on each side of the pass he named Cordeaux and Mitchell. The latter—named after Sir Thos. Mitchell, Surveyor-General of New South Wales—looks a sort of rounded hum-
mock, as seen from Mt. Coot-tha. When one stands nearer its shadow, however, it bears a different aspect. Towards its summit, it presents almost perpendicular walls to would-be climbers. In later years, when the pass was considerably used by travellers from the Downs to Ipswich and Brisbane, there was a public-house there. It was kept by one Jubb, a comical character, being a brawny, stout man, with a soft, low voice and a trick of using much finer language and longer words than he was quite at home with. The late N. Bartley, in his gossip book, "Opals and Agates," has a good deal to say about the Gap and about Jubb. The merry blades of the fifties nicknamed Mt. Mitchell "Jubb's bald peak." It was Jubb who, climbing up that mountain alone, as far back as the forties, met a lot of "Myall" blacks coming down, spear and boomerang in hand, and to divert their attentions from his own carcass, made them understand that "plenty flour and sugar lie down along-a wheelbarrow," indicating the drays which were below, which they scampered down to sack. But the drays were well guarded in those days, and Jubb rejoined his companions in safety.

Not content with having discovered the Darling Downs and a gap opening therefrom to the lower coast country, Allan Cunningham voyaged up to Brisbane town the very next year, and undertook to reach the Gap from below. Captain Logan, the Commandant, had just before discovered the mouth of the Logan, so he, Cunningham and Frazer, another botanist, started off to try and reach the Gap by travelling up that river. This brought them to the ravines at the foot of Mts. Barney and Lindesay, as already mentioned, and they had to turn back. But they made their way out by Limestone, now Ipswich. Cunningham parted from them near Flinders' Peak, struck off afresh with three men and two pack-bullocks in search of his gap, and this time found it, climbed up it, pushed through, reached places on the Darling Downs where he had been the year before and thence returned to Brisbane.

Many years had elapsed and Cunningham was in his grave in Devonshire Street Cemetery, Sydney, before his Gap was re-visited by a white man. Capt. Logan, too, was dead, and Lieut. Gorman was Commandant in his stead. It was in 1841 that Patrick Leslie, the first squatter to take up country on the Darling Downs, following the directions in Cunningham's journal, made his way to the Pass, attended by his faithful henchman, Peter Murphy, alias Duff, "a lifer," and gazed wistfully on the prospect below and before him, straining his eyesight to discover some indication of Brisbane town. Murphy, eagerly scanning the distant prospect, asked him whether there was a church at the settlement. Leslie had no knowledge of such a building existing, but told him there was a windmill, upon
which Murphy told him he saw it. This was the present Observatory tower, and as lime was abundant, no doubt it shone brilliantly white. Leslie and Murphy clambered down the Pass and made for Limestone, but after some progress turned back, as Leslie had no permit, without which at that time no one was allowed to approach within 50 miles of the penal settlement. He has left no record of his impressions when he stood on the brink of Cunningham's Gap, viewing the wide, wild prospect before him. Leslie was not a sentimental man. Mr. Bartley has, however, word-painted the picture, from the same spot.

"Glorious was the view to the south, over the peaked mountains which mark the heads of the Clarence and Richmond rivers, from this 1,900 feet of elevation; while another 1,900 feet above me, or 3,800 feet in all, there appeared, sitting hign as it were on a silver bank of fog-cloud, a solitary stone pulpit in the sky, being the narrow, rocky, eastern 'horn' of 'Mount Mitchell,' that looks over to the sea and the savannahs of West Moreton; all the rest of the mountains, between me and it, being robed in the cloud over which peeped this apparently air-borne, spectral, stone pulpit; it might have been a balloon a mile in the air, so little seemed the connection between it and the earth below, and it was a sight of unearthly beauty rarely seen."

A little later than Leslie's journey, Messrs. Elliott and Hodgson descended the Gap and made their way through to Brisbane. No doubt they had permits. Elliott had been General Sir Geo. Gipps' Aide-de-camp. He must not, however, be confounded with the first Speaker of the Queensland Legislative Assembly, whose portrait ornaments the Parliamentary library. On their return these two gentlemen, who had occupied country on the Darling Downs, brought their bullock drays down the Gap—a tremendous job. They had no hope of getting them up the same way, and, Commandant Gorman personally assisting, a better ascent, known on account of its merits as Gorman's Hell-hole Pass, was discovered and made possible, reaching the top of the range near Drayton. However, this lies out of sight from Mt. Coot-tha, so it is not necessary to pursue this matter further.

Turning slightly to the right a group of white dots shows the situation of Ipswich. Only buildings on the higher ridges are thus visible. Further round the prospect is cut off by the southernmost points of D'Aguilar Range.

But, although the scope of the prospects from Mount Coot-tha is thus limited, the scenic resources of the reserve of which it is but one of many eminences, are by no means exhausted. The visitor, quitting the Mount and leaving behind him the shade of the leafy fig-trees and the conveniences provided in the way of a plain pavilion and water-tanks, supplied by the rainfall on its roof of iron, will find a cleared
but unformed track leading along the saddle of a spur to other knolls whence different and interesting, although less extensive, views present themselves. To the west and north-west the irregular banks of the D'Aguilar Range rise, embaying a rugged valley, above which, on bluffs half-way towards the summit, are clearings, buildings of Brookfield, where, availing themselves of patches of volcanic soil, enterprising settlers cultivate sugar-cane, while enjoying lovely views towards the river.

So far the views from Mount Coot-tha have chiefly suggested memories of past times. In imagination the eager Logan and the Commandants who succeeded him have been seen on this eminence scanning the far-extending landscape, observing the numerous threads of smoke which indicated to them where the abounding natives were grouped around their fires, and pondering on the mysterious possibilities of the unknown interior, which lay beyond the distant mountains which closed in the prospect.

The theme may now be varied, and conception be exercised to idealise the scene which will, a century or two hence, disclose itself from this standpoint to the observant visitor of those times to come. Perchance by then the garment of forest which now covers the land with almost unbroken monotony, will, like the pines and brushes of the early days of white man's intrusion, have been improved off the face of the land. Where now painted cottages of wood dot the scene, along the river's course, palaces may have been reared. The cold and foggy valley of the Thames may then have lost its present throng of inhabitants, and under a kinder sky and in a more genial climate, there may here be that concentration of population which the beauty of the country appears as though created to attract and retain.

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Note.—The distant peaks and mountains not coming within the range of a photographic landscape, the accompanying illustrations have been reproduced by photo-engraving from a fine water-colour picture, painted by Mr. A. Thomas, of the Survey Department, and kindly lent by him for the purpose.
THE THOORGA LANGUAGE.


Prefatory.

In the following pages an attempt will be made to supply the outlines of the structure of the Thoor'ga, or Thur'-ga, language, which is spoken by the aborigines scattered along the coast of New South Wales from Bermagui northerly to Jervis Bay.

To the north and north-west of the Thoorga are the Thur'rawal, Dhar'rook, Gun'dungur'ra and Ngoonawal tribes. Adjoining the Thoor-ga on the south are the Jirringāŋ, Thāva and other communities. The speech of all the tribes mentioned is similar in grammatical structure, although differing more or less widely in vocabulary, and constitute a language which differs in several important respects from that of the natives of other portions of New South Wales.

The above aggregate of tribes covers the territory between the Hawkesbury River and Cape Howe, extending inland till met by the great Wiraijuri nation, whose speech belongs to the Yookumbill order, which I have briefly outlined in the Appendix hereto. It is hoped that the two types of Australian languages described in this paper may be found useful to philologists.

The different parts of speech will be first dealt with, showing the declensions of nouns and adjectives, the modifications of pronouns, and the conjugation of verbs. A few songs used at the initiation ceremonies come next, after which there is a vocabulary containing about four hundred and sixty carefully-selected words from the Thoor-ga tongue.

Every word in this paper has been taken down by myself from the lips of several old men and women of the Thoorga tribe on different occasions, according as opportunities offered to make special journeys among them. The student of ethnology will readily understand all the difficulties and patient work appertaining to a first attempt to reduce to writing the language of a savage people possessing no literature of any kind, where all the particulars have to be gathered orally from the native speakers. I therefore crave the indulgence of the reader for the incomplete form of this article, as well as for any errors which are necessarily incident to the first edition of a work of this character. On a future occasion I hope to complete the task upon which a commencement has now been made.

* Read before the Royal Geographical Society of Australasia, Queensland, 28th November, 1901.

D—ROYAL GEO. SOC.
Orthography.

The vowels used in the Thoorga language are a, e, i, o, u; and the consonants, b, c, d, g, h, j, k, l, m, n, p, r, t, w, y. In this treatise every word is spelt phonetically, the letters having the same value as in English, with the undermentioned qualifications:

Vowels have the usual short sound, unless marked, as follows:—

| ã as in late | ï as in kite | ë as in bear |
| ã as in far | ï as in far | ë as in vote |

It is hard to distinguish between the short, or unmarked, sound of a and that of û. A difficulty also met with in several other languages.

Combinations of vowels are pronounced thus:—

ee, as in meet; oo, as in moon; ou, as in loud.

In order to get the native pronunciation as accurately as possible, it has been found necessary to make certain combinations of consonants when spelling some of the words.

Ng at the beginning of a syllable, as nga, has a peculiar nasal sound, which can be got almost exactly by assuming oo to be placed before it, as oo-ngâ, and then pronouncing the two syllables as one. At the end of a syllable, it has the sound of ng in sing, but more nasal.

The sound of the Spanish ñ is frequent. At the commencement of a word or syllable I have represented it by ny, as nyîr, which is articulated as one syllable. At the termination of a syllable, ñ is adopted, as yoo-ñî.

Y, followed by a vowel, is attached to several consonants, as dyâ, lyee, byoo, tya, and so on, which are pronounced as one syllable, sounding all the letters. Y sometimes follows a consonant at the end of a word, as in gur-ra-gaty, meaning slow. In such cases it must form part of the preceding syllable; thus, gaty should be pronounced all in one.

Dh, whether at the beginning or end of a word, is pronounced nearly as th in that, with a slight sound of d preceding it; thus, dhoo-ghan, a camp, and kan-na-go-badh, a porcupine. Frequently th is used instead of dh, when an initial t sound is substituted for that of the d.

Nh at the commencement of a syllable, as nhoor, is pronounced as the th in that, with the sound of n before it. At the end of a word, it resembles nth in tenth, omitting the final hissing sound.

The final h is guttural, closely resembling the ch in the German word joch.

T is interchangeable with d, p with b, and g with k.

R has a rough trilled sound as in the exclamation hur-rah! no matter what its position in the word may be.

The sound of j at the beginning of a syllable is often given by the natives as ty or dy, thus, tya has substantially the sound of ja.

Ch, which seldom occurs, is pronounced as in church.

The accent is shown thus. Kul'la, and when two syllables are accented, both are marked in the same way.
When there is a reduplication of a consonant, as in boorra, each letter is distinctly enunciated.

To Mr. H. E. Hockey, manager of Wallaga Lake Aboriginal Station, I wish to express my thanks for his courtesy in allowing me to have free access to the natives under his charge, and for other acts of kindness during my visits to that portion of the district while engaged in my ethnological investigations.

Articles.

There are no articles, such as the equivalents of "a" and "the," in the language.

The usual arrangement of words in a sentence is to place the nominative first, then the adjective, and lastly the verb, as Koongarangga jiroura thunnan, the opossum leaves eats (is eating). An adjective qualifying either the nominative or objective, follows its noun. Space will not admit of examples at present.

Nouns.

Nouns are subject to variation on account of number, gender, and case—the inflexion being effected by means of suffixes or postpositions.

Number.—There are three numbers, the singular, dual, and plural.

The singular number denotes one; the dual number two, or a pair; the plural number more than two. Generally, the dual is formed by adding the termination burra to the word; the plural is formed by suffixing burraga; as in the following examples:—

(1) One opossum, Koong'ara
   A pair of opossums, Koong'arambur'ra
   Several opossums, Koong'arambur'raga

(2) One kangaroo, Boo'roo
   A pair of kangaroos, Boo'roowur'ra
   Several kangaroos, Boo'roowur'raga

(3) One boomerang, Warang'an
   A pair of boomerangs, Warang'anbur'ra
   Several boomerangs, Warang'anbur'raga

In the first example the name of the animal ends with a vowel, and the syllable is closed by the annexure of the letter m, which is then followed by the suffixes burra and burraga respectively. The letters m and b are closely related to each other in sound; in the articulation of the former the air escapes through the nose—in the latter through the mouth. Therefore, the introduction of the m before the b makes the whole word flow more easily than if the m were not there.

In the second example the creature's name concludes with oo, which is closely allied to u in sound, therefore the b is dropped from the beginning of the next syllable, and a w substituted for it, making the whole word read boo'roo-wur-ra—the two syllables roo-wur melting into each other.
In the third example, the name of the object terminates with *n*, and the suffix is added without modification. It appears, therefore, that the suffixes are liable to variations which are apparently designed for the sake of a pleasing, easy pronunciation.

**Gender.**—There are two modes of indicating difference of gender in nouns:—(1) By using different words for the male and female; and (2) By affixing some word indicative of sex.

Yoo'ii is a man, wang'gan a woman. Kum'mera means an old man; karng'ga an old woman. Gubbogoobal, a boy; yan'dabal, a girl.

The gender of animals is usually expressed by forming a compound with another word, as Wuddhung'ur beano, a male dog; wuddhung'ur wang'ganmano, a female dog. Wang'ganmano being derived from wang'gan, the name of the human female.

For a few of the animals a specific word represents the male, without naming the animal, but in the case of the female the animal name must be stated, followed by a distinguishing word. For example, the male of the koong'ara, opossum, is called kumburrooa, whilst the female is spoken of as koongara-koorooro. Gumbawur, native bear, has the single word bur'runda for the male, but the female is represented by giving the name of the animal, followed by koorooroon, thus—gumbawur-koorooro. A female kangaroo is called immer, as boorooro-immer.

When the name of any animal or inanimate object is mentioned, without some word specifying the sex, the masculine gender is invariably understood.

**Case.**—The principal cases are the nominative, nominative-agent, possessive, accusative, dative and ablative.

The nominative is expressed in two ways, the first being called the nominative—the second the nominative-agent. The noun is unaltered if we merely name the object under consideration, as, wuddungur thambamoolaga, a dog I saw. But if we speak of the object as performing any act, a suffix is required, as wuddungurra koongara buddhal, the dog an opossum bit. Koongarangga jiroura thunnan, an opossum leaves is eating. The form of the suffix varies slightly with the termination of the noun to which it is annexed, as in the last two examples. Frequently the agent-suffix is omitted altogether.

The possessive (genitive) is formed by adding the suffix noo, or its variants, to the name of the object possessed, and dha, or a euphonic modification, to the name of the possessor, as follows:—

Wanggan, a woman—wurran, a child; but wangujandha wurranyoo is a woman's child.

Yooin', a man—bimbia, a shield, and yooindya bimbianoo, a man's shield.
Wurran, a child—thoogan, a camp; but wurranya thooganoo is a child's camp.

The possessive case of a large number of nouns is effected by a suffix corresponding to the person and number required, thus forming one word, which can be inflected as under:

| SINGULAR   | 1st person | My camp |Thoonganhooga |
|            | 2nd        | Thy camp |Thooganoong   |
|            | 3rd        | His camp |Thooganoo     |

| DUAL ...   | 1st person | (Our camp (incl.) |Thoogangul |
|            | 2nd        | (Our .. (excl.)  |Thoogangullung|
|            | 3rd        | Your camp        |Thooganbool  |
|            |            | Their camp       |Thooganbool  |

| PLURAL     | 1st person | (Our camp (incl.) |Thooganyin  |
|            | 2nd        | (Our .. (excl.)  |Thooganyinnunga|
|            | 3rd        | Your camp        |Thoogandhoor|
|            |            | Their camp       |Thoogangadhan|

The native words in the above table read thus:—Camp my, camp thy, camp his, and so on.

In the accusative there is generally no change in the noun, as, Wangandha wurranyoo garay thunnan—the woman's child a snake is eating.

The sense of the ablative case is often obtained by means of the objective: Wuddungurra koongara buddhal—the dog the opossum bit: that is, the opossum was bitten by the dog.

The dative case is sometimes obtained in a similar way: Eedhunggooroo murrawarnoo mirreejigga ngoomal—the mother her daughter a bandicoot gave, or, the mother gave a bandicoot to her daughter.

Usually the ablative and dative cases are shown by suffixes to the noun, and in a few instances they are indicated by modifications of the verb.

**Adjectives.**

Adjectives have three numbers, and are placed after the nouns they qualify. When an adjective qualifies a noun in the dual or plural, the requisite suffix is attached to both:

- Yooiŋ garneena, a man bad
- Yooiŋburra garneenamburra, a pair of men bad
- Yooiŋburraga garneenamburraga, several men bad.

The suffix is often omitted from one of the words, leaving the noun only, or the adjective, to indicate the dual and plural.

Adjectives also take the same possessive, dative, and ablative suffixes as the nouns with which they are used.

The comparison of adjectives does not follow the same rules as in European languages, but there are several ways of comparing one quality or quantity with another. One method is to use a stronger form
of the same word, thus, birraga, large; birragambora, above the average size; birragangoodhoo, very large.

Referring to a couple of boomerangs, which are equally good, a native would say, Warrangan ſeen jummagadha—warranganwal jinginda jummagadha, Boomerang this good—boomerang other that good; that is, This boomerang is good, that other boomerang is good. If a better weapon were produced, he might say, Warrangan jummagan-
goodhoo, boomerang very good.

Where one of the objects compared is smaller or inferior in any way to the other, the speaker will use words to imply, small this, large that, or as the case may require.

Comparison may be effected by using different words, as, gooro'ugoora, fast; joambadhoo, resembling the speed of a falling star.

We have seen that when used qualitatively, adjectives are inflected for number and case; when they are used as predicates, they are inflected for person and number, and are placed foremost in the sentence:

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1st person</th>
<th>I am good (good I)</th>
<th>Jummagambaga</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Thou art good (good thou)</td>
<td>Jummagambee</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>He is good (good he)</td>
<td>Jummagaman</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DUAL</th>
<th>1st person</th>
<th>We are good (incl.)</th>
<th>Jummagambung</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>We &quot; &quot; (excl.)</td>
<td>Jummagambungulla</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>You are good</td>
<td>Jummagamboo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>They are good</td>
<td>Jummagamburra</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PLURAL</th>
<th>1st person</th>
<th>We are good (incl.)</th>
<th>Jummagamban</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>We &quot; &quot; (excl.)</td>
<td>Jummagambuga</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>You are good</td>
<td>Jummagamban</td>
<td></td>
</tr>
<tr>
<td></td>
<td>They are good</td>
<td>Jummagamburraga</td>
<td></td>
</tr>
</tbody>
</table>

Any adjective which is used in this way, as I am strong, hungry, glad, and so on, can be inflected as in the above example. They also admit of inflection for past and future time, like intransitive verbs. One example in the singular of each tense will be sufficient:

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1st person</th>
<th>I was good</th>
<th>Jummagamboolaga</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Thou wast good</td>
<td>Jummagamboolee</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>He was good</td>
<td>Jummagambool</td>
<td></td>
</tr>
</tbody>
</table>

And so on for the dual and plural.

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1st person</th>
<th>I will be good</th>
<th>Jummagambobooga</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Thou will be good</td>
<td>Jummagamboboonee</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>He will be good</td>
<td>Jummagamboboone</td>
<td></td>
</tr>
</tbody>
</table>

It appears, therefore, that any adjective which describes a quality or attribute, which can be connected with a personal pronoun, as "I am good," "he is merry," "we are sick," can be conjugated in the same manner as an intransitive verb. The primary use of these words as adjectives is exemplified in such expressions as "A good woman,"
"a merry boy," "a sick man," and they are then declined for number and case only. Many adjectives, as bright, sweet, frosty, thick, and so on, cannot be used as verbs.

It would be better, perhaps, to include the predicative adjectives among the verbs, but I have thought it as well to illustrate them under the present heading, for the purpose of keeping all the adjectives together.

Pronouns have the singular, dual, and plural numbers, and are without gender. The nominative and possessive pronouns are as under:

<table>
<thead>
<tr>
<th>Person</th>
<th>Singular</th>
<th>Dual</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Ngiaga</td>
<td>We (incl.) Ngiawung</td>
<td>We (incl.) Ngiawungaull</td>
</tr>
<tr>
<td></td>
<td>Mine</td>
<td>Ours (incl.) Ngiawungaloo</td>
<td>Ours (incl.) Ngiawungaool</td>
</tr>
<tr>
<td>2nd</td>
<td>Thou</td>
<td>We (excl.) Ngiawungulla</td>
<td>Ngiawungallool</td>
</tr>
<tr>
<td></td>
<td>Indeega</td>
<td>Ours (excl.) Ngiawungalangool</td>
<td>Ngiawungallangool</td>
</tr>
<tr>
<td>3rd</td>
<td>He</td>
<td>They</td>
<td>We (incl.) Ngiawañ</td>
</tr>
<tr>
<td></td>
<td>Jeejulla</td>
<td>Indeewoo</td>
<td>Ours (incl.) Ngiawunyungool</td>
</tr>
<tr>
<td></td>
<td>Thine</td>
<td>Yours</td>
<td>Indeewool</td>
</tr>
<tr>
<td></td>
<td>Indeeganguella</td>
<td>Theirs</td>
<td>Indeewuñungool</td>
</tr>
<tr>
<td></td>
<td>His</td>
<td>Ngiawunyungleenjulla</td>
<td>Theirs Jellanowurra</td>
</tr>
<tr>
<td></td>
<td>Jellangool</td>
<td>Jellanowurra</td>
<td>Jellanowurra</td>
</tr>
</tbody>
</table>

These pronouns are not much used as separate words, except in answer to a question, or assertively. If some one asks, "Who is going hunting?" a man may answer, "Ngiaga," I am, or "Ngiawungulla," we (dual exclusive) are. If an inquiry be made, "Whose food is this?" some one may reply, "Indeegangool," thine; or "Ngiawunyungool," ours (plural inclusive), and so on.

There are other forms of the above pronouns, meaning "for me," "with me," "from me," etc., which extend through the three numbers and persons. And the number of a noun can be expressed by means of the pronoun, thus, a native could say, in reference to a couple of anything, "Ngiagangoolowurra," mine both; if referring to several articles, he might say, "Ngiagangoolowurra," mine all, and so on.

Pronominal suffixes, in abbreviated forms, are used in great number and variety in the declension of nouns, adjectives, verbs, prepositions, and adverbs, examples of which are given under these parts of speech in the present article.

The equivalents of the demonstrative pronouns, "this" and "that," are declinable for dual and plural number, and also have modifications
to express possession. In these demonstratives—and also in the personal pronouns—there are two forms of the nominative case, one being the simple nominative, and the other the nominative agent. as already explained in dealing with the nouns in an earlier page.

The interrogatives "who" and "what" have numerous inflections for number, person, and case, a few of which are as under:—

Who art thou, wunnunggawee
Who are you (two), wunnunggawoo
Who are you (several), wunnunggawun
Who is there, wunnungga nyoon
What is the matter (with thee), minyamanee
What is the matter (with them, several), minyamanha
Who is this for, wunnugalool neen.

Other forms of these interrogatives represent, belonging to whom and what, from whom and what, etc.

If there be any relative pronouns, they have up to the present escaped notice.

**Verbs.**

Verbs have three numbers—the singular, dual, and plural. There are three principal moods—the indicative, imperative, and subjunctive, or conditional, with indications of an infinitive, which I have not yet succeeded in establishing.

There are three persons and three primary tenses—present, past, and future—and possibly a perfect is occasionally used. Conjugation is effected by numerous postpositions, among which there is considerable regularity. What are called participles in English become part of the inflexion of the verb in the native tongue.

The stem of the verb and the pronominal suffix with which it is used, together form one word, as. Booroo thambamoolee, a kangaroo saw I; Booroo thambamoolee, a kangaroo sawest thou, and so on. This permits of the verb, and its corresponding particle, being inflected together throughout all the tenses. When a pronoun is postfixed to a verb in this way, the former is very much contracted. The following is the conjugation of the verb Jama, "to talk or tell."

**Active Voice—Indicative Mood.**

<table>
<thead>
<tr>
<th>Present Tense</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SINGULAR</strong></td>
</tr>
<tr>
<td>1st Person</td>
</tr>
<tr>
<td>2nd</td>
</tr>
<tr>
<td>3rd</td>
</tr>
<tr>
<td><strong>DUAL</strong></td>
</tr>
<tr>
<td>1st Person</td>
</tr>
<tr>
<td>2nd</td>
</tr>
<tr>
<td>3rd</td>
</tr>
<tr>
<td><strong>PLURAL</strong></td>
</tr>
<tr>
<td>1st Person</td>
</tr>
<tr>
<td>2nd</td>
</tr>
<tr>
<td>3rd</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
### Past Tense

<table>
<thead>
<tr>
<th>1st Person</th>
<th>2nd Person</th>
<th>3rd Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular</td>
<td>I talked</td>
<td>Jamoolaga</td>
</tr>
<tr>
<td></td>
<td>Thou talkedst</td>
<td>Jamoolee</td>
</tr>
<tr>
<td></td>
<td>He talked</td>
<td>Jamool</td>
</tr>
<tr>
<td>Dual</td>
<td>We talked (incl.)</td>
<td>Jamoolung</td>
</tr>
<tr>
<td></td>
<td>We talked (excl.)</td>
<td>Jamoolungulla</td>
</tr>
<tr>
<td></td>
<td>You talked</td>
<td>Jamooloo</td>
</tr>
<tr>
<td></td>
<td>They talked</td>
<td>Jamoolawurra</td>
</tr>
<tr>
<td>Plural</td>
<td>We talked (incl.)</td>
<td>Jamoolun</td>
</tr>
<tr>
<td></td>
<td>We talked (excl.)</td>
<td>Jamoolunga</td>
</tr>
<tr>
<td></td>
<td>You talked</td>
<td>Jamooloon</td>
</tr>
<tr>
<td></td>
<td>They talked</td>
<td>Jamoola</td>
</tr>
</tbody>
</table>

### Future Tense

<table>
<thead>
<tr>
<th>1st Person</th>
<th>2nd Person</th>
<th>3rd Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular</td>
<td>I will talk</td>
<td>Jamooga</td>
</tr>
<tr>
<td></td>
<td>Thou wilt talk</td>
<td>Jamoonee</td>
</tr>
<tr>
<td></td>
<td>He will talk</td>
<td>Jamoonan</td>
</tr>
<tr>
<td>Dual</td>
<td>We will talk (incl.)</td>
<td>Jamoonyung</td>
</tr>
<tr>
<td></td>
<td>We will talk (excl.)</td>
<td>Jameemoongulla</td>
</tr>
<tr>
<td></td>
<td>You will talk</td>
<td>Jameemboola</td>
</tr>
<tr>
<td></td>
<td>They will talk</td>
<td>Jameoonawurra</td>
</tr>
<tr>
<td>Plural</td>
<td>We will talk (incl.)</td>
<td>Jameembulan</td>
</tr>
<tr>
<td></td>
<td>We will talk (excl.)</td>
<td>Jameemminga</td>
</tr>
<tr>
<td></td>
<td>You will talk</td>
<td>Jameoonan</td>
</tr>
<tr>
<td></td>
<td>They will talk</td>
<td>Jameoonana</td>
</tr>
</tbody>
</table>

### Imperative Mood—Present Tense

<table>
<thead>
<tr>
<th>2nd Person</th>
<th>3rd Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular</td>
<td>Let him talk</td>
</tr>
<tr>
<td>Dual</td>
<td>Let them talk</td>
</tr>
<tr>
<td>Plural</td>
<td>Let them talk</td>
</tr>
</tbody>
</table>

### Conditional Mood—Present Tense

<table>
<thead>
<tr>
<th>2nd Person</th>
<th>3rd Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular</td>
<td>I may talk</td>
</tr>
<tr>
<td></td>
<td>Thou mayest talk</td>
</tr>
<tr>
<td></td>
<td>He may talk</td>
</tr>
<tr>
<td>Dual</td>
<td>I may have talked</td>
</tr>
<tr>
<td></td>
<td>Thou mayest have talked</td>
</tr>
<tr>
<td>Plural</td>
<td>I may have talked</td>
</tr>
</tbody>
</table>

### Passive Voice

There is no special form for the passive voice. The phrase, "An opossum was bitten by a dog," is expressed in Thoorga by saying, "A dog bit an opossum."
Middle Voice—Indicative Mood.

**PRESENT TENSE.**

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1st Person</th>
<th>I talk to myself</th>
<th>Jamunjaleega</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUAL</td>
<td>1st</td>
<td>We (incl.) talk to ourselves</td>
<td>Jamunjaleeng</td>
</tr>
<tr>
<td>PLURAL</td>
<td>1st</td>
<td>We (excl.) talk to ourselves</td>
<td>Jamunjaleeann</td>
</tr>
</tbody>
</table>

**PAST TENSE.**

| SINGULAR | 1st Person | I talked to myself | Jamunjaleeoolaga |

**FUTURE TENSE.**

| SINGULAR | 1st Person | I will talk to myself | Jamunjalooga |

Each of the three tenses in the last examples contain all the persons and numbers, but I have only shown sufficient to illustrate their structure.

There is a reciprocal inflection of the verb in the dual and plural, as under:

- We (dual incl.) talk to each other | Jamunjaleeang
- We (plural incl.) talk to each other | Jamunjaleeann

The negative form of the verb consists of in-fixing the syllable *ngamba* between the stem of the verb and the termination, as in the following example in each tense:

<table>
<thead>
<tr>
<th>Present</th>
<th>I talk not</th>
<th>Jamangambaga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past</td>
<td>I talked no</td>
<td>Jamoolngambaga</td>
</tr>
<tr>
<td>Future</td>
<td>I will not talk</td>
<td>Jamoongambaga</td>
</tr>
</tbody>
</table>

And so on through all the persons of the singular, dual, and plural.

Various modifications of the verb are made, to convey different shades of meaning, of which the following are a few examples, which extend to all the persons and numbers:

| I talk to thee | ... | ... | Jamagoon |
| I talk for thee | ... | ... | Jamoonamagoon |
| Do not talk to me | ... | ... | Jamoongambeengga |
| I gave to him | ... | ... | Ngamalaga |
| He gave to me | ... | ... | Ngamaleengga |
| I took from him | ... | ... | Moondardillaga |
| He took from you two | ... | ... | Moondardilool |
| I took from you all | ... | ... | Moondardillagoondhoor |
| A man caught a wallaby | ... | Yooindyoo jarrooga dhubbagal |
| A man caught a wallaby for himself | Yooindyoo jarrooga dhubbagamil-leel |
| A man caught a wallaby for me | Yooindyoo jarrooga dhubbagamool-leengga |
| A man caught a couple of wallabies | Yooindyoo jarroogamburra dhubbagalool |
| A man caught several wallabies | Yooindyoo jarroogamburraga dhubbagalin (that is, a man several wallabies caught) |
It will be observed that the dative, ablative, and possessive cases are often included in the verb, as "to," "from," "for," etc. The number of the verb in some expressions agrees with the subject, and in others with the object, noun.

The Thoorga natives employ a verb meaning "to become," or "to intend," in future time, which can be used with an adjective or another verb, and in such cases the adjective or verb need not be declined.

In the following example the adjective bulwul, strong, will be taken:

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>Bulwul anyerreoooga</th>
</tr>
</thead>
<tbody>
<tr>
<td>I will become, or intend to be, strong</td>
<td></td>
</tr>
<tr>
<td>Thou wilt become strong</td>
<td>anyerreooonce</td>
</tr>
<tr>
<td>He will become strong</td>
<td>anyerreoon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DUAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>We (incl.) will become strong</td>
<td>Bulwul anyerreooong</td>
</tr>
<tr>
<td>We (excl.)</td>
<td></td>
</tr>
<tr>
<td>You</td>
<td>anyerreooongulla</td>
</tr>
<tr>
<td>They</td>
<td>anyerroonthoo</td>
</tr>
<tr>
<td>anyerroonawurra</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PLURAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>We (incl.) will become strong</td>
<td>Bulwul anyerrooön</td>
</tr>
<tr>
<td>We (excl.)</td>
<td></td>
</tr>
<tr>
<td>You</td>
<td>anyerrooinga</td>
</tr>
<tr>
<td>They</td>
<td>anyerrooan</td>
</tr>
<tr>
<td>anyerroonawurraga</td>
<td></td>
</tr>
</tbody>
</table>

**Prepositions.**

Post-positions, or the equivalent of what are called prepositions in English, are of two kinds, one of which comprises separate words, as booroongoona, between. The other kind consists of various particles suffixed to verbs, nouns, and adjectives, which give them a prepositional meaning. Thus, instead of using a separate word for "through," there is a verb, "irreetboolaga," meaning "through-went-I," which can, of course, be conjugated for number, person, and tense.

The following are a few words exhibiting a prepositional significance:

- Booroongoona boonbalwurra, between two trees.
- Bunnerwawalan boonbala, the other side of the tree.
- Burreetboolaga, across came I (as across a river).
- Nyirroowaga, down go I (as down hill).
- Dhulleeboaga, up go I (as up hill).
- Gooroomboaga, around go I (as around a camp).

Like nouns, some prepositions can be conjugated by suffixing an abridged form of the requisite pronoun:

<table>
<thead>
<tr>
<th>1st Person</th>
<th>Behind me</th>
<th>Burgidha</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGULAR</td>
<td>Behind thee</td>
<td>Burgioong</td>
</tr>
<tr>
<td>2nd</td>
<td>Behind him</td>
<td>Burgieen</td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DUAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Person</td>
<td>Behind us (incl.)</td>
</tr>
<tr>
<td>2nd</td>
<td>Behind us (excl.)</td>
</tr>
<tr>
<td>3rd</td>
<td>Behind you</td>
</tr>
<tr>
<td>3rd</td>
<td>Behind them</td>
</tr>
</tbody>
</table>
THE THOORG A LANGUAGE

Adverbs may be either primitive words, or they may be derived from adjectives, from which they differ so little that the use of the word determines what part of speech it belongs to. The numerous inflexions of the verbs lessen the necessity for the employment of adverbs, and hence diminishes their number in the language.

The following are a few examples of phrases containing adverbs, or having an adverbial meaning:

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>DUAL...</th>
<th>PLURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Person</td>
<td>2nd, 3rd</td>
<td>1st Person</td>
</tr>
<tr>
<td>Behind us (incl.)</td>
<td>Behind you</td>
<td>Behind us (incl.)</td>
</tr>
<tr>
<td>Behind us (excl.)</td>
<td>Behind them</td>
<td>Behind us (excl.)</td>
</tr>
</tbody>
</table>

"In front of me," "on my left," etc., can be conjugated similarly.

The meaning of the word "instead" is obtained by the following expression:—Yannoon—miooga, goes he, stop I; that is, he goes instead of me.

Adjectives.

Adjectives may be either primitive words, or they may be derived from adjectives, from which they differ so little that the use of the word determines what part of speech it belongs to. The numerous inflexions of the verbs lessen the necessity for the employment of adverbs, and hence diminishes their number in the language.

The following are a few examples of phrases containing adverbs, or having an adverbial meaning:

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>DUAL...</th>
<th>PLURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Person</td>
<td>2nd, 3rd</td>
<td>1st Person</td>
</tr>
<tr>
<td>Where am I</td>
<td>Where are you</td>
<td>Where are we (incl.)</td>
</tr>
<tr>
<td>Waddunggabaga</td>
<td>Waddungabung</td>
<td>Waddungabañ</td>
</tr>
<tr>
<td>Waddungbánee</td>
<td>Waddungabungulla</td>
<td>Waddungabanga</td>
</tr>
<tr>
<td>Waddungabanoo</td>
<td>Waddungaburra</td>
<td>Waddungaburraga</td>
</tr>
<tr>
<td>Waddungaburra</td>
<td>Waddungaburraga</td>
<td></td>
</tr>
</tbody>
</table>

The meaning of the word "instead" is obtained by the following expression:—Yannoon—miooga, goes he, stop I; that is, he goes instead of me.

The number of conjunctions in the Thoorga dialect is very limited. Their general absence is attributable to the numerous modifications of the verbs and pronouns, by which means sentences are brought together without the help of connecting words.

Exclamations.

Yi, calling attention. Wuddhou, hillo! Yuggadya, surprise. Moolo moooolonga, vexation. Most of these interjections have a dual and plural form.
The cardinal numbers, which are indeclinable, are as follows:

One—mir’dindhāl; Two—jirree’ba; Three—toor’oongad’ya; Four—jirree’bawal jirree’bawal; Five—mur’nawal, or a hand; Ten—Thou’a, the two hands; Many—thou’a-mullai.


The ideas of the natives in regard to numbers, quantity, and size, are very limited.

Aboriginal Songs at Initiation Ceremonies.

In an article contributed to the Anthropological Society, of Washington, in 1896, I described the Bunān1 ceremony of initiation in force among the native tribes occupying the south-east coast of New South Wales from the Victorian boundary to Bulli, and extending inland from eighty to a hundred miles. Since then I have also described a preparatory inaugural rite, called the Kudsha2, which is practised by the same people. This tract of territory includes the hunting grounds of all the tribes referred to in the present treatise.

In the papers referred to, I have given the words of certain sacred songs used in the celebration of the ceremonies, but am now in a position to incorporate the music of some of them in this article. The words of one of the songs chanted by the old men in the presence of the boys are:

Dharamooloon, Dhurramooloon
Bingilbee moondanunna
Gummerawarawa

These words are droned monotonously ad libitum to the following music:

Another song has the following words and music:

Dharramooloonga gale wirrabroo ganga
Ngoorungga wirraleema.

The words and music of another song are:

_Ngalalba waloolba jilleejileen._

One of the songs used by the women in the morning during the time their sons are away with the chief men undergoing initiation is:

_Jil'barara mus'ragadyah'

_Yam'ungad'yenah'

This is sung to the following music:

During the same period the mothers of the boys chant songs in the evening, of which the following is a specimen:

_Ngul'leejee gawinjee mullinda

_Gunilyee mong'gajee

The music runs thus, repeated as long as required:

Another song sung by the boys' mothers, with the accompanying music, is as follows:

_Millingalee kubberinya, millingalee kubberinya

_Bingundabee pambeeloonya

_Mirreewala pambeeloonya
These are the first songs of the aborigines of this part of New South Wales which have ever been set to music. It may be mentioned that the words of these chants possess no meaning to the present natives, having been handed down from one generation to another. They were probably in the language of conquering tribes in the past. They are considered sacred, and are never used except at the initiation ceremonies, of which they constitute an important essential.

APPENDIX.

THE YOOKUMBILL LANGUAGE.

In order to add to the value of this article it is proposed to furnish an abstract of the grammatical structure of the Yoo-kum'-bill, or U-kum'-bil, language, spoken by the natives of the Upper Macintyre, the principal source of the Barwon River, New South Wales.

This language is representative, in its fundamental principles, of the speech of the aborigines of more than three-quarters of the geographic area of New South Wales, being one of the most widely spread of Australian tongues. This type extends southerly from the Macintyre and Barwon rivers to the Murray, and stretches easterly to include the north-east coast of New South Wales from the Hawkesbury River northwards. It also covers a great part of Queensland.

Nouns.

Number.—Nouns have the singular, dual and plural numbers, as follows:—

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>A kangaroo</th>
<th>Bun'dar</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUAL</td>
<td>A couple of kargaroos</td>
<td>Bun'darbur'ta</td>
</tr>
<tr>
<td>PLURAL</td>
<td>Several kargaroos</td>
<td>Bun'darmundim'ba</td>
</tr>
</tbody>
</table>

Gender.—In the human family different words are used to distinguish the sex, as—gib'beer, a man; uk'keether, a woman; woo'nar, a young boy; mee'kai, a young girl; gir'ri, a child of either sex.

The gender of animals is shown by adding words signifying "male" and "female" respectively, as. goo'pee boo'roo, an opossum male; goo'pee goo'nee, an opossum female. These distinguishing words are different when speaking of birds, thus, boidhoorba is a cock and gooneedhar a hen.

Case.—The principal cases are the nominative, nominative-agent, possessive, accusative, dative, and ablative.

Nominative.—Gibbeer, a man; ing-gal, a child.

Nominative-agent.—Gib'beeroo ing'gal, u'mea, a man a child beat.

Possessive.—Gibbeergoo bur'gan, a man's boomerang; ukkeether-goo koo'nee, a woman's yamstick; bun'dargoo dhoon, a kangaroo's tail.

In the Thoorga language the object possessed also takes a suffix.

Accusative.—In the example given above for the nominative agent, it is seen that the word inggal, a child, does not change. When, however, an instrument is the direct object of the verb, it takes a similar suffix to the nominative-agent, as, uttha burgandoo dhoowânee, I am boomerang threw.

Dative.—Ngoo'ra is a camp; ngoo'raga munnayettee, to the camp come.

Ablative.—Ngoo'randee munnal wandeebia, from the camp go away.

Adjectives.

Adjectives are declined for number and case, and are placed after the nouns they qualify.

Bundar muggan, a kangaroo, large.
Bundar mugganbuta, a couple of kangaroos, large.
Bundar mugganmundimba, several kangaroos, large.

The inflexions for case are:

Nominative-agent.—Gibberoo muggandoo inggal umea, a man big the child beat.

Possessive.—Bundargoo muggangoo dhoon, a large kangaroo's tail; gibbeergoo muggangoo burgan, a big man's boomerang.

Dative.—Gibbeera mugganda yetteemunna, the man big come to (come to the big man).

Ablative.—Gibbeeree muggandee munnal, the man large go from.

Comparison is effected in a manner similar to that employed in the Thoorga; and certain adjectives, when used as predicates, can be conjugated like intransitive verbs, the same as in that language.

Pronouns.

Pronouns have the nominative, possessive and objective cases, but are without gender. The following are the nominative:

| 1st Person | I       | Uttha |
| 2nd       | Thou    | Inda  |
| 3rd       | He      | Numbo |

| 1st Person | We (incl.) | Uttee |
| 2nd       | We (excl.) | Utteenumbo |
| 3rd       | You       | Utoota |
|           | They      | Numbotuta |

| 1st Person | Utthasumbo |
| 2nd       | Indaunumbo |
| 3rd       | Numbuyumbo |
The possessive and objective forms of these pronouns are as
under:

**Singular**

<table>
<thead>
<tr>
<th>1st Person</th>
<th>We (incl.)</th>
<th>Nguninda</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>We (excl.)</td>
<td>Niger</td>
</tr>
<tr>
<td>3rd</td>
<td>You</td>
<td>Indaner</td>
</tr>
</tbody>
</table>

**Plural**

<table>
<thead>
<tr>
<th>1st Person</th>
<th>We (incl.)</th>
<th>Nguninda</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>We (excl.)</td>
<td>Niger</td>
</tr>
<tr>
<td>3rd</td>
<td>They</td>
<td>Utooldiner</td>
</tr>
</tbody>
</table>

It will be observed that these pronouns have two forms in the first person of the dual and plural, one of which includes the person addressed, and the other excludes him.

**Interrogatives.**—Ngana woonee, who is there? Nganda bundar uma, who struck the kangaroo? Nganoona burgan, whose boomerang? Nganbi, who from? Ngandoona, who did that? Minya nha, what is that? Minyanginda, what for? Minyungi, how many? Wundha, which or how? Wundha beepoonda, which is the best? Wundha inda immemeea, how didst thou do it?

**Demonstratives.**—These are very numerous and are inflected for number and case, and usually follow the word qualified. Space forbids examples.

**Verbs.**

There is a difference in the termination of the verb for each of the tenses, as umunge, beats now; uma, did beat; umul, will beat. There are, moreover, variations in the past and future tenses, to express slight differences in past and future time, thus, umulganiba, did beat this morning, etc.; umulngi, will beat to-morrow, etc. (See conjugation hereunder.) These variations are the same in all the persons and numbers of the tense to which they respectively apply.

Any required number and person in each tense can be shown by using the necessary pronoun, as, uttha umunge, I beat; uttee umunge, we (dual) beat; nguninda umunge, we (plural) beat. It is apparent, therefore, that each tense form remains constant throughout all its persons and numbers.

In these respects the Yookumbill verb differs materially from the Thoorga and kindred tongues, in which there is a distinct verbal termination for every person and number in each tense.

E—Royal Geo. Soc.
Some of the numerous modifications of the verb will be understood from the following conjugation of the verb "to beat." The present tense is given in full, but in the past and future the first person only of the singular is taken.

**Active Voice—Indicative Mood.**

**Present Tense.**

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1st Person</th>
<th>I beat</th>
<th>Umunge uttha</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Thou beatest</td>
<td>&quot;</td>
<td>inda</td>
</tr>
<tr>
<td>3rd</td>
<td>He beats</td>
<td>&quot;</td>
<td>numbo</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DUAL</th>
<th>1st Person</th>
<th>We (incl.) beat</th>
<th>&quot;</th>
<th>uttee</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>You beat</td>
<td>&quot;</td>
<td>utteenumbo</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>They beat</td>
<td>&quot;</td>
<td>numbotoota</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PLURAL</th>
<th>1st Person</th>
<th>We (incl.) beat</th>
<th>&quot;</th>
<th>nguninda</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>You beat</td>
<td>&quot;</td>
<td>ngunner</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>They beat</td>
<td>&quot;</td>
<td>indaner</td>
<td></td>
</tr>
</tbody>
</table>

**Past Tense.**

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>I beat just now</th>
<th>Umea uttha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st PERSON</td>
<td>I beat this morning</td>
<td>Umulganiba uttha</td>
</tr>
<tr>
<td></td>
<td>I beat some days ago</td>
<td>Umul-byane uttha</td>
</tr>
</tbody>
</table>

These forms of the verb are repeated through all the persons of the singular, dual and plural. Thus, for the second person singular we have—umea inda, umulganiba inda, umulbyâne inda. For the third person singular we use—umea numbo, umulganiba numbo, umulbyâne numbo. They can also be applied to all the persons of the dual, and to all the persons of the plural, in the same manner, by using the proper pronouns, which are tabulated in a previous page.

**Future Tense.**

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>I will beat presently</th>
<th>Umul uttha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st PERSON</td>
<td>I will beat to-morrow</td>
<td>Umulngâ uttha</td>
</tr>
<tr>
<td></td>
<td>or some future time</td>
<td></td>
</tr>
</tbody>
</table>

And so on through all the persons and numbers.

**Imperative Mood.**

Beat thou | Uma inda |

The negative form is—

Beat thou not | Yooka uma inda |

**Conditional Mood.**

I may beat | Umulleea uttha |

**Middle Voice—indicative mood.**

**Present Tense.**

I am beating myself | UmungNgge uttha |
BY R. H. MATHEWS, L.S.

PAST TENSE.
I did beat myself  Umungingiange uttha

FUTURE TENSE.
I will beat myself  Umungū uttha

IMPERATIVE MOOD.
Beat thou thyself  Umungilleea inda

There is a reciprocal form of the verb, which is necessarily restricted to the dual and plural:
We are beating each other, Umulilella uttee.
This reciprocal has also a past and a future tense.
Many other variations of verbs could be given, but this is precluded by exigencies of space.

ADVERBS.
Yo, yes; yooka, no; yooumbange, no one; nha, here; unna, there; nunggoa, yonder; numboo, that; dhouakal, a little; moorgeer, quickly; boothoo, slowly; peepoon mea, well done; ngardha mea, badly done; wanda nga a ngoora, where is my camp? wandabungga inda munnal, where goest thou away?

INTERJECTIONS.
Ya! calling attention. Thuttea! stop! Wirro wirro! equivalent to Oh, dear!

NUMERALS.
Dharrar, one; boota, two; bootagarar, three; dharara, once; bootagoo, twice; dhararmunna, first; guttunnee, last; moolan moo- lan, middle.

Prepositions have their place in the language, but conjunctions are few and unimportant.

THOORGA VOCABULARY.
Man (collectively), Yoo'-iūn-bur'-ra-ga  Old woman, Karn'-ga
A man, Yoo'-iūn  Wife, Dhun'-na-ma
Old man, Kum'-mer-a  Girl, Yan'-da-bāl
Clever man, Moo'-yoo-loo  Father, Bāng
Young man, Nhurst'-ma  Mother, Meeng'-a
Youth, Kab'-bo-goo'-bal  Elder brother, Dha'-dha-dhā
Small Bov, Wur'-raṇ  Younger brother, Mi-ā'-ga
Woman, Wang'-gan  Elder Sister, Mā'-ma-dhā

THE HUMAN BODY.
Head, Kab'-bān  Younger Sister, Mur'-nung-gan
Forehead, Goon'-doo  Eyebrow, Men-mir'-koon
Hair of head, Jou'-oor  Eye lid, Meed-pum'-bo
Hair of beard, Yar'-raṇ  Nose, Nō'-goor
Eye, Mab'-o-ra  Nostril, Ngoo'-doo-ngoo'-doo

Jaw, Mun'-tha
The Human Body—Continued.

Back of neck, Nung'-goor
Throat, Kam-mee
Ear, Koor'-ree
Mouth, Thål'-ga
Lips, Weel'-leen
Tongue, Ngur'nañ
Teeth, Ee'-ra
Chin, War'-loo
Chest, Bing'-al
Navel, Kor'-ree
Navel string, Noor'-reech
Stomach, Bin'-dhee
Abdomen, Moo'-roo
Rump, Mun'-jee
Anus, Goon'-nee
Flank, Kung'-gul
Back, Barl'-ka
Penis, Burn'-da
Erection, Yoor'-doo-ba'-ga
Testicles, Moor'-ra
Vulva, Kul'-la
Clitoris, Mee'-gurn
Hair on privates, Moo'-roo-goo-roo
Semen, Boor'-ra
Copulation, Kon'-de-jà-lin-ba
Sexual desire, Mur'-loo-goo-dhà-ga

Masturbation, Kud'-da-gud'-da-bà-lin
Urine, Jil'-loo-ow'-ga
Venereal, Bum'-bo-ra
Excrement, Goon'-nee
Woman’s breasts, Ngab'-boo-nà
Woman’s milk, Ngam'-min-ya
Shoulder, Kò'-ko
Arm, Ki'-kan
Elbow, Dhur'-leeng
Hand, Murn'-a
Finger, Wär'-doo
Finger-nail, Yoo'-loo
Thumb, Koo-looong'-oo-loo
Calf of leg, Jab'-boor
Thigh, Boorn-dät'-ya
Knee, Ngoo'-mo
Shin, Boo'-yoo
Foot, Dhun'-na
Big-toe, Bir'-ra-ga-yoo-loo'-dha
Little-toe, Koo'-bee-ji-ang'-a
Heel, Tung-gul
Sole of foot, Dhun'-na-dha
Bowels, Goor-goon
Blood Jer'-lëe
Fat, Byoo'-wan
Skin, Wà-dhoon-gan'-yan

NATURAL SURROUNDINGS.

Sun, Nou'-a, or, Bag'goran
Moon, Thou'-a-ra
Stars generally, Jing'-gee
Sirius, Goon-je-ran
Alpha Orionis, Goor-nung'-a-ma
Orion’s Belt, Yoo'-in-dyà
Pleiades, Wang-gat'-tee
Canopus, Mir'-ree-jig'-ga
Milky-way, Kur-ray'-wà
West wind, Koo-roong'-a-ma
Cold ditto, Koo-nam'-ma
East wind, Jir-rin'-jee-ring
Cold ditto, Beo-wà'-wa
South wind, Mir-reeng'-a-ma
North wind, Pal'-ya

Picture, Bò-an'-yoo
Clouds, Mong'-tà-la
Sky, Mir-ree'-war
Thunder, Mer'-ree-bee
Lightning, Goo-rang'-oo-ran
Rain, Bun'-na
Dew, Jing'-ee-a
Mist, Moor'-yan
Fog, Gur'-ral
Snow, Goon'-um-ma
Frost, Dhug'-gatch
Hail, Dhun'-dul-la
Water, Ngad'-yoo
Sea, near, Kat'-thoo
Sea, distant, Ngur-rout'-an
Sparkle of Waves, Mil'dum-bâ-wa
The Ground, Koo-rat'
Mud, Nhoo-roo'-ba-bâ
Stones, Boor'-ran
Sand, Jâ'-jo-an
Light, Bin' nin-gul-la
Darkness,Gil'-wa
Heat, Ngoo'-boo-liñ
Coldness, Dhug'-gar
Fire, Kun'-bee
Smoke, Tur-ro'-wa
Day, Ngeo-roong'-a-roo
Night, Dhub'-boo-râ
Morning, Boo'-moo'-la-ga
Evening, Ee-re-bee'nee
Sunrise, Bug'-ga-rañ kar-rick-bung'-a-leen
Sunset, Bug'-ga-rañ ee'-rik-boo'-yal
Food, Thung'-â

Kangaroo, Boor'-roo
Porcupine, Kan'-na-go-badh'
Native Bear, Koor'-a-ban
Wild dog, War'-re-gal
Opossum, Koong'-ar-a
Flying-fox, Kara-mon'-da
Kangaroo-rat Wang-gâ'-lee
Wombat, Bung-gâ'-ta

Emu, Mur'-re-a
Eaglehawk, Mun'-yung-ga
Crow, Wâ'-goo-ra
Black duck, Wom-bâ'-ra
Teal duck, Goom'-bur-ra-ga
Wood duck, Koon-ar'-rook
Pelican, Kar'-oong-goo'-ba
Laughing Jackass, Koo'-goon-yâ'-roo
Native Companion, Koor'-a-dhoo
White Cockatoo, Ngow'-al
Black Cockatoo, Wy'-a-lert
Sea-gull, Mâ'-ran

Honey, Gou-ang'-gal
Hill, Bun'-gur-ree
Creek, Bud'-dâ
Grass, general, Wad'-dhan
Tree, general, Boon'-bal
Bark of trees, Boon'-boon
Leaves of trees, Jir-rout'-a-ra
Wood, Gou'-go'-al
Camp, Thoo'-gan
Home, Mung'-gur-ra
Hole, Gâ'-goor
Lump, Boo'-bun-dhâ'-ga
Egg, Gou'-â'-na
Path, Bur'-doo
Shadow of a man, Moo'-ran-jân-yan
Shadow of a tree, Kum'-bo-ree
Echo, Bur'-re-wur'-reb-gan'-yon
A sore, Kun'-ja

Flying-Squirrel, Pong'-goo
Bandicoot (short nose), Koor'-a-goor
Bandicoot (long nose), Mir'-ree-jug-ga
Ring-tail opossum, Boo'-gât'-lee
Native Cat, Mid'dha-goon'-ee
Wallaby, Bud-dhâ'-lee-ma

Swan, Koon'-yoo
Pheasant, Jâ'-goo-la
Bird (general), Boo'-jan
Common Magpie, Koo-rom'-ba-ga
Slate Crane, Koor-ar-ay'-ga
Plover, Bin'-ja-ring'-a-ring
Curlew, Kwee'-in-wur'-wur
Quail, Boor'-boor-an
Fish hawk, Nyir'-ra
Brown hawk, Bib-bur-noong'-ga
Shag, Bir-rô'-a-ra
Cormorant, Bin-yâ'-roo
THE THOORGA LANGUAGE

**FISHES.**

- Fish (general), Ma'-ra
- Whale, Moo'-ree-ir-ra
- Killer, Măr'-num-na
- Star-fish, Tyoong'-ga
- Guard-fish, Woor-ām'-been
- Guard-fish, small, Koo'-bee
- Shark, Wā'-lim-boor-a
- Great Shark, Dār'-lou-an
- True Valley, Bā'-ja
- Porpoise, Dhā'-wur-ree
- Jew-fish, Ir'-rim-bā'-goon
- Schnapper, Bar-rā'-ran
- Squire, Nar-rā'-waŋ
- Whiting, War'-ra-boo-gan
- Toad-fish, Jir'-ree'-boon
- Bream, Boor'-oo-my-el
- Black Bream, Wā'-gal
- Silver Bream, Gām'-baŋ
- Flat-head, Dhug'-gul-la
- Mullet, War'-re-gul-la
- Small mullet, Dyee'-bur-ra
- Flat-tailed mullet, Gar'-ree'-ba
- Salmon, Bur-re-go-aň
- Eel, Bur'-ra
- Stingaree, Gwee'-ā-la

**REPTILES.**

- Iguana (tree), Bur-nā'-ga
- Iguana (water), Jer'-ra-burt
- Jew Lizard, Jar-rā'-gar
- Snake, general, Kā'-ree
- Death-adder, Boo'-boo-goor'-ning
- Sleeping Lizard, Bir'-reen
- Turtle, Bil'-le-ma
- Big Frog, Koor'-gaty

**INSECTS.**

- Bee, Moor'-roorn
- Locust, Kur'-laň
- Centipede, Dhā'-jar
- Louse, Mool'-a
- Common fly, Nā'-ka
- Spider, Mur'-rar
- Mosquito, Nay'-loo-goo
- Bull-dog Ant, Kiu:-roor

**TREES.**

- Mountain Ash, Ngan-dhou'-ur
- Lillypilly, Kul-lung'-ur-ra
- Myrtle, You'-ee-a
- Tree-fern, Jer-run'-g'-ra
- Kurrajong, Koor'-maň
- Tea-tree, Boo'-ar-la
- Ironbark, Goorn-dee'-ra
- Stringybark, Ko'-bā
- White box, Koor'-a-bar
- Wattle, Bid'-dhoo-dhoo
- Grasstree, Meeng'-gō
- Peppermint, Bur'-rum-bur-ra
- Red gum, Yā'-la
- Swamp Mahogany, Mud-dhou'-urn
- River oak, Oom'-bul-wur-ra
- Forest oak, Bil'-la
- Cherry tree, Ma-mā'-ja
- Jecbung, Bub-bud'-dhal
- Cabbage tree, Dhur-rou'-a
- Bloodwood, Goor'-gool
- Spotted gum, Dhur-rā'-nee
- Honeysuckle, Bā'-bírr
- A squeaking-tree, Mou'-a-rutch

**PLANTS.**

- Swamp Yam, Boong-ul'-la
- Land Yam, Goor-ām'-aň
- Ferns, Mung'-ga
- Bullrushes, Nyoor'-goon
- Cutting grass, Nyee'-reeň
- Reeds, Kum-bee'-ra
- Burrawang, Bung-gou'
- Nut of burrawang, Ib'-bur
WEAPONS, Etc.

Spear, hunting, Bir-ree'-wa
Spear, plain, Jar'-ram-bâ-dhee
Spear, jagged, Kam'-ma
Fish Spear, Ga-rou'-at
Shield for Boomerangs, Mil'-le-dhoo
Shield for Spears, Bim-by'-a
Club, Boon'-dhee
Spear thrower, Wom'-ur
Boomerang, War-rang'-an
Tomahawk, Moon'-doo-ba
Fighting hook, Bud'-dha-wul
Stick to throw, Jâ-jur'-na

Koolamin, Bun'-gul-lee
Fishing-line, Wa-rou'-ur-ra
Fish hook, Thoo'-la
Net bag, Mud'-boo
Yamstick, Gâ'-ga
Canoe, Kur'-ree-ja
Ribs of Canoe, Kur-bung'-a-ma
Lining of Canoe, In'-nul
Paddle, Wâ'-ree
Child's play canoe, Dhâ'-le-gir
Stone or Shell Knife, Kur'-rang-ang'-ań

ADJECTIVES.

Alive, Mur'-ro-wan
Dead, Wa-râl
Large, Birraga
Small, Koo-bid'-ya
Long, Yar'-ung-arn
Short, Bar'-là
Good, Jum'-ug'ga
Bad, Gar-neen'-a
Hungry, Ee-thal-a-mâ'-ga
Thirsty, Kâ-boot-ban-dhan'-ing-a
Distant, War'-ree-gam-ban
Near, Nyoo'-neel
Red, Mun'-ya-mun'-ya
Grey, Wu'-ree
White, Wu'-ra-wur'-ra
Black, Bur'-ou'-ra
Full, Thoood'-bun-dhooł
Empty, Kar'-ra-gul-lum-bee'-wan
Quick, Goo'-ra-gy
Slow, Gur'-ra-gaty
Blind, Med'-bo-ań
Jealous, Ngoon'-a-roong-oor'-a-ga
Flat, Bil'-wur
Round, Boo'-bun-dhan
Sick, Gun'-ja-ma'-ga
Lame, Nun'nung-gar'-a-ga
Deaf, Wa-rag'-a-dhan
Strong, Bul'-wuł
Weak, Gul-lâ'-bo-an
Heavy, Moon'-door

Light, Bir-ree'bir'-ra
Afraid, Goo'-roo-bâ-ga
Courageous, Goo'-roo-ba-ngam-bâ-ga
Sweet, Jeen-ka
Angry, Jâ'-joo-la'-ran
Right, Yag-goon'-a-dha
Wrong, Gur'-na-mun'-ya
Straight, N'goor'-rum-ban
Crooked, Gang'-gool-wur'-ra
Tired, Eed'-bûl'-a-ga
Greedy, Ka'-roo-dhan
Silent, Jan'-bub'-boor
Stupid, Wam'-boor
Ripe, Wâ'-nhal
Blunt, Moor'-do-o-boo-ra
Sharp (edge), Jar'-ra-râń
Sharp (point), Nyâ'-garn
Fat man, Byoo'-wan-gee
Lean man, Yab'-bin-gee
Hot, Nôw'-an-mâ-ka
Cold, Koo'-yoo-doo
Clear (sparkling), Kun'-dha-gun'-dha
Dirty (as water), Burl'-guń
Glad, Ir'-ring-gâ-ga
Sorry, Goo'-ngam-bâ-ga
Deep, Ka'-goor
Shallow, Dhoon-bun'-yil
THE THOORGA LANGUAGE

**Verbs.**

Live, Mur'-roo-á-ga  
Die, Moo'-boo-rál  
Eat, Thun'-na-má-ga  
Drink, Ngoon'-dhoo-loong-a  
Sleep, Dhur'-ree-ga  
Sit, My'-ee-ga  
Go, Wab-boo-boo-ce  
Tell, Ja'-ma-ga  
Walk, Yan'-na-ga  
Run, Wal'-le-á-ga  
Bring, Mur'-ran-di-ga  
Take, Wab'-bun-di-ga  
Lift, Kur'-reet-bar  
Carry, E-lee-moo'-dhan-yal-lun  
Make, Yab'-bunj-la-ga  
Break, Gam-bool'-a-jal-la-ga  
Strike, By'-eel-la-gug'-ga  
Fight, Kam'-ba-jal-la-ga  
Fall, Goong'-o-bá-leen  
Observe, Thoom-bá-'ma-la-ga  
Hear, Ngar'-ra-lug-ga  
Know, Nan'-noo-má-ga  
Think, Boon'-jel-a-ga  
Grow, Dhoo'-ré-ga  
Give, Ngoo'-ma-la-ga  
Like (love), Ngoom'-bco-dha-ga  
Catch, Nun'-ba-ja-ga  
Climb, Kul'-la-wal-ga  
Cover, Bur'-ree-moor  
Cry, Nyoong'-go-an  
Cut, Thur'-gan-jar  
Die, Moo'-boo-rál  
Drop (from the hand), Ngar'-ram-bil-lil  
Drop (as rain), Ngurl'-wan  
Fear, Goo'-roo-goong-dhá-ga  
Feed, Dhun'-na-ma-ga  
Frighten, Goo'-ra-bun-ya-ree'-moo-ga  
Fly, Yar'-rat-ba-ga  
Hang up. Dhang'-gar-moor  
Hear, Ngar'-rá-ga  
Hold, Gar-gang'-ar  
Jump, War'-da-gá-ga  
Keep, Yoo'-ná-ga  
Kick, Boor'-doo-loo-ga  
Kiss, Noom'-boo-lug-ga  
Laugh, Ngad'-jée-lee-ga  
Learn, Kan'-nan-dhim'-mee-loo-ga  
Leave off, Wun'-nar-ran  
Scratch, Wam'-an-jal-le-ga  
Let go, War'-nud-dha  
Loss, Dhoon-boong'-a-lug-ga  
Perspire, Bug'-ga-ra-ma'-ning-ga  
Pinch, Nyeen-mool'-la-ga  
Plunder, Kar-rang'-al-la-ga  
Praise, Jum'-ma-gang'-oor  
Be quiet, Jár-room'-boor  
Rejoice, Yel'-la-gá-ga  
Remember, Boon'já-ga  
Forget, Wi'-an-dhá-ga  
Rend, Kar'-deer-á-ga  
Return, Wal'-lim-by'-a-wan  
Rise, Been'-dar-ga  
See, Nyuul'-lag-ga  
Search for, War-dal'-loo-wul'-ga  
Send, Yoo'-ree-al'-oo-goo  
Shake, Boor-un-gal-la-ga  
Shine, Mil'-lum-bub-bán'
Verbs—Continued.

Spread, Yar-ra-ran-jar’
Stand, Dhar’ree-ga
Suck, Ngoon-dhool’leen
Swim, Yang’ân
Talk, Yâ’-woo-ga
Taste, Gan’-un-dhoo-ga
Touch, Dhoo-dhoo-gou’-ga
Turn away, Ga-rang’-a-lir
Twist, Koo-iîn’-moor
Wash, Boo’-loo-moo-ga
Rub, Wal’-bun-jal’-la-ga
Spit, Joo’-joo-bâ-ga
Smell, Mir-ra-gou’-a-ga
Throw, Bin’gou’-oo-ga
Pretend, Bur’-nang
Hunt, Kur’rum-ba-loo’-ga
Paint (one’s self), Mil’-ling’bâ-loo-iîn

Adverbs.

Yes, Ngâ’way
No, Thug-guy’-îl
Here, Nyeen
There, close by, Nyun’na-dha
There, a little way, Jeen’-a-boora-a
There, farther away, Jeen-al’-ee-bur-ra
Yonder, Jin’-na-dha
Distant, War’-ree-goon-da
Near, Mub’-boom-baî, and nyun’-îl
Where? Wud’-dha
Why? Mul’-lee
Late, Kâ’-reen
To-day, Nhou’-î
Yesterday, Boo’-gee-à
To-morrow, Boo-râ’-ja
Day after that, Yar’-ra-der-ou’-al
Day after to-morrow, Boo-râ’-ja-wal’-lin
Once only, Mir’-dhan-dhâ’-ga
How? Yook’-a
When? Wern’-doong
Now, Jal’-loo
By-and-bye, Bul’-la-boo
Hereafter, Bul’-la-bo-goo’-dha
Long ago, Yer’-ra-der-ô-al
Front, Bin’-dyee-oon’-ya
Behind, Bur-gi’-dha
Outside, Dhi’-a-nud-dha
Middle, Doo’-la-yin
Right hand side, Dhoor-gí’-an-dhee
Left hand side, Wad’-bur-ray’-an
Enough, Goon-ja
Over, across, Burd-bo’-ga
QUEENSLAND BIRDS: PARTLY OR WHOLLY INSECTIVOROUS.¹

By KENDAL BROADBENT (Queensland Museum Staff).

HAWKS AND OWLS.

(a) Day Birds. (Small mammals and insects and reptiles.)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Geog. Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Brown Hawk</em></td>
<td>Hieracidea orientalis (Sch.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., W.A.</td>
</tr>
<tr>
<td><em>Rufous Hawk</em></td>
<td>Hieracidea berigora (Vig. &amp; Hors.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., W.A.</td>
</tr>
<tr>
<td><em>Nankeen Kestral</em></td>
<td>Cerchneis cenchroides (Vig. &amp; Hors.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A.</td>
</tr>
<tr>
<td><em>White Hawk</em></td>
<td>Astur novae hollandiae (Gmel.)</td>
<td>Q’ld, N.S.W., Vic.</td>
</tr>
<tr>
<td><em>Goshawk</em></td>
<td>Astur approximans (Vig. &amp; Hors.)</td>
<td>Q’ld, N.S.W., Vic., S.A., Tas., W.A.</td>
</tr>
<tr>
<td>*Collared Sparrow Ha’k</td>
<td>Accipiter cirrhocephalus (Vieill)</td>
<td>Q’ld, N.S.W., Vic., S.A., Tas., W.A.</td>
</tr>
<tr>
<td><em>Kite</em></td>
<td>Milvus aethes (Gould)</td>
<td>Q’ld, N.S.W., Vic., S.A., W.A., New Guinea</td>
</tr>
<tr>
<td><em>Square-tailed Kite</em></td>
<td>Lophoictinia isura</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., W.A.</td>
</tr>
<tr>
<td>*Black-shouldered Kite</td>
<td>Ealanx axillaris (Lath.)</td>
<td>Q’ld, N.S.W., Vic., S.A., W.A.</td>
</tr>
<tr>
<td><em>Letter-winged Kite</em></td>
<td>Ealanx scriptus (Gld.)</td>
<td>Q’ld, N.S.W., Vic., S.A., W.A.</td>
</tr>
<tr>
<td><em>Crested Hawk</em></td>
<td>Baza supercristata (Gld.)</td>
<td>Q’land, N.S.Wales</td>
</tr>
<tr>
<td><em>Gould’s Harrier</em></td>
<td>Circus gouldi (Bmp.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., Tas.</td>
</tr>
</tbody>
</table>

Jardine’s Spotted Harrier

(b) Night Birds. True Owls.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Geog. Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Masked Owl</em></td>
<td>Strix novae hollandiae (Step.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., W.A.</td>
</tr>
<tr>
<td><em>Sooty Owl</em></td>
<td>Strix tenebricosa (Gld.)</td>
<td>Q’ld, N.S.W., Vic., S.A., New Guinea</td>
</tr>
<tr>
<td>*Australian Barn Owl</td>
<td>Strix flammea delicatula (Gld.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., W.A., N.Guin.</td>
</tr>
</tbody>
</table>

Hawk Owls. Night Birds.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Geog. Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Great Owl of the scrubs</td>
<td>Ninox strenua (Gld.)</td>
<td>Q’ld, N.S.W., Vic., S.A.</td>
</tr>
<tr>
<td><em>Red Owl</em></td>
<td>Ninox rufa (Gld.)</td>
<td>Q’ld, Port Moresby</td>
</tr>
<tr>
<td><em>Winking Owl</em></td>
<td>Ninox connivens (Lath.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., W.A.</td>
</tr>
<tr>
<td><em>Cape York Owl</em></td>
<td>Ninox peninsularis (Salvadori)</td>
<td>Cape York Peninsula</td>
</tr>
<tr>
<td>*Boobook Owl (common)</td>
<td>Ninox boobook (Lath.)</td>
<td>Q’ld, N.S.W., Int., Vic., S.A., W.A.</td>
</tr>
<tr>
<td><em>Dark or Smoky Owl</em></td>
<td>Ninox lurida (De Vis)</td>
<td>Cardwell</td>
</tr>
</tbody>
</table>

¹ Food: Small mammals, reptiles, and insects.

(1) Read before the Royal Geographical Society of Australasia, Queensland, May 31, 1900, and November 28, 1901.
BY KENDAL BROADBENT.

OWL NIGHTJARS. NIGHT BIRDS.

*Nightjar . . . . Egotheles novae hollandaiae (Vig. and Hors.) . . . . Q’ld, N.S.W., Vic., S.A., Tas., W.A.


NIGHT BIRDS.

MOREPOKES (PODARGUS OR MOOTH-EATERS).

*Dawny Podargus . . Podargus strigoides (Lath.) . . . . Q’ld, N.S.W., Int., Vic., S.A.

*Short-winged Podargus . . Podargus phalaenoides (Gld.) . . . . Q’ld, North-west Aust.

*Papuan Podargus . . Podargus papaensis (Quoy & Gaud.) . . . . Q’ld, New Guinea.

*Gulf of Carpentaria Podargus . . Podargus gouldi (Masters) . . . . Gulf of Carpentaria.

*Marbled Morepoke . . Podargus marmoratus (Gld.) . . . . Q’ld, New Guinea

*White-throated Night-jars . . . . Eurostopus albicularis . . . . . . . Q’ld, N.S.W., Int., Vic., S.A.

*Spotted Moth-eater (night bird) . . . . Caprimulgus guttatus (Vig. & Hors.) . . . . Q’ld, N.S.W., Int., Vic., S.A., W.A.

(b) AUSTRALIAN SWALLOWS.

†Welcome Swallow . . Hirundo neoxena (Gld.) . . . . Q’ld, N.S.W., Int., Vic., S.A., Tas., W.A.

†Torres Straits Swallow . . Hirundo rustica gutturalis (Scop.) . . . . Torres Straits.

†White breasted Swallow . . Charameza leucosternum (Gld.) . . . . Charleville, N.S.W., Int., Vic., S.A., W.A.


†Fairy Martin . . . . Petrochelidon ariel (Gld.) . . . . Q’ld, N.S.W., Int., Vic., S.A.

(b) AUSTRALIAN SWIFTS.

†Spine-tailed Swifts . . Chaetura caudacuta (Lath.) . . . . Q’ld, N.S.W., Int., Vic., S.A., W.A.


†Australian Swifts . . Cypselus pacificus (Gld.) . . . . Q’ld, N.S.W., Int., Vic., S.A.


KINGFISHERS.

†Laughing Jackass . . Dacelo gigas (Boddart) . . . . Q’ld, N.S.W., Int., Vic., S.A.

†Leach’s Kingfisher . . Dacelo leachii (Vig. & Hors.) . . . . Q’ld, New Guinea.

†Fawn-breasted Kingfisher . . Dacelo cervina (Gld.) . . . . Q’ld (Gulf of Carpentaria).

* Food: Small mammals, reptiles, and insects.
† Food: Insects.  † Food: Reptiles and insects.
QUEENSLAND BIRDS.

KINGFISHERS—Continued.

†Sacred Kingfisher .  Halcyon sanctus (Vig. & Hors.) .  Q'ld, N.S.W., Int., Vic., S.A., Tas., W.A., New Guinea

†Red Rumped Kingfisher .  Halcyon pyrrhopygus (Gld.) .  Q'ld, N.S.W., Int., Vic., S.A.

†Mangrove Kingfisher .  Halcyon sordidus (Gld.) .  Q'ld, New Guinea

†Forest Kingfisher .  Halcyon macleayi (Jar. & Selb.) .  Q'ld, N.S.W., N.Guin.

†Scrub Kingfisher (yellow-billed) .  Syma flavirostris (Gld.) .  Cape York, New Guinea

†Long-tailed or Cape York Kingfisher .  Tanysiptera sylvia (Gld.) .  Cardwell, Cape York, New Guinea

†Creek Kingfisher .  Aleyone azurea (Lath.) .  Q'ld, N.S.W., Vic., S.A.

†Little Creek Kingfisher .  Aleyone pusilla (Sem.) .  Cardwell, Cape York, New Guinea

WOOD SWALLOW. (True Insect-eaters.) Day Birds.

†Common Wood Swallow .  Artamus sordidus (Lath.) .  Q'ld, N.S.W., Int., Vic., S.A., W.A., Tas.

†Little Wood Swallow .  Artamus minor (Vieill) .  Q'ld, N.S.W., W.A.

†Grey-breasted Swallow .  Artamus cineres (Vieill) .  Charleville, Darling Downs, W.A.

†White-vented Swallow .  Artamus albinetis (Gld.) .  Gulf of Carpentaria, Int., Vic., S.A.

†Black-faced Swallow .  Artamus melanops (Gld.) .  Q'ld, Int., Vic., S.A., W.A., N.S.W.

†Masked Swallow .  Artamus personatus (Gld.) .  Q'ld, N.S.W., Int., Vic., S.A., W.A.

†White-eyed Swallow .  Artamus superciliosus (Gld.) .  Q'ld, N.S.W., Int., Vic., S.A.

†White-rumped Swallow .  Artamus leucogaster (Val.) .  Q'ld, New Guinea


†Diamond Bird .  Pardalotus punctatus (Temm.) .  Q'ld, N.S.W., Int., Vic., S.A., Tas., W.A.

†Charleville Diamond Bird .  Pardalotus rubricatus (Gld.) .  Q'ld, N.S.W., Int.

†Striated Diamond Bird .  Pardalotus ornatus (Temm.) .  Q'ld, N.S.W., Int.

†Chinchilla Diamond Bird .  Pardalotus assimillis (Ramsey) .  Q'ld, N.S.W., Int.

†Cardwell Diamond Bird .  Pardalotus nainis (Gld.) .  Q'ld, N.S.W., Vic., S.A., Tas.

†Black-headed Diamond Bird .  Pardalotus melanocephalus (Gld.) .  Q'ld, N.S.W., Int.

†Georgetown Diamond Bird .  Pardalotus uropygialis (Gld.) .  Queensland

MAGPIES.

†Black Magpie of the scrubs .  Strepera graculina (White) .  Q'ld, N.S.W., Int., Vic., S.A.

†Common Black-backed Magpie .  Gymnorhina tibicen (Lath.) .  Q'ld, N.S.W., Int., Vic., S.A.

† Food: Reptiles and insects.  § Food: Reptiles, insects, and fish.
† Food: Insects.
Butcher Birds.

†Blk-throated Butcher Bird
Cracticus nigrigularis (Lath.) Q'land, New Guinea

†Black Butcher Bird
Cracticus quoyi (Lesson) Cardwell, New Guinea

†Collared Destructor
Cracticus torquatus Q'ld, N.S.W., Int., Vic., S.A.

†Brown Butcher Bird
Cracticus rufescens (De Vis) Cardwell

Magpie Larks.

†Pied Magpie Lark
Grallina picata (Lath.) Q'ld, N.S.W., Int., Vic., S.A., W.A.

Graucalus.

†Black-faced Mutton Bird

†Varied Mutton Bird
Graucalus mentalis (Vig. & Hors.) Q'ld, N.S.W., Int., Vic., S.A.

†Barred Mutton Bird
Graucalus lineatus (Swain) Q'ld, N.S.W.

†Long-tailed Mutton Bird
Pteropodocys phasianella (Gld.) Q'ld, N.S.W., Int., Vic., S.A., W.A.

†Black Mutton Bird
Edoliisoma teniurostre Q'ld, N.S.W.

Salage.

†Red-vented Lalage
Lalage karo (Lesson) Q'ld, N.S.W., N. Guin.

†White-shouldered Lalage
Lalage tricolor (Swain) Q'ld, N.S.W., Int., Vic., S.A., New Guinea.

Pachycephala (Thick Heads).

†Common Thick Head
Pachycephala gutturalis (Lath.) Q'ld, N.S.W., Vic., S.A.

†Black-tailed Thick Head
Pachycephala melanura (Gld.) Q'ld., New Guinea, Cape York

†Common Rufous Thick Head
Pachycephala rufiventris (Lath.) Q'ld, N.S.W., Int., Vic., S.A., W.A.

†Gulf of Carpentaria Thick Head
Pachycephala lanioides (Gld.) Gulf of Carpentaria

†Cape York Peninsula Thick Head
Pachycephala gilberti (Gld.) Cape York Peninsula

†Torres Straits Thick Head
Pachycephala fretorum (De Vis.) Torres Strait, Cape York

†Palm Island Thick Head
Pachycephala robusta (Mast.) Palm Islands

Shrike Thrushes.

†Piping Shrike Thrush
Collyriocincla harmonica (Lath.) Q'ld, N.S.W., Int., Vic., S.A.

†Buff-bellied Shrike Thrush
Collyriocincla rufiventris (Gld.) Q'ld, W.A.

†Little Shrike Thrush
Collyriocincla parvula (Gld.) Cardwell

†Mountain Shrike Thrush
Collyriocincla boweri (Ram.) Cardwell, W.A.

Crested Shrike.

†Crested Shrike
Falculcus frontatus (Lath.) Q'ld, N.S.W., Int., Vic., S.A., Chinchilla

(Breeds in the high gums: Sept., Oct., Nov.)

†Ventriloquist’s Bird
Oreoica cristata (Lewin) Q'ld, N.S.W., Int., Vic., S.A, W.A.

Food: Reptiles and insects.  † Food: Insects.
QUEENSLAND BIRDS.

Dronga Shrike.

†Dronga Shrike Fish Tail
Diceruridae bracteata (Gld.) . . . Q'ld, N.S.W., N. Guin.

Flycatchers.

†White-shafted Fantail
Rhipidura albiscapa (Gld.) . . . Q'ld, N.S.W., Int., Vic., S.A., Tas.
†(common)
†Red-fronted Fantail
Rhipidura rufifrons (Lath.) . . . Q'ld, N.S.W., Vic.
†Cardwell Fantail
Rhipidura setosa (Quoy) . . . Q'ld, New Guinea
†White-fronted Norman Fantail
Rhipiaura phasiani (De Vis) . . . Gulf of Carpentaria
†Shepherd's Companion
Sauloprocta motacilloides (Vig. and Hors.) Q'ld, N.S.W., Int., Vic., S.A., W.A., N.Guin.
†Black Fantail
Sisura inquieta (Lath.) . . . Q'ld, N.S.W., Int., Vic., S.A., W.A.
†Incessant Flycatcher
Arses kaupi (Gld.) . . . Q'ld, Cardwell, Cape York
†(The Grinder)
†Lead-coloured Flycatcher
Myiagra rubecula (Lath.) . . . Q'ld, N.S.W., Vic., S.A., Cape York
†Shinning Flycatcher
Myiagra nutida (Gld.) . . . Cape York, N.S.W., Int., Vic., S.A., Tas.
†Broad-billed Flycatcher
Myiagra ruficollis (Vieill) . . . Cape York
†Yellow-breasted Flycatcher
Machetorrhynchus flaviventer (Gld.) Cape York
†Brown Flycatcher
Microeca fascinans (Lath.) . . . Q'ld, N.S.W., Int., Vic., S.A.
†("stumper" of the Cardwell boys)
†Pale-coloured Flycatcher
Microeca pallida (De Vis) . . . Gulf of Carpentaria, mouth of Norman River
†Yellow-bellied Flycatcher
Microeca flavigaster (Gld.) . . . Q'ld, New Guinea
†Black-fronted Flycatcher
Piezorhynchus gouldi'(Gr.) . . . Q'ld, N.S.W., Brisbane Scrubs
†Black Mangrove Flycatcher
Piezorhynchus nitidus (Gld.) . . . Q'ld, New Guinea, Herbert River
†Carinated Flycatcher
Monarcha melanopsis (Vieill) . . . Brisbane Scrubs, Cape York, Cardwell

Gerygone.

†White-throated Gerygone
Gerygone albiventralis (Gld.) . . . Q'ld, N.S.W., Int.
†Buff-breasted Gerygone
Pseudogerygone levigaster (Gld.) . . . Q'ld, Herberton
†Brown Gerygone
Pseudogerygone fusca . . . Q'ld, N.S.W., Vic., S.A.
†Masked Gerygone
Pseudogerygone personata (Gld.) . . . Q'ld, New Guinea, Cape York
†Gulf of Carpentaria Gerygone
Pseudogerygone masterii (Sharp) . . . Gulf of Carpentaria
†Cardwell Gerygone
Pseudogerygone flavida (Ram.) . . . Cardwell, Q'ld
†Wee-bill Gerygone
Smicronis brevirostris (Gld.) . . . Q'ld, N.S.W., Int., Vic., S.A.

† Food: Insects.
BY KENDAL BROADBENT.

ROBINS.

†Rose-breasted Robin  Petrela rosea (Gld.)  Q'd, N.S.W., Vic., S.A.
†Red-capped Robin  Petrela goodeni (Vig. & Hors.)  Q'd, N.S.W., Int., Vic., S.A., W.A.
†Hooded Robin  Petrela bicolor (Vig. & Hors.)  Q'd, N.S.W., Vic., S.A., W.A.
†Pied Robin  Petrela picata  Q'd, Interior
†Grey-fronted Robin  Heteromyias cinerifrons (Ram.)  Cardwell
†Buff-sided Robin  Poecilodryas cerviniventris (Gld.)  Q'd, North-west Aust.
†Little (Cardwell) Robin  Poecilodryas nana (Ram)  Cardwell
†White-eyebrowed Robin  Poecilodryas superciliosa (Gld.)  Q’d, (Herbert River, Cardwell)
†Big-headed Robin  Poecilodryas capito (Gld.)  Q’d, (Cardwell and Brisbane)
†Cape York Long-legged Robin  Drymædus superciliaris (Gld.)  Cape York
†Yellow Robin  Eopsaltria australis (Lath.)  Q’d, N.S.W., Vic., S.A.
†White-bellied Robin  Eopsaltria gularis (Quoy.)  Cardwell, Vic., S.A., W.A.
†White-tailed Robin  Eopsaltria pulverulenta (Mull.)  N. Q’d., Northern Ter., S.A.
†Large-billed Robin  Eopsaltria magnirostris (Ram.)  N. Q’d, N.S.W.
†Plain-coloured Robin  Eopsaltria inornata (Ram.)  Q’d (Cardwell)
†Yellow-rumped Robin  Eopsaltria chrysorhous (Gld.)  Q’d, (Brisbane, Cardwell)

LYRE BIRDS.

†Lyre Bird  Menura superba (Davis)  King’s Ck. & N.S.W.
†Queensland Lyre Bird  Menura alberti  Logan R. & Nerang Ck.

COACH WHIP BIRDS.

†Coach Whip Bird  Psophodes crepitans  N.S.W., Q’d, Vic., Cardwell
†Crested Wedge Bill  Sphenostoma cristatum (Gld.)  N.S.W., Q’d, Vic., S.A.

WRENS.

†Queensland Blue Wren  Malurus cyanochlamys (Sharp)  Queensland, Chinchilla
†Black-backed Wren  Malurus melanotus (Gld.)  Q’d, S. Aust.
†Lovely Wren  Malurus amabilis (Gld.)  Queensland, Cardwell, Cape York
†Orange-backed Wren  Malurus melanopcephalus (Vig. and Hors.)  N.S.W., Qld.
†Fire-backed Wren  Malurus dorsalis (Ler.)  N. Q’d, and N. Aust., Cardwell
†Lambert’s Wren  Malurus lamberti (Vig. & Hors.)  N.S.W., Q’d, Vic., Brisbane
†Emu Wren  Stipiturus malachurus (Shaw)  N.S.W., Q’d, Vic., S.A., W.A., Tas.
†Bristle Bird  Sphenura brachyptera (Lath.)  N.S.W., Q’d, Vic.
†Grass Warbler  Cisticola exilis (Vig. & Hors.)  N.S.W., Q’d, Vic., S.A.
†Ground Warbler  Chthonicoila sagittata (Lath.)  Q’d, N.S.W.

† Food: Insects.
<table>
<thead>
<tr>
<th>Bird Name</th>
<th>Scientific Name</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Yellow-throated Sericornis</td>
<td>Sericornis citreogularis (Gld.)</td>
<td>N.S.W., Q'ld.</td>
</tr>
<tr>
<td>White-fronted Sericornis</td>
<td>Sericornis frontalis (Vig. &amp; Hors.)</td>
<td>Q'ld, N.S.W., Vic., S.A.</td>
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<tr>
<td>Great-billed Sericornis</td>
<td>Sericornis magnirostris (Gld.)</td>
<td>N.S.W. Q'ld. Scrubs</td>
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<tr>
<td>Collared Sericornis</td>
<td>Sericornis gutturalis (De Vis.)</td>
<td>Herberton</td>
</tr>
<tr>
<td>Little Brown Acanthisa</td>
<td>Acanthiza pusilla (Lath.)</td>
<td>N.S.W., Q'ld., Vic.,</td>
</tr>
<tr>
<td>Chestnut-rumped Acanthisa</td>
<td>Acanthiza uropygialis (Gld.)</td>
<td>N.S.W., Q'ld, Vic.</td>
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<tr>
<td>Red-rumped Acanthisa</td>
<td>Acanthiza pyrrhopygia (Gld.)</td>
<td>Q'ld, S. Aust.</td>
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<tr>
<td>Little Acanthisa</td>
<td>Acanthiza nana (Vig. &amp; Hors.)</td>
<td>N.S.W., Q'ld, Vic., S.A.</td>
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<tr>
<td>Scaly-throated Acanthisa</td>
<td>Acanthiza squamata (De Vis.)</td>
<td>Herberton</td>
</tr>
<tr>
<td>Yellow-rumped Acanthisa</td>
<td>Acanthiza chrysorrhoa (Gld.)</td>
<td>Q'ld, N.S.W., Vic., S.A., W.A., Tas.</td>
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<tr>
<td>Buff-rumped Acanthisa</td>
<td>Acanthiza reguloides (Vig. &amp; Hors.)</td>
<td>Q'ld, N.S.W., Vic., S.A.</td>
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<tr>
<td>Striated Field Warbler</td>
<td>Calamanthus fuliginosus (Hors.)</td>
<td>Q'ld, N.S.W., Vic.</td>
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<tr>
<td>Field Warbler</td>
<td>Calamanthus campestris (Gld.)</td>
<td>Vic., W.A., Q'ld</td>
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<tr>
<td>Streaked Warbler</td>
<td>Chthonicola sagittata (Lath.)</td>
<td>Q'ld, N.S.W.</td>
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<tr>
<td>Pipit Lark</td>
<td>Anthus Australis (Vig. &amp; Hors.)</td>
<td>Q'ld, N.S.W., Vic., Tas. S.A., W.A.</td>
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<tr>
<td>Brown-winged Warbler</td>
<td>Cinclorhamphus cruralis (Vig. and Hors.)</td>
<td>Q'ld, N.S.W., Vic., S.A., Nth. Aus.</td>
</tr>
<tr>
<td>Black-breasted Warbler</td>
<td>Cinclorhamphus cantillans (Gld.)</td>
<td>Q'ld, Vic., S.A., N.Aus.</td>
</tr>
<tr>
<td>Rufous Lark</td>
<td>Cinclorhamphus rufescens (Vig. and Hors.)</td>
<td>Q'ld, N. S. W., Vic., W.A., Nth.Aus.</td>
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<tr>
<td>Tawny Grass Bird</td>
<td>Megalurus galactotes (Temm.)</td>
<td>Q'ld, N.Aus., N.S.W., Vic., S.A.</td>
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<tr>
<td>Reed Warbler</td>
<td>Acrocephalus Australis (Gld.)</td>
<td>Q'ld, N.S.W., Vic.</td>
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<tr>
<td>Bush Lark</td>
<td>Murafras horsfieldii (Gld.)</td>
<td>Q'ld, N.S.W., Vic., Tas.</td>
</tr>
<tr>
<td>Spotted-sided Finch</td>
<td>Staganophractis guttata (Shaw)</td>
<td>Q'ld, N.S.W., Vic., S.A.</td>
</tr>
<tr>
<td>Fire-tailed Finch</td>
<td>Zonoginthus bellus (Shaw)</td>
<td>Q'ld, N.S.W., Vic., Tas., S.A.</td>
</tr>
</tbody>
</table>

Food: Insects

Food: Grass seeds and insects.
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Finches—Continued.

Chestnut-eared Finch
Thraupis castanotis (Gld.)  N.Aus., Vic., S.A., W.A.

Gouldian Grass Finch
Ploceidae gouldiae (Gld.)  N.Aus., Q'ld, W.A.

Red-capped Finch
Ploceida mirabilis (H.S.J.)  N.Aus., W.A., Q'ld

Long-Tailed Finch
Ploceida acuticauda (Gld.)  N.Aus., W.A., Q'ld

Masked Finch
Ploceida personata (Gld.)  Georgetown

White-eared Finch
Ploceida leucotis (Gld.)  N.Aus., W.A., Q'ld

Banded Finch
Ploceida cineta (Gld.)  Chinchilla, N.S.W.

Armit's Finch
Ploceida armitiana (Ram.)  N. Aus., W.A., Q'ld., Georgetown

Chestnut-breasted Finch
Donaciocia castaneo thorax (Gld.) Q'ld, N.S.W.

White-breasted Finch
Donaciocia pectoralis (Gld.)  N.Aus., Q'ld

Yellow-rumped Finch
Munia flaviprymna (Gld.)  N.Aus., Q'ld

Painted Finch
Emblema picta (Gld.)  Victoria River and Roper River

(THis is the rarest and grandest of all the finches.)

Pittas.

Dragoon Bird
Pitta streptias (Temm.)  N. & S. Q'ld., Cape York

Cardwell Pitta
Pitta simillima (Gld.)  Queensland, N. Guinea

Macklot's Pitta
Pitta Mackloti (Mul. & Stl.)  Cape York, Cardwell

Thrushes.

Spotted Ground Thrush
Cinclosoma punctatum (Vig. and Hors.) Q'ld, N.S.W., Vic., Tas., S.A.

Chested-back Thrush
Cinclosoma castanotum (Gld.)  Q'ld, Vic., S.A., W.A.

Cinnamon Thrush
Cinclosoma cinnamomeum (Gld.)  Q'ld, Vic., S.A.

Northern Thrush
Cinclosoma marginatum  N. Aust., N. Q'ld.

Mountain Thrush
Geocichila lunulata (Lath.)  Q'ld, N.S.W.

Herberton (Broadbent's) Thrush
Geocichila cuneata (De Vis.)  Cape York Penin., Herberton

Brisbane Mountain Thrush
Geocichila heinii (Cab.)  Q'ld, N. and S.

Bower Birds.

Satin Bower Bird
Ptlinorrhynchus violaceus (Vig.)  Q'ld, N.S.W., Victoria

Cat Bird
Aeluropus viridis (Lath.)  Q'ld, N.S.W.

Spotted Cat Bird
Aeluropus maculosus (Ram.)  N. Q'ld., Cardwell

Tooth-billed Cat Bird
Scenopica dentirostris (Ram.)  N. Qld., Cardwell

Crested Bower Bird
Prionodura newtoniana (De Vis.)  N. Qld., Herberton

Great-spotted Bower Bird
Chlamydodera muchalis (Gld.)  Q'ld, N. Aust.

Lesser-spotted Bower Bird
Chlamydodera maculata (Gld.)  Q'ld, Vic., S.A.

Guttated Bower Bird
Chlamydodera guttata (Gld.)  Q'ld, S.A., W.A.

Fawn breasted Bower Bird
Chlamydodera cerviniventris (Gld.) Cape York, N. Guinea, Port Moresby

Lilac-naped Bower Bird
Chlamydodera orientalis (Gld.) Cape York

Food: Grass seeds and insects.

Food: Insects and food.

Food: Insects and worms.

Food: Fruit and insects.

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QUEENSLAND BIRDS.

BOWER BIRDS—Continued.

<table>
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<tr>
<th>Orioles</th>
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<tbody>
<tr>
<td>Regent Bird</td>
<td>Sericulus melinus (Lath.)</td>
<td>Q'ld (rare N.S.W.)</td>
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<tr>
<td>Green Oriole</td>
<td>Oriolus viridis (Lath.)</td>
<td>Q'ld, N.S.W., Vic.</td>
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<tr>
<td>Northern Oriole</td>
<td>Oriolus affinis (Lath.)</td>
<td>Q'ld, N. Aust.</td>
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<tr>
<td>Cardwell Oriole</td>
<td>Oriolus flavicinctus (Vig.)</td>
<td>Q'ld, N. Aust., Cape York</td>
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</tbody>
</table>

FIG-EATING BIRDS. (Insectivorous).

| Fig Bird | Sphecotheres maxillaris (Lath.) | Q'ld, N. Aust., N.S.W. |
| Yellow Fig Bird | Sphecotheres flaviventeris (Gld.) | Q'ld, N. Aust. |

CROWS.

| Cough's Happy Family | Corcorax melanorhamphus (Vieill) | Q'ld, N.S.W., Vic., Tas., S.A. |
| Quaker Bird | Struthidea cinerea (Gld.) | Q'ld, N. Aust., Vic., S.A. |
| Brown-eyed Crow | Corvus coroneoides (Vig. & Hors.) | Q'ld, N.S.W., N. Aus., Gulf Carpentaria, Tas., Vic., S.A. |
| White-eyed Crow | Corvus Australia | All over Australia |

STARLINGS.

| Metallic Starling | Calornis metallica (Temm.) | Cape York, Cardwell |
| Chatterer | Pomatorhinus temporalis (Vig. and Hors.) | Q'ld, N.S.W., Vic., S.A., N.Aus. |
| White-eyebrowed Chatterer | Pomatorhinus superciliosus (Vig. and Hors.) | Q'ld, N.S.W., Vic., S.A., W.A., N.Aus. |
| Chestnut-crowned Chatterer | Pomatorhinus ruficeps (Vig. & Hors.) | Q'ld, Vic., S.A. |

HONEY-EATERS.

| Silver Eye | Zosterops coerulescens (Lath.) | Q'ld, N.S.W., Vic., S.A., Tas. |
| Yellow-rumped Silver Eye | Zosterops westernensis (Q. & G.) | Q'ld, N.S.W., Vic., S.A. |
| Green-backed Silver Eye | Zosterops gouldi (Bpte.) | Q'ld, W.A. |
| White-bellied Silver Eye | Zosterops albiventer (Reich.) | N.Aus., Q'land |
| Yellow Silver Eye | Zosterops lutea (Gld.) | N.Aus., Q'land |
| Crested-naped Honey-eater | Melithreptus lunulatus (Shaw) | Q'ld, N.S.W. |
| White-throat'd Honey-eater | Melithreptus albignarius (Gld.) | Q'ld, N.S.W., N.Aus. |
| Black-chinned Honey-eater | Melithreptus gularis (Gld.) | Q'ld, N.S.W., W.A. |
| Golden-back'd Honey-eater | Melithreptus laetior (Gld.) | Q'ld, N.S.W., Vic., N.Aus. |
| Tinted Honey-eater | Melithreptus vinicornis (Gld.) | Cape York |
| Striped Honey-eater | Electorhynchus lanceolatus (Gld.) | Q'ld, N.S.W., Vic., S.A. |
| Blood Bird | Myzornela sanguinolenta (Lath.) | Q'ld, N.S.W. |

* Food: Fruit and insects.  § Food: Insects and small mammals.  ¶ Food: Insects and honey.
### Honey-eaters—Continued.

<table>
<thead>
<tr>
<th>Blood Bird</th>
<th>Grey Honey-eater</th>
<th>Banded Honey-eater</th>
<th>Fulvous-fronted Honey-eater</th>
<th>Bar-breasted Honey-eater</th>
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</thead>
<tbody>
<tr>
<td>Myzomela erythrocephala (Gld.)</td>
<td>Myzomela nigra (Gld.)</td>
<td>Myzomela obscura (Gld.)</td>
<td>Glycyphila fulvifrons (Lewin)</td>
<td>Glycyphila fasciata (Gld.)</td>
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<td>Q’ld, N.Aus.</td>
<td>Q’ld, N.Aus., Vic., S.A.</td>
<td>Q’ld, N.S.W., N.Aus.</td>
<td>Q’ld, N.S.W., Vic., Tas., W.A.</td>
<td>Cardwell, and N.S.W.</td>
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<tr>
<td>Shy Honey-eater</td>
<td>Black Honey-eater</td>
<td>Myzomela pectoralis (Gld.)</td>
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<td>Myzomela nigra (Gld.)</td>
<td>Myzomela obscura (Gld.)</td>
<td>Myzomela pectoralis (Gld.)</td>
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<td>Q’ld, N.Aus.</td>
<td>Q’ld, N.S.W., N.Aus.</td>
<td>Cape York</td>
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<td>Bar-breasted Honey-eater</td>
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<td>Glycyphila fasciata (Gld.)</td>
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<td>Cardwell, and N.S.W.</td>
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<td>Brown Honey-eater</td>
<td>Mulgrave Honey-eater</td>
<td>Paint-barred Honey-eater</td>
<td>Yellow Honey-eater</td>
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<td>Glycyphila ocularis (Gld.)</td>
<td>Glycyphila subocularis (Gld.)</td>
<td>Glycyphila modesta (Gray)</td>
<td>Ptilotis flava (Gld.)</td>
<td>N. Queensland</td>
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<td>Cardwell, N.S.W., S.A., W.A.</td>
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<td>Q’ld, N.S.W.</td>
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<tr>
<td>White-eared Honey-eater</td>
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<td>Ptilotis flava (Gld.)</td>
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<td>N. Queensland</td>
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<td>Yellow-faced Honey-eater</td>
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<td>Ptilotis chrysops (Lath.)</td>
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<td>Q’ld, N.S.W.</td>
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<td>Yellow-streaked Honey-eater</td>
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<td>Ptilotis flavistriata (Gld.)</td>
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<td>N. Aust., Q’ld.</td>
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<td>Bridled Honey-eater</td>
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<td>Ptilotis frenata (Ram.)</td>
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<td>Cape York</td>
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<td>Yellow-gaped Honey-eater</td>
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<td>Ptilotis analoga (Gld.)</td>
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<td>N. Aust., Cape York</td>
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<td>Dusky Honey-eater</td>
<td>Scrub Honey-eater</td>
<td>Streaked Honey-eater</td>
<td>White-plumed Honey-eater</td>
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<td>Ptilotis fusca (Gld.)</td>
<td>Ptilotis lewini (Swainson)</td>
<td>Ptilotis filigera (Gld.)</td>
<td>Ptilotis penicillata (Gld.)</td>
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<td>Q’ld, N.S.W., Vic., S.A.</td>
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<td>N. Aust., Cape York</td>
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<td>Hairy-necked Honey-eater</td>
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<td>Ptilotis cockerelli (Gld.)</td>
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<td>Cape York</td>
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<td>Yellow-tufted Honey-eater</td>
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<td>Ptilotis auricomis (Lath.)</td>
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<td>Yellow-fronted Honey-eater</td>
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<td>Ptilotis plumula (Gld.)</td>
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<td>Smoky Honey-eater</td>
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<td>Ptilotis unicolor (Gld.)</td>
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<td>Red-throated Honey-eater</td>
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<td>Entomophila rufugaris (Gld.)</td>
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<td>Crescent Honey-eater</td>
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<td>Meliornis Australasiana (Shaw)</td>
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<td>Q’ld, N.S.W., Tas.</td>
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<td>Yellow-winged Honey-eater</td>
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<td>Meliornis novae-hollandiae (Lath.)</td>
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<td>Q’ld, N.S.W., Tas.</td>
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<td>New South Wales Honey-eater</td>
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<td>Meliornis longirostris (Gld.)</td>
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<td>White-cheeked Honey-eater</td>
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<td>Meliornis sericea (Gld.)</td>
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<td>Q’ld., N.S.W., Herbertson.</td>
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<td>Moustached Honey-eater</td>
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<td>Meliornis mystacalis (Gld.)</td>
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<td>Q’ld, W.A.</td>
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§ Food: Insects and honey.
Queensland Birds.

Honey Eaters—Continued.

§ Bell Minah . . . Manorhinia melanophrys (Lath.) . . Q’ld, N.S.W.
§ Soldier Bird . . . Manorhinia garrula (Lath.) . . Q’ld, N.S.W., Tas.
§ Blue Eye . . . . Entomyza cyanotis (Lath.) . . Q’ld, Vic., S.A.
§ Mock Regent Bird . . . Meliphaga phrygia (Lath.) . . Q’ld, N.S.W., Vic., S.A.
§ Bush Wattle Bird . . Acanthochaera melliwora (Lath.) . . Q’ld, N.S.W., Tas.
§ Spiny-cheeked Wattle Bird . . Acanthochaera rufigularis (Gld.) . . Q’ld, N.S.W., Vic.
§ Friar Bird . . . Philemon corniculatis (Lath.) . . Q’ld, Vic., S.A., N.A.
§ Silver-crowned Friar Bird . . Philemon argenticeps (Gld.) . . Q’ld, N.A., W.A.
§ Helmet-headed Friar Bird . . Philemon buceroides (Swain) . . Cape York
§ Yellow-throated Friar Bird . . Philemon citreogularis (Gld.) . . Q’ld, N.S.W., Vic., S.A.
§ Little Friar Bird . . . Philemon sordidus (Gld.) . . Q’ld, N.S.W., W.A., Cardwell

Sun Birds.

§ Sun Bird . . . . Cinnyris jugularis (irenata) (Mull) . . Cape York, N. Guinea

Paradisea. (Tree Creepers.)

Rifle Birds.

*Brisbane Rifle Bird . . . Ptilorhis paradisea (Se.) . . . . Q’ld, N.S.W.
*Cardwell Rifle Bird . . . Ptilorhis victoria (Gld.) . . . . Queensland
*Cape York Rifle Bird . . . Ptilorhis alberti (Elliott) . . . . Cape York

Tree Creepers.

† Tree Creeper . . . Climacteris scandens (Temm.) . . Q’ld, N.S.W., Vic., S.A.
† Red-eyedrowed Tree Creeper . . Climacteris erythrops (Gld.) . . Q’ld, N.S.W.
† Black-backed Tree Creeper . . Climacteris melanomota (Gld.) . . Q’ld, N.Aus.
† Mulga Tree Creeper . . . Climacteris . . . . . . . . . . . Charleville, Cent’l Aus.
† White-throated Tree Creeper . . Climacteris leucophoea (Lath.) . . Brisbane, N.S.W., Vic., Tas., S.A.

Sittella. (Tree Creepers.)

† Orange-winged Sittella . . Sittella chrysoptera (Lath.) . . Q’ld, N.S.W.
† Brisbane (White-headed) Sittella . . Sittella leucocephala (Gld.) . . Q’ld, N. Aus.
† Cardwell (Streaked) Sittella . . Sittella striata (Gld.) . . . . Queensland
† Gulf Sittella . . . . Sittella albata (Ram.) . . . . Cape York

§ Food: Insects and honey  * Food: Insects and fruit.
† Food: Insects.
Orthonyx.

†Spine-tailed Orthonyx
Orthonyx spinicauda (Temm.) .. Q'ld, N.S.W., Vic.

†Spalding's Spine-tail
Orthonyx spaldingi (Ram.) .. Queensland

Cuckoos.

§Australian Cuckoo
Cuculus canorus (Miller) .. Q'ld, N. Aust., Cardwell.

§Spine-tailed Orthonyx
Orthonyx spinicauda (Temm.) .. Q'ld, N.S.W., C. York

§Spalding's Spine-tail
Orthonyx spaldingi (Ram.) .. Q'ld, N. Aust., Vic.

§South- or Tailed Cuckoo
Cacomantis flabelliformis (Lath.) .. Q'ld, N.S.W., Vic., S.A., W.A., Tas.

§Bush Cuckoo
Cacomantis insperatus (Gld.) .. W.A.

§Chesnut-bellied Cuckoo
Cacomantis castaneiventris (Gld.) .. Queensland

§Black-eared Cuckoo
Mesococcyx palliatus (Lath.) .. Q'ld, Vic., S.A., W.A.

§Narrow-billed Cuckoo
Chalcococcyx basalis (Hors.) .. N. Q'ld, N. Aust.

§Whistling Cuckoo
Chalcococcyx lucidus (Grm.) .. Queensland

§Bronze Cuckoo
Chalcococcyx plagiurus (Lath.) .. N. Q'ld, N. Aust.

§Little Bronze Cuckoo
Chalcococcyx malayanus (Raffles) .. Queensland

§Russel Cuckoo
Chalcococcyx poecilurus (Gray) .. Q'ld, W. Aust.

§Koel Cuckoo
Eudynamis cyanocephala (Lath.) .. W.A.

§Channel-billed Cuckoo
Scythrops novae-hollandiae (Lath.) .. N.S.W., Q'ld, Vic., N. Aust.

†Swamp Pheasant
Centrops phasianus (Lath.) .. Q'ld., N.S.W., S.A., W.A.

Scrub Turkeys.

||Turkey
Talegallus lathami (Grey) .. N.S.W., Q'ld, Vic.

||Scrub Hen
Megapodius tumultus (Gld.) .. Q'ld, N. Aust.

Plain Turkey.

†Plain Turkey
Eupodotis Australis (Gr.) .. N.S.W., Q'ld, Vic., S.A., W.A., N. Aust.

*Emu
Dromaeus novae-hollandiae (Lath.) .. N.S.W., Q'ld, Vic., S.A., W.A., N.A., Tas.

*Cassowary
Casuarius Australis (Wall) .. Queensland

Quails.

§Black-breasted Quail
Turnix melanogaster (Gld.) .. N.S.W., Q'ld.

§Varied or Painted Quail
Turnix varia (Lath.) .. Q'ld, N.S.W., Vic., S.A., W.A., Tas.

§Red-chested Quail
Turnix castanonota (Gld.) .. Q'ld, N. Aust.

§Stubble Quail
Coturnix pectoralis (Gld.) .. Q'ld, N.S.W., Vic., S.A., W.A., Tas.

§ Food: Insects and fruit.
† Food: Insects.
‡ Food: Small reptiles and insects.
§ Food: Insects, fruit, &c.
* Food: Fruit and insects.
§ Food: Fruit and seeds.
Queensland Birds.

Quails—Continued.

$Swamp Quail .. .. Synoecus Australis (Gld.) .. .. Q'ld, N.S.W., Vic., S.A., W.A., Tas.

$Little Quail .. .. Turnix velox (Gld.) .. .. . N.S.W., Q'ld, Vic., S.A.

Wading Birds. (More or less insectivorous).


$ Food: Fruit and seeds.
THE DISCOVERY AND EARLY DEVELOPMENT OF THE DARLING DOWNS. *

By the Hon. ARTHUR MORGAN, M.L.A., Vice-President, R.G.S.A.Q.

"I hear the tread of Pioneers
Of Nations yet to be;
The first low wash of waves, where soon
Shall roll a human sea."
—Whittier.

The paper which I have prepared deals, in the main, not with the Darling Downs as we know it to-day, but with the Darling Downs of Allan Cunningham. The country on which Cunningham bestowed the name of Darling Downs was the valley of Glengallan Creek; but he also discovered Canning Downs, to the south-east, and Peel's Plains, to north-west; and it is of these districts—forming together what is now generally spoken of as the Southern Downs—that the paper prepared for to-night's meeting treats, leaving for some future occasion, and to some other member of the Society, the task of relating the story of the early settlement and later progress of the Northern or Toowoomba end of the Downs.

PHYSICAL FEATURES.

The Darling Downs District, as at present known, is one of the most fertile, as well as the most interesting and healthful tracts of country in Queensland. Its historical associations are no less fascinating to the historiographer than its physical and geological features are to the modern geographer, or the vast importance of its post-Pliocene deposits to the science of Zoology. Certain it is that no other region in the whole of Australia has yielded more important fossiliferous deposits, or contributed more largely to our knowledge of the extinct fauna of past ages.

Geographically considered, the physical structure of the district is simple, and easily understood. An inland region, forming a fringe, as it were, of the great central basin of the Continent, it possesses no important streams, no greatly elevated internal features, and few deep and rugged glens. In area, it comprises some five thousand nine hundred square miles of alluvial plains, forming the basin of the

* Read before the Royal Geographical Society of Australasia, Queensland, at Warwick, May 7, 1902.
Upper Condamine River, with its numerous tributary streams that carry the drainage waters from the mountain ranges by which it is almost enclosed. There are the Bunya Bunya Mountains on the North; the Main Range, with Cunningham's Gap, on the East; the Great Dividing Range on the South; and Herries Range, stretching far away north-westerly in the general direction of the river which drains the basin. These amputating ranges culminate in numerous lofty peaks, that stand out in bold and beautiful relief above the rugged landscape in the immediate neighbourhood. Those which leave the sky-line from Cunningham's Gap round to Killarney—Mount Cordeaux (4,100 feet), the double-peaked Mount Mitchell (3,751 feet). Spicer's Peak, Mount Huntley (4,153 feet), Wilson's Peak, and Mount Leslie—are especially precipitous and picturesque as they shoot up from the general outline of the main mass of ranges.

Essentially a fluviatile region, with all the chief features that characterise the action of an extensive denudation of the surrounding highlands in remote ages, the Darling Downs country possesses some general aspects of a specially interesting and instructive geographical nature. Here we find an extensive alluvial plain, dotted over with numerous isolated peaks that shoot up like volcano cones, suggesting to the physical geographer the existence of some remote subterranean disturbances that have thrown up these sharply-defined mountain masses; or the erosive action of water, which, carrying away the softer material, has left the harder substances in their present shape. We know that these vast alluvial plains are mostly composed of the detritus washed down from the mountain-slopes, and deposited on the top of the basalts which are spread over the bottom of the valley now forming the basin of the Condamine. The soils are in consequence very deep and extremely fertile over a large proportion of the area under consideration; hence the heavy yields of grain and other crops, and the nutritious grasses and herbage, which the Downs produces under normal climatic conditions.

From a Geological standpoint, the district possesses some typical features that have made it famous in the history of the country. For years past the Darling Downs has enjoyed a reputation extending over the entire world for the numerous fossil bones of extinct animals that have been discovered in the post-Pliocene drifts there, indicating that in past ages the vegetation and climate contributed to the development of a vigorous marsupial fauna that disappeared when the conditions of life were no longer favourable to existence. Chief among the remarkable types of gigantic animals that at one time, far back in the remote ages of antiquity, roamed this part of the country, may be mentioned the great Diprotodon Australis; the Marsupial Lion (Thylacoleo); the Giant Kangaroo (Macropus Titan); an enormous Wombat, an immense Alligator, and other associated
fauna which rendered the post-Tertiary period wonderfully interesting in the diversity and magnitude of its animal forms, as well as in the luxuriance of its rank vegetation and excessively moist climate. Fossil kangaroo-bones have been found in the neighbourhood of Roma embedded in the earth about one hundred feet below the surface, and in most of the numerous watercourses all over the Downs abundant evidence has been found of the former existence of giant marsupial life as indicated by the fossiliferous deposits so largely distributed there.

The basis of the Downs formation is carboniferous rocks, on which the Walloon coal measures are largely developed, and these are overlaid by the basalts and Pliocene strata, wherein are deposited all that now remains of the life of a by-gone period when marsupial giants predominated, and prehistoric man held undisputed possession of the Victorian plains in the southeast corner of Continental Australia.

DISCOVERY OF THE DOWNS.

To Allan Cunningham, a copy of whose portrait has been printed for circulation amongst you this evening, belongs the credit of having discovered the district of which one of the early explorers is reported to have said, “You may discover another Australia, but you will never discover another Darling Downs.” Cunningham was an Englishman. Born at Wimbledon, Surrey, in 1791, after completing his education near London, he was placed in a conveyancer’s office; but the dull duties and prolix technicalities of the law were subjects ill-fitted for his investigating mind, and, fortunately for Science, an introduction to botanical pursuits was placed in his path, which led to his receiving an appointment in connection with the Royal Gardens at Kew. In 1814, when the subject of sending out botanical collectors was revived, the Imperial Government acceded to the suggestions made to them by Sir Joseph Banks, and arrangements were completed for despatching two such collectors to the Southern Hemisphere. On the nomination of Sir Joseph, Cunningham was chosen to collect for the Kew Gardens, and on the 3rd October, 1814, he embarked, in company with Mr. James Bowie, at Spithead, on board the “Duncan,” 74, sailing from Plymouth on the 29th of that month. The whole of 1815, and the first seven months of 1816 were spent by Cunningham and his companion in Brazil, and it was not until August of the latter year that instructions were received from Sir Joseph directing Bowie to embark for the Cape of Good Hope, and Cunningham to proceed to New South Wales. Cunningham arrived in Sydney Cove on the 20th of December in the convict ship “Surrey,” and on the following day reported himself to Governor Macquarie at Parramatta. During the next twenty years—with the exception of the time occupied in paying a visit to England, and short periods of rest between his many expeditions—Cunningham’s life was devoted to the work of examining
the coasts and pushing into the interior of the new continent. Early in 1817, he explored the Lachlan, in company with Oxley. During the five years following he made four voyages in the “Mermaid,” and one in the “Bathurst,” being employed in surveying the East, North, and West coasts of Australia. Circumnavigating the continent, and pursuing at every opportunity his study of the botany of the mainland and islands, his indomitable zeal and energy in the work to which he had devoted himself on more than one occasion endangered his life, and, in the end, left him in a very debilitated condition. In 1822 he made an excursion across the Blue Mountains into the Bathurst district, returning early in the following year. Three months later he was out again in the effort to find a practicable pass to Liverpool Plains, and, after weeks of repeated disappointments, his labours were rewarded by the discovery of the crossing, which he called “Pandora’s Pass.” After a few months devoted to trips to his favourite field for botanising—the Illawarra district—he set out in September, 1824, for Moreton Bay, in company with Oxley, with whom he surveyed the Brisbane River to the head of boat navigation. In the following year he made an excursion, by way of “Pandora’s Pass,” to the back country beyond Bathurst, and twelve months later paid his first visit to New Zealand.

The year 1827 witnessed the conception and completion of Cunningham’s most important work—the work in which we in Queensland are
more particularly interested—the discovery of the Darling Downs. Understanding that it was the wish of the New South Wales Government that a more extended journey of exploration should be made into the northern and north-western interior, for the purpose of investigating the capabilities of the country for agricultural and other purposes. Cunningham communicated with the Governor (Lieut.-General Darling), intimating his desire to conduct an expedition in the direction, and for the purposes, indicated. He said he proposed to proceed from Parramatta to the Peel River, and penetrate North to the parallel of Cape Moreton. His object was to ascertain the general features of portion of the interior comprehending four degrees of latitude, the geological structure of the country, the nature of its soil, the importance and value of its timbers, and the number, magnitude, and velocity of the streams by which it was watered. And he added: “In this excursion, moreover, would be determined how far the Brisbane River is to be considered as originating in the high lands near the coast, or whether the opinion that has prevailed is correct, of the identity of its stream with some presumed outlet from the eastern margin of our interior marshes.” Cunningham intended, should the dry season favour him, to make a western excursion along the 27th parallel, with a view to determining the character of the country for pastoral purposes; but he said that, if the season proved wet, he would return along the high land to the eastward of his outward track. His offer was accepted, and he took his departure on the 30th of April from Segenhoe, a station on the Upper Hunter, accompanied by six men and eleven heavily laden pack-horses. Three weeks later he crossed the Peel, and continued northward to the Gwydir River country, hitherto untrodden by white men. Of the country, as he saw it, he says: “The eye sought anxiously for a rising smoke, as indicative of the presence of the wandering aborigines, but in vain; for, excepting in the immediate neighbourhood of a river of the larger magnitude, these vast solitudes may be fairly said to be almost without inhabitants.” He had left the coast range well away to his right, and intended to continue almost due northward to the parallel of 27 degrees South; but this purpose was frustrated by the arid country he soon got into, and, after crossing the 29th parallel, he was compelled to alter his course to the north-east and eastward—a happy accident which led to the important result which attended his explorations in that direction, the discovery of the Darling Downs. Soon after changing his course, he reached the Severn (or Dumarasq) River, at a point between Texas and Bengalla. On the 5th of June, he observed the smoke of numerous fires from blacks’ camps, and heard the screeching of many flocks of white cockatoos, signs which satisfied him that he was on the verge of desirable country; and he pursued his way in an E.N.E. direction. Crossing a rocky creek, and ascending a ridge upon its eastern bank, the explorer had “a most agreeable, though confined view of an extensive range of open country, which from its ample features and
The discovery of the Darling Downs.

prospect he doubted not would, in its examination, abundantly reward all his labours." He perceived right ahead, at a distance of eight or nine miles, open plains or downs of great extent, which appeared to extend easterly to the base of a lofty range of mountains lying North and South, the distance, by estimation, being about thirty miles. This was Cunningham's first glimpse of the Downs, obtained from one of the highest points of the elevated land lying between the headwaters of Thane's Creek and Sandy Creek. A noble view of a magnificent country—what wonder that he was delighted at the prospect of the splendid results which promised to crown his efforts! Pushing on with quickened steps, the party arrived early in the afternoon on the left bank of a small river, having in all parts of its channel deep pools of excellent water. Cunningham bestowed upon the stream the name of "Condamine's River," in compliment to Mr. T. de la Condamine, aide-de-camp to His Excellency the Governor. Blacks were seen here, but they evinced little fear, and, having fired the grass opposite the camp, walked leisurely away on the approach of the intruders. Fishing was good in the Condamine waters, and several fine cod were landed during the afternoon. About noon on the 6th, Cunningham proceeded up-stream for half a mile, crossed to the North bank by a ford previously discovered by one of his men, quitted the river, and entered upon the Downs country, pursuing his way E.N.E. along the southern margin of the valley which lay smiling before him. "During the afternoon of the 6th and the following day," he says, "we travelled throughout the whole length of the Downs to the base of the mountainous land which bounds them on the eastern extreme." It should be remembered that the narrow tract of land to which Cunningham gave the name of Darling Downs—bestowing it, by permission, in honour of the Governor—embraced but a fraction of the country which is so known now; it, indeed, included only the narrow valley of Glengallan Creek. It was this fertile valley he traversed during the 6th and 7th of June, 1827, from the Condamine below Toolburra to the foot of the mountain, which he used a few days later as a lookout, with the object of discovering a pass through the coast range. "These extensive tracts of open country," he informed Governor Darling, "are situated in or about the mean parallel 28 degrees 8 minutes S., along which they extend East 18 miles. On their northern side they are bounded by a very gentle rise of lightly wooded ridge, and on their opposite margin by a forest of box and gum of ordinary timber. A chain of deep ponds, supported by streams from the lofty ranges immediately to the eastward, passes along the central lower flats of these Downs throughout their whole length; and these (ponds) uniting in seasons of heavy rains, fall westerly into Condamine's River. Their breadth varies in different parts of their lengthened surface, appearing at their western extremity not to exceed one and a half miles. The lower parts, deeply grooved by watercourses, form flats which, in consequence of their permanent moisture, furnish a very considerable
range of cattle pasture at all seasons of the year—the grasses and herbage exhibiting in the depth of winter extraordinary luxuriance of growth.

From these central grounds rise downs of a rich black and dry soil, which extend several miles to the eastward; and, as they furnish abundance of grass and are conveniently watered, yet perfectly beyond the reach of those irrigations which take place on the flats in wet seasons, they constitute a most valuable sound sheep pasture, the permanently dry nature of which may be inferred from the fact of there being a difference of three hundred feet between their upper or eastern limits, and Condamine's River.” By the afternoon of the 7th, Cunningham had reached the forest ground on the eastern verge of the plain; but he continued his course for about a mile and a half through “a truly beautiful apple forest, abounding in kangaroos.” Having reached the base of a remarkable flat-topped mountain, forming the termination of a portion of the lateral range to which he had taken a bearing when 25 miles to the south-west, he encamped on the bank of Freestone Creek, where his wearied horses enjoyed “the finest meadow pasture he had seen in New South Wales.” Here he gave his animals a couple of days' rest, spending the time meanwhile in examining the luxuriant vegetation of the scrub which clothed the adjacent mountain from its base almost to its very summit.” On the morning of the 8th, accompanied by one of his party, he ascended the table mountain above the tents, from the lofty summit of which he had promised himself an extensive prospect. Reaching the top two hours later, he was gratified exceedingly by the extensive view afforded of the country to the North, West, and South. The large cleared patches of land lying to the North of his Darling Downs—i.e., the Clifton country—he named “Peel’s Plains,” while the open spaces to the South and South-east were entitled “Canning Downs,” in honour of the Right Hon. George Canning. The extent of the downs easterly he was unable from the point on which he stood to observe, but on the South they were bounded by a lofty range of hills, lying nearly East and West, which he named “Harris Range”—the Herries Range of the maps of to-day, which forms the divide between the Condamine and McIntyre watersheds. But, extremely gratifying as it was to the explorer to survey such a vast expanse of magnificent country, the discovery of which he says compensated him for all the privations met with in his journey of 340 miles from the Hunter, the question that arose in his mind now was—From what point could so fine a territory be approached, seeing that the route towards Moreton Bay was barred by a range of rugged mountains, whose lowest gaps were quite 2,500 feet above sea level. Having sought in vain for a solution of the problem from the flat-topped eminence on which he stood, and upon which he bestowed the name of “Mount Dumaresq,” while he christened the grassy glen stretching along its northerly side “Millar’s Valley.” Cunningham descended to his camp, and, after a delay of 48 hours, due to heavy rains, started with the intention of penetrating
towards the highest points of the Main Range, from the summit of which he expected to obtain bearings to fixed points on the coast. Taking a southerly course, running down Jack Smith's Gully, and skirting Mount Sturt, he proceeded nor'-easterly to "a very beautiful grassy vale, bounded by lofty lateral ridges, and, like Millar's Valley, leading directly to the base of the principal range." This lovely region, now one of the most populous, as it is certainly one of the most productive farming centres in Southern Queensland, he named "Logan's Vale," after the then Commandant of Moreton Bay. Cunningham had entered the Yangan Valley, along which the party advanced for about five miles, halting on the bank of Upper Swan Creek. For the eye of the botanist there was much of interest in the dense scrubs clothing the bases of the ranges surrounding the camp, and it was here that, for the first time on the western side of the range, Cunningham recognised the stately "hoop pine" which now bears his name, but which he had previously observed in great numbers in the dark brushes of the coastal streams. Some days were spent in taking observations and in exploring the ranges, with the view of discovering a practicable pass to Brisbane Town and Moreton Bay. Ascending the highest points at the head of Swan Creek, Cunningham was enabled to overlook portions of the country in the vicinity of Moreton Bay; but heavy rain set in from the coast, and, driving billowy clouds on to the summit of the mountains, he was unable to push his observations to the point of actual success. Before descending, however, he descried a very singular deeply excavated gap to the N.N.E., "to the pitch of which," he says, "the acclivity from the head of Millar's Valley seemed very moderate"; and he employed the following day in exploring in that direction. The gap itself was found to be very rugged and difficult, but to the South the range presented a very moderate surface over which he thought a line of road might be constructed without much labour, as the rise from Millar's Valley proved by no means abrupt, and the fall easterly from the range to the forest land at its base appeared of easy declivity. Looking in the direction of Fassifern and Normanby, his eye wandered with pleasure over a fine open country, very moderately timbered, with patches of clear plain and detached wooded ridges to diversify the surface; and in no part did there appear any obstacle to prevent communication either with the southern shores of Moreton Bay or the banks of the Brisbane River.

The summit of the range at the head of the Yangan Valley was the furthest point of the 1827 trip. In taking a general view of the results of the expedition, Cunningham specially mentions the luxuriant pasturage of the plains, rising downs, open woodlands, valleys, and elevated forest ranges, which his discovery had thrown open to the flocks and herds of Australia. He saw neither coal nor limestone in his journey, though both have since been found within sight of his lookout from Mount Dumasresq. But he notes that "a quarry of freestone, seemingly well
adapted for building, could be easily opened on the bank of a creek about two miles South of Logan Vale." This quarry is now supplying building stone to the city of Brisbane. "In fine," he continues in his report to Governor Darling, "upon consideration that we are occupying a country in which, in the absence of navigable rivers, an expensive land carriage must ever be resorted to in the conveyance of produce from the inland to the coast, the value of this extensive range of pastoral country is not a little enhanced by its proximity to the seashore, and the seeming facility with which the fleeces of its growth, as well as the general produce of its soil, will at some future time be borne down to the shores of Moreton Bay."

Cunningham started on his return journey on the 16th of June, and, crossing Canning Downs and the heads of the Severn, arrived at his starting point, Segenhoe, on the 28th of the following month, having, in an absence of thirteen weeks, travelled a distance of 800 miles. On his return to Parramatta, he waited upon the Governor, and laid before His Excellency a rough outline of the country through which he had penetrated, later on delivering a report in which he described his experiences in detail, and a map showing his route and discoveries. He subsequently received an official letter conveying "His Excellency's pleasure at being able to bear testimony to the zeal and enterprise with which Mr. Cunningham's journey was undertaken, and the judgment and success with which it had been performed."

Anxious to complete his work of the previous year, Cunningham set out in 1828 to find a practicable route from Brisbane to the Downs. Mr. Fraser, the Colonial Botanist, accompanied him, and they landed at Brisbane on the 1st July. The Commandant, Captain Logan, had recently discovered the mouth of the river which now bears his name, and it was decided to make an effort to reach the gap by that route; the attempt failed, however, for the party got "bushed" in the vicinity of Mount Lindsay. Returning, Cunningham and his people struck off for Limestone Station, on the Bremer, while Logan and Fraser returned direct to Brisbane. Cunningham encountered many difficulties in his efforts to reach the summit of the pass which he had observed from Logan Vale, but by pluck and determination succeeded in doing so on the 25th of August. As he looked over the magnificent stretch of country at which his labours of the previous year had closed, portions of Canning Downs and patches of Peel's Plains were distinctly recognised at a distance of from 20 to 30 miles. He looked down on Millar's Valley, located Mount Dunaresq and Mount Sturt, and was enabled to connect on the map of the country the northern points of his last year's journey with the settlement on the Brisbane River.

Thus was his great work completed. In 1827, he discovered the finest tract of land the Continent contains, and in 1828 he found and
marked a route by which the produce of its pastures might be sent to
the seaboard and the markets of the world.

Cunningham, whose industry was unflagging, no matter how his
health suffered, continued his explorations in various directions until
1831, when he left Sydney for the old country, arriving in London in
July, after an absence of fifteen years. In the following year, a
vacancy occurring in the office of Colonial Botanist, Richard Cunning-
ham, Allan’s brother, was appointed to the post; but he was killed
by the Bogan blacks a few years later, and Allan Cunningham re-
turned to Australia to succeed him, only however to hold office for a
little more than a year. Discovering, to his bitter disappointment, that
the duties required of him were not those that a botanist should be
expected to perform, he resigned, refusing to allow himself to be con-
verted into a mere cultivator of vegetables for the private tables of
public officials. “Tell all that I have discharged the Government cab-
bage-garden in disgust,” were the bitter words in which, in a letter to
a friend, he announced the severance of his connection with the Sydney
gardens. Subsequently he spent some months collecting in New
Zealand, returning to Sydney towards the end of 1838, with his health
completely undermined. He passed away, in the cottage in the Botanic
Gardens, on the 27th of June, 1839, at the age of 48, leaving behind him
an undying name. “He was a ‘rare specimen,’ ” says his friend and
executor, Captain Philip Parker King, R.N., “quite a genus of him-
self; an enthusiast in Australian geography; a warm friend, and an
honest man; and, to crown all, when the time came, he resigned him-
self into the arms of his Saviour without a murmur.” His remains
were deposited in the grounds of St. Andrew’s Presbyterian Church,
Sydney, and a statuary marble tablet, suitably inscribed, paid all too
brief tribute to his worth. A monument to perpetuate his memory
was subsequently erected in the Sydney Gardens, and within this—
thanks to the kindly efforts of Mr. J. H. Maiden, the present Super-
intendent of the Gardens—there is now a leaden casket containing all
that could be found of the botanist’s remains when, quite recently, the
Devonshire street Cemetery was abolished to make room for the new
Redfern Railway Station. “But,” says Heward, “while sculptured
marble may tell to the cold ear of posterity the science and virtues of
the departed botanist, the greatest debt of gratitude to his memory is
due from the agriculturist, who owes so much to the indefatigable per-
severance and research of the explorer of the vast pastoral country to
the north-west and north of New South Wales.” Queensland has paid
a far from adequate tribute to Cunningham’s work by naming after
him the electorate that embraces the territory he discovered, and the
municipal authorities of Warwick have followed the State example by
adopting Cunningham as the name of one of their handsome parks,
equally appropriately conferring the name of Leslie on another. But have we, who enjoy the fruits of his labour, done all that duty demands we should do to perpetuate his memory? Surely not.

THE EARLY SQUATTERS.

Thirteen years elapsed before Cunningham's great discovery was turned to practical account. Then came Patrick Leslie—first of the Downs squatters—and later his brother Walter, guided to the new pastoral El Dorado by a rough copy of the discoverer's map and by directions obtained from his friends. The Leslies were Aberdonians; they were financed by their uncle, a London banker named Davidson, father of Gilbert and Walter Davidson, to whom they sold Canning Downs fourteen years after first "sitting down" upon it. After the Leslies, in quick succession, came a number of equally bold and enterprising young men; and thereafter "the sound of occupying footsteps fell continuously upon the ear of the dismayed savage, until he had no longer a spot on all those fertile plains which he could look upon as his own."

In March, 1840—nine months after Cunningham had gone to his rest—Patrick Leslie came across from the outposts of settlement in northern New England, and pitched his camp on the pretty knoll on which now stands North Toolburra head station. He was accompanied by Peter Murphy, an assigned servant, whom he described as "about the best plucked fellow I ever came across in my life, as good a servant as master ever had." Leslie travelled by way of Texas, on the Severn, Pike's Creek, and Upper Sandy Creek, making the Downs about four miles from Toolburra. He had come to spy out the land. Following the Condamine valley up to Canning Downs, and then crossing over to Glengallan Creek, he ran that stream down to its junction with the Condamine, making his way back by Canal Creek and the heads of the Severn to Falkner's Plains, his original starting point. Here he was joined by his brother Walter, who had been following with their sheep. They had two bullock teams (each drawn by twelve animals), a horse team, and ten saddle horses. In addition to Patrick and Walter Leslie, there were 22 ticket-of-leave men—"as good and game a lot as ever existed, who never gave their employers a moment's trouble; worth," says Patrick Leslie, "any 40 men I have ever seen since."

A day or two later the party set out for the Downs, arriving at "Leslie's Crossing-place" on the Condamine, between Talgai and Toolburra, on 4th June, without the loss of a single animal. Leaving the stock and drays in charge of the men, the Leslies, accompanied by Murphy, examined the valley of the Condamine as far east as Killarney, crossing thence to Glengallan and Dalrymple creeks, and returning to camp on the 13th. On the following day camp was moved G—Royal G.t.o. Soc.
to the junction of Sandy Creek with the Condamine, where they formed what was intended to be their first sheep station, every precaution being taken against attack by the blacks. On the 21st the Leslies, again accompanied by the faithful Murphy, struck across the Downs by way of Allora, Spring Creek, King’s Creek, and Hodgson’s Creek to Gowrie, but “finding nothing they liked so much as Canning Downs,” they returned as far as Glengallan Creek, which they followed up through Millar’s Valley to Cunningham’s Gap. Crossing the range, they got down as far as the Bremer, intending to go on to Brisbane; but, not being provided with the permit necessary to enable them to enter the Settlement, they thought better of it, turned back, and once

more reached their Condamine camp on the 1st of July. The day following they moved to the site of North Toolburra, and there formed their first “station.” They afterwards sold Toolburra to Gordon, and made Canning Downs their head station. They were modest men, and contented themselves with the country “from the bottom of Toolburra to the head of the Condamine, including all tributaries”—a vast tract of country, embracing many hundreds of thousands of acres. Subsequently they “gave up” the lovely valley now known as Glengallan to the Campbells, the “German’s Creek” (i.e., Rosenthal Creek) to Fred Bracker, and Sandy Creek—the Rosenthal country—to the Aberdeen
Company (the North British Australasian Company). Thus were formed the first stations on the Darling Downs. Toolburra was actually the first occupied, but Canning Downs was the first formed and stocked. Patrick and George Leslie married sisters of John McArthur, formerly of Glenelg, on the McIntyre Brook, and while those ladies resided at Canning Downs the old station was the centre of social life and hospitality in that part of the colony, as indeed it has been ever since. Patrick Leslie was a man of great courage, and he enjoyed the respect and good will of his neighbours from New England to Brisbane. But his firmness and determination earned for him the bitter enmity of the blacks, and on more than one occasion he and his brother Walter narrowly escaped murder at their hands.

Canning Downs passed from the Leslies to the Davieasons in 1854, and Captain Daveney, still a well-known resident of the Warwick district, managed for the new owners from 1855 to 1866. The Davieasons sold to Wildash, from whom the station passed in 1875 to the late John Donald Macansh, in whose family it remained until a few months ago, when the residue, some 33,000 acres (a like area having been already disposed of in small areas for farm settlement) was sold to a Scottish Company, whose representative is continuing the same wise policy, with every prospect that, within the next few years, the last block of the first Darling Downs sheep station will have passed for ever from the purely pastoral to the agricultural stage of development.

North Toolburra (the Toolburra of the Leslies, originally a very much larger holding than the estate known by that name in later times) was sold by its first occupiers to Gordon, from whom it passed very quickly to Fairholm and Hay. Then came John and George Gammie, Hood and Douglas, Massie, and Thomas Coutts. In 1895, half of the estate was sold by the Coutts family to the Government for close settlement, and the balance to the late Mr. Matthew Swinburne, of whose estate it still forms part.

Eton Vale was taken up by Arthur Hodgson, who met Patrick Leslie in New England on the return of the latter from his first hurried visit to the Downs. Hodgson, who was accompanied by Gilbert Elliott (afterwards first Speaker of the Queensland Legislative Assembly), was in doubt whether he should go to the Clarence or to the Darling Downs, but Leslie persuaded him to take the latter course, and told him of fine country and how to reach it from "Leslie's Crossing" on the Condamine. The country referred to was Eton Vale. Hodgson made his way there without delay, secured the country, and has ever since retained it. Hodgson (now Sir Arthur) is one of the few pioneer

* In the subsequent discussion, the President, quoting from a letter from Sir Arthur Hodgson, showed that the statement that Sir Arthur's first partner at Eton Vale afterwards became First Speaker of the Queensland Legislative Assembly, was erroneous.—A.M.
squatters of the Downs who can be said to have made a competency out of his first venture, and is almost the only one who still owns his original station. It was at Eton Vale that the distinguished President of the Queensland Branch of the Royal Geographical Society of Australasia gained his first Downs experience, in the year 1855.

Glengallan, the pick of Cunningham's "Darling Downs," also formed part of the Leslies' "first choice." According to Patrick Leslie's journal, they "gave it up" to the Campbells, who were amongst the earliest Downs pioneers. Colin Campbell and his brothers, John and Archibald, arrived on the Downs soon after the Leslies; their party included the late Allan McInnes, of Glencoe, and his wife—whose children were among the first Europeans born in the new territory—Le Porte and Le Martin, natives of Martinique, in the French West Indies, and a number of ticket-of-leave men. They pitched their camp on Freestone Creek, close to the point at which the main road from Warwick to Cunningham's Gap crosses that stream, but quickly removed to the southern slope of Mount Marshall, on which Glengallan head station now stands. The estate passed from the hands of the Campbells to C. H. Marshall, then to the firm of Marshall and Deuchar, and still later to Marshall and Slade, the present holders, as a result of whose labours Glengallan has become and is known far and wide as one of the foremost stud-breeding establishments in Australia. In 1895 and subsequent years the present proprietors sold some 16,000 acres of the estate to the Government for close settlement. The whole of this has been selected, the bulk of it is already highly cultivated, and the probabilities are that the balance of the estate will, in the not far distant future, share the same fate.

The Rosenthal property passed from the possession of the Leslies to the Aberdeen Company (the North British Australasian Company), for whom John Deuchar, Frederick Bracker, Buckland, Lester, and Augustus Evans managed in succession. Originally a very large holding devoted mainly to sheep, it passed, as the leases of the several blocks expired, into the hands of grazing selectors, and only a few thousand acres of freehold remain in the possession of the company.

Goomburra, another of the out-stations of the original Canning Downs, passed from the Leslies to Ernest Elphinstone Dalrymple, after whom the creek on which the town of Allora now stands was named. Dalrymple sold it to the Aberdeen Company, for whom John Deuchar managed in the early forties. From the company it reverted to its original owner (Patrick Leslie), who sold it in the middle of the fifties to Robert Tooth, a Sydney brewer, who was succeeded in turn by Charles H. Green, Edward Wienholt, and F. W. Donkin. Like many more of the first-choice stations of the Downs pioneers, Goomburra has been acquired by the Government for close settlement. (It was thrown
open to agricultural farm selection on the 1st inst., and within 48 hours every acre had passed into the hands of farmers).

The Talgai of the early days embraced portions of more than one of the off-shoot properties which now bear the same name, while North and South and East its boundaries extended far beyond their present limits—including at one period Glenelg, Toolburra, and part of Clifton. It was taken up by John and George Gammie, and was held and worked by them for about fifteen years. The late James Morgan managed the property from 1849 to 1854, and his letter-books show that 60,000 sheep were shorn on the station in 1853. The following extract from the same source may be quoted, by reason of the coincidence of dates—it was written on the 7th of May, 1852, just fifty years ago to-day—and also because of the contrast between the conditions which it describes and those prevailing on the Downs just now:—"Copious showers at regular intervals during the past month have given this fine district all the appearance and freshness of a luxuriant spring. Stock of all kinds are in tip-top condition, and no doubt is entertained by the sheep-owners of a first-rate clip next season. They are, and have good reason to be, satisfied with the favourable prospects of their grazing pursuits." Would that we could say the same to-day!

Ellangowan was taken up by John Thane, who came to the Downs with George Gammie in 1840-1. He is popularly supposed to have been drowned in Thane’s Creek, which was named after him; but, as a matter of fact, he met his death in 1843 while endeavouring to cross the Condamine, in flood at the time, at the "Talgai Crossing." Arthur Hodgson came over from Eton Vale, held a magisterial inquiry into the circumstances, and read the burial service over the grave. The station, with nearly 5,000 sheep, horses, bullocks, all improvements, ten bales of wool, implements, etc., was sold immediately after for £650 cash.

The belt of country embracing part of what is now Ellangowan, and Clifton, Headington Hill, Pilton, and West Haldane, was early occupied by the Forbeses, the Gammies, King and Sibley, and Joshua John Whitting. W. B. Tooth was the last of the squatters who owned Clifton, which, with Headington Hill, has since reverted to the Crown, and been parcelled out among the farmers almost as rapidly as it was acquired by the squatters 60 years ago.

Westbrook Station, which, like so many of its neighbours, has in recent years been cut up for close settlement, was first selected by John Campbell, who claims that he was the first man to take up pastoral country and form a cattle camp in what is now Queensland territory. He had originally settled on the North bank of the Severn River—the Dumaresq of Cunningham—bringing his cattle from the Gwydir district of New South Wales, and building his stock yards and huts at a place called by the blacks Kittah-Kittah, on Beebo, one of the blocks now form-
ing part of Bengalla Station, the property of the Lalors. He says he was there when the first squatters came over from New England to the Downs; but very soon he, too, joined the "rush" northward.

Warroo was taken up by Frederick Bracker, and is still the property of his family. Bracker was one of the best judges of sheep and wool on the Downs in his day, and his memory is still held in kindly recollection by the few surviving members of the gallant band of pioneers of which he was one.

Nestling between Glengallan and Maryvale, on the first high-road from the new territory to Brisbane Town and Moreton Bay, lay Gladfield, which has long since been divided between the adjoining stations or parcelled out into farms. The Leslies were the first occupiers of Gladfield, but they early "gave it up" to McDonald Bros., from whom it passed in succession to Neil Ross (whence it derived the name of Ross' Corner, on the Gap Road), Fred. Bracker, Francis Robert Chester Master (afterwards Usher of the Black Rod in the Legislative Council), and finally back to the Leslies again.

Maryvale Station, most famous of Queensland horse-breeding establishments, possesses a history full of interest to old hands. It embraces the whole of Millar's Valley. Hard by the homestead runs the road that in the early days led through Cunningham's Gap, but which in later years was diverted to the easier pass between Spicer's Peak and the southern slope of Mount Mitchell. A few miles distant is the site of Jubb's hotel, a well-known wayside hostelry in the pre-railway days, where lively squatters and burly bullock-drivers often foregathered and occasionally came to blows. The run was taken over from the Leslies by Walter Parquharson, who seems to have found it anything but a profitable possession. He offered it, with 700 sheep, to Mr. Edward Anderson, now of Allora, in payment of an account for £34—less than a shilling per head for the sheep, with the station given in. Anderson, however, declined the bargain, and a little later Maryvale was sold to Walter Leslie for a "song"—or, rather, for an old stock-horse. It subsequently became the property of "Bush" Hay, who sold it to Arnold Wienholt, and it now forms part of the Wienholt Estate. (Mr. Edward Anderson, to whom reference has just been made, is, I am glad to say, with us this evening. He is one of the few Downs pioneers who remain to connect the present with the past. He came to Queensland in 1843, making the voyage from Sydney to Brisbane in the steamer "Sovereign," which was wrecked, with terrible loss of life, on the South Passage bar four years later. Anderson came on to the Downs almost immediately, and has been a resident of the district ever since. He knew most of the early squatters intimately, and enjoyed a full measure of their respect.)

Other early Downs settlers were Messrs. Hughes and Isaac, at Gowrie; the Gores, at Yandilla; Stuart Russell, at Cecil Plains; and Henry
Dennis, who took up Jimbour for Scougall, Myall Creek for Coxen, Warra for Irving, and Jondaryan in his own name; but many of these properties were not stocked until long after.

Many places familiar to residents of the Downs to-day bear the names of the pioneers, as for example:

“Mount Leslie,” near Kilbarney; “Leslie’s Crossing,” on the Condamine below Toolburra; and “Hodgson’s Creek,” near Cambooya.

On the Western road from Warwick there is “Mocatta’s Creek,” called after the original selector of Grantham; “Rodger’s Creek,” after “Cocky” Rodger, at whose expense Stuart Russell makes merry; and “Thane’s Creek,” called after John Thane, of Ellangowan.

In the Pratten country we have “Gammie’s Mountain,” and on the other side of the Range, near the Peak Mountain, “Gammie’s Camp,” on the old main road.

Then there are “Bracker’s Creek,” “Deuchar’s Creek,” “Campbell’s Plain,” “Gore’s Range,” “Mount Marshall,” “Dalrymple Creek,” “Elphinstone,” and “Mount Sibley.”

“Perrott’s Gap,” on the road from New England to the Downs, usually miscalled “Parrots’ Gap,” is said to have been named after William Stafford Perrott, one of the first “supers” of Maryland Station. Tradition says Perrott was the last Earl of Stafford. He died at a public-house in Deniliquin, where he was employed as “boots” and groom.

Can anyone say whence came those singular names, “Lord John Swamp” and “The Jew’s Retreat?”

WORK OF THE PIONEERS.

These were the men who pioneered the Downs, and paved the way for the steadily swelling tide of settlement which very soon followed in their footsteps. A sturdy band of enterprising spirits, alike remarkable for courage, self-reliance, and energy, they have laid their successors under an everlasting debt of gratitude. Leading a semi-nomadic life in a newly discovered country, they were daily subjected to hardships and dangers of which the present generation can have little conception. Sheltered by tents or rude bark huts, these young men—most of them highly educated, and many of them tenderly nurtured in their early years—had none of the luxuries and comparatively few of the necessaries of life; salt beef and mutton, damper and tea, formed their usual fare. John Campbell says that when he first visited the Downs, early in 1841, there was but one bark humpy in that part of the colony. Sibley was camped under a tarpaulin, whilst Hodgson and Eliott had a cloth tent, where the latter, the son of a British admiral, was found trying his hand at a damper, with sleeves rolled up, and in flour to the elbows. Yet these pioneers, living a life of freedom in a glorious climate, amid surroundings of great beauty, and engaged in work that promised ultimate profit to themselves and rich reward to those who might come after them, were generally happy
and contented. They are certainly entitled to a full share of the admiration which has been expressed for the spirit of independence that characterised Noah and his sons when they set about the task of building the Ark "without asking for a penny of aid from the Government of the day." They had brought their flocks and herds to the new territory, and it was essential to the success of the enterprise in which they had embarked that means should be provided for getting their supplies from and their produce to port. But the frowning coast range barred the way, and though Cunningham had found a pass across one of its lower altitudes, and similar discoveries were made elsewhere later, much hard work, demanding unflinching determination, had to be done before the roads could be made practicable for vehicular traffic. The squatters possessed the determination, and were equal to the work—they formed themselves into road-parties, and drawing help in the shape of men and teams from stations all over the Downs, entered upon the task of clearing tracks across the range. The work was arduous, and something more than a spice of danger was added by the presence of bands of hostile blacks, who made occasional attacks upon stragglers from the working parties; but it was accomplished.

The first supplies for the Downs, brought up by dray, passed through 'Cunningham's Gap in October, 1840. But owing to the steepness of the eastern approach, the route proved a bad one, and it was soon abandoned in favour of the easier track through what is known as the Spicer's Peak Gap. The Cunningham's Gap track, now so overgrown with dense vine-scrub as to be almost impassable even for equestrian traffic, crosses between Mount Cordeaux and the northern peak of Mount Mitchell; the route by Spicer follows the pass between the frowning peak of that name and the southern slope of Mount Mitchell. It is said to have been discovered and marked by Harry Alphen, a stockman in the employ of the Leslies, who was for a considerable time in charge of their cattle station at Mount Sturt, where he no doubt acquired his knowledge of the hill country. He received a reward from the Government for discovering the new track; and this he invested in a public-house, located at the western approach to the Gap. He made a good deal of money, which he spent in erecting boiling-down works on the Condamine near Warwick, at a point about a mile from Millhill Railway Station. He engaged "Tinker" Campbell, the original selector of Westbrook, as manager, but the venture failed owing to the difficulties encountered in getting the tallow over the range to port.

The Government authorised the employment of a few men to open the Spicer's Peak Gap track, money to defray their wages being sent up from Sydney as opportunity offered to Patrick Leslie, who was entrusted with its disbursement. Later on, in the fifties, the late Mr. H. E. Clinton, District Road Engineer, was transferred from the Too-
woomba end to the new track, and charged with the duty of making a road over the range. He did his work admirably, and some miles of the macadam on the summit section—laid down forty-five years ago—may even now be cited as an example worthy of emulation by divisional boards and municipal councils. A couple of days may be pleasantly and profitably spent in a riding trip from Warwick to Ipswich by the Gap road; recollections of the pioneers are revived at every mile. the scenery is charming, and some of the views magnificent—notably that obtained from the "Governor's Chair" (on the summit of the Pass), so-called since Lord Lamington paid a visit to the spot shortly before his departure from Queensland last year. Before Queensland became a separate colony the Government of New South Wales had made a feature survey for a line of railway from Moreton Bay through the Gap to the Downs, and the Spicer's Peak route will probably in due time again become the Via Recta.

FIRST WHITE WOMAN ON THE DOWNS.

In a paper dealing with the pioneering days, it will not be out of place to devote a few moments to an effort to establish the identity of the first white woman who came to the Downs, though it must be admitted the evidence is not convincing. The honour is claimed for the late Lady Hodgson, wife of Sir Arthur, who was formerly Miss Eliza Dowling, daughter of Sir James Dowling, at one time Chief Justice of New South Wales; for Mrs. Patrick Leslie, who, as already stated, was a Miss McArthur, and who Forbes says was "the pioneer lady"; and for Mrs. Allan McInnes, of Glencoe, near Warwick, who with her husband came out with the Campbells from Scotland and accompanied them to the Darling Downs, arriving soon after the Leslies. Sir Arthur Hodgson, speaking at the dinner tendered to the present Governor of Queensland on his departure from London, said that Lady Hodgson—who came up after her marriage—was the first white woman who reached the Downs; adding that, if they lived until the 30th of March (1902), they would have reached 60 years of married life. That would make April, 1842, the earliest possible date of Lady Hodgson's arrival on the Downs. Patrick Leslie's Journal contains the following passage:—"On the 9th of September (1840) I was "spliced," and that is a day one does not forget." It is hardly likely that he and his wife came on to Canning Downs sooner than a month after that date; so that Mrs. Patrick Leslie could scarcely have arrived before October, 1840. Now, the Campbells, with whom were Allan McInnes and his wife, while crossing New England on their way to the Downs, met Patrick Leslie on his way back to Sydney—probably on the trip which resulted in his getting "spliced." This must have been prior to the 27th of July, 1840, the date on which Leslie left Maitland by steamer.
for Sydney, and would seem to indicate that the Campbells' party arrived on the Downs during the latter half of 1840, in which event Mrs. McInnes must necessarily have preceded Hodgson and his wife, and in all probability Mrs. Leslie also.

THE ABORIGINES.

Though perhaps no finer hunting grounds could be found on the western slopes of the coast range, the Darling Downs of Cunningham's time does not seem to have supported a very large aboriginal population. The explorer saw frequent indications of the presence of blacks, but only encountered them at occasional intervals—on the banks of the Severn, the Condamine, and Swan Creek. Of war or hunting parties or large tribes he saw none, possibly because they were temporarily absent from the narrow belt of country which he traversed, or because, in fear of their strange visitors, they hid themselves in the forests and scrubs. Those who came later had closer contact with the blacks, who were found to be more numerous than Cunningham supposed. They were crafty, but not conspicuous for bravery. The tribes inhabiting the western side of the district were the boldest; but as a rule they made war only upon shepherds and stockmen, very seldom venturing an organised attack against station homesteads. The nameless graves of many scores of their victims dot the Downs, but on the whole it may be said that they were more sinned against than sinning, and when treated kindly they usually respected the property of the settlers. Game of all kinds was plentiful all over the Downs, so that there was little temptation, other than a desire for change of diet, to interfere with the flocks and herds of the squatters. Like most of the Queensland aborigines, from Killarney to Cape York, coastal and inland, the Downs blacks were cannibals, and some at least of the pioneers were afforded opportunities of acquiring a taste for human flesh; the weight of credible testimony, however, goes to show that only children were eaten. Tribal fights were frequent between the blacks inhabiting the Eastern Downs country and those from the McIntyre districts to the westward, and the immediate neighbourhood of the spot on which Warwick now stands was often chosen as the battle ground. Their weapons were the spear, boomerang, stone-tomahawk, and nulla-nulla for attack, while they used a shield for defence; the woomera was not used on the Downs. Like the civilized warfare with which Britons have recently been made familiar, the battles of the braves who sought glory on the early fields of the Downs were fought at long range; and the casualty lists were seldom alarming, often indeed being confined to the carrying-off of a few lubras and the loss of more or less blood from wounds which as a rule did not terminate fatally. The aboriginal warrior entertained a wholesome respect for his enemy, and a still more wholesome respect for his own skin, which he seemed anxious to preserve for the attentions of
the tattoo-artists of his tribe. Physically they were a fine race of people, well formed, well fed, and free from the diseases and vices which quickly followed upon contact with the whites. "Old hands," whose memory carries them back to the time when, 40 years ago, tribes were still to be seen in the vigour of health, will agree with the descriptions of those early explorers who spoke of the blacks of what is now South Queensland as "stout, clean-skinned, well made people"; ... "tall, fine-personed"; ... "a fine, stately, well-formed race; some of both sexes good-looking, and many of the men 6 feet high." In the early days the blacks did good service for the squatters in many capacities, but they rapidly disappeared before the onward march of civilisation; and, though not much more than half a century has elapsed since Cunningham's immediate successor first set foot on the Downs, the period has witnessed the total disappearance of its original inhabitants. Scarcely one of the Eastern Downs blacks survives to-day, a fact worthy of note—and, it should be added, of some reflection.

THE EARLY TOWNS.

Warwick was one of the first Downs towns to spring into existence. It dates back to 1847. Leslie was instructed by the Government of New South Wales to select a spot for a township on the Condamine, below Canning Downs. He did so, but he says, "it must have been in 1848 when the first settlement took place." "The Pocket," under Summerhill, then a Canning Downs horse-paddock, was first suggested as a suitable site; but it was not approved. George Leslie had a sheep station where Warwick now stands. The native name of the locality was Gooragooby, while the racecourse reserve was called Toongooroo. The first sale of Warwick town lots was held in 1848, and Patrick Leslie was the first purchaser. He was instigated thereto, he says, by a sawyer named John Russell, a well-known character in those days, who, when the first lot was put up, addressed him in these words: —"Come, Mr. Patrick Leslie, buy the—— lot for luck; you were the first man here, be the first to buy." And Leslie bought the first allotment for £4. It was proposed to call the place Canningtown, but the residents very properly objected, and at their suggestion the name was changed to Warwick. The original township, a collection of rude bark and slab huts, was built on Hudson's Hill and the flat to the northward; and the line of what is now Albert-street—then the main street—was the track on which were run the frequent races peculiar to a young bush town in a "horsey" community. "The Flat" proving subject to floods, the town gradually shifted to its present situation on the higher ground to the westward. Dr. Lang, who in 1854, crossed the Downs from Warwick to Drayton, described Warwick as "occupying a beautiful situation, and possessing all the requisites for a first-class inland colonial town, including one of the finest climates im-
aginable.” Sir George Bowen, Queensland’s pioneer Governor, paid his first official visit to Warwick in 1860, crossing the Main Range on horseback by the rough bridle-track through Cunningham’s Gap. The citizens presented him with the inevitable address, couched in the florid phraseology peculiar to such documents; and His Excellency proved himself equal to the occasion. Having referred to the splendid welcome they had given him to their “rich and beautiful district,” and declared that the numerous cavalcade of well-mounted horsemen which met and escorted him into town presented a spectacle “such as could be exhibited in only two countries in the world—England and Australia”—he went on to refer to the “lovely scenery” and the “delicious climate” of the place, and so laid the foundations of the loyalty which has ever since been one of young Warwick’s most marked characteristics. But Sir George Bowen was not the first Australian Governor who visited Warwick. Six years previously Sir Charles Fitzroy came on to the Downs by way of Drayton. He was the guest of Arthur Hodgson at Eton Vale, Whitting at Pilton, and Patrick Leslie at Goomburra, on his way across the Downs. His Excellency attended Divine service in Warwick, on Sunday, April 1st, 1854, and later lunched with Dr. Labatt, in the cottage known as Canning Lodge, near Bracker’s Creek, overlooking what was then the main road from New England across Canning Downs to the Gap. Next day he set out for Brisbane by the Cunningham’s Gap route, stopping at Jubb’s for the night, and crossing the range on the Tuesday. The first church service (Anglican) was held in Warwick on the 9th of September, 1849, by good Canon (then the Rev. Benjamin) Glennie, whose “parish,” in the Diocese of Newcastle, embraced practically the whole of what is now Queensland. The service was held in the old Horse and Jockey Inn, which stood upon the site now occupied by the Commercial Hotel, at the corner of Victoria and Palmerin streets. The first newspaper was called the “Warwick Mail”; it was published in a building, long since demolished, at the south-east corner of Palmerin and Victoria Streets. It survived only a few months, and Mr. Patrick Ritchie then started the “Warwick Argus,” the first issue of which appeared on 2nd November, 1864. The “Examiner” was established in 1867.

Drayton, first known as “The Springs,” was founded about the same time as Warwick, but was quickly overtaken and outstripped by its younger and more vigorous rival, Toowoomba, to-day the capital of the Darling Downs, and one of the most populous, as it is certainly one of the most progressive of Queensland provincial towns. “Toowoomba” is said by some to be an aboriginal term signifying “great in the future,” while others declare it is the European corruption of a blackfellow’s effort to pronounce the original name of the place—“The Swamp.” With its splendid position on the summit of the range, its salubrious climate, the magnificent district by which it is surrounded,
its contiguity to the metropolis, and the advantage it possesses in being the point of junction of two main trunk lines of railway intersecting the southern and western interior, it has but one drawback—a water-supply insufficient for the needs of a town so populous as it is destined to become before it marks its first century. Already its population is some 15,000, and of late years the rate of progress has been far above the average of Queensland towns generally. With the transition of the Downs from the pastoral to the agricultural stage of development, now in rapid progress everywhere between Toowoomba and Warwick, the former town may hope to become ere long the capital of provincial Queensland; but the hopes which its citizens cherished 40 years ago, and gave expression to in the address which they presented to Governor Bowen on his first visit—that Toowoomba might be chosen as the political capital of the State—are hardly likely to be realised. The oldest Toowoomba newspaper is the "Darling Downs Gazette," which first saw the light in Drayton on the 11th of June, 1858.

Dalby, the town of next importance on the Downs, has made less satisfactory progress than its eastern neighbours. Originally dependent upon station trade, it is only now beginning to draw vitality from the gradual spread of agricultural settlement in the surrounding district; and there is reason for anticipating that there, too, the transformation from pastoral to agricultural settlement will be attended with results as beneficial to Dalby as they have been to Toowoomba and Warwick.

Away back in the year 1844, there was one house where Allora now stands—the residence of Neil Ross and his family—but some years later this was removed to Gladfield; and it was not until 1859 or 1860 that the town was established. To-day it is the centre of the largest wheat-growing district in the State.

Cambooya was the administrative headquarters on the Downs in 1844, and it was there the Commissioner of Crown Lands, Mr. Christopher Rolleston, resided. The place was then little better than the hamlet it remains to this day.

Nearly all the other Downs towns belong to a later generation.

It is interesting to note that to the first Queensland Legislative Assembly (which consisted of 26 members representing 16 electorates) the Downs constituencies sent six members, or nearly one-fourth of the House. The late St. George R. Gore was first member for Warwick; he was elected by a majority of 13 votes over his opponent, Arnold Wienholt, the numbers polled being—Gore 71, Wienholt 58. Warwick's first representative was Secretary for Lands and Works in the first Ministry, formed by R. G. W. Herbert; he also held office later under Macalister and Lilley. Gore died in 1872, and a monument to his memory now stands in Cunningham Park.
John Watts was first member for Drayton and Toowoomba, Charles Coxen for Northern Downs, and Pring for Eastern Downs, while Moffat and Taylor sat for Western Downs.

PROGRESS OF DEVELOPMENT.

Half a century of pastoral occupation, one of the most remarkable characteristics of which was the unwise policy of overstocking, wrought a deplorable change in the condition of the Downs pastures. Cunningham, Leslie, Leichhardt, Lang, and many others speak in enthusiastic language of the incomparable luxuriance and richness of the grasses which clothed the country when they first saw it, and which, indeed, continued to flourish until 25 or 30 years ago; but these have now almost entirely disappeared, and are only seen in good seasons in protected strips within the railway fences. In such a pastoral paradise cattle and sheep multiplied amazingly and fattened rapidly, and soon the finding of markets for stock became a question of first importance to station-owners. Curing and packing beef for export, and boiling down for tallow were tried, but with scant success, and the ups and downs continued till the discovery of gold in New South Wales and Victoria sent values up to the levels recently unhoped for. Soon there was ample money available for all classes of enterprise, and pastoral occupation, theretofore confined to the Darling Downs and the southern coast belt, quickly spread to the northward and westward. But other causes were co-operating to bring about a change in the condition of settlement on the Darling Downs, which up to the foundation of Queensland as a separate colony, and indeed for some time after, had been devoted almost exclusively to the feeding and breeding of sheep and cattle, with isolated unsuccessful experiments (at Canning Downs and East Talgai) in the direction of acclimatising the South American llama and the Angora goat. Purely pastoral occupation was necessarily the first stage of Darling Downs development. But with the discovery of gold in Queensland, there followed a rapid accession of wealth and population, and this brought with it conditions which called into existence the second stage of development—the pastoral-agricultural period—by creating such a demand for farm products as induced many men, hitherto employed in the towns or on the stations, to turn their attention to the cultivation of the soil. The rich land of the Downs could not fail to attract notice; such areas as were available for close settlement gave generous return for the labours of the husbandman, and slowly, yet none the less surely, agriculture became not only an established but even a popular industry. The cultivation of maize, which had been grown with marked success in the rich lands of the Condamine valley about Killarney from the time of the Leslies, spread all over the Downs; wheat (first grown at Rosenthal by Bracker
and at Canning Downs by the Leslies in 1843) was cultivated in commercial areas in the early sixties, and, was steadily persevered with despite the ravages of rust and other scourges, until varieties suited to the soil and climate were found or obtained by selection; lucerne (first grown at Warroo in 1849) was cultivated in steady increasing areas; while other crops also claimed attention in suitable localities. Flour mills were erected in Warwick and other centres, and settlement and production progressed steadily until the needs of producer and consumer alike called for the facilities for commerce and development which railways alone can supply in a country devoid of navigable waterways. These, giving agriculturists easy access to markets, and opening up the cheaper pastoral country of the west, heralded the next step in the development of the Downs—the transition from the agricultural-pastoral to the purely agricultural period. The bulk of the best lands were parted with to the early squatters, but are being re-acquired by the State to meet the necessities of the new conditions, and already innumerable farm houses are to be seen where but a little while ago only an occasional boundary rider's hut was encountered. But hundreds of thousands of acres still remain to be similarly dealt with before the full fruits of Cunningham's discovery are enjoyed by the people of Australia.

CONCLUSION.

This hasty survey of a period of history so interesting to us is mainly a record of the doings of some of those who helped, more or less, to bring about the progress we have made and the prosperity we enjoy. How far any one man is entitled to the credit of that progress and that prosperity is a question upon which people may differ. Indeed, one set of philosophers holds that the influence of this or that individual on social development is, in all cases, more apparent than real. But this teaching has not been accepted by the world; for the world loves to connect great men with important movements and mighty events, and to think that, but for those men, the movements and events would not have taken place. Hero-worship, it is well to be able to say, has not yet become unfashionable, for a nation would be poor indeed without its idols, even though mankind be only too much disposed to lay incense upon unworthy shrines. Consequently I make no apology for asserting that, among the many men I have mentioned, there is one at least who should never be spoken of unless with gratitude and reverence—Allan Cunningham; and so great is the admiration I have for his merits and achievements that I am prepared to abide by the maxim that the idol is the measure of the worshipper. He is by far the most conspicuous figure in our unpretentious annals, and it was through him in the first place that the Darling Downs is now the home of a prosperous and con-
tented people of his own speech and blood. Had he never been born, it is true, this fair region would in time have been discovered and occupied. But many years might have elapsed before such an event came to pass, and perhaps many more before a route was found across the mountains from the new territory to the sea.

It has been said that if any one of the illustrious dead were permitted to return to earth he would revisit first the scene of the greatest moment of his life. There can be no difficulty in deciding what that moment was in the life of Allan Cunningham. It was on that day, seventy-five years ago, when he stood on Mount Dumaresq, looking down on an endless succession of hills and dales, watered by many streamlets, rivalling in loveliness the glories of landscape Nature and Art had combined to produce in the most favoured portions of his native country. A man of cultivated mind and poetic temperamet, he must have had, at that moment, thoughts not shared by his companions; though they, too, must have been stirred by unwonted emotions at a sight so long unfamiliar to them—

"the living gleam of rustling woods, and the glint of laughing waters."

Did he foresee, or see as in a vision, the marvels that were to be wrought in that beautiful region by his own race, prompted by his words and encouraged by his example? Did he foresee that the tract, now observed for the first time by European eyes, was about to pass quickly through all the stages by which nations ordinarily proceed, painfully and slowly, from primitive barbarism to civilisation? Did he foresee that within the lifetime of some who were his intimate friends, the land he knew to be only the hunting-ground of thinly-scattered savage tribes would become the home of "shepherd-kings," with their countless flocks and herds? Did he foresee that at a later period this useful and necessary class would, in turn, give place slowly and perhaps unwillingly, yet inevitably, to cultivators of the soil who would make the Darling Downs both the garden and the granary of Queensland?

Let us hope that some such thoughts as these passed through his mind; for his was a nature which would be solaced by such reflections, and in truth was sadly in need of such consolation. For it must be confessed that, splendid as were his services, they were never adequately rewarded by his contemporaries. For great conquerors and devastators the world has need enough and to spare; but, it deigned to bestow little attention on this ardent and intrepid explorer—who, too, was a soldier, but a peaceful soldier of civilisation, perpetually incurring the risks and hardships of the battle-field without reaping its glory or its reward. It behoves us, as residents of the Darling Downs, to endeavour to make some atonement, tardy though it be, for this neglect of a truly great man; and not to content ourselves with naming a square here, and a street there, and an electoral division elsewhere, after our benefactor. Every important town on the Downs ought to have some visible memorial of him. Above all, the centenary of the event which has made him famous, which some of us
may hope to take part in, ought not to be allowed to pass without due observance and fitting ceremonial. When that day comes, the Darling Downs will in all probability be one of the most populous and flourishing districts of Australia, exhibiting a quick succession of wheat-fields and orchards, interrupted only by thriving towns, renowned. Let us hope, no less as intellectual than as great industrial centres; it will certainly be in a much better position than now to do honour to its discoverer.

Whatever shape the celebration may take, let me express the hope that Warwick will play a conspicuous part therein, and that, in even a finer hall than this, before as distinguished an audience as the present one, a more eloquent voice than mine will do ample justice to the high courage, the resolute spirit, the noble ideals of duty, and the eminent public services of Allan Cunningham.

Before the reading of the paper, the President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.) said it had been contemplated for some time past, with a view to more effectively carry out the objects of the Society—viz., the spreading of geographical knowledge—to hold meetings in some of the provincial towns of the State. Hitherto the meetings had always been held in Brisbane, and he thought it very appropriate, in making a departure from their old-time custom, that they should have chosen, as the scene of their first country meeting, the oldest inland town in the colony of Queensland. They were particularly fortunate also in having enlisted the endeavours of the Hon. A. Morgan—a gentleman who had been born on the spot, who was justly proud of his native land, and who was to favour them during the evening, with a paper on the history of the Darling Downs. The object for which the Society existed was one now attracting the attention of the whole civilized world, for it was one of the main factors in the great scheme of education; in fact, the Society regarded itself as a part of the Education Department. The object of its members was to induce their fellow-colonists to take an interest in the great science of geography. The old system of teaching geography—the system that obtained in the days of his youth—was now entirely obsolete, and had been superseded by the modern system of a qualified teacher taking his pupils to the country, leaving aside book and map knowledge, and confronting them with the country in all the aspects depicted by Nature. This system had been in vogue in Germany and America, and was now being adopted in England and Scotland. It seemed strange how very little most people knew respecting the country in which they were privileged to live. The country they (his hearers) inhabited was scarcely two generations old; in fact, the period from the time it was first settled until now could be comprised in the lifetime of some still living. Yet how few of them knew what had taken place in those early days! After paying a tribute to the work of those who had pioneered the country, the speaker said he thought it was a duty they owed not only to themselves, but also to the rising generation, to have recorded and brought to mind the achievements of the early settlers. That was the object of the present meeting. Mr. Morgan would deal with the historical aspect of the great science of geography, as affecting this particular portion of the State, and he anticipated, therefore, that what they would hear that night would prove instructive and most interesting. The Society intended treating this as one of its ordinary meetings. It was certainly one of the largest they had held, and he was glad to note that the new departure had brought together such a brilliant and intelligent audience. (Applause.)

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After the reading of the paper, His Excellency the Governor (Major-General Sir Herbert Charnside, G.C.M.G., C.B., Patron) said he had been asked by the President to add a few remarks on the subject of the meeting. He congratulated the President and Secretary of the Society on the success attending the experiment of holding meetings away from the city. The great merit of these societies was their popularity and universality, and it was of the greatest interest to see geography making its way as a popular science. The able and interesting paper just read by Mr. Morgan had proved very edifying to the members, and was particularly so to the inhabitants of Warwick. He had ventured on the making of these remarks, not with the intention of dealing in detail with that paper, but rather as a means of introducing himself to his hearers. Unfortunately, the present moment was one of such distress in all conditions of life throughout the State that it was hardly a time when one could wish to travel and look at things in a light-hearted way. But at some opportune time he hoped to come amongst them again. He had had an opportunity that night of hearing the genesis of the settlement of this splendid Darling Downs district traced so ably from the beginning—its discovery by Allan Cunningham, the experiences of the pioneers who followed him, and the development now taking place. To him it had been of the highest interest to observe that every allusion made by Mr. Morgan to the transition from pastoral to agricultural occupation should have met with their approval. He had read of the early remark that the country was only fit for the raising of sheep, but what a triumphant contradiction to that belief was the present condition of the Downs! The story he had heard traced that night was the history of only one district in these colonies, but in essence they were all the same; the enterprising achievements of the pioneers, and their overcoming of all obstacles, were an example to the whole world. The development of the pastoral, agricultural and mineral industries of Queensland had taken place in a short space of time—almost in the lifetime of some men now present. Mr. Morgan had alluded in his paper to what had been done in the past, to what was now being done, and to the possibilities of the future. But it struck him that the future of this continent, the future of this State, depended on the practical application of engineering science, and he hoped the greatest attention would be paid by the rising generation to that subject, and to the development of the soil of the country. Ultimately the wealth of the country would be in proportion to its production. But while they possessed the soil and the climate, they had no control over the third great agent necessary, viz., water. In this connection, His Excellency instanced the benefits of storage and irrigation in sub-tropical lands elsewhere, and hoped that in the future the subject would have the early attention of those who directed the fortunes of the State. He concluded by thanking his hearers for their kind reception of his remarks.

The Hon. John Murray, Minister for Public Instruction (who represented the Government), in alluding to Mr. Morgan's interesting and instructive paper, referred to the great future in store for the Darling Downs, and the progress now being made in agriculture. The Government fully recognised the wisdom of continuing its policy of buying up the large estates. The success attending that policy so far had been encouraging, and soon the whole of the large Downs estates would be bought up and settled upon. He concluded by tendering an apology for the absence of the Premier.

On the motion of Mr. R. M. Collins (Past President), a very cordial vote of thanks was tendered to Mr. Morgan for his valuable paper.

The President said it was usual at their meetings to have discussion or criticism on the subjects brought forward, and he hoped he would not be considered hypercritical if he dealt with some of the facts in the paper just read. In the first place they knew that he (the speaker) was a Queenslander, but he was also a Scotchman; they also knew that, whenever any man distinguished himself, he was
almost invariably claimed as one of Scotland's sons. Now, he was going to claim Allan Cunningham as a Scotchman. (Laughter.) Mr. Morgan had told them that Allan Cunningham was born in England; but if a man was born in a stable it did not follow that he was a horse. Allan's father was a Scotchman who emigrated to England and married an English wife; they had two sons—Allan and Richard. The second point to which he would allude was Mr. Morgan's reference to Mr. Elliot the partner of Sir Arthur Hodgson at Eton Vale, as the first Speaker of the Queensland Assembly. Having seen this statement mentioned by one of their distinguished writers, and also included in the official "Year Book," he had made inquiries with a view to verifying it. He would quote from a letter he had received from Sir Arthur Hodgson to show that that gentleman's partner was not identical with the first Speaker of the Assembly; in fact they spelt their names differently. Sir Arthur said: "My first partner was Gilbert Elliot; he joined me in 1840, having up to that date been A.D.C. to Sir George Gipps. He was a son of the Admiral who was a brother of Earl Minto. Elliot married a sister of St. George and Ralph Gore. He died at Kangaroo Point from consumption—such a nice fellow. His widow is still alive at Torquay. Gilbert Elliot's father and our late Speaker's (Elliott) were connected, but not very nearly related. The Speaker's brother was a Baronet, of Stobbs, Roxburghshire. You are of course perfectly right in assuming that my late partner was not our first Speaker; he was P.M. at Parramatta previous to his coming to Brisbane. He once had a small station in New England." The third point was a rather delicate one—as to who was entitled to the honour of being the pioneer lady of the Darling Downs. Notwithstanding Mr. Morgan's facts—which were undoubtedly the best he had been enabled to collect—he (the speaker) claimed that the late Lady Hodgson, whose death they had read of only last week, was entitled to that honour. And he would quote from another of Sir Arthur's letters in support of his contention. Sir Arthur wrote: "Lady Hodgson was the first lady on the Downs. Mrs. St. George Gore (Yandilla) the second, Mrs. Rolland (Tumaville) the third; Mrs. Patrick Leslie (longo intercallo) at Canning Downs. The first squatters were Patrick, Walter and George Leslie, Hodgson and Elliot. Sibley and King; about ten months later George Gammie, Dalrymple, Shaw, 'Tinker' Campbell, and the Campbells (3) of Glengallan appeared on the scene. By looking at her journal Lady Hodgson tells me that 'we arrived at Eton Vale as a newly-married couple on May 22th, 1842.'" He had to thank Mr. Morgan for his interesting address, showing evidence of extensive research, and which the Society would print and publish through all kindred societies over the civilized world. He thought the paper was a splendid contribution to their historical records, seeing that the Darling Downs was the first part of the State settled by free men. Also it was gratifying to all the members to have met such a magnificent gathering in Warwick, and he hoped the society would continue with its country meetings.

HON. A. MORGAN, in acknowledging the vote of thanks, said he felt bound to say a word or two on the three points of the President's indictment. First: In regard to the nationality of Allan Cunningham, as to parentage honours were easy, for Allan's father was Scotch, while his mother was English. But Allan was born in England. Sir Hugh had pointed out that there were two sons: he (the speaker) would give him Richard, and take Allan. Second: In having described Sir Arthur Hodgson's partner as the first Speaker he had done some service to the accuracy of history. The authority upon which he made the statement was the historical section of the "Year Book of Queensland," an official publication. They knew now that the authority erred in that particular respect. Third: He was sure, now that he had the dates and order of Mrs. Hodgson's and Mrs. P. Leslie's arrival on the Downs, that his case was stronger than that of the other side, and was more than ever satisfied.
that the first white woman on the Darling Downs was Kate M'Innes. The last extract from Sir Arthur Hodgson's letter, read by the President, taken in connection with the facts he had supplied as to Colin Campbell's party, and the date of their arrival on the Downs, made it pretty clear. On behalf of the audience, he expressed the pleasure they all felt at seeing His Excellency amongst them. (Applause.) In honouring the Society with his presence he had also honoured the town of Warwick; and they hoped that, notwithstanding the distressful state of the country, he would find here something to interest and something to admire, that he would enjoy his visit, and that at no very distant date they would have the honour and pleasure of welcoming His Excellency on his first official visit to Warwick. (Applause.)
IMPRESSIONS OF A YEAR'S SOJOURN IN BRITISH NEW GUINEA.*

By H. R. MAGUIRE. Lic. Surveyor.

On the 17th November, 1900, I left Brisbane, in company with a party of surveyors, under engagement with the Government of British New Guinea, and arrived at Port Moresby by the "Merrie England," on the 28th of the same month.

On arrival there, I was commissioned by the Chief Government Surveyor, the Hon. H. H. Stuart Russell, to survey a large number of dredging claims, which had been taken up on the Mambare and Gira Rivers and Tamata Creek, in the extreme north-western division of the Possession, and immediately proceeded to my destination to carry out the important work entrusted to me. My duties occupied me until the 16th January last, and I returned to Brisbane on the 23rd, after an absence of fourteen months in British New Guinea. Before going there, fifteen months ago, I had little or no reliable up-to-date information concerning New Guinea, but I have since gained by practical experience some knowledge of the country, and in the course of the following article I will endeavour to place that information at your disposal, so that "he who runs may read."

General interest in this little-known country has recently been aroused in Australia by the action of the Federal Government in taking over the administration of the Possession, and I venture to predict that, before many months have elapsed, when the wonderful wealth and possibilities of the territory have become known in the Commonwealth, this interest will take an intensely practical turn, and result in the opening up of a virgin field for Australian capital and enterprise.

The facts enumerated are reliable, and have been carefully collected by myself personally, as well as from men of long experience and proved integrity in the Possession. Some of these may prove unpalatable to many people, but their indisputable existence is the only justification I need claim for their mention in this article. Having thus cleared the ground, as it were, for action, I shall proceed without delay to the subject matter in hand. First in importance to be considered is perhaps the

CLIMATE.

The climate of British New Guinea—as far as range of temperature is concerned—is an admirable one.

*Read before the Royal Geographical Society of Australasia, Queensland, 24th April, 1902.
It appears to be an almost universal impression in Australia that the sun heat in the Possession is far in excess of that of the hottest parts of what is generally regarded as the most sultry state in Australia—viz., Queensland. This is entirely erroneous. As a general rule, the mercury rarely rises about 95 degrees to 100 degrees, or falls below 80 degrees in the daytime. The nights are universally cool and delightful. At the higher levels, on the mountain plateaus in the North-eastern and Northern Division, at an elevation from 8,000 to 13,000 feet, the maximum heat is much less than 90 degrees, but the minimum falls considerably below 80 degrees. Even in the middle of the day at these high altitudes travellers crossing the mountains frequently experience very cold temperatures, and would hardly say nay to a coat—a garment very rarely worn in the interior. It may be accepted generally that on the mountain plateaus there is never any summer—as Australians understand it—and on the levels never any winter.

The rainfall is very regular, and in certain districts very heavy. In the Northern Division, adjoining the German boundary, where the mountain ranges reach an altitude of 13,000 feet and over—the two domes of Mount Albert Edward being respectively—East dome, 13,100 feet, and West dome, 13,000 feet—the rainfall is heaviest, and floods most frequent. The latter are never dangerous, as the banks of the rivers are high. and their fall to the sea heavy, ensuring a rapid carrying off of the congested waters from the high levels.

Up here the rainfall varies from 100 inches to 200 inches per annum. The general "lay" of the Possession is roughly from north-west to south-east, and a series of mountain ranges traverse the centre of the country, decreasing in height from the maximum of 13,000 feet in the extreme north-west to 2,000 to 1,000 feet in the extreme south-east. The rainfall follows this fall of mountain, and decreases in proportion. Still, even in the extreme south-east, the rainfall is heavy, and dust in the township of Samarai, situated on a small island, embracing an area of 60 acres, about a mile off the most easterly point of the Possession, is an "unknown quantity."

As a result of the abundant rainfall the vegetation is luxurious and magnificent to a degree. Wherever the country is open and free from scrub the grass is always as green as a barley field, and soothes the eyes and refreshes the mind to behold. Thus, so far from being a black man's land—climatically speaking—in years to come, when the country is closely settled, two of the chief attractions of British New Guinea for drought-weary and heat-stricken Australians will be the beautiful temperate climate and lovely cool, green landscapes to be seen on all sides in this the latest appanage of the great Australian Commonwealth.

CLIMATIC DISEASES, Etc.

New Guinea has earned an unenviable reputation for certain climatic diseases—peculiar to the tropics—which has without doubt unduly pre-
judged the merits of the country as a field for white settlement and industry. I say unduly, because it is the general opinion of most men who have lived any length of time in the Possession that the prevalence and virulence of these diseases are greatly overrated.

The name of New Guinea in Australia is mostly synonymous with malaria, and so deeply rooted is this opinion in the public mind that very few people care to risk their health and lives in following the ever-alluring phantom of Fortune into the wilds of the Possession.

As a matter of fact, the malaria over there is not much worse than it used to be in far Northern Queensland in the early days of the colony, and yet no one ever seriously thought of tabooring Queensland on account of the fever and ague in the north. As the country becomes settled (it is to all intents and purposes practically uninhabited by white men at present, for most of the population is at Samarai and the Woodlark Island) the malaria will gradually retire before civilisation. the same as it has done in many other tropical and at one time highly pestilential countries. Certainly all sojourners, with very few exceptions, suffer from malaria after they have been some length of time in the Possession, but the average mortality is comparatively light. At present the difficulty, and, in the cases of the northern and central divisions, practical imposibility, of securing fresh food is a terrible handicap to persons suffering from malaria and other climatic diseases. At Port Moresby and Samarai fresh food is obtainable every few weeks, the s.s. "Moresby" (Messrs. Burns, Philp, and Co.) calling at both ports, and the s.s. "Adelaide" (Messrs. Clunn and Sons, Cooktown) at Samarai, at intervals of from six to three weeks, generally landing sheep at one or both places for local consumption. But the miners in the interior, at the Gira, Yodda, and Gibara Goldfields, have to subsist solely on tinned foods, and it is from these centres that all the worst cases of malarial fever come. If these men could only get fresh milk and fresh food, and even the crudest of nursing and attendance, when down with the fever, there would be very few deaths from this much-dreaded disease, and this must inevitably come as the country becomes more settled and opened up. Quinine, in doses of from 10 to 25 grains, is used almost exclusively to combat the disease. Many of the old hands have prescriptions of their own, and seem to get along all right with them. The following prescription was given to me by Captain Colin Thompson, late commander of the Hygeia, who has been living in New Guinea and other tropical countries for the last forty years, and I found it to be an invaluable remedy, a second attack rarely supervening, as is the case when quinine alone is used:

Malarial Fever Mixture.

20 grains quinine, 2 drms. tincture capsiicum, 2 drms. elix. of vitriol, 4 ozs. Epsom salts, 1 qt. aqua.

Dose:—If fever very bad, one wineglass full three (3) times a day.
Although high medical authorities recommend taking, say, 5 grains of quinine daily as a prophylactic in malarial infested countries, the practice does not prevail in New Guinea. I myself did so for several weeks after I first landed on the Mambare River, but it was not a success, so I abandoned the practice, which I found was affecting my nerves and hearing.

The worst form of malaria is what is known as red-water fever, so called because the urine turns to a dark turgid colour.

This is most prevalent on the northern rivers, and, if not arrested quickly, is likely to prove fatal in from three (3) to seven (7) days. I knew of one man who suffered from it for six weeks, and then recovered, but this was an exceptionally rare case. Spirits of nitre and quinine are the remedies most commonly used.

It is generally accepted in scientific circles that the mosquito (Anopheles) is the host of the plasmodium of malaria, but practical experience in tropical countries goes to show that the disease may be communicated in other ways. For instance, at Tamata—the most northerly Government station on the Mambare River—fogs, sometimes light and sometimes heavy, creep up from the creek at night time and envelope the station, but generally pass off in a very short time. The following day nearly every man on the station will have an attack of fever, sometimes accompanied with severe retching. I have noticed the same thing on the Mambare River, about 10 miles above Tamata. Shortly after sundown a thick, low fog, confined to the bed of the river and not higher than the banks, would come rapidly down the river, and pass by in five or ten minutes. Whenever we saw it coming we used to get off the boats and canoes, on which we camped, and reach the high banks, from which we could look down on the fog with safety, the river, for the time being, presenting a very beautiful spectacle, being filled from bank to bank with what looked like snow, the dark green foliage on either bank forming a striking setting for the floating, filmy, nebulous mass between. Sometimes, however, these fogs would come down late in the night when we were asleep, and we were sure to feel off-colour next day. Men working in the shade of the scrub, and coming out into the open also generally contract fever quickly, the sun seeming to directly affect anyone susceptible to the malaria.

An attack of fever is often accompanied or followed by a severe attack of dysentery, which sometimes lasts for weeks, reducing the sufferer to the direst straits from weakness and exhaustion, death frequently resulting. Heavy doses of calomel are taken to allay the attack, but even this sometimes proves unavailing. Flour and water is often used, and large doses of tincture of iron. Constitutional idiosyncrasies have to be regarded in treating dysentery, as what might prove effectual with one person would be useless with another. If one remedy fails another must
be substituted. When it is possible to secure a milk diet the following prescription, given to me by a duly qualified medical practitioner of many years' experience in highly malarious countries, should be tried:—

Dysentery.

Sat. Sol. Mag. Sulph. Dose: One drachm every hour or two, with 5 drops of aromatic sulphuric acid. Continue until ten hours after the motions have lost the dysenteric characters. Food to be milk diet, and all must be capable of passing through a muslin sieve. Method—little and often.

OTHER DISEASES.

Whilst malaria, red-water fever, and dysentery are the principal diseases which affect white men, the natives have a practical monopoly of two far more obstinate though not dangerous diseases. These are known as Sipuma and Kuri Kuri.

Sipuma is the most common disease, and a very large proportion of the natives suffer from it. Sipuma is the Papuan name, but the disease is identical with tinea imbricata—a peculiar form of epiphytic disease strictly confined to warm climates, and principally met with in the Eastern Archipelago and in the islands of the South Pacific. Very high or low temperatures are inimical to its existence and extension, but it spreads very rapidly in countries with a damp equable climate and temperature of from 80 degrees to 100 degrees Fahr., like that of New Guinea.∗

The experience of many men in New Guinea goes to show that sulphur fumes in the form of a sulphur bath are by far the best cure, and this is most commonly used, even in the Government prisons. The disease may be easily contracted by contact, and numbers of white men catch it in this way. In the early stages a painting of the part affected three times a day with tincture of iodine is a certain cure in about a week's time in the case of white men. Cocoanut oil is an excellent prophylactic, and those natives who follow the practice of oiling their bodies rarely contract the disease.

Kuri Kuri is the Papuan name for another well-known tropical epiphytic disease known as Pinta—a disease characterised by peculiar red, or blue, or black, or white-piebald spotting of the skin of any part, or of the whole, of the body.∗

Sulphur baths are most commonly used in New Guinea, and these, if properly given, generally prove effectual. This disease is very common amongst the Kiwei carriers on the north-east coast.

A horrible mouth disease is frequently to be met with at Sudest and other islands some distance off the eastern mainland. This is best

∗ For full descriptions and methods of treating these diseases see Dr. Patrick Manson's work on "Tropical Diseases." [Ed. Q.G.J.]
treated with light, dry mouth washes, light diet, and keeping the bowels in good order.

Another common affection amongst white men who have been any length of time in New Guinea—and more especially in those parts where it is impossible to obtain fresh food even at long intervals—is a rapidly spreading, but generally, after a time, spontaneously arrested, gangrene of the skin and subjacent tissues, resulting in the formation of large sloughing sores. These, if not properly attended to, occasionally become chronic ulcers. They nearly always attack the lower limbs, rarely spreading above the waist. Change of climate and plenty of fresh food and vegetables are really what are required, but when this is impracticable or inconvenient limejuice and quinine should be used. Opium in full doses assuages the pain when troublesome, and is usually of great service. Dr. Manson is of opinion that the disease has its origin in some specific micro-organism which finds its special opportunity in the bodies of men who from overwork, underfeeding, exposure, malarial dysentery, scorbutus, and the like, are physically depressed.*

Leprosy, Elephantiasis, Beri-beri, and other serious and fatal diseases are to be found in New Guinea, but only in rare instances. The foregoing comprise all the principal diseases which affect white men and natives in the Possession, and anyone visiting or settling in the country is bound to come in contact with all of these, and probably contract at least malaria, dysentery, and the sloughing sores if subject to much exposure and roughing it in the interior. At Port Moresby and Samarai one is not likely to catch anything worse than a good dose of malaria, possibly dysentery, but the "awful examples" of the climatic diseases—though frequently to be seen in these places—come from the interior to the townships for relief or cure.

NATIVES.

I had not an opportunity of studying the habits, characteristics, etc., of the natives in the south-western and southern parts of the Possession, my work lying principally in the Northern and North-eastern Divisions. However, I saw many hundreds of specimens of the typical tribe of the South-eastern Division—viz., the Kiweis, in the Northern Division. Most of the police are recruited from the Kiweis, and also pretty well all the carriers employed by the storekeepers and miners in the Northern Division. The police, being picked men, are splendid specimens of physical manhood, but the carriers—being taken indiscriminately for commercial purposes—are a very inferior lot. The coastal and inland tribes from Samarai up the north coast west to Gira River comprise perhaps the most virile tribes in British New Guinea. The men on the Gira River,

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* For full descriptions and methods of treating these diseases see Dr. Patrick Manson's work on "Tropical Diseases." [Ed. Q.G.I.]
I should say, were certainly the finest specimens in the Possession. Their villages are very large, with extensive gardens, and in some cases stockaded—that is, protected from a sudden attack by a stockade of spears, etc. These men I had a good deal to do with, as there are a number of dredging claims on the Gira, and in surveying them I came daily into close contact with the natives in the villages along the banks. I was advised beforehand to be careful when dealing with these men, as they were very warlike and not to be trusted too far. I acted accordingly, and had no serious trouble whatever. They always kept their women and children in the background—a certain sign that they are not as friendly as they endeavoured to make out by their lavish offers to trade taro, bananas, sago, sugarcane, and betel nut for tobacco, paper, and calico. In dealing with most of the native tribes of New Guinea a traveller or explorer can be sure if the natives bring their women and children forward, and allow them to mingle freely with the newcomers, that they are friendly disposed, and intend no harm—just then, at any rate. But when the women and children are ordered to retire, or gradually drift away, seemingly unintentionally, it is time to be on guard, and not allow any warrior to get too close to you with a spear in his hand. It is an invariably observed rule amongst the pioneers and old practised hands in New Guinea never to allow a native to approach closer than fifty yards with a spear or other native weapon in his hand. If he persists, after being warned to drop it, a little moral suasion in the shape of a rifle bullet should be brought to bear on him to compel him to do so. Any man who observes this rule need have no fear of being treacherously murdered by natives.

Another timely hint—don’t let them get behind you—that is, if you are in a strange village and don’t know what the natives are like. If you wish them to show you the road let them go first, and if possible get the chief or one of his sons in front of you—as a kind of hostage, as it were. Then if any treachery is intended they will be very cautious, as they mourn very long over their chiefs. Lastly, never be without firearms. There are some men in New Guinea who are always preaching about the docility of the natives, and the wrong of carrying firearms, yet they are the first men to cry out for vengeance when some of their credulous votaries are wiped out by the natives for their foolhardy trustfulness. If a man elects to go amongst a savage people unarmed and unprotected he should be prepared to take all risks, and, in the event of those risks overwhelming him, his friends—instead of howling for vengeance on a race of men imbued with centuries of savage instincts to kill and slay—should profit by his experience, and bring their misplaced philanthropic fancies into line with common sense and hard practical experience. I have specially referred to this matter at length, for it is a most important one and has been the cause of many hundreds of innocent natives being
slaughtered to appease the wrath of the friends of some murdered white
man or men who were foolhardy enough to court disaster by not carrying
firearms. In most cases of this kind the real murderers escape, and the
innocent are made to suffer for the guilty, the avengers, as a rule, not
being too particular about such scruples so long as someone goes under
to compensate for their friend's life.

Tribal conflicts are rare now between the tribes on the northern
rivers, but now and again they combine and attack their common foe just
across the German boundary—the Wariea men. Some of these fights
are of considerable importance. Quite recently about 300 Mambare men
marched over 20 miles and joined forces with 500 Gira warriors, and
with an "artillery" equipment of two rifles and a revolver invaded the
Wariea territory. It might be interesting to note how the "artillery"
was obtained. Hearing that a certain native (who was wanted) was on
the Gira, the Government officer at Tamata sent two policemen over to
secure him. These fellows told the Mambare men of their mission, and
immediately the idea struck them all with great force that this would
be an excellent opportunity to tackle their inveterate foes in the Wariea
territory, as with the assistance of two rifles they should surely prove
invincible. A few hundred men were hastily got together, and the ex-
pedition started. Of course all these preparations were kept discreetly
quiet, as had a whisper reached the magistrate at Tamata there would
have been an end to it all. But the hopeful anticipations of the invaders
were not realised. For even with their splendid "artillery" equipment
the Wariea men proved too good, and drove the allied forces back with
a loss of twenty-seven men, the former losing eighteen. The killed were
subsequently dished up by the opposing armies—of course, each man eat-
ing his enemy's slain, and the last remnant of one of the bodies was finally
demolished at Apochi village, on the Mambare. In addition to the dis-
comfiture of a defeat by the enemy, the Mambare fellows had to subse-
dually face the music before the Resident Magistrate at Tamata, who
had wind of the affair, and at the present time some forty or fifty of the
bluest blood amongst the Mambare warriors are "doing time" in the
Government prison at Tamata for making war upon their neighbours—
an innocent little pastime eternally forbidden by the Government.

Most of the men on the Gira are fine big clean-skinned fellows, very
active and powerful, and born fighters. Some of them have finely
formed features and commanding mien, and one has only to stand face
to face with picked men to realise that he is in the presence of men of
the highest calibre—as far as physical perfection, courage, and savage
nobility is concerned. They look you fearlessly in the face, with head
and shoulders thrown proudly back, and impress you at once as born
leaders amongst their own people. I have often thought, when looking
at some of these splendid fellows, what a pity it is to interfere with their
simple primitive happiness, and shoot them down for resenting the intru-
sion of invaders, in the shape of white men, into their cherished homes.
All the natives on these rivers are expert swimmers, and on one memori-
able occasion in my life on the Mambare I saw them make the most gal-
lant attempts again and again to save a white man—my own brother—
who was drowning in a dangerous rapid. For this alone I shall always
think tenderly of these boys. For, apart from their savage racial
instincts, they have many good and lovable traits. They are most unself-
fish, and always share equally amongst themselves whatever is going.
If it is a cigarette they are smoking each man will take a few draws and
then pass it on to the next, until it has gone the entire round. It is the
same with their food, or any little delicacy that might be given them by
white men—such as some tinned fruit or "bullamacow"—meat. The
men rarely do any work in the field. When they start to make a garden
the men fell the scrub, and clear it off, and then the women have to do
the rest—plant the taro, sugarcane, bananas, sago, etc.; look after it,
and dig and cook the taro when ripe. The men hunt wild pigs, spear
fish, and sometimes secure a pigeon. Pigeons, by the way, are very
plentiful up there, and are finely developed, one pigeon making an ex-
cellent meal for two men. The river tribes are very jolly and extremely
ticklish, and it is a rare thing to see a native in a bad humour. When
signed on to work with white men they are most deferential, and look
upon the white taubada as somebody very high and mighty. The men
all clean shave—without exception. No self-respecting sinna-sinna
(girl) would dare to receive the attentions of a man with a moustache or
beard. In certain localities—such as the Port Moresby district—the
women are most elaborately tattooed, the most fanciful designs being
executed over their entire anatomy. The tattooing is looked upon as
a valuable adornment, and nothing delights a woman more than for a
visitor to seem to take an interest in her tattooing. In the Northern
Division I did not notice any tattooing at all. The natives go in more for
ear and nose ornaments up there, and take a pride in stretching the
perforation in the lobes of their ears until they become an enormous
great—sometimes capable of holding a light article three inches in dia-
meter, or being curled round the top of the ear, completely encircling it.
When parting and meeting on extended journeys both men and women
shake hands and kiss on the cheeks. This habit of kissing must be
racial. It could not have been learnt from the whites, as no white
woman has ever been in those parts, and white men do not, as a rule, go
in for osculatory exercises of that description between themselves.

The men wear only a thin piece of sago leaf between the legs, while
the women revel in a grass girdle—called a rami—round the hips and
reaching to a little above their knees. The children appear on all occa-
sions in puris naturalibus. They have two good meals every day; gene-
rally of taro, which is boiled in earthenware pots, and covered over with banana tree leaves to keep the steam in the taro—the first meal being about 11 o'clock and the second at sundown. Time is measured by the moon—one month, one moon; six months, six moons, and so on. They have absolutely no idea of distance as far as measurement is concerned, and apply the time limit to this also. They will tell you that a place is so many days' journey distant—a day's journey generally meaning anything from 10 to 20 miles according to the country, and whether you are travelling by land or water. In going up or down a river they reckon the distance by the number of bends or "points," as they call them. They have no idea of tracking like the Australian aboriginals, and in my opinion are not good bushmen.

They can sleep at any time, anywhere, and in any position. I have frequently seen a number of boys coiled up in an inextricable mass, heads and legs in all directions, and every one of them sleeping as soundly and sweetly as new-born babes. When working for white men they will never growl or grumble about when or how they get their food, or late hours, and will plod on stolidly day or night as long as the *taubada* does the same. They have no idea of the value of time, and consider it a great mistake on the part of the white men to hurry over anything. Life is short enough, in their modest opinions, without hurrying through it. A great many of the tribes have a deadly weakness for stealing, and nothing comes amiss to the fellows on the Gibara Goldfield, near Samarai.

Both men and women are highly emotional, and it is very pathetic sometimes to witness the sadly affectionate farewells between parents, sons, and friends when some of the boys are leaving to go away and work with white men. Their senses of sight and hearing are wonderful. I have known boys to see the tips of the masts of a vessel out at sea with the naked eye when I could not place it with a pair of good field-glasses. Yet in a few hours' time the nearer approach of the vessel would prove the accuracy of the marvellous vision of the boy. Their sense of hearing is equally remarkable. They do not raise their voices or shout when speaking to each other across a wide stretch of river—say, from 100 to 200 yards wide—but simply converse in quite an ordinary tone. They speak very rapidly, and say a lot in a few words, short phrases frequently expressing what would be long and involved sentences in English. The women and children call for special mention—the women for their extreme docility and generosity, and the children for their spontaneous trustfulness and gentle, loving little ways. The women are generally finely developed and of prepossessing appearance—some of them are very pretty, retiring, and bashful, with winning ways, and beautifully modulated voices. In the Northern and North-eastern Divisions they are strictly virtuous, and marital rights are observed with a commendable
rigidity. In some parts of the Possession, however, the women are very licentious and immoral, notably so at Yassi Yassi, and the Latrobian Islands. At the latter place a horrible practice exists with regard to little girls from 6 to 8 years of age, to fit them for marital relations later on. The women make admirable carriers, and will carry a far heavier load than the men. The latter have it lashed across their shoulders after the style of a knapsack, but the women carry the load on their backs, suspended from their foreheads, the head being bent well forward to keep the straps in position. The average load for a man is from 50 to 60 pounds, but some of the women have been known to carry over 100 lbs. long distances. The old dowagers of the tribe are the physicians, and they appear to possess some occult information with regard to the determination of the sex which has defied the medical savants of Europe to discover. The family limit appears to be two—generally two boys, sometimes a boy and a girl, but never two girls. These old witches—they are the most grotesque specimens of humanity one could wish to see—are also experts at procuring abortions with ease and safety—carefully safeguard their precious knowledge, however, and bluntly refuse to impart any information to the young people or to white men. They are also very good at treating ugly flesh wounds, such as might be inflicted by a tomahawk or spear in a tribal fight. The women are not musical, and appear to have no ear for harmony. The men, on the other hand, possess fine baritone voices, which are heard to great advantage when singing as an accompaniment to their fantastic war dances. Children win their way into a stranger's heart straight away. They are full of life and fun, and learn to run about and take care of themselves at a far earlier age than the offspring of white people. They are also far quicker and more intelligent than the latter, and never hit each other, and are never chastised by their parents. A word is sufficient at all times. If spoken to harshly by a white man the little fellows will cry and fret for hours, and if struck even lightly will pine away and never be the same again.

The ordinances of the Possession permit of marriages by Resident Magistrates or authorised missionaries between white men and native women, and the missionaries strongly advocate such unions with the hope of preventing immoral relations between white men and the native women. This is a matter which should receive early attention when the Possession is formally taken over by the Federal Government. Such unions are repugnant to the sense of right and decency of all sensible people, and should not be permitted. They do not achieve the end aimed at, are a disgrace to white men, and the offspring a future menace and burden on the people of the Possession. Several such marriages have taken place, at the instigation of the missionaries, and the disgusting practice should be abolished before further humiliating unions are celebrated.
Many hundreds of the natives are employed by the white people in all parts of the Possession. These boys are signed on to their employers for from three to twelve months, at from 7s. 6d. to 20s. per month. The boys have to be signed on before a magistrate, and the employer has to either deposit the whole of the boy’s wages with the magistrate or find security for the same. No payments are permitted to the boys except in the presence of a magistrate. Who notes the amount on the official paper delivered to the employer when the boys are first signed on. This is a wise provision to protect boys from unscrupulous employers, who might say they paid the boys so much when in reality they had done no such thing. Fortunately, such men are very rare, and when found out are not allowed to have boys signed on to them. When the boy’s time is up he has to be paid off at the place where he was signed on, and returned to the locality from which he was recruited. If his employer ill-treats him, and the boy makes a complaint to the nearest magistrate, an inquiry is held, and if proved the employer is heavily fined or imprisoned.

The boys are fed on rice, and native food when obtainable. Some men give their boys tinned meat also. All the boys are supposed to get a fixed ration, but the regulation is more honoured in the breach than the observance. Women are not signed on to men, but the wives of the proprietors of the hotels in Samarai, and the missionaries, are allowed to sign on women. These women at the hotels do a lot of the laundry work, but are not nearly so useful as the boys. These fellows do all the rough work at the hotels, and are like so many tame cats about the place. The greatest chastisement they can receive is to have their hair pulled. This honour is not infrequently conferred upon them by one or other of the Sinbadus—white women—when they are caught taking things too easily. They make some farcical blunders sometimes. On one occasion a peripatetic “solicitor”—latest American term for commercial traveller—just over from Queensland, told one of the boys at the hotel in Samarai to clean his new tan boots. The boy took the boots downstairs, and a few minutes afterwards the enterprising “solicitor” found the boy scrubbing his prized tan boots under the tank with a hard scrubbing brush and monkey soap. The “solicitor,” it is almost needless to say, was more than delighted with the boy’s intelligence.

The largest employers of native labour are the storekeepers—viz., Messrs. Burns. Philp. and Co., Wm. Whitten, and Messrs. Clunas and Clark. Whitten and Clunas and Clark have fully 300 boys employed between them on the Kumusi and Mambare Rivers for carrying to the Yodda and Gira goldfields. These boys are almost all Kiweis, recruited on the Fly River and brought round by water to the northern rivers as carriers. Signed on for twelve months at £1 per month; the northern division being considered the most unhealthy and dangerous, the highest wages are paid to boys working there.
On the Kumusi the boys carry from Bogi, 60 miles up the river, to
the Yodda. This trip is 70 miles, and the carriers take ten days to do
the return journey. Each store has about 100 carriers, and every boy
carries 70 lbs.—60 lbs. supplies and 10 lbs. of rice for his rations on the
track. They are accompanied by white men, who receive £5 per week
and rations to tramp this 140 miles, in all weathers, every ten days.
The road, which is merely a narrow bush track, crosses 319 creeks in the
70 miles, and as none of these have been bridged by placing even a log
across them, the journey is a very wet one in any case.

The Gira Goldfield is only about 25 miles from Tamata Station (situated
2 miles up Tamata Creek from its junction with the Mambare
River), and the track is not so wet, but still it is a very rough and broken
one to travel. The Government have been petitioned by the miners
over and over again to make decent roads to the goldfields, which are the
principal support of the country, but nothing has ever been done. This
is a matter which should also be looked into as soon as possible by the
Federal Government.

The whole of the police in the Possession, and all the warders in the
goals, are recruited from the natives—fully 90 per cent. from the Kiweis
on the Fly River. These are fine big men, and make excellent police.
Kiwei boys are very cunning, and—outside the police, who are picked
men—require watching. Truth is a stranger to them at all times, and
they very often harbour bitter resentment against any white man who
strikes them. They make by far the best carriers, as, taken so far from
their homes, there is no fear of them running away. All the Orikeivas
(river tribes) in the Northern Division have a terrible “set” on the
Kiweis, and the latter know it. They never associate or fraternise with
the district natives, but keep exclusively to themselves. Whenever they
get a chance the Orikeivas wipe out a few of the Kiweis on the track to
the Yodda. The latter are not to be compared with the river or island
boys for water work. Some of the island boys are experts in sailing and
handling boats, and the whole of the crew of the two Government yachts
at Samarai and the Woodlarks, the Siai and Muruya, consist of natives,
including the captain.

**RIVERS.**

New Guinea has been bountifully supplied by Nature with fine
waterways, and, in course of time, when the country is properly opened
up, these rivers will become the great highways of trade and commerce.
The Fly—on the south-western division—is easily the largest river in
the Possession, and 500 miles from its mouth is over a quarter of a
mile wide. It has never yet been followed to its source, which is
situated somewhere in Dutch New Guinea. This remains for some
explorer in the future to accomplish. The north-east coast is especially
favoured with rivers—the following occurring in succession north of

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Cape Nelson—the Musa, the Kumusi, the Ope, the Mambare, and the Gira. There are no rivers on the north-east between Samarai and the Musa of any importance. There is a small river emptying into Milno Bay, about 30 miles from Samarai, but it is more of a large creek than a river.

The Musa and Ope are the least known of these. Quite recently, an convict launch drawing 20 inches of water, with a 15 h.p. engine, took a large prospecting party 80 miles up the Musa from its mouth. Here the rapids were too swift for the launch, and the party had to be landed. Prospectors who have been further up the river than this say that for the next 20 miles its course lies between deep gorges with tremendously swift rapids. After that it widens out into a fine river for miles and miles, finally splitting into several large branches. The average width of the Musa is about four chains, and in its lower reaches it runs through rich scrub lands, with splendid leaf-mould soil. The prospecting party referred to above reported the finding of gold in payable quantities in some of the upper branches or feeders of the Musa. Unfortunately, they were greatly impeded in their progress by the inland natives, who were very hostile, and managed to steal the greater part of the party’s rations. This was a serious loss, as being so far removed from any stores a lot of time was wasted in sending down for more. When I left New Guinea, no further news had been heard of the party, but as they comprised six of the most experienced miners and bushmen in the Possession, their return was anxiously awaited, for it was felt that they would thoroughly prospect all the country passed over, and if payable gold in any quantity was to be found, they would be sure to locate it. In the event of the gold dredging in the other northern rivers proving successful, the Musa would be one of the first rivers to attract attention, and no doubt numbers of claims would be taken up in its top reaches.

The Kumusi, which is about 30 miles further up the coast, is a larger and swifter river than the Musa, and passes through much more interesting country. It is the great highway towards the far-famed Yodda goldfield. Oil launches, with shallow draft, drawing not more than two feet, and from 8 to 15 h.p., can go up to Bogi, about 60 miles. After this the rapids become too swift for any but launches of far higher power than are at present on the river. And it does not pay to put too expensive launches on these rivers, for, in addition to the rapids, there are hundreds of snags, many of them just out of sight under water.

Mr. G. Auerbach’s launch, the “Balmain,” 15 h.p. carrying eight tons, and towing a large whal’e boat with four more tons, takes two days to go up to Bogi. The freight is £4 10s. per ton; at one time it was £10! Passengers are carried for £2 10s. each. The return journey is accomplished in a few hours, and anyone coming down in the launch will never forget it. The boat has to go at full speed to steer her properly in the
rapids, and as the bends in the river are very sharp and the snags plentiful a most exciting time is experienced. Sometimes it seems a certainty that the launch will be on to a snag, but in a flash it shaves it by a few inches, and all breathe freely for a few moments until another looms up, and then the same thing over again. Sometimes the launch will spring clean out of the water, and then plunge her bow deeply into the rushing water again, and sweep on as before. A dangerous snag lying crossways has been jumped, the driver will calmly tell you. But at the time anyone not used to these little things thinks that the boat was plunging to the bottom of the river, and for some time after he becomes unduly reflective. There are millions of mosquitoes on this and all other rivers, and the mosquito net—cheese cloth—are slung as soon as the sun is down. The new chum who comes up without a mosquito net takes a surprisingly lively and active interest in the river scenery all night. The coastal steamer from Samarai, the "President," calls at the mouth of the Kumusi River, where there is a small store and a Government station—the latter not always occupied. There are two entrances to the river, and both are bar bound. The one generally used is the eastern, and at ordinary levels there are about 20 inches of water on the bar. The sea breaks too heavily on the other bar, as a rule, to make the entrance of much use, although it is far the largest, in fact, the main outlet of the river.

A short run of 8 or 10 miles further up the coast brings us to the Ope. Practically nothing is known of this river, as no boats have ever ascended it for any distance. It is much smaller than either the Musa or Kumusi, and is also bar-bound as far as boats of any draft are concerned. Miners crossing the river about 30 miles up—on the track from Tamata to the Kumusi—have reported that it carries fine gold. It will also come in for attention for dredging purposes at a later date.

The Mambare River comes next, another 18 or 20 miles up the coast. This river has three outlets, the first two reached being completely bar-bound, with a nasty sea breaking on them. The last entrance (in the hollow of Traitor's Bay) is the one used by boats and launches, and even this has to be carefully negotiated, as the main channel is constantly shifting in the sand, and at low tide there is not more than 18 inches of water on the bar. There is only one tide in Traitor's Bay in the twenty-four hours. The Mambare is the largest river on the north-east coast, and for the first 50 miles maintains an average width of about five chains. In many places it is 10 and 12 chains wide, with beautiful long, straight stretches of water. Coming up to Avo Anglican Mission Station—which is situated about 45 miles up the river—there is a magnificent stretch of water for 2½ miles, as straight as an arrow and eight chains wide. It would make a splendid course for a boat race, and in years to come, if best-and-best boats ever
make their appearance in these parts, this will be the convincing ground. For the first 45 miles the current is not more than 3 knots at the outside, but after that the rapids begin to get pronounced and troublesome. Eight or ten miles further up, they become very swift and dangerous, and whirlpools and undertows menace the swimmer at every turn. The mountains begin to close in on the river, and 70 miles from its mouth it narrows in to 2 chains wide and becomes practically mountain-bound, rapids too steep and swift for either boat or canoe to live in them—some of them have a fall of eight feet in a chain—being met with in close succession. When the river was in flood, a small 4 h.p. oil launch, drawing 3 feet of water, was taken up to Simpson's Creek—60 miles—but at ordinary times a launch, drawing only two feet of water, could not get within 7 miles of this. Floods are frequent, but the banks are high, and the flood waters do not cause any damage. In some of the mountain gullies running into the Mambare, about 80 to 100 miles from its mouth, many of the richest finds of gold in New Guinea were discovered, the general geological features of the country leading to the belief that the gold had been originally shed from reefs far up in the lofty mountains in which these branches take their rise, and in the course of time was swept down the gullies and into the Mambare, for in almost any place up there gold can be found in the bed of the river. It was this that induced a number of miners to take up dredging claims in the Mambare, lower down the river where the rapids were not so bad, and the river more practicable to work. Starting three miles below Apochi village—which is 38 miles from the mouth of the river—the claims extend for 28 miles up the river. Each claim is 4 miles long, and must not contain more than 240 acres. The survey fee is, roughly speaking, about £80, and the rent payable 2/6 the first year, and 5/- per acre every subsequent year. Exemptions are granted for twelve months from date of granting of claim, but after that a dredge has to be placed thereon and certain labour conditions complied with. The whole of these claims, together with certain other claims on Tamata Creek and the Gira River, have been floated on the London market with a nominal capital of £240,000, and £30,000 has been set aside to thoroughly test the rivers to see whether they will justify the larger amount being spent on them. An English expert is at present inspecting and testing the Mambare and Gira, and his report should be made known at an early date. If favourable it will mean that an immense amount of foreign capital will be introduced into the country, and there will be a big boom in New Guinea generally. In the event of the report not proving favourable, it will not affect the Possession in the slightest, as far as its being a rich gold-carrying country is concerned; it will only prove that the gold to be found in the lower reaches of these rivers is too fine to pay for dredging. That there is payable gold in
immense quantities in the upper reaches of both the Mambare and Gira rivers has been proved over and over again by numbers of different miners, many of whom have obtained an ounce of gold per day by what is called "blind-stabbing," in the rapids. But these parts of the rivers are inaccessible from below—that is, coming up—and machinery would have to be put up in sections of not more than 60 lbs. and carried for miles over rough mountain tracks. If the machinery could ever be got there, dredging would pay handsomely.

About 45 miles up the Mambare, Tamata Creek flows in on the left bank. Two miles up this creek is the Government station, known as Tamata. This is practically the outpost of civilization in northern British New Guinea. The station comprises a clearing of about 30 acres, and several rough Government buildings, a strong wooden gaol and two stores constitute the township. It was here where Gold-warden Green and forty natives were massacred by the Orikeivas some five years ago. The tin house was recently taken down on which Green was engaged putting the roof when the natives attacked him and his party. Not one of them escaped. The Mambare and Tamata are very unhealthy, and a large proportion of the fever cases comes from here. The rainfall is heavier than in any other part of the Possession. A small steamer, the "President," owned by W. Whitten, storekeeper, runs from Samarai to the mouth of the Mambare, calling also at Cape Nelson and the Kunusii River every three or four weeks, bringing the mail and supplies for Tamata and the Gira goldfield. The fare from Samarai is £3 10s. for white men, and 10s. for boys. The cargo is then taken up the Mambare to Tamata in a small oil launch, the journey occupying two days. When the launch is laid up, about 12 or 18 boys pull, or rather paddle, a big whaleboat up. This takes four long, weary days to do the 45 miles. Pulling boats come down the river in eight or ten hours easily. There are plenty of alligators, but they are not troublesome. Magnificent rich, soil flats are to be found along the Mambare, and with such a fine water frontage and regular rainfall will doubtless become very valuable in the future for tropical culture of all descriptions.

Six miles round Traitor's Bay, further north from the Mambare, is the Gira River, the most northerly river in the Possession. It has only one outlet, and this has a dangerous bar across it. All the year round a very heavy sea breaks on this bar, and it is an exceedingly risky thing to get in and out of the river. I myself lost a valuable oil launch on this bar, and had a whaleboat disabled by the tremendous bumping it received. The Gira constitutes the boundary line between British and German New Guinea for a good part of its course, and a German beacon is erected at the mouth to emphasise the fact. This river is, on the average, narrower than the Mambare, but 30 miles or so up it is equally as wide. It does not carry so much water though, but has a swifter current. In
the lower reaches sago swamps abound, but as we ascend the river it becomes very pretty and interesting. There are a number of very large villages dotted along the river, inhabited by fine types of natives. The largest villages are Omega, Onamatutu, Oosi, Mopi and Wadi, Onamatutu containing about 800 people. When surveying the dredging areas on this river I visited every village, and from a careful estimate should place the native population on the Gira at between 5,000 and 6,000, by far the most of them able-bodied fighting men. These people are very warlike, and are looked upon as some of the best fighters in the Possession. The country on either side of the Gira up to the village of Umuta—the top village on the river, about 40 miles from the mouth—is bounded by rich flats, running back several miles to two gradually converging lines of low hills, which finally close in a short distance above Umuta. The description of these flats is comprised in the following extract from my official report to the Surveyor-General of the Possession, on one of the lower dredging claims on the river:

"The river throughout this claim maintains an average width of about 6½ chains, and carries a large volume of water. Is navigable for whaleboats and small launches drawing 20 to 28 inches of water.

"In places there are very extensive beaches, all carrying gold in a greater or less degree.

"The banks of the river are high and boldly defined, but owing to the large body of water which congests the channel in flood time, are being continually worn away, and altering the course of the river.

"Magnificent arable flats extend for some distance back from the river, the different soils of which are adapted for almost any kind of tropical cereal—more especially rice, maize, sugar-cane, coffee or rubber. These flats are at present covered with thick undergrowth, and in many places native gardens and villages. In years to come, when this part of the country becomes thickly settled with white men, these flats will become very valuable.

"From various tests I made I am of opinion that underneath these flats, adjoining the river, there are immense quantities of gold-carrying wash. And the probabilities are that, if the present ventures are successful, applications will be made to the Government to make these flats available for dredging purposes. Etc., etc."

From Umuta up, the river gets narrower, and rapids are the order of the day. Ten or twelve miles above Umuta, precipitous mountains, from 800 to 1,000 feet, constitute the banks of the river, the scenery being exceedingly weird and beautiful. After passing through some miles of rocky gorges, the river again opens out, and for 15 or 20 miles is calm and navigable. The river up here is richly gold-bearing, and if dredges could be got up they would pay handsomely. Proceeding further up, the river again becomes mountain-bound, and is finally lost.
in a maze of small tributaries high up in the lofty ranges, towering 13,000 feet above the surrounding country.

If ever the Gira becomes of commercial importance, it will be found that the bar at its mouth will be an almost insuperable obstacle. The difficulty can be overcome, however, by widening and deepening a small creek, which at present connects the Gira with Traitor's Bay. This creek springs from the right bank of the river about 5 miles up, and embouches in Traitor's Bay, half-way between the Gira and Mambare, where the Bay water is always comparatively smooth.

THE GOLDFIELDS.

The goldfields are the backbone of British New Guinea, and support—directly and indirectly—fully 95 per cent. of the population. The principal fields are the Yodda, the Gira, the Gibara, and Cloudy Bay. The latter, which lies almost midway between Port Moresby and Samarai, and about 20 miles inland from the south coast, can hardly be called a field now, as there are not more than a dozen men there. About twelve months ago two lucky miners, named George Klotz and Frank Pryke, struck a rich patch of gold in the bed of a small creek, and in five or six weeks took 700 ozs. of gold out of it. Running short of rations they had to go to Samarai, and the news caused a big rush from the northern fields. The rush was a failure, however, as very little more gold was won, and the tide of miners set in again for the Yodda and Gira.

The Yodda is the richest field, and there are between 150 and 200 men constantly there. It is the most difficult to reach, however, as after a man arrives at Bogi, 60 miles up the Kumusi—and it will cost him £5 to get there from Samarai—he has to tramp 70 miles along a rough narrow scrub track, intersected by hundreds of large and small creeks. The journey takes the native carriers seven days, and the miners generally go up with them. Every miner has from three to six boys to work for him, and carry his outfit, which is necessarily very light and limited. All the miners use strong calico flys—tents are never seen up there—to sleep under, the fly also doing service as a "galley." Living is very dear on the field, and averages about an ounce of gold per week for even the roughest fare. The cost of carriage is 6d. per pound from Bogi to the Yodda, and as each boy carries a clear 60 lbs. every trip—which occupies ten days going and coming—and each storekeeper has from 100 to 150 boys employed, the storekeepers must wax and grow fat on the profits. A 50 lb. bag of rice costs £3 17s. 6d. on the field, and a 50 lb. bag of flour the same. So it does not pay to make too many sods when ambling round the improvised bush oven. Butter—tinned, of course—is 5s. per lb. and sugar 1s. 3d. There are two stores on the field, and each dispenses liquor of all kinds, a considerable amount being consumed.
The track to the Yodda lies through hostile country, and occasionally the Orikivas swoop down on the carriers and cause a general scatter. That means a big loss to the storekeeper. Some of the carriers also lose the number of their mess. The track passes through numbers of old gardens, now deserted and neglected. At one time there were thousands of warlike natives here, but the Government parties were compelled to fight them and destroy their villages. Then they shifted back to the mountains, on the sides of which may be seen miles and miles of beautiful native gardens. There is an Acting and an Assistant Resident Magistrate with about 20 native police stationed at Bogi, and they are supposed to patrol and maintain order between the mouth of the Kumusi and the Yodda, a nice little stretch of 130 miles of difficult country, the last 70 being inhabited by fully 20,000 natives. The old hands consider that of this 20,000, fully 10,000 are able-bodied fighting men, of a very warlike temperament. Unless the existing police force is greatly strengthened, and active and aggressive steps taken by the Government to thoroughly subjugate these warriors, there will be a big massacre of white men and natives some day, and that at a not far distant date. The hill tribes are becoming more aggressive and emboldened every day, being encouraged by the inaction of the Government. As a matter of fact, the Resident Magistrates have neither the force or authority to take the field against these powerful tribes, and uphold the prestige of the white man's government. They are ridiculously undermanned with police, and, further, they have been instructed not to attack the natives and shoot them, but at all times "to take prisoners." With wily savages like these it is impossible to do the latter without the former, and the magistrates know that if they shoot any natives, there will be serious trouble with the Governor. While giving his Excellency all due credit for his humanitarian orders, it should be, nevertheless, patent to all that in firmly establishing the government control amongst savages, physical force has to be used at first, and the Governor should give his Magistrates—some of whom have lived for years amongst such surroundings, and thoroughly understand the natures and dispositions of the savages—far more latitude in dealing with insurrectionary and dangerous tribes. Nothing but hard, practical experience amongst the warlike natives of the interior can guide a person in dealing with them for the establishment of the white man's supremacy, and subsequent friendly relations on both sides, and practical experience in all parts of the world says that any mistaken ideas of caution and philanthropy in dealing with savage races will be taken by them as a sign of weakness, and lead to disaster in the end. If the numerous tribes in the Yodda Valley ever realise the power of combination and single leadership—and they are learning a little of the methods of how white men fight every week—the rule of the white man
in northern British New Guinea will not survive a day. If it is intended that the Possession shall be a white man's country, the Government should prepare for such an emergency. It is absurd for people who have never been there to talk about the natives in these parts—and, in fact, all up the coast from Cape Nelson to the German boundary—being civilised and friendly. Men who know every inch of this country say otherwise, and wisely leave the know-alls to take the risks—which, it might be as well to state, they never do.

While I was on the Kumusi, a competent geologist, who had been up to inspect the Yodda on behalf of a big southern syndicate for possible reefing country, told me that he considered the Yodda goldfield had not been touched yet—that it presented unmistakeable indications of proving one of the finest alluvial goldfields discovered of late years. He was of opinion that if it was made more accessible, and the cost of living reduced, the field was capable of supporting thousands of miners. At the present time there are numbers of men on the Yodda who are hardly making tucker, while others are doing fairly well. This is always the case on every goldfield. Besides, the miners on the Yodda are so heavily handicapped on all sides, that it is a very difficult matter to form a correct idea of its value and extent from the present returns.

Fever (red-water) is prevalent up there, and several men have gone under to it, while others have come down to Samarai in a bad way.

The Gira goldfield is a day's march from Tamata, about 20 miles. There are between 30 and 40 men there, mostly very old hands. Nearly every miner, after having had a few prospecting trips, seems to drift back to the Gira. None of the men are doing well there, a big proportion of them not making enough to pay for tucker. Living is not nearly so expensive as on the Yodda, and a bag of rice or flour varies from 20s. to 25s. In some of the gullies emptying into the Gira very rich claims have been worked, a large number of them averaging from 100 to 150 ounces per 50 feet. The formation of the country and the experience of the miners point to the conclusion that the gold found in these gullies has been shed from the crests of the spurs. This is further confirmed by the fact that the claims increased in richness as they approached the summits of the ridges. There should be a great future before this part of the country for hydraulic sluicing. The supplies for the Gira are brought over by native carriers, the same as on the Yodda, only here far fewer are required. Each of the two storekeepers has from 6 to 12 boys carrying, and they take two days going over, and one back. There is not so much sickness on the Gira as on the Yodda.

The Gibara goldfield is situated a few miles inland from Milne Bay, and about 30 miles from Samarai. There are between 20 and 30 men on this field also, mostly all old fossickers who don't care to rough it up on the Yodda and Gira. A bare living is the average. The natives in
this part are about the very worst specimens in the Possession—puny, lying, treacherous, and inveterate thieves. Numbers of miners have had to clear out from the field on account of the depredations of the natives, the Government having signally failed to put a stop to the wholesale thieving and pilfering by these dingo tribes. Quite recently some of the miners became so exasperated at the loss of their rations, etc., that they fired on the thieves, and some of the latter were killed. For this they were reported by the missionaries, thrown into gaol for three or four months, and then tried, one of them getting six months' imprisonment. Until the Government see fit to suppress the natives in the locality, the Gibara goldfield is a very healthy place to be away from. A couple of reefs have been found on the Gibara, but are hardly rich enough to work. The track to the field is also a mere neglected "pad."

The goldfields are undoubtedly the mainstay of British New Guinea at the present time, and if these were to peter out to-morrow, nine-tenths of the revenue of the country would disappear at once. Yet, in the face of this, the miners receive the least consideration of all. They have asked time and again to have decent roads made to the fields, and free police protection for prospecting parties, and both have been refused. Were any encouragement given by the Government to the miners in this direction, it is almost certain that new and rich finds would be very quickly made, which would materially benefit every man in the country. All New Guinea wants to make it highly prosperous is population, and rich goldfields are the surest and best way of attracting outsiders. But the Government does not seem to be anxious to people the country, judging by its frigid treatment of the miners.

Woodlark Island, about 150 miles off the eastern mainland, is a big mining centre in a small compass. Numbers of reefs have been opened up there, and powerful companies floated to work them. The population consists of about 300 or 400 miners and a couple of thousand natives. I have not been there myself, so cannot speak with certainty about it.

OTHER INDUSTRIES.

Practically the only industries in New Guinea are the timber (sandalwood) industry at Port Moresby, and that of copra collecting. There must be millions of palms in the Possession, and in certain favoured places thousands of these may be found growing close together. These are utilised as plantations, and the copra collected from them is exported through Messrs. Burns, Philp and Co.

The sandal-wood industry at Port Moresby is also a valuable undertaking, and returns a good few thousand pounds every year to those engaged in it.
Pearl-shelling, beche-de-mer fishing, and trading generally are carried on in and around the coast from the Fly to the Gira River. But nobody seems to make a fortune out of either of those industries, with the exception of, perhaps, a couple of men who are believed to be doing well at the first-named two.

PORT MORESBY AND SAMARAI.

A few words regarding the only two towns—if such they can be called—in the Possession, viz., Port Moresby and Samarai, may not be uninteresting. Port Moresby is the seat of Government, and is situated in the wrong end of the country for the purposes of a central administration.

It is built on low hills, surrounding a very pretty harbour, but the former presents a very bleak aspect, being almost treeless, and what trees are there are there stunted and shrivelled, like the Queensland back country timber. The Governor resides in a large airy—it cannot be called handsome—house, about two miles round the Bay, while a little further on is the L.M.S. Mission station—a lovely place. Messrs. Burns, Philp and Co. have a very large business establishment, and there is a big roomy tin building which revels in the name of an hotel. Here the drinks are 1s. each, and a whisky and soda will cost you 2s. There is very little drinking done at the „hotel.“ There is a good deal in the township, though, but nearly every man indents, or buys his liquor in bulk, from Burns, Philp, and Co., by which means he gets it even cheaper than his Australian confrere, as the duty is much less. Board at the hotel is £2 5s. per week, and the fare is nearly always tinned meat, varied by an occasional dash of rock wallaby. This is a luxury. Judging by its appearance, the billiard table has done service for a polo ground for the last 20 years, and a hen-roost on spare occasions. There is a fair-sized weatherboard church as a kind of a counter-blast to the hotel, and services are held here every Sunday when the Governor is in port. On the opposite side of the hill is a glaring white building, which does service for a gaol, while one occasionally has visible proof of the necessity for such by meeting a long line of attenuated natives hobbling along in leg-irons, with an armed native warden as escort. The Government offices are situated in three or four different buildings, about 200 yards apart. There are over 40 civil servants at the Port. The „Moresby“ brings the mail every six weeks from Australia. Dr. Blayney, a very clever duly qualified medical practitioner, has the health of the inhabitants in hand. To the man passing through, Port Moresby is very dull and uninteresting, and he feels greatly relieved when he boards the s.s. „Moresby“ and sets sail for Samarai, 189 miles further east.
Samarai is far ahead of Port Moresby in every way except health, as it is generally conceded that Port Moresby is much healthier. The island (Dinner Plate) on which Samarai is built is about a mile off the mainland—extreme eastern end—and is a veritable paradise of waving green palms. It is only 60 acres in extent, and rises up at the back 400 feet above sea level. The house of the Resident Magistrate and the hospital are built on the crest of this ridge, while a little lower down is the pretty residence of C. Arboine, Esq., the popular manager of Messrs. Burns, Philp, and Co., at Samarai. These buildings can be seen a long way off when approaching the island by sea. There are three hotels, and three large stores in the main street. All the hotels are two-storied, and very comfortable. The tariff is only 25s. per week, and accommodation and attention equal to that of a first-class hotel in the country in Queensland. Excellent liquors are dispensed at 6d., while the three billiard tables are in first-class order. About one-quarter of the Island is fenced off as a Government domain, and in a regular fairyland of palms and beautiful tropical foliage the Sub-collector of Customs has his quarters. The s.s. "Moresby," from Sydney, calls every six or seven weeks—going on from here to New Britain, returning, generally, in a week or ten days' time—and the s.s. "Adelaide" every three weeks, from Cooktown. A number of sailing boats go to and fro from Samarai and Cooktown, so the people very often send and receive a mail in between the regular runs of the "Adelaide." When the "Moresby" arrives all the craft for hundreds of miles around seem to assemble, and I have often counted between 30 and 40 vessels of all sizes in the harbour at the one time. The average white population of Samarai is about 50, of whom 12 or 15 are white women. Occasionally, however, when there is a new rush on, there will be from 150 to 200 men in the place for several weeks.

There is a small chemist's shop in the main street, but there is no qualified chemist on the Island. Neither is there a doctor, the duties of Health Officer being attended to by a gentleman named Mr. Ceci Vaughan. There should be a good opening at Samarai for a first-class medical man, as, in addition to the local practice, he would have unusual opportunities for the study of many tropical diseases of an interesting nature, and of which little is known in the medical world at the present time.

A large dry swamp runs across the Island, and although a large amount of Government money has been spent in trying to properly drain this when submerged in wet weather, success has not been achieved. This swamp is no doubt responsible for a good deal of sickness on the Island. The sanitation of the town is very bad—especially about the hotels—and unless some radical alteration is made in this direction, before very long a serious outbreak of typhoid fever.
will occur. There is a small cricket ground and a tennis court, and both these are well patronised. Sailing on Sundays is about the principal pastime.

The want of regular mail communication with Port Moresby is severely felt. Of course, every six weeks the "Moresby" brings news from Port Moresby, but there is no boat running regularly the other way, and letters have usually to go to Cooktown and catch the next "Moresby" for Port—a round of over 1,000 miles instead of 190. That means at least six weeks, possibly longer. The "Merrie England" only visits Samarai and the south-east coast about once a year. This question of regular mail communication will call for immediate attention on the part of the Federal Government later on. A small oil launch, 25 h.p., costing about £800, running fortnightly between Port Moresby, Samarai, and the Mambare, calling at all the stations on route, is what is required.

But the desideratum above all others is cable communication with Australia, connecting either Cooktown and Samarai, or Thursday Island and Port Moresby, telegraphic communication between Samarai and Port Moresby following as a matter of course. This would put the Possession in touch with the central Government in Australia at once, and remove that feeling of isolation which is the greatest drawback to the life of the country at the present time. The impetus to the Possession which would follow the laying of such a cable would rapidly justify the Australian Government in undertaking the work, and, until this connection is made, the Federal authorities will find it extremely difficult and at times impracticable to properly govern their first over-sea dependency.

PRESENT AND FUTURE POSSIBILITIES OF BRITISH NEW GUINEA.

Nothing can prevent New Guinea becoming some day one of the richest—as it is now the largest—island in the world. It comprises every range of temperature and every class of soil, has a splendid regular rainfall, fine rivers, and numbers of excellent and natural harbours. With cable connection and a regular fortnightly mail service established between the Possession and Australia, the tide of immigration would rapidly follow, and then the future of the country would be permanently assured. The pity of it is that two foreign nations were allowed to secure the greatest portion of the island. If it had not been for the apathy of the Home Government the British flag would now be flying over the whole of the island, and the trouble which must inevitably come in the future through this same tripartite control would have been averted. Already the Dutch are inserting the thin end of the wedge of a great racial disturbance, by
endeavouring to attract immigration from the inferior races in the South of Asia. Another fifty years—perhaps ten or twenty years—may see the British in Eastern New Guinea arrayed in arms against the alien hordes of Asia who have made the western end of the island their home. If the Federal Government really intend to open up British New Guinea, and make it a valuable possession of the Commonwealth, it should complete the undertaking by buying out Dutch and German interests in the island. This is a matter which should command the attention of the Federal Ministry when dealing with the New Guinea question, and some far-seeing statesmanlike step like the above taken while there is yet time. The internal form of government should also be altered. The administration at present consists of the Governor and five or six Executive Councillors, all chosen by His Excellency, and living at Port Moresby. The people of the country should surely be entitled to elect at least one representative to the Executive, in accordance with the good old British principle of "no taxation without representation." The seat of Government should also be moved further east, so as to make it more central. Land selection should be encouraged, and more facilities be given to intending selectors to examine and take up land. In some parts of the Possession there are thousands of acres of rubber country in which indigenous rubber trees are thriving. This, when once known, will lead to the active prosecution of this industry, and the starting of other kindred industries. There is very little pastoral country available, but what is there is equal to the finest in the world. In one place I came across several thousand acres of glorious grazing country, grass six feet high, and splendidly watered. This grass is very fattening for stock, the few cattle about Samarai being almost too fat for market. Thousands of acres of land along the rivers in the northern division are admirably adapted for agriculture of every description. Only the fringe of the gold-bearing country has been tapped—the interior, silent and unknown, remains to be broached by the intrepid pioneer and daring prospector.

Before concluding, I would like to bring under the notice of the Royal Geographical Society the immense value that would attach to the result of a scientific expedition right through the centre of the island, starting at Samarai, and traversing British, German, and Dutch New Guinea to the extreme north-west. Such an expedition would pass through country unknown to white men, and should prove prolific in scientific information of the highest value. It has been proposed in Samarai to send a prospecting expedition through British New Guinea, starting at Samarai, and coming out about the head of the Fly River. But if the larger expedition referred to above was formed, the members of the prospecting expedition would most probably willingly throw in their lot with it. The expedition would have
to consist of a geologist, botanist, naturalist, taxidermist—to attend to the lovely bird specimens that would be secured—a surveyor and two good practical miners, with, of course, about 40 or 50 native carriers and police. The cost should not be more than a couple of thousand pounds, and a large part of this would be covered by the value of the collections made during the expedition. With this suggestion, I will conclude this rather desultory article. I trust that some of the information contained therein will prove of service to the public, and also result in the search-light of Federal Parliamentary inquiry being directed towards the internal affairs of British New Guinea.
ANNIVERSARY ADDRESS TO THE ROYAL GEO-
GRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND.*

By the Right Hon. Sir HUGH M. NELSON, K.C.M.G., D.C.L.,
President.

The President, after congratulating the members of the Society
on the work done during the Session just closed, and the sound position of
the Society, as set forth in the report submitted and adopted; and re-
turning his sincere thanks for the honour conferred upon him by his
re-election to the chair (now for the fourth successive year), said:—

YOUR EXCELLENCY, LADIES AND GENTLEMEN,

In addressing you once more on the occasion of our anniver-
sary meeting, I have as usual nothing very original to lay before you,
as I make no pretensions to the designation of a scientist, but with the
assistance of our indefatigable Hon. Secretary, the Hydraulic Engineer,
Mr. Henderson, and others who have kindly collated authorities and
data for me, I have put together some notes on a subject, which, at the
present moment, is of intense interest to us all—viz., "The Climate
of Australia." in the hope that the ventilation of some facts and some
theories which I have touched upon may lead after discussion to some
practical results in the near future.

Speaking at a recent meeting of our sister society in Victoria,
on the subject of the recent disastrous volcanic disturbances in the
West Indies, the Governor, Sir George Sydenham Clarke, remarked that
"he wished we could have volcanic action in Australia to throw up an
Andes in the centre of the Continent." The possible realisation of this
wish would mean a great deal. It would not only produce a great
change in the physical structure of the country, but its effect on the
climate, and distribution of rainfall, would be very pronounced.

Taken as a whole the physical geography of Australia is really
phenomenal, the surface features, as represented by elevations, depres-
sions, and rivers, being remarkably so. It is, for instance, the very
antithesis of the physiography of our neighbouring island, New Guinea,
and in no other part of the world do we find its exact counterpart.
The mountain ranges and areas of greatest elevation are confined,
almost entirely, to the eastern seaboard of the continent, more especially
along the extreme south-eastern shores, where the great Alpine masses

* Delivered at the Annual General Meeting, July 26, 1902.
indicate the culminating point of the Cordillera chain, that extends far away northerly to Cape York peninsula.

On the western side of Australia, and within the Northern Territory, the elevated regions assume the form of extended table-lands, capped in many places by the old desert sand-stone, and showing abundant evidence of extensive denudation. But these formations exert little influence on the distribution of rainfall, and as climatic factors they are of doubtful value.

A vast central depression occupies the floor of the ancient cretaceous sea, that at one time separated the eastern from the western side of the country, and into this hollow the numerous inland streams flow, in times of heavy rains that fall on the highland regions of the seaboard. The synclinal area of this central territory is indicated by several shallow salt lakes, dipping at one or two points below the sea level, and these are, for the most part, situated in the midst of a barren desert country of endless spinifex sand ridges of the most dismal aspect. Here, in this immense territory, occupying a large proportion of the whole continent, the climatic conditions are of a type, differing entirely from the climate of the coastal belt, and this is chiefly brought about by the natural configuration of the land mass, dividing Australia unequally into two very distinct zones, of unequal temperature and rainfall; the one excessively moist, the other characterised by extreme dryness. Nor, does it seem possible to alter or modify these conditions by any artificial means; whilst, so far as natural operations are concerned, it would require a mighty cataclysm, powerful enough to completely change the physiography of the country, and raise the central region to an altitude exceeding the rim of the coastal line.

Even in normal seasons the rainfall of Australia is very unequally distributed, the least of all being over the central depression (to which I have referred), where the mean annual precipitation is less than ten inches, thereby rendering an immense area of the continent of little or no value whatever, at least from an agricultural or pastoral point of view. The heaviest rainfall occurs along the eastern seaboard, where the great vapour laden clouds, coming in from the Pacific, are influenced by the configuration of the land mass, and intercepted on their inland journey by the high mountain ranges. Here they are met by an opposing current of low temperature air, resulting in condensation, and more or less heavy precipitation. This is greatest of all in the Cardwell district of Queensland, where an average of over 140 inches of rain is recorded annually.

Along the whole of the seaboard of this part of tropical Australia, the prevailing wind is from the south-east for about nine months of the year, and from the north-east during the remaining three months. From both quarters the air is heavily laden with moisture, brought in from
the Pacific Ocean, and intercepted by the high coastal ranges, upon which heavy rainfalls occur. But on the inland side of these ranges the precipitation gradually diminishes in quantity and frequency, until the great central regions are reached, where the rainfall is practically nil; or at least only a few inches. Thus we find that the maximum rainfall zones of eastern Australia lie along the coast line, where the forests and vegetation are luxuriant; in contrast to the stunted trees and other forms of vegetable life west of the Great Dividing Range. This is, of course, a characteristic depending upon the configuration of the land surface. We know that in Eastern Australia the mountain ranges are moderately high and continuous from south to north, within a comparatively short distance from the sea shore, and that they culminate in regions where there is diminished air pressure, and consequent fall of temperature. Here there is a commingling of the moist and warm vapour currents of the Pacific Ocean, and the cooler airs of the high land masses, resulting in condensation and precipitation of moisture in the shape of rains over the country affected. Similar physical conditions, but considerably modified, exist in the Northern Territory of South Australia, where, as already said, the elevated areas of Arnhem Land assume the form of table-lands, upon which are deposited the heavy rains that occur in that part of the continent. But these downpours are limited in range, and rarely reach the great interior plains, where a condition of extreme dryness prevails, and is only modified by occasional showers, the whole scarcely amounting to a maximum of ten inches in the year. In Western Australia the rains are often capricious and insufficient for agricultural purposes, except over a narrow fringe of country along the sea shore, and there the farmer and the fruit grower have taken up large areas. In the region bordering upon the Great Australian Bight, the rainfall is most scanty and uncertain. But here the limestones are extensively developed, and subterraneous waters are known to exist in the rock-hollows and other natural caverns, that occur in the eroded limestone formation, and we may add to this supply the underground lakes of good fresh water recently discovered in the neighbourhood.

From what I have stated it will be concluded that the whole of central Australia, comprising a vast area of the continent, is for all practical purposes a waterless desert of waste lands, where the rainfall does not average more than four or five inches per annum, with the exception of the region occupied by the McDonnell Ranges, in which the yearly rains amount to over twelve inches. In the elevated masses of these ranges, we have an example of the effect of physical conditions on the distribution of periodic precipitations, whether in the form of thunderstorms or ordinary rains, and we can readily imagine the remarkable influence, which lofty mountain ranges would exercise on the climate
of this vast region, were it possible to alter the physiography of the country in that respect.

For the purpose of improving the climatic conditions of Australia, the subject of an *inland sea* has been alluded to in the public prints from time to time, and the cutting of an inlet, from the head of Spencer's Gulf to the lake regions, so that the sea water might find its way into the interior, and there set up conditions favourable to the precipitation of rain, has been advocated. It is contended that such a water supply would serve to irrigate the waste lands of the central basin, but how this could be done with salt water, or with waters impregnated with a percentage of mineral salts, has not yet been clearly shown. It is very likely that a large inland sea would have the effect of producing moisture, in the shape of more or less heavy dews, but these would be purely local in range, and would not affect the prevailing climate of central Australia. However, the physical conditions of the country do not favour such a scheme, and in any case the enormous cost involved would render it altogether impracticable.

The advantages of *irrigation* as a means of minimising the effects of prolonged drought have been frequently advocated. For *agricultural* purposes the value of irrigated land cannot very well be over-estimated, and an efficient system of irrigation, under such conditions, combined with intense cultivation, would be of the highest utility and importance to the country, increasing the value and fertility of our lands, and adding greatly to the development of our rural industrial life. But to the *pastoralist*, irrigation, of the natural grasses, in my opinion, is out of the question. His run holdings are far too extensive, comprising, as they do, some two-thirds or more of the available lands of the entire continent, and extending, from the very heart of the settled districts, to the unexplored regions of the far off interior. For an Australian squatter to attempt anything of the kind, at least on a scale that would be of any real practical value, would simply spell financial ruin. For watering stock, when natural supplies fail, the artesian wells serve a useful and, in point of fact, indispensable purpose. They enable run holders to tide over protracted intervals of unusually dry weather, when creeks have ceased to run, and waterholes become exhausted; but stock cannot live on water alone, and when the natural herbage fails conditions become critical, and heavy losses of stock too often ensue. Even assuming that the artesian waters of Australia are inexhaustible, it must be borne in mind that their geographical range, so far as our present knowledge extends, is limited to a comparatively small area of country; that all the bore waters are not suitable for irrigation, and that many of the bores put down only yield a sub-artesian supply.

The subject is one of extreme interest to us all, inasmuch as the unparalleled drought from which we still suffer, and which, during the
preceding four or five years, has been so disastrous to our Western pastoralists, and even to others situated in more favoured localities, has brought about a crisis in the history of the community and has forced itself upon us as an object lesson. But too much seems to be expected from the application of artesian water to our western sub-arid country. Many people imagine that the aggregate volume of our artesian supplies is sufficient to water the greater part of the Western country to an extent that will render it capable of freely and profitably growing, in times of drought, sufficient grass and fodder to feed all the stock that could be depastured there in good seasons; this idea may or may not prove correct in the future—my own opinion is that it is far too optimistic—but the sooner it is threshed out the better. True, there are in our Western country, as is generally the case in regions of small rainfall, vast tracts possessing all the elements of fertility save water, so the questions which arise and which must be decided are: (a) have we the requisite volume of water necessary for effectively and profitably irrigating the bulk of our Western country; and (b) if not, could it be obtained by sinking a greater number of wells? After careful consideration I have arrived at the conclusion that the answer to the first question must be most certainly, no; to the latter no definite answer can as yet be given. I have very grave doubts, however, of our artesian basin's capabilities in respect to its being able to afford the requisite volume; but, supposing it could, I do not think it would be found profitable to sink deep and costly artesian wells, many of which would afford but a very limited supply, unless the use to which the water would be put would have a higher value than that of merely irrigating grass paddocks. Still it is possible that future improvements in irrigation engineering, and in the mode of conveying and applying water, and possible discoveries of new and shallow underground supplies, may in course of time do much to make it profitable to irrigate grass lands of much greater area than that which could now be profitably operated upon.

The very large volume of water requisite for effective irrigation, even under ordinary conditions, is realised by very few people, except those who have closely studied the subject, or who have had practical experience in irrigation. To cover one acre of land with water only fifteen inches deep would require 54,450 cubic feet, or 340,312 gallons, the weight of which at ten pounds per imperial gallon would be 1,519.4 tons; hence the corresponding figures for 640 acres, or one square mile, would be 34,848,000 cubic feet: 217,799,680 gallons: and 972,320 tons. Now applying some of these figures to a Western grazing farm of 20,000 acres, only one half of which, let us assume, would be annually irrigated, the irrigated half would every year require at least four waterings (if that number would be sufficient), two of which would each be four inches deep, the other two three and a half inches deep, so that the
total depth of water that would be applied to the land would be fifteen inches in addition to the yearly rainfall of, say, ten to fifteen inches; hence the volume of water annually required to irrigate the 10,000 acres would be 544,500,000 cubic feet, equivalent to a daily supply of 1,491,780 cubic feet, or 9,323,624 gallons, without making allowances for losses by evaporation, seepage in the supply channels, and losses from any other causes, assumptions unwarrantable in practice, which indicates that, inter alia, these losses range between twenty and seventy per centum.

Let us now endeavour to show what area the aggregate volume of the flows from all the artesian wells known to Mr. Henderson, the Government hydraulic engineer, on the 31st August, 1901, the date of his latest annual report on water supply and the hydraulic survey of Queensland, would water to a depth of fifteen inches, without making allowances for the waste and losses referred to in the preceding paragraph, that is, that the whole of the water could be applied to water the land and on the further supposition that there would be no diminution of the artesian flows. On the date mentioned the hydraulic engineer set down the aggregate volume of the flows of all the artesian wells then known to him at 351,295,254 gallons per diem, equal to 128,222,767,710 gallons, or 20,515,642,833 cubic feet per annum. This volume would cover but 376,780 acres fifteen inches deep, or 314,198 acres eighteen inches deep, the former being only .457 per centum and the latter .38 per centum of the present estimated area of the Western country under artesian conditions, namely 82,384,000 acres. In other words the aggregate supply from all the known artesian bores in Queensland would serve to irrigate one half the area of 38 grazing farms of 20,000 acres each to an extent equal to a rainfall of 15 inches.

Respecting the diminution of artesian flows, it is a regrettable fact that reports from sources apparently reliable have been received, stating that such has actually taken place in some localities, especially in the Central district; the particulars of these cases are, however, not yet available because drought has prevented officers of the Hydraulic Department investigating the subject on the spot, and because there is a natural reluctance on the part of the well owners to give details. There are good grounds, however, for believing that a few wells have entirely ceased to flow, while the flows from others have dwindled down to an insignificant volume, and there is no guarantee that they will not sooner or later cease to flow and that others will not follow suit.*

In agricultural districts the conditions differ, for here the available areas of suitable land are comparatively small, and surplus water could be stored, and be readily utilised when the rainfall is deficient. It is certainly a great pity to see so much lavish waste in the natural water
supply of our coast districts, when the frequently flooded rivers carry the bulk of the rainfall to the sea, freighted with enormous deposits of sediment, derived from the rich soils of the valleys and deltaic lands through which the streams flow. The thriftless waste of water in this way is admittedly great, and we pay the penalty in abnormally dry weather. The natural physical conditions of the coastal river valleys, however, would require very careful expert examination before it could be ascertained that they are favourable to the storage of large volumes of water for irrigation purposes, at a reasonable cost. Our esteemed fellow member, Mr. George Phillips, C.E., lately brought the matter before the public when reporting on, what seemed to him when on a visit to the locality, an exceptionally favourable site for the economical and advantageous conservation of a body of water on an extensive scale, at a place in the very heart of the Blackall ranges, about 60 miles from Brisbane, on the Northern railway line. Speaking on the general subject Mr. Phillips says:—"Much has been said and written of late on the conservation and utilisation of water, but one of the chief difficulties in this connection is to find suitable sites for reservoirs. How few of our rivers can be depended upon to yield much water in times of drought? The Brisbane River at present is yielding less than 4,000,000 gallons per day, whilst the Burnett River, with nearly three times the area of the Brisbane, is said to yield at Bingera only about 6,000,000 gallons daily.* The reason is the generally non-absorbent character of the drainage basins. This will be better understood when I state that the Elliot River, near Bundaberg (which drains a very small area by comparison with the Burnett—probably not more than the one-hundredth part), yields more water at the present time than its big neighbour, the Burnett, because the basin of the Elliot comprises sandy country—very absorbent in character. For the same reason ten square miles of Stradbroke Island can be depended upon to yield more water all the year round, than the 4,000 square miles of the Brisbane River Basin above Mount Crosby.

"The locking of rivers where the rainfall (instead of being evenly distributed throughout the year, as in Europe) falls irregularly and chiefly in storms of great intensity, is not only difficult, but, so far as Queensland is concerned, practically impossible. We are thus confined to the alternative of finding underground reservoirs, as in sandy or otherwise absorbent stratas, or the making of artificial reservoirs by means of dams. No doubt in coastal districts of Queensland there are places where such reservoirs as those at Enoggera and Gold Creek might be

* In May last the irrigation works were stopped on account of the supply of water having failed, after pumping an estimated volume of 710 million gallons, operations having started in December last.
made, but I do not think there are many suitable sites where very extensive bodies of water could be economically conserved, and even where a suitable site may exist it does not always follow that the surrounding country is of sufficient value to justify the expenditure."

The natural causes that operate to bring about abnormal droughts, such as are now being experienced in Queensland, and generally throughout the continent, are as yet obscure and practically unknown, although the subject has received serious attention. No generally accepted solution of this important problem has yet been forthcoming, notwithstanding that the matter has been discussed for some considerable time by several well-recognised authorities. Many theories have been advanced, and some are even now under careful consideration, but they are all more or less conjectural, and lack the very important element of practical demonstration. Amongst others, a good deal of attention has, for many years, been given to the sunspot theory, but so far with almost negative results, in this part of the world at least. Our honorary corresponding member, Mr. H. C. Russell, the well-known astronomer and scientific meteorologist, of Sydney, has studied the subject for many years, and was the first Australian scientist to bring it before the public in proper form. This he did in some of his numerous valuable papers, contributed to the Royal Society of New South Wales, in which he endeavoured to show an apparent probable connection between good and bad seasons, and the spots that periodically appear on the solar surface. Mr. Russell's observations went to show that there are periods of maximum and minimum activity on the sun's surface, and that these have a corresponding influence on the climatic changes we so frequently experience over the whole of the Australian continent. Mr. Wragge has given the subject some attention. Mr. Russell has also endeavoured to establish the theory of weather cycles, each of which is supposed to cover a given number of years corresponding to the minima and maxima of such spot epochs. But the subject is admittedly complex, requiring a life-long study, and the most patient and careful investigation of the phenomena presenting themselves year by year, until thousands of observations have been recorded for classification and discussion. By such means only can it be possible to find out what bearing the different changes on the solar surface have to one another, and in what manner these changes affect the meteorology of our terrestrial globe, and so be able eventually to formulate the laws by which such changes are governed. Already the record is a long one, covering as it does some centuries of laborious research and investigation, and going back to the days of Wolf and Schwabe, who recorded observations dating from 1611. Sir William Herschell was amongst those who considered that the presence of many spots on the sun's surface indicated the existence of violent chemical action there, and this led him
to believe that years of maximum solar energy, when spots are abundant, would be productive of high terrestrial temperatures. This view is supported by Wolf, who concluded "that years rich in solar spots are generally drier and more fruitful than those of an opposite character, while the latter are wetter and stormier than the former." *

Without referring in detail to the authorities who have favoured the theory under consideration, it may be remarked that the majority of observers seem to think that an affinity of some kind actually exists between the climates of our globe and the spotted disc of the sun. Baxendell even states "that the future progress of meteorology must depend to a much greater extent than has generally been supposed upon the knowledge we may obtain upon the nature and extent of the changes which are constantly taking place on the surface of the sun." † M. Poey, who has collated a mass of statistics of tropical storms, from the year 1750, finds that ten out of twelve epochs of very frequent and extremely severe storms correspond to the period of sun spot maxima. In Canada, Mr. A. Elvins, whose observations extend over a number of years, finds that years characterised by scarcity of rainfall and low temperatures are known to correspond with the periods of greatest and least sun spots, but he nevertheless concludes that "the year immediately preceding a maximum or minimum is usually a specially wet year." ‡

It is interesting to find that the storm-cycle theory is supported by both Poey and Elvins. The American meteorologist, Broekleeby, who has investigated the results of a number of observations, covering a period of over sixty years, believes that he is justified in concluding that "the rainfall tends to rise above the mean when the sun-spot area is in excess and to fall below when there is a deficiency of solar activity." § The late Professor C. P. Smyth, formerly Astronomer Royal for Scotland, was of opinion that a great heat wave sweeps across the terrestrial surface "every eleven years and a fraction, and nearly coincidently with the beginning of the increase of each sun-spot cycle of the same eleven-year duration." ¶ But Smyth's view received scant support from the famous meteorologist and astronomer, Prince, who said that he had no belief in any weather cycles whatever. However, Stone, who investigated the Cape of Good Hope observations, and Professor Cleveland Abbe, who utilised the Munich records covering a period of some sixty years, claim that they have established the existence of a relationship between our earth temperatures and the disturbances that occur.

* Mittheilungen, No. 10.
BY RIGHT HON. SIR HUGH M. NELSON, K.C.M.G., D.C.L. 158

on the solar disc. In the opinion of the latter authority the amount of heat given off by the sun is diminished by the prevalence of spots, whose aggregated areas we may assume decrease the luminous surface of the solar disc, and this is, no doubt, followed by a corresponding diminution of the mean annual temperatures of the terrestrial sphere.

It has long been an accepted fact that our magnetic elements are sensibly influenced by the far reaching disturbances that are known to periodically occur on the sun's surface. The effect of these as sometimes felt by us on the earth, indicates that the outbursts are of enormous dimensions, extending for many thousands of miles locally, and reaching with their almost unlimited influence the remotest members of the solar system.

From what has been said (by the afore-mentioned authorities), it seems reasonable to suppose that our climate is, to some extent at least, influenced, in a more or less direct way, by the changes that occur from time to time on the luminous surface of the solar disc. Such influence, however, will not be confined to any special locality, country, or State, but must be considered in its wide bearing on the earth, as a whole, and studied in that light. But we must bear in mind that the changes of which we have spoken are probably periodic and comparatively slow in movement, requiring careful and prolonged observations, recorded with care and intelligence, before we can hope to utilise the results in our study of terrestrial meteorology, and of the conditions that operate in the production of long periods of excessive dryness or of phenomenal rainfall. This is being done in all the principal observatories throughout the world, where the sun's disc is daily studied, with elaborate instrumental appliances suited for the purpose. Photographs of the sun's disc are taken daily, whenever weather conditions are favourable, and the negatives are measured and examined with the utmost care and exactitude. To be of any practical value these observations must be extended over a great number of years, as I have already said, so that it may even yet be a long time before scientists arrive at any practical results.

Turning now to another phase of the subject. I may remark that, as Australian residents, we are fairly familiar with the numerous Antarctic disturbances, that overlap and envelope the southern regions of our continent from time to time, coalescing with the opposing equatorial cyclones that sweep across the Indian Ocean and strike our northern shores with enormous force and energy. In meeting with the warm equatorial air currents, the cold Antarctic vapour clouds condense and heavy rains are precipitated. But here again the geographical factor comes into operation, for we find that these precipitations are distributed along the continental seaboard, and very little reaches the inland regions remote from the coastal ranges. The heavy vapour clouds yield to the influence of the high mountain masses, before reaching the in-
terior. In this respect the great Alpine chain of south-eastern Australia plays a very important part in the movements and general distribution of rain clouds, as well as in the disposition of Antarctic storms, and their effect on our Australian climate. That those southern cyclonic disturbances are, to some extent, influenced by the highland regions in the neighbourhood of Mount Kosciusko, has been often enough shown by the well-known fact that many of the storms reported to be travelling in a general direction that would have led them right across the continent, have been deflected when striking our southern shore, changed their course, and left the Australian mainland altogether, or have merely skirted the coast regions with greatly decreased energy. The subject of Antarctic meteorology is one which has already received careful attention from some of my predecessors in the presidential chair. It is of the greatest interest, and it is one of those subjects, our knowledge of which we may confidently expect to be largely increased by the observations of the various expeditions now making a study of the geography in all its sections of those inhospitable regions.

In the preceding remarks I have briefly alluded to weather cycles, and their probable connection with solar phenomena, but it seems to me, that in so far as Australia is concerned, it is just as reasonable to suppose that the climate is, to a considerable extent, influenced by the changes that periodically occur in the regions surrounding the South Pole. The enormous masses of polar ice that drift about in Australian waters, from time to time, to almost within reach of the southern shores of our continent, must necessarily tend to reduce the temperature, and this reduction would favour condensation. From experience, gained in high northern latitudes bordering Greenland's coast line, and in the South Pacific Ocean as well, it is known that there is a periodical breaking up of the ice in the Polar seas, and that this results in great ice drifts, which influence the temperatures of adjacent regions to a very appreciable extent. That such is actually the case, we know from the very numerous icebergs that are sometimes met with by vessels trading to this country, and these enormous icebergs are occasionally seen within a comparatively short distance of the southernmost shores of our continent. This, coupled with the fact that we are only separated by a narrow belt of ocean from what is generally considered to be the usual northern limit of the Antarctic ice drift, may justify the belief that some relationship really exists between our Australian climate and the South Polar ice movements, and, until the essential factors of such assumed relationship are formulated and fully understood, we cannot hope to improve much on our ordinary system of weather forecasting, nor will it be practicable to prognosticate seasonal changes or conditions of climate for long periods. With such increased knowledge as we hope to derive from the British and foreign expeditions now operating within the un-
known regions of the Antarctic circle, and from such other information as may be received from time to time, from other similar enterprises, a great deal of light, it is to be hoped, will be thrown on this extremely interesting and important subject, which will enable meteorologists to speak with greater certainty and authority than the present meagre data render possible.

To sum up, I think we are fairly justified in arriving at the following conclusions:

(1) That geographically considered, the great ruling factor of our Australian climate, and the causes that mainly operate in producing an unequally distributed and deficient rainfall, have their origin in the physical structure and configuration of the great land mass of the continent. (2) That our Australian climate and rainfall are influenced to some extent by the physical and meteorological conditions of the Antarctic regions. (3) That, in common with other parts of the earth's surface, there is probably a relationship existing between our terrestrial temperatures and solar disturbances. (4) That such probable relationship requires for its satisfactory study and elucidation, extremely long periods of observation extending over the entire world. (5) That the theory of weather cycles is probably applicable to Australia's climate and rainfall. (6) That water conservation is extremely important and desirable, and that storage reservoirs would be of immense advantage as a means of minimising the effects of prolonged periods of excessive dryness, and that with a view to such it is advisable to commence a systematic examination and survey by expert engineers of the channels of our important watercourses. (7) That the storage of large bodies of water might prove invaluable for irrigation purposes, so far as small holdings under tillage are concerned, but that for pastoral purposes irrigation in the interior regions of Australia is impracticable. (8) We might further enlist the services of the practical botanist for encouraging the propagation and growth of drought-resisting herbage.

APPENDIX.

Addendum on the duties which various writers on irrigation and practical irrigationists assign to irrigation water: the term "duty" meaning the volume of water requisite to mature a given crop under certain given conditions of soil and climate, conditions that are, of course, inconstant even in a single district.

For sugar crops in Hawaii it is generally agreed that the volume of each watering shall be at least three or four inches over the whole surface of the ground. It is also stated that 11,000 cubic feet equal 68,750 imperial gallons per acre, equivalent to 3.03 inches in depth, given every seven days for a period of sixty-five weeks per crop, will produce the best results, and another statement of the same authority
indicates that 10,800 cubic feet per acre to each watering of seven days' duration, which is equal to a depth of three inches in that time, answers well. To these statements let me add that the average depth of water applied per week at four plantations in Hawaii is 3.635 inches, the maximum weekly depth applied being 4.03 inches, the minimum 3.05 inches. I am also credibly informed by an expert in the matter of irrigation pumping plants, that in putting down such installations in Hawaii provision is usually made for applying a daily volume of between eight and nine millions of imperial gallons on every 1,000 acres of cane, equivalent to a depth of about one-third of an inch per day, or two and one-third inches per week, over the irrigated area. At Bingera, Queensland, the enterprising and deservedly successful owners of that plantation inform me that cane will suffer if left without artificial watering for more than eight days irrespective of rainfall, and that weekly they apply to plant cane about 45,000 gallons per acre; that is to say, in irrigating their cane they daily apply for seven consecutive days, every alternate week, about 1,028 cubic feet, or 6,430 gallons per acre, equivalent to a depth of about nine thirty-seconds of an inch of water over the whole surface of every acre irrigated.

Mr. Willcocks, in a very recent report he made to the Cape Government on the subject of irrigation in South Africa, says: "In America, ever quoted as a country where important irrigation works have been carried out by private enterprise, capital has been slow to undertake large and important works because of the difficulty of realising immediate returns for the investments, so if private enterprise cannot there succeed in irrigation works of magnitude, it surely will not succeed in any other country in the world"—and elsewhere in the same report he adds: "When the irrigation season is in winter a duty of 150 to 200 acres per cubic foot per second (a "second-foot") may be considered a maximum even with a rainfall of fifteen inches. This quantity of water is, however, insignificant for irrigating grass lands, although of the utmost value for watering stock and small areas."

* A second-foot is practically six and a-quarter gallons per second = 540,000 gallons in twenty-four hours.

The period during which the water should be applied is not given, but as the term "winter" is used by Mr. Willcocks it may mean six months per annum, or during an irrigation season the duration of which is uncertain. Molesworth in his Engineering formulae says: "A constant flow of one cubic foot per second will irrigate the following acreage: Rice, 30 to 40; Sugarcane, 100; ordinary winter crops, 150; six and eight months crops, 150. In Egypt winter crops require a four-inch watering every ten days; one cubic foot per second will irrigate about 240 acres."
Mr. H. M. Wilson, an expert writer on irrigation, gives the following figures as the average results of the duty of water in the United States of America:

<table>
<thead>
<tr>
<th>State</th>
<th>Acres per Second-foot.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FROM</td>
</tr>
<tr>
<td>Colorado</td>
<td>80</td>
</tr>
<tr>
<td>Utah</td>
<td>60</td>
</tr>
<tr>
<td>Montana</td>
<td>80</td>
</tr>
<tr>
<td>Wyoming</td>
<td>70</td>
</tr>
<tr>
<td>Idaho</td>
<td>60</td>
</tr>
<tr>
<td>New Mexico</td>
<td>60</td>
</tr>
<tr>
<td>Southern Arizona</td>
<td>100</td>
</tr>
<tr>
<td>San Joaquin Valley, Cal.</td>
<td>100</td>
</tr>
<tr>
<td>Southern California, Surface Irrigation</td>
<td>150</td>
</tr>
<tr>
<td>Total average</td>
<td></td>
</tr>
</tbody>
</table>

Other Authorities give the following values for the second-foot of water in the undermentioned countries:

<table>
<thead>
<tr>
<th>Country</th>
<th>Acres per Second-foot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>60 to 90</td>
</tr>
<tr>
<td>Spain, &quot;average&quot;</td>
<td>140</td>
</tr>
<tr>
<td>India</td>
<td>250</td>
</tr>
</tbody>
</table>

His Excellency Sir Herbert Chermside said: It is my privilege to ask you to pass a vote of thanks to your President (Sir Hugh Nelson) for the very intelligent, instructive, and interesting address to which we have listened. The subject he has chosen for his remarks is one which must be of the highest interest to all Australians, especially at the present time. Of course, it is to be hoped that the matter to which he has drawn our attention will be one of permanent and not ephemeral interest. His very lucid and able résumé on statistics of irrigation deals with two separate questions—the idea of irrigation for pastoral purposes which, in the world to-day is more or less, if not altogether, a new one, and agricultural irrigation, which is as old as history. In this continent, inhabited by one of the most energetic, if not the most energetic of races which the world has ever seen, it would not do to take as settled any of the problems of the old world. They must be worked out and tried under the new conditions, and by such experiments they must stand or fall. It appears to me in considering, quite hastily, the remarks we have heard, that they constitute an ex parte statement of such weight that it behoves us to apply thereto the most analytical criticism, and to seek to hear the other side of the question. Therefore I hope that the President's suggestions will call forth some able remarks as to what has been done and what
may be done with our known supplies of water and the means of storing them given us by our knowledge of modern mechanical appliances and natural and experimental sciences. It is impossible for anyone dealing with such a wide subject to give an answer off-hand of interest on these points. But let us consider that the cradle-lands of history—I mean those from which our religious come—were their successful agriculture almost entirely to irrigation. I refer to Egypt, India, Mesopotamia, the waters of which come from the Armenian Taurus, the wonderful plains of Chen Fu, along the Hoang-Ho, in China, where there have been irrigation works established, which support two millions of people, and which have been running now for 2,000 years. We look at them and see that the necessities for agriculture are soil, climate, sun, and water, nothing more, and so it would certainly not do to take a pessimistic view of our possibilities in Australia. One of the reasons why, wherever Anglo-Saxons settle, the water question is neglected is perhaps that we come thither from Northern lands, and are descended from peoples which emerged from the damp Northern forests where there is an abundance of humidity and verdure. We have never learnt to provide against periods of prolonged drought in a land where the rainfall is only a few inches per annum. And so our ideas of homestead cultivation are far different from what they would have been had we descended more directly from Asiatic or African races. Take the Peninsula of Hindostan, the dry plains of Persia, of Western Asia, Syria, and so on; wherever there is water flowing beneath the surface of the soil these eastern peoples have constructed irrigation works. There are long lines of subterranean wells in Central Asia, called "Karenas," so arranged as to avoid the water being exposed to the rays of the sun. Then we have that magnificent series of aqueducts for which the Romans were responsible, in Italy, Cilicia, Constantiopolie, etc., all embracing the same idea of bringing water to great centres of population, both for drinking and for agricultural purposes. To come to far more modern times, we have what has been done in the south-west of the United States. A great many here present know a good deal more about it than I do, so I need not refer to it in detail. The energy and persistence of the Anglo-Saxons have done a great deal there, in submountainous districts which were formerly only capable of pasturing a few wild animals. It is quite evident that if we look at those places where successful irrigation has been established, we note that high tablelands form the surroundings. Although these conditions do not obtain in Australia, the problem is far from being thrashed out—this is that having the soil, sun—and a certain amount of water which is not dependent upon the uncertainty of the seasons, we should make the best of that water. It has not been done hitherto. We welcome such a learned and exhaustive paper upon what is known about this great question, and it is with the greatest pleasure that I move a vote of thanks to Sir Hugh Nelson for his able address, and that the paper be printed on behalf of the society. (Applause.)

Mr. J. Cameron seconded the motion. He also thanked the President for the admirable and valuable paper which he had read. As one who had had a beneficial and bitter experience of the West country during the drought, he entirely endorsed the opinions Sir Hugh had expressed that irrigation could never be carried on in a sufficiently extensive manner with artesian water. He had inquired into the system adopted in America, and had found that a very small proportion of artesian water was used for irrigation purposes. Artesian water was used for surface conservation, and at first it succeeded, but when the soil became impregnated with the chemicals in the water everything in the shape of vegetation died.

The motion was carried, and Sir Hugh Nelson returned thanks.
PROCEEDINGS
OF THE
Royal Geographical Society of Australasia,
QUEENSLAND.

[Unless otherwise stated, all the meetings have been held at the Rooms of the Society, Brisbane.]

SEPTEMBER 16th, 1901.


The minutes of the previous Annual General Meeting were taken as read, and duly confirmed.

Messrs. John Bell, Edwin B. Kellaway, Arthur Midson, and W. J. Scott, were elected ordinary members of the Society.

Apologies for absence from the meeting were received from His Excellency the Lieut.-Governor and Mr. L. A. Bernays.

The Hon. Secretary (Mr. J. P. Thomson, Hon.F.R.S.G.S.), read a paper on "The Climate and Artesian Waters of Australia." (See page 1.)

After some interesting remarks by the Hon. A. C. Gregory, C.M.G., and the President, a vote of thanks to Mr. Thomson for his paper was moved, seconded and supported by Messrs. R. Mackie, T. H. Owens and R. Fraser, and carried by acclamation.

OCTOBER 30th, 1901.


The minutes of the previous Ordinary Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), and duly confirmed.

Messrs. R. Edwards, M.H.R., D. C. MacGroarty, Hon. Alex. Raff, M.L.C., and the Hon. A. Heron Wilson, M.L.C., were elected ordinary members of the Society.

Letters of apology for absence from the meeting were read from the Vice-President (Hon. Arthur Morgan, M.L.A.), and Ald. G. Fish.

A communication was received from the Société de Géographie Commerciale. Paris, congratulating the President and Council on the successful results of the Annual General Meeting of the 26th July last, and commending the action then taken to recognise the services of the Hon. Secretary by establishing the Thomson Foundation Gold Medal, which it was hoped would be open to the competition of foreigners as well as Britshers.

The Hon. Secretary stated that Senator the Hon. J. Ferguson, the Hon. T. Macdonald-Paterson, M.H.R., and Mr. R. Edwards, M.H.R., had been appointed to represent the Society at the ceremony of unveiling the Baron von
Mueller Grave Monument at Melbourne, by His Excellency the Governor-General.

The President said it was his melancholy duty to announce the death of a dear friend and a previous President of the Society, the late William Allan. He suggested sending a letter of condolence to Mr. Allan's widow.

A letter of condolence, as suggested, was adopted.

The President then read a paper on "The Geographical Conditions of Mount Coot-tha Reserve," by W. H. Traill. (See page 33).

The vote of thanks to the President was moved by Alderman R. Gailey, and carried unanimously.

**NOVEMBER 28th, 1901.**


The minutes of the previous Ordinary Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), and duly confirmed.

An apology for absence from the meeting was received from the Vice-President, Hon. Arthur Morgan, M.L.A.

The President referred to a letter he had that day received from Sir Clements R. Markham, President of the Royal Geographical Society in London, and which had reference to the voyage of the "Discovery" to the Antarctic regions. The letter, which Sir Hugh read to the meeting, was dated 22nd October, and was as follows:—The 'Discovery,' fully equipped for Antarctic exploration, sailed from England on 6th August. After touching at the Cape she will proceed direct to Lyttelton, as the most convenient point of departure, and thence to the scene of her labours, reaching the edge of the ice at the end of December. Queensland stands alone amongst the Australian colonies in having come forward to give help to this Imperial enterprise. Thanks to your good offices, I cannot let the period of the good ship's voyage out pass away without again expressing our warmest thanks to the sympathising colony, to its enlightened Government, and to yourself for the highly valued aid and sympathy we have received from Queensland,—Ever yours sincerely, Clements R. Markham." Sir Hugh explained that, owing to the efforts of the Queensland Society, the Government of this State had contributed £1,000 towards the expenses of the expedition, and subsequently the Society had been instrumental in inducing the Queensland Government to prevail upon the Governments of the other States to open their ports to vessels of the Antarctic Expedition for refitting, etc., free of port and other dues. The ships that were in commission for Antarctic discovery now were the "Discovery," under Commander Robert Scott, R.N., and the "Gauss," under Professor Erich von Drygalski, of Berlin, and early next year these would be followed by the Scottish National Expedition under Dr. Bruce. The "Discovery" is a strong wooden vessel, specially built for the voyage by a Dundee firm, from the designs of W. E. Smith, one of the naval constructors. She is 178 feet in length, 34 feet in width, and 20 feet in depth, with a displacement of 1,570 tons. She is barque-rigged, with auxiliary engines of 450 horse-power, and a coal capacity of 240 tons. Amidships is a magnetic observatory, within 30 feet of which all the fastenings are of brass, copper, or gun metal, so as to secure immunity from magnetic influence. The ship carries dogs for sledging purposes, and has been fully provisioned for three years. The outfit for the winter station and the supply of scientific instruments has received the direct attention of experts, so that in these respects the expedition was all that could be
desired. The ship is commanded by Captain Robert Scott, a young and energetic naval officer, who has five other officers under his command. The crew consists chiefly of bluejackets, with some Dundee whalers, the total complement, including the civilian scientific staff, being about forty-eight men, most of whom are under thirty years of age.

Several current scientific publications were submitted alluding in complimentary terms to the establishment of the Thomson Foundation Gold Medal.

The Hon. Secretary referred to the observations at his own private observatory of the beautiful comet, visible in the southern heavens in May last, and alluded to the satisfactory results of same. These showed that the comet was moving in a parabolic orbit, and would not return to the sun.

A paper by Mr. R. H. Mathews, on "The Thooga Language," was presented by the Hon. Secretary, and taken as read. (See page 49.)

Mr. Kendall Broadbent gave an interesting description of some Queensland insectivorous birds, his remarks being illustrated by some very beautiful specimens of stuffed birds representing the several species described. (See page 74.)

Messrs. Mathews and Broadbent were cordially thanked.

APRIL 24th, 1902.

The President, Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., in the chair; and he was supported by His Excellency Major-General Sir Herbert Chermside, G.C.M.G., C.B., Governor of Queensland, who was accompanied by his A.D.C., Captain Harman.

The minutes of the previous Ordinary Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), and duly confirmed.

Mr. E. J. T. Barton, Surgeon Walter Fisher, J.P., Messrs. John Joseph MacGinley, and Ernest H. Miller were elected ordinary members of the Society.

Mr. A. S. Kennedy moved that His Excellency the Governor be elected Patron of the Society.

The motion was carried by acclamation.

His Excellency, in responding, thanked the meeting, and alluded in complimentary terms to the honour conferred upon the Hon. Secretary by the parent organisation. He congratulated the Society on the good work done in the past, and said it would afford him great pleasure to accept the office of Patron.

The President stated that an official letter had been received by Mr. Thomson from the Royal Geographical Society, London, intimating that the Council of that body had awarded him the Cuthbert Peak Grant in recognition of his successful work to promote the interests of geography in Queensland. Sir Henry Norman had been asked to receive the award on Mr. Thomson's behalf and in the name of the Government of Queensland, of the Society, and of the recipient, to thank the parent organisation for the great honour conferred.

The President referred to the arrangements made for the Warwick meeting.

The Hon. Secretary read a copy of the address of welcome presented by the President, the Vice-President, and himself to His Excellency the Governor, at Government House, on the date of his arrival in Brisbane, as follows:

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.
Brisbane, 24th March, 1902.

To His Excellency Major-General Sir Herbert Chermside, G.C.M.G., C.B., etc.

Sir,—On behalf of the Council, Fellows, and Members of the Royal Geographical Society of Australasia, Queensland, we desire to express to you our
feelings of great pleasure at the safe arrival of yourself and Lady Chermside on the shores of Australia, and we are happy to extend to you, as the distinguished representative of His Majesty the King, a very warm welcome to Brisbane.

In expressing gratification at the appointment of so eminent an officer to the high position of Governor of Queensland, we venture to hope that, like your honoured predecessors in office, you will identify yourself with the active life of this Society, and thereby assist us to contribute to the advancement of Geographical Science, so largely developed during the Victorian age.

J. P. THOMSON.  
Hon. Secretary.

The following reply was also read:—

Government House, Brisbane.

Sir Hugh Nelson (President), Hon. Secretary, Councillors, Fellows, and Members of the Royal Geographical Society of Australasia in Queensland,—I desire to express to you the sincere thanks of my wife and myself for the kind message of welcome conveyed to us by the local representatives of a science in which we both take the greatest interest. The Geographical Society of Queensland, although of comparatively recent institution, has a well-earned reputation for its enlightened perception of the important field for exploration open to it in Queensland and New Guinea, for the energy and enterprise it has shown in giving effect to this perception, and for its successful efforts to ensure a worthy place being assigned to the study of geography in the Department of Education.

HERBERT CHERMSIDE,  
Major-General.

24-3-1902.

Letters of apology for absence from the meeting were read from His Excellency the Hon. G. R. Le Hunte, Lieutenant-Governor of British New Guinea, from H. R. Maguire, and J. Spiers. A communication from Major C. F. Plant, covering a donation to the Medal Fund, was also read.

Mr. A. S. Kennedy gave notice of his intention to move at the next Annual General Meeting of the Society that the following new paragraph be added to Clause 44 of the Constitution and Rules, namely:—"Provided that any of the rules may be suspended from time to time: but a motion shall not be put to suspend any rule or rules except by leave, which leave shall not be granted if six members dissent therefrom."

The President then read a paper by Mr. H. R. Maguire on "Impressions of a Year's Sojourn in British New Guinea." (See page 117.)

This gave rise to an interesting discussion, in which Dr. E. Hirschfeld, Messrs. L. A. Bernays, C.M.G., and Alderman W. Jones took part.

The vote of thanks to the author of the paper was moved by Alderman Jones, and carried unanimously.

On the motion of His Excellency the Governor, a vote of thanks to the President for reading the paper, in Mr. Maguire's absence, was carried by acclamation.

MAY 7th, 1902.

In accordance with previous decision of the Council to hold meetings of the Society in the provincial towns of the State from time to time, the first meeting of the kind was held at the Town Hall, Warwick, on the above date. By the kindness of the Railway Commissioner (Mr. J. F. Thallon, member), the members and their friends travelled from and to the Metropolis by special train, in charge of the Traffic Manager, Mr. R. Dunbar.
The President, Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., in the chair. He was supported by His Excellency the Governor, Patron (who formed one of the party of visiting members, and was accompanied by his A.D.C., Captain Harman), the Vice-President (Hon. A. Morgan, M.L.A.), the Hon. Secretary (Mr. J. P. Thomson, Hon.F.R.S.G.S.), Lieutenant-Colonel James Irving, M.R.C.V.S.L.), Messrs. Robert Fraser, R. M. Collins, and others.

The hall was filled with a most fashionable and appreciative audience.

The minutes of the previous monthly meeting were taken as read and confirmed.

Several apologies were read from members who were unable to attend the meeting.

Messrs. W. Lees, J. G. MacDonald, P.M., F.R.G.S., A. O. H. Phillips, M.D., and W. B. Shade were duly elected ordinary members of the Society.

The Hon. Arthur Morgan, M.L.A., read a paper on "The Discovery and Early Development of the Darling Downs," illustrated by a large wall map and portraits of A. Cunningham and Patrick Leslie. (See page 87.)

His Excellency the Governor and the Hon. John Murray addressed the meeting, complimenting Mr. Morgan on the interesting paper which he had read. (See page 114.)

The vote of thanks to the author of the paper was moved by Mr. R. M. Collins, and carried by acclamation.

In responding, Mr. Morgan proposed a cordial vote of thanks to the President for presiding. This was seconded by His Excellency the Governor, and carried nem. con.

In responding, the President alluded to the first white woman on the Darling Downs, claiming the honour for Lady Hodgson.

This was opposed by Mr. Morgan, who contended that such honour rightly belonged to Kate McIntosh.

June 18th, 1902.


The minutes of the previous Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon.F.R.S.G.S.), and confirmed.

The Hon. Secretary stated that the Council had conferred the honorary Diploma of Fellowship on General Sir Henry W. Norman, G.C.B., G.C.M.G., C.I.E., etc., a former patron, who had done so much to promote the interests of the Society.

On the motion of the Hon. Secretary, Sir Clements R. Markham, K.C.B F.R.S. (President Royal Geographical Society, London), was elected an Honorary Member, and Dr. Gerard Trower (Bishop of Likoma) an Honorary Corresponding Member of the Society.


A letter was read from the Town Clerk, Maryborough, cordially inviting the Society to hold the next country meeting there. The matter was left to the Council for further action. Letters were read from Field Marshal Sir Henry W. Norman and Lord Lamington conveying hearty congratulations to the Hon. Secretary on having been selected to receive the Peck Award from the Royal Geographical Society, London.
The President read a communication from the Rev. N. Hey, on a visit to the Archer River, from which the following is an extract:—

We hesitated at first to enter, in the dark, a river the course of which was unknown to us, but the low headlands on the northern and southern extremities of the Archer were on our approach soon lighted up and made conspicuous by a number of fires.

But in spite of these fires and the free use of the lead we got upon a narrow sandbank. Fortunately the tide was rising, and we had the wind by this time from the land, so we got off in a few minutes, and entered the river.

Having a strong south-easterly wind, as already stated (the exact course we had to sail), it took us about two hours to make two miles, tacking from point to point, when at last we anchored under the lee shore of what turned out the next morning to be an island in midstream.

As soon as we had entered the river several large bark canoes followed us, four and five natives in each, but, owing to our beating in, they could not get near us until we had cast anchor.

I should have mentioned before that during our few hours stay off Pera Head we picked up a native who understood a little English, having spent some time at the Weipa Mission Station, and who professed to know to some extent the dialect spoken by the natives near the Archer River.

The natives on reaching our vessel were desirous to board her, but we did not care to have their companionship just then, and I informed them through my interpreter, who proved a great help to me, that we would see them in the morning. After a somewhat lengthy palaver, the reason of our visit having been explained, and partly understood, they paddled quietly, but reluctantly on shore, no doubt having expected a rich harvest of some kind or another. I would gladly have given them some presents then, but thought it not wise to do so.

Although the natives had gone on shore, and everything was quiet, save the crackling of the camp fires on the beach, we did not feel very secure. None of us on board made any remarks to that effect, yet it was amusing to find in the morning that we all, I suppose, by a kind of instinct, had a weapon of some kind or another by our side, ready for use.

October 19, 1901.—As soon as it was sufficiently light we went on shore, except the captain, and visited the native camps. About 100 people, including women and children came under our notice. At first the women and children had all hidden themselves, probably by request of "their lords," but on my expressing a desire to see them, being well provided with presents (beads, toys, and biscuits), they soon made their appearance. The natives proved very friendly during our two days stay, and I only regretted not being able to give them more attention, so as to learn some of their habits and customs: my time being fully occupied sounding and exploring the land behind the fringe of mangroves that covered the banks of the river.

I was agreeably surprised to see so many children, between the age of six and twelve years, but felt disappointed to notice that there were so very few under that age, and hardly any babies. This fact shows that the rapid extinction of the whole aboriginal race is unavoidable, even in districts where civilisation has made very little advance. The natives on the Archer River are without clothing of any kind.

We proceeded up the river in a N.E. direction, and I landed at several points. About five miles up the river, I noticed open forest and higher banks coming down to the river, and only two miles inland there is a large fresh water lagoon with abundance of water, even at this time of the year. The timber on
SKETCH OF

ARCHER & WARD RIVERS

Position between latitude 13°14'.

SCALE 2 MILES TO AN INCH
Soundings in Fathoms reduced to low Water approximately.
MORGAN'S PAPER ON THE RING DWONS.

NOTE:—Cunningham's route shown thus:—
this country consists mainly of bloodwood and messmate. I marked a spot between the river bank and the lagoon, as a not unlikely place for a Mission Station.

I proceeded in the dingey still further up the river, taking soundings in various directions, as you will see marked on my sketch map. From three to four fathoms are carried in the channel of the Archer River, but wherever the river widens, as below and above the island in mid-stream, the water becomes very shallow towards the bank.

We returned with the falling tide to within one mile and a-half of the mouth of the Archer. Presently we sailed into a branch of the Archer, which I named "Ward" River, after our stout little vessel, and proceeding almost due north, we carried at first three and four fathoms, but after a few miles the Ward River becomes very shallow, and we could only press forward about four miles when we had to anchor just below a little island. I went again in the dingey, and proceeded another two miles and found ten feet of water for some distance, but the banks got higher, and the river we found considerably narrower. The bank on the left side for the first four or five miles is densely fringed with mangroves and generally low, whereas the right bank is pretty high with open forests almost to the edge of the water.

I have no doubt, judging from the position and course of the Ward River, that the creek marked on the map "Mekanga" Creek forms the head of that river. I may also state that from the information gained from the natives, I believe the Hey River to be the continuation of the Wattsons Creek; of course, this surmise may not after all prove correct.

The land between the coast and the Ward River, is, as a whole, very inferior, of a sandy character, and mostly open forest. There are patches however of good well-grassed soil along the creek, which contains a chain of waterholes, but limited in extent.

Considering all things, I came, after two days of hard work, to the conclusion that the point between the Northern extremity of the mouth of the Archer and the entrance of the Ward River, called "Oodana Point" (native name), would make a very suitable spot for the proposed Mission Station, as the missionary would then be in a position to control the recruiting of natives, which will no doubt follow in the wake of missionary efforts, but I leave the decision to wiser and more experienced heads than mine own.

It is a very curious fact that the Archer and Ward Rivers seem to have very poor tidal courses extending only a few miles: whilst the Embly, Mission, Batavia and Ducie Rivers have tidal courses extending inland, and being navigable for from twenty-five to thirty miles.

As a farewell gift, I presented our newly-made black friends, with, a bag of flour and some biscuits, and on October 21, before daybreak, we set sails again on our homeward journey.

Under a very gentle S.E. wind, we were enabled to take soundings as we left the Archer River, and so ascertain the proper channel, which is rather shallow, varying from nine to fifteen feet at low water.

As delegate to the Hobart meeting of the Australasian Association for the Advancement of Science, Mr. J. A. Sorell read the following report:

The success of the 1902 meeting of the Australasian Association for the Advancement of Science was due in no small measure to the liberal assistance of the Tasmanian Government, and the excellent arrangements at Hobart for the accommodation of members. Dispersal of the sections into separate buildings was, of course, inevitable; but as there was only a dividing street between them, very little inconvenience was experienced in this respect. The use of the Town Hall and
Museum was generously permitted by the local governing bodies, and as generously acquiesced in by the public—the Museum for the convenience of the Association being practically closed to visitors for a whole week. Plans of the lecture rooms were furnished to members, and programmes for each day's work, as well as a general programme for the whole sitting, which was as closely adhered to as possible.

Captain Hutton's presidential address was interesting and able. Too thoughtful to follow on the reading, it was published in full in the "Hobart Mercury": a copy of which I have had the honour to hand to our Secretary. The lecturer was introduced by Sir Arthur Havelock, Governor of Tasmania. The officers elected were as follow:—President, Captain F. W. Hutton, F.R.S., F.G.S., Director of the Canterbury Museum. Christchurch, New Zealand; General Treasurer, H. C. Russell, C.M.G., F.R.S., B.A., F.R.A.S.; Permanent Hon. Sec., Professor A. Liversidge, M.A., L.L.D., F.R.S.; Local Treasurer, Robert Mackenzie Johnston, F.S.S.; General Secretary for Tasmania, Alexander Moreton, Editor of Official Journal; E. F. J. Love, M.A., F.R.A.S.

The Sectional Committees met daily at 10 a.m., and the sections at 10.30 to read and discuss papers. Much good work, some of Geographical interest, was done in the various sections, and will be published in due course in the Journal of the Association. But although the papers read in the other sections were often of a high scientific standard, it cannot be said that the work done in the Geographical section was in correspondence with the high position which Geography should occupy in Australasia. On the other hand, it is to be remembered that there have been in the past certain defects in the management of the Association, the remembrance of which may still deter members from sending in their best work.

The officers of the Section were:—President, Rev. George Brown, D.D. (Sydney); Vice-Presidents, F. J. Young, B.A., E. A. Coulson, F.R.G.S., J. R. McClymont, M.A., Rev. J. B. Woolnough, M.A., A. D. Watchorn, C. M. Tennyson; Secretary, J. W. Beattie; Committee, A. W. Howitt, Rev. J. J. Prescott, W. H. Tietjens, W. N. Kermott, — Maurice.

The President delivered his address, "The Pacific, East and West," in the Town Hall on Friday evening, January 10, profusely illustrating his subject with well-selected lantern views. The lecturer spoke from an experience of forty years, of New Guinea, Samoa, Fiji, New Britain, and Santa Cruz. Most of the islands showed distinct signs of upheaval; and he testified in particular to the appearance of an island in Blanche Bay, where twenty years previously he had sailed his boat. Here in this comparatively short period rich soil had been formed, supporting a heavy undergrowth and trees from fifteen to twenty feet high. On the other hand some of the islands showed unmistakable signs of a period of slow subsidence. Dr. Brown next described the manners and customs of the islanders, the industrial pursuits, and their tribal relationships—the different groups having descended from one common stock, of which the Papuan is the oldest representative.

Amongst the pictures shown was one of a mysterious pile of three great pieces of limestone, suggesting a gateway—possibly the entrance of former kings—with a cross-stone resting on, and mortised at either end to, two tall uprights. This is in the interior of Tonga; and the stones, each weighing from thirty to forty tons, have been transported thither from the coast by the natives.

Speaking of the Solomon Islands, the lecturer declared there is "no fairer group on God's earth." And he eulogised the Samoan as the "most courteous gentleman in the world."

On the 13th, the Committees of the Geographical, Ethnological, and Anthropological Sections held a joint meeting at 10 a.m., to receive the report of the sub-
committee appointed to consider the question of adopting an uniform system of spelling native names, to which reference will be made later on. At 10.30, a paper by Mr. J. R. McClymont, M.A., on "Diego Alvarez, or Gough Island," was read by the President. This island is marked on the Carta Universal of Diego Riberia, dated 1529. Joachim Lelewel reads the inscription attached to it, "Y de go Aluaro," or Isle De Diego Alvare. The Dutch cartographers—Mercator, Ortelius, and others—name it Gonsalo Alvare. History seems to record nothing of Diego Alvare, nor of its first discovery; but in the Geographical History of Africa of Leo Africanus, translated by John Pory, in 1600, and re-published by the Hakluyt Society with notes by Dr. Brown, in 1896, it is stated this was the first island discovered by the Portuguese in their voyages to India. The date of the discovery, therefore, lies between 1497 and 1501. The discovery of the island may have been magnified, for in a map in the Cosmographia of Hieronymo Girado (Milan, 1556), drawn after Kaspar Vopel, 1511-1561, an inscription runs near the lower margin, and within the outlines of an exterior tract of land as follows:—

Tierra meridional descubierta el ano de 1499; pero no se sabe onde? ponerra? o que sea (Southern land discovered in the year 1499, but one does not know where to place it or what it is). The words followed by interrogation marks are not easily deciphered, and may be only approximately correct. The nearest land to this island is the Tristan D'Acrehia group, distant about 250 nautical miles N.N.W. The Cape of Good Hope is 1,730 miles from it E.N.E. The approximate Geographical position of the island is 40 deg. 19 min. S. lat., and long. 9 deg. 41 min. west.

Colonel Legge, Commandant of the Tasmanian forces, then gave an address, illustrated by sketches, "On some curious mirage effects on the East Coast of Tasmania, near Falmouth, on the 2nd of November last." The weather was clear, with a bright blue sky, and the wind N.N.E.; but on the long coast-line there was a bluish haze above the horizon. The mirage, as sketched, bore the appearance of huge tables of basalt, with basaltic columns rising out of the sea beside them. The phenomenon occurred about 11 o'clock, and lasted till nearly noon.

In the discussion which followed, one of the speakers testified to having seen mirages of vessels, off the coast of Geelong, which were clearly pictured in the sky, in an inverted position for quite twenty minutes; and the President referred to similar phenomena in the Samoan Islands, where a careful observer, on nine different occasions, had accurately determined the positions of approaching vessels about twenty-four hours before their arrival in port.

Professor Kerrou, in reply to a question, explained the causes of mirage effects, and told of an amusing experience which occurred to himself and party while travelling through some forest land in Victoria.

This was the only discussion in which ladies attending the section took any part.

On Thursday, the 16th, the following recommendation was made by Section E—spelling of native names of places; committee to collect lists of names and recommendations as to spelling. In Victoria, Dr. Fison and Professor B. Spencer: New South Wales, Dr. Brown and Rev. J. J. Prescott; South Australia, Mr. Maurice and Mr. Gillen; Tasmania, Mr. Alex. Morton and Mr. R. M. Johnston; Queensland, Dr. Roth and Mr. J. F. Bailey; New Zealand, Captain Hutson, Mr. Percy Smith, Mr. E. Tregear, and Mr. A. Hamilton; West Australia, Mr. Alex. Morton and Mr Princeps, with power to add to their number. This recommendation was agreed to.

After appointment of officers for 1901 the President declared the session
closed. Much good work had been done, and he thought the volume to be issued of the papers and proceedings should prove most interesting.

JOHN A. SORELL,
Delegate Royal Geographical Society.

The votes of thanks to the authors of the communications were proposed by Mr. A. S. Kennedy and the Hon. Secretary, and carried unanimously.

ANNUAL GENERAL MEETING AND CONVERSAZIONE.

JULY 26th, 1902.


This meeting was held at the new rooms of the Society, Public Library Building, William Street, Brisbane, there being a very large number of Fellows, members, and friends present, including many ladies, all of whom quite filled the spacious hall. His Excellency the Governor (Patron), who was accompanied by Captain Webb, occupied a seat on the dais, with the President and Hon. Secretary.

The minutes of the previous Ordinary Monthly Meeting were read by the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), and duly confirmed.

Apologies for absence from the meeting were received from the Chief Justice (Right Hon. Sir S. W. Griffith, G.C.M.G., etc.), the Hon. Thos. B. Cribb, M.L.A., Mr. Robert Fraser, and Mr. Alex. Muir.

Alderman L. G. Corrie (Mayor), Messrs. George Phillips, C.E., Alex. C. Raff, C.E., and James Stoddart, M.L.A., were elected ordinary members of the Society.

The Hon. Treasurer (Mr. D. S. Thistlethwayte, C.E.) read the financial statement covering the preceding year, and moved that it be adopted.

The motion was seconded by Lieutenant-Colonel Irving, and carried.

The Hon. Secretary then read the following Report of the Council:

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND.

REPORT OF COUNCIL.

Seventeenth Session. 1901-1902.

In submitting this report of the proceedings of the Seventeenth Session of the Royal Geographical Society of Australasia, Queensland, the Council, whilst expressing pleasure at the satisfactory manner in which the operations of the Society continue to develop, desires to place upon record an expression of profound regret at the loss sustained by the unexpected death of the Hon. William Allan, a past President, an Hon. Councillor and Referee, one of the early members, a staunch friend, and a highly esteemed colonist. Also by the untimely demise of Capt. T. M. Almond, a former officer of the Council, and one whose membership dated back for many years. These periodical thinnings in the ranks of original associates occasion feelings of sadness, and call forth expressions of deep sorrow and regret.
The arrival of the Governor, Major-General Sir Herbert Chermside, G.C.M.G., C.B., who has succeeded Lord Lamington as patron, was made the occasion of a presentation in the form of an address of welcome to His Excellency from the Council, fellows, and members.

Taken in the usual order of sequence, the work of the Session may be summarised in the following manner:—(1) Meetings.—The ordinary monthly meetings have been exceptionally well attended and were of much general interest and importance—the papers, with the discussions that followed, being very meritorious indeed, whilst the subjects treated were clearly and ably elucidated. Following up a previous decision, embodying the generally expressed wish of members, the first country meeting was held at Warwick in the beginning of May, when our Vice-President, the Hon. Arthur Morgan, M.L.A., read an exceedingly interesting historical paper on "The Discovery of the Darling Downs." The meeting, which was one of the largest in the history of the Society, was highly successful and gave the greatest encouragement to try the experiment in other country towns from time to time. We were fortunate in arranging with the Railway Commissioner for special train facilities between the metropolis and Warwick, and His Excellency the Governor (patron of the Society) took advantage of the occasion to make one of the party of members who attended the meeting. (2) Membership.—Our Roll has received an accession of 28 ordinary members who have joined the Society during the Session, including two ladies. These members are geographically distributed over widely separated parts of the State, one being a resident of New South Wales. In addition to these, Sir Clements R. Markham, K.C.B., F.R.S., was elected an Honorary Member, and Dr. Gerard Trower, D.D., an Honorary Corresponding Member. The former, who for some 25 years occupied the important and responsible position of Hon. Secretary to the Royal Geographical Society, London, and is now the widely esteemed President of that great body, is one of the leading geographers of the Empire, and has rendered eminent service in promoting the cause of geographical science and education. The latter is Bishop of Likoma, Central Africa, and is situated in one of the most interesting regions of that vast continent. As a slight mark of appreciation of his long and continued efforts to promote the best interests of the Society, and contribute to its welfare and advancement in every possible way, the Honorary Diploma of Fellowship was conferred upon Field-Marshal Sir Henry W. Norman, G.C.B., G.C.M.G., etc., by the unanimous vote of the Council. It is well-known that as Governor of Queensland, Sir Henry identified himself very closely with the active life of the Society, and ever since his departure from amongst us he has evinced the deepest interest in its progress. Whilst a substantial addition to membership cannot do otherwise than afford extreme gratification and pleasure to
the officers and Council, it is felt that the numerical strength of the Society could be greatly increased if members would take some little trouble to make the nature of our important work and the privileges of association more widely and generally known amongst friends and acquaintances. (3) Funds.—Our Hon. Treasurer—whose statement is here-with submitted—reports that the financial affairs of the Society are in a satisfactory condition, notwithstanding the exceptionally heavy expenditure which the Session's transactions have involved. Detailed particulars of the Medal Fund—which is kept as a distinctly separate trust account, as provided by the rules—are again hereto appended. An addition of something like £100 is still required to make the fund self-supporting, so that the Medal may be awarded annually as originally intended, and this amount, it is hoped, will soon be subscribed by the fellows, members, and friends of the Society, to whom an appeal is again made, with renewed confidence of success. (4) The Library continues to grow in a steady and uninterrupted manner, the weekly accessions from all parts of the world being both numerous and valuable. The increased facilities now afforded by the new quarters for exhibiting our many maps, atlases, and books will, it is hoped, give to all concerned, a better opportunity of making more frequent use of the superior privileges which membership affords and tend to make the objects and work of the Society more thoroughly known and better understood. (5) The 16th volume of the "Queensland Geographical Journal," containing the work of our last Session, was issued in good time to members and Exchange Institutions with which we correspond in all civilised parts of the globe. The numerous and increasing applications for back and current numbers which we receive from time to time, afford satisfactory evidence of the value of our publications, and the wide interest evinced in the geographical work of this State, which must be a source of gratification to the Society, as well as to all others who have the intellectual and public life of Queensland at heart. (6) The following papers were read before the Society during the Session under review:—The Anniversary Address by the President, Rt. Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.; "The Climate and Artesian Waters of Australia," by J. P. Thomson, Hon. F.R.S.G.S., etc.; "Mount Coot-tha Reserve," by W. H. Traill; "The Thoorga Language," by R. H. Mathews, L.S., etc.; "Queensland Insectivorous Birds," by Kendal Broadbent; "Impressions of a Year's Sojourn in British New Guinea," by H. R. Maguire, L.S.; "The Discovery and Early Development of the Darling Downs," by the Hon. Arthur Morgan, M.L.A., Vice-President; "A Trip to the Archer River," by the Rev. N. Hey; report on the Hobart Meeting of the Australasian Association, by J. A. Sorell, delegate. (7) Competitive Essays.—In accordance with the conditions governing the award of the Thomson Foundation Gold Medal of the Society,
competitive papers were invited on the Commercial Geography of Australia. In response to our invitation, four communications were received; one from Samoa, one from Victoria, one from New South Wales, and a local one. These were subjected to a most careful and thorough examination, but after lengthy deliberation, it was found that none of the essays met the necessary requirement, and, in consequence, no award of the Medal will be made for either. This is regretted, but in consideration of the importance of the subject, it was decided to repeat it next year, and to limit the length of the competition to about 32 pages of our "Journal." Royal 8vo. This, it is hoped, will give intending competitors sufficient scope to treat the subject in a satisfactory manner, and competition is cordially invited from members and non-members alike, whether residing in Australasia or elsewhere.

In accordance with due notice of motion it is recommended that the following new paragraph be added to Clause 44 of the Constitution and Rules of the Society:—Provided that any of the Rules may be suspended from time to time; but a motion shall not be put to suspend any rule or rules, except by leave, which leave shall not be granted if six members dissent therefrom.

The Council has the honour of again recommending:—(1) The suspension for the ensuing Session of so much of the Rules as provides for the payment of an entrance fee. (2) The reappointment of the Hon. A. C. Gregory, C.M.G., F.R.G.S., Messrs. C. W. de Vis, M.A., and Alex. Muir, J.P., as Hon. Councillors and Referees.

Whilst cordially thanking all who have helped in the sessional work, or who have in any other way assisted the Society, the Council desires to make special acknowledgment of the services rendered during the unavoidable absence of the Hon. Treasurer, by Mr. L. H. Hutchinson, who performed honorary duty in an intelligent, energetic and satisfactory manner.

For the Council,

J. P. THOMSON,
Hon. Sec.

Brisbane, July 15, 1902.

His Excellency the Governor said that on his way here he was asked to move the adoption of the report. He had already expressed his regret that the intended arrival of the Acting Governor-General would prevent his presence there that night. In these circumstances his moving the adoption of the report would be a purely formal one. There was no subject the study and appreciation of which better merited the attention or was more important to citizens of such an Empire as that to which they had the honour to belong, than geography, both historical and commercial, but it was one upon which all present could not fail to have an abundance of ideas. He would not presume to address any audience, least of all such a one as that, without making some mental digest of what he was going to say.
He would on any future occasion, be proud to address to them a few remarks on geographical science. He then formally moved the adoption of the report.

Mr. A. S. Kennedy, in seconding the motion, said that the report disclosed evidence of enterprise, vitality, and progress, that could not fail to make itself acceptable to all who had the welfare of the Society at heart.

The motion was carried.

The President delivered the Anniversary Address on the "Geographical Conditions of our Environment." (See page 144.)

The vote of thanks to the President for his interesting address was moved by His Excellency the Governor, seconded by Mr. John Cameron, M.L.A., and carried by acclamation.

The President responded.

Alderman R. Gailey moved,—"That so much of the rules be suspended as will admit of the re-election of the President."

The motion was seconded by Lieutenant-Colonel Irving, and carried unanimously.

The following officers and Council were then elected for the ensuing session, 1902-03:—

President: Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., etc.
Vice- President: Hon. Arthur Morgan, M.L.A.
Hon. Treasurer: D. S. Thistlethwayte, C.E.
Hon. Secretary: J. P. Thomson, Hon.F.R.S.G.S., etc.

OTHER MEMBERS OF COUNCIL—


The vote of thanks to the retiring members of the Council was moved by Alderman George Fish, seconded by Mr. J. D. Quaid, and carried nem. con.

The President announced that on Friday next the Society would celebrate the 83rd birthday of the Hon. A. C. Gregory, M.L.C., by a trip in the "Lucinda" during the day and a social at the rooms in the evening.

The meeting then adjourned for light refreshments kindly provided by Mrs. J. P. Thomson, with the assistance of Mrs. T. H. Owens and Miss Nicholson.

LIST OF CONTRIBUTIONS

To the Thomson Foundation Medal Fund of the Royal Geographical Society of Australasia, Queensland. (In the order in which they were received, and as referred to on page 170.)

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HUGH M. NELSON,
Trustee of the Medal Fund.

Brisbane, 15/7/02.
## BALANCE SHEET, 1901-1902.

THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

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<th>Dr.</th>
<th>£  s.  d.</th>
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<td>By Balance brought forward, Royal Bank</td>
<td>189 6 3</td>
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<td>&quot; &quot; Government Savings Bank</td>
<td>46 1 11</td>
<td>Printing, Stationery, Postage, etc.</td>
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<td>&quot; Annual Subscriptions</td>
<td>169 10 9</td>
<td>Advertising, Reporting, &amp;c.</td>
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<td>&quot; Government Grant</td>
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<td>Pharmacy Board of Queensland, Joint</td>
<td>120 8 0</td>
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<td>&quot; Interest on Government Savings Bank Account</td>
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<td>Expenses in Rooms</td>
<td>35 14 8</td>
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<td>Exchanges on Cheques, etc.</td>
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<td>Bank Charges for keeping account</td>
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Examined with Bank Pass Books, Vouchers, etc., and found correct.

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D. S. THISTLETHWAYTE, Hon. Treasurer.

Brisbane, July 15th, 1902.
The Royal Geographical Society of Australasia, Queensland.

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ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA.
QUEENSLAND.

CONDITIONS OF COMPETITION FOR THE THOMSON FOUNDATION
GOLD MEDAL.

The Thomson Foundation Gold Medal of this Society will be awarded to the Author of the Best Original Paper (provided it be of sufficient merit) on each of the following subjects:

To be sent in not later than 1st July, 1903.

1.—The Commercial Development, Expansion, and Potentialities of Australia—or, briefly put, The Commerce of Australia.

Note.—[This subject belongs to the department of Commercial Geography and should be treated in such a manner as to indicate very clearly and fully the present commercial life of the Continent, its development under constitutional Government and future possibilities].

To be sent in not later than 1st July, 1904.

2.—The Pastoral Industry of Australia, past, present and probable future.

To be sent in not later than 1st July, 1905.

3.—The Geographical Distribution of Australian Minerals.

To be sent in not later than 1st July, 1906.

4.—The Agricultural Industry of Australia.

The competition is open to Members and Non-members of the Society alike, whether residing in Australasia or elsewhere, but not to any Officer of the Society or Member of the Council for the time being. No award of the Medal will be made for a mere compilation, no matter how meritorious.

All competitive communications for the Medal should be written on one side of the paper only, with marginal space on the left hand side thereof, and limited to, say, about 32 pages of the "Queensland Geographical Journal," Royal 8vo. Instead of the writer's name each paper must be identified by a motto. A sealed envelope with such motto written outside, and the writer's name and address inside, should accompany each paper.

The successful papers will be printed and published in the Journal of the Society, fifty reprint copies of each being supplied to the author, free.

All communications, with illustrations for which the Medal may be awarded, must be written in the English language, and will become the property of the Society absolutely.

Papers may be illustrated by such maps, diagrams and pictures as are considered by the authors thereof to be necessary and useful.

Additional subjects for future papers will be announced from time to time.

All communications should be addressed to the Hon. Secretary of the Society, Brisbane

HUGH M. NELSON, President
J. P. THOMSON, Hon. Secretary.
QUEENSLAND GEOGRAPHICAL JOURNAL

(NEW SERIES).

INCLUDING THE PROCEEDINGS OF THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

18th SESSION,
1902-1903.

J. P. THOMSON, LL.D., Hon.F.R.S.G.S., Etc., Etc., Honorary Editor.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. XVIII.

PUBLISHED AT BRISBANE BY THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

NOTE.—All communications should be addressed to the Hon. Secretary, at the Rooms of the Society, Brisbane.
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Every person desirous of bequeathing to the Society any money is requested to make use of the following

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the sum of .................................................................

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for the benefit of the said Royal Geographical Society of Australasia, Queensland, to be expended as the Council of the said Society may deem expedient for the promotion of Geographical Science or the purpose of exploration in Australasia.

N.B.—All Donations presented to the Royal Geographical Society of Australasia, Queensland, are acknowledged by letter and in the Journal of Proceedings.

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Rt. Hon. Sir HUGH M. NELSON, K.C.M.G., D.C.L.,

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QUEENSLAND.
Queensland
Geographical Journal.

No. 4. New Series. 1903. Vol. XVIII.

THE PHYSICAL GEOGRAPHY OF AUSTRALIA.

V.

GEOLOGY. *

By J. P. THOMSON, Hon.F.R.S.G.S., etc., etc.

The Geology of Australia has already been so frequently alluded to in some of the preceding sections dealing with the physical structure that very little more remains to be said. It is in reality so closely related to the physical structure of the continent that both subjects ought to be considered together. This, indeed, is what I would very much prefer to have done, but that custom has established many hard and fast rules of procedure which it is not always prudent to ignore. Geographers would probably say: "Quite proper that both subjects should be discussed together." Then the irate Geologist would very likely rise up and indignantly exclaim: "I protest against this mode of procedure altogether, the long established rights of my science must be respected." Then would ensue a discussion on the already debated subject of "The Border Land between Geology and Geography." Although it would perhaps be mutually advantageous were this to actually occur again, it seems to me that no hard and fast Border Land ought to be recognised between two great departments of human knowledge so much dependent upon one another. For the same reason, I am decidedly of opinion that between the Geologist and the Geographer there ought to exist an indissoluble bond of union. This, indeed, was the view which forced itself upon me some few years ago when reading the account of a joint meeting of the Geological and Geographical sec-

tions of the British Association for the express purpose of discussing the subject to which I have alluded. But that is another matter altogether. The fact remains that we are chiefly indebted to Australian geographers and their distinguished coadjutors, both past and present, especially to our eminent scientific explorer, the Hon. A. C. Gregory, for our geological knowledge of the Australian continent. Most of the known mineral areas have been examined, the extensive cretaceous beds of the great central depression partially delineated, the numerous drifts and fossiliferous deposits located, and other important features of the rock structures investigated, so far as to enable us to read with tolerable accuracy the geological history of the country.

Australia, as a whole, is probably one of the oldest of all the land masses on the face of the globe. Even in the far back and vastly remote ages of antiquity, when numerous isolated nuclei of future land areas were formed, the evolution of Australia was greatly in advance of that of many other continents. There seems no reason whatever to doubt that most of the continent belongs to an age anterior to that of the greater part of Siberia, Europe, Asia and Africa, and of the West Coast of America. The extensive areas occupied by plutonic and metamorphic rocks along the great border rim of the territory, and the occurrence of the oldest fossiliferous deposits, over-lying these rocks in many places, furnish weighty evidence of a far back history.

The whole of the eastern side and a portion of the south side of the continent are occupied by mountain ranges and valleys, representing the anticlinal and synclinal folds of the earth's crust. The average height of these dominant areas of elevation is about 2,000 feet above sea level. The north side is slightly less elevated, and the western one consisting of an immense plateau, seldom exceeds 1,500 feet above the sea. The geological structure of these regions, although, geographically, widely separated, does not vary in any material respect, consisting chiefly as it does, of a series of ancient stratified rocks of Palæozoic age, the older members of which are more or less metamorphosed. There also occur within these areas granite and syenite rocks of plutonic and of metamorphic origin, as well as bedded and intrusive basic igneous ones, of various ages. The fossiliferous formations associated with these ancient rocks are Palæozoic, Mesozoic, Tertiary, Post-Tertiary, and Recent. The beds in which the fossils occur are very extensive, and bear local designations by which they are distinguished. The granite rocks are very largely developed, and may, in point of fact, be regarded as the very foundation of the areas under consideration. On the eastern side of the continent the sub-aerial weathering of the rocks is fully apparent, but nowhere has the process of denudation been more active than along the north-eastern coastal region adjacent to the Great Barrier Reef, where the former tableland
character of the country has been materially modified. Metaphorically it may be fairly stated that the central portion of the continent is almost completely surrounded by a chain of gold with pendants composed of precious gems, and all other valuable metals, for which Australia is famous. These occur in the granites and other ancient rocks throughout the entire regions under review. There are, besides these older minerals, very extensive coal beds in basins over-lying the older rocks unconformably. The coal measures, which belong to the primary and secondary periods, are largely developed in New South Wales, Victoria, and Queensland. The Desert Sandstone, or upper cretaceous formation that overlies the coal beds, must at one time have covered a very great portion of the continent. Being of exceedingly soft texture, it has undergone extensive denudation, and now frequently occurs in the form of isolated tablelands, covered by a scanty vegetation, of a type locally known as spinifex grass (*Triodia irrites*), and poorly-nourished timber trees. The opals which occur in this formation, embedded in the Desert Sandstone, are distributed over the inland slopes of the eastern division of the country. They are found in great abundance south of the town of Winton (Queensland), in the Opal Range, and on the tableland separating the waters of the Diamantina and Mayne streams.

This Tertiary formation of sandstone is one of the geological puzzles of the continent, its origin being even now obscure. The late Father J. E. Tenison Woods was of opinion that it is a recent eolian or fluvial-tile deposit, but there are others who regard it in the light of an inland sea formation. It is considered probable that a very large body of water occupied the whole central regions of the continent in past ages, when Australia itself extended far beyond its present limits. The mountain ranges were then generally elevated above their existing level, and altogether the physical conditions were of a different and more striking character than at present. The detritus from the adjacent mountains was deposited in the bed of the impounded waters, which finally disappeared, leaving behind the material of which the Desert Sandstone is composed. This, in brief, is the inland-sea-formation theory (recently suggested by Dr. A. R. Wallace), which, in some respects, agrees with my own view of the subject.*

In the interior there occur several lateral and isolated ranges which do not seem to have any definable connection whatever with the mountain systems outside themselves, although composed of the same class of granite and palaeozoic rocks that constitute the structural parts of the

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* In further elucidation of the subject, it may be noted that the desert sandstones are always on aqueous deposits of shales and clays, and though in some parts there are indications of wind drifts of sand the formation is always capped by a deposit of ferruginous aqueous rocks.
adjacent elevations of the great eastern chain and south-eastern Alpine cluster. They are very probably the product of some great local eruptive or convulsive movement of the earth's crust.

In point of age, the geological structure of the south side of the continent, occupied by the Great Australian Bight, differs materially from that to which I have alluded. Here we have an uninterrupted sequence of Tertiary deposits, extending for probably 300 or 400 miles inland, their exact limits being unknown. Along the margin of the Bight, the fossiliferous miocene limestone beds expose themselves in the form of precipitous cliffs from 300 to 600 feet in height.

The immense central basin of the continent is occupied by an interesting series of cretaceous beds, in which fossils are abundant. The Lower Cretaceous beds, about which I have already said so much a little further back in the series, consist of soft stratified rocks upon which the Desert Sandstone rests unconformably. They are associated with a formation of soft, grey, friable sandstone grits and conglomerates, covered in places by the Upper Cretaceous bed. This highly porous rock—Blythesdale Braystone—crops out over an area estimated to be about 5,000 square miles.

The Tertiary strata are distributed in the form of a series of Drifts, ranging in age from the oldest to the most recent. These are rich in organic impressions, the fossil remains of animal and vegetable life that occur in them over a very wide range of territory indicating that the country has sustained a most vigorous fauna and flora for untold ages. In one of the preceding chapters upon the Geographical evolution of the continent, this pre-historic or Post-Tertiary fauna was briefly referred to. The subject is one of absorbing interest, for the evidence afforded by the numerous fossil remains that have been found from time to time embedded in the Post-Pliocene drifts enables us to form a mental picture of some of the remarkable animals that have inhabited the country at a fairly remote period, and to realise, to some extent at least, the conditions of life under which they existed. To those familiar with the existing marsupial life of Australia, this conception will not be impossible. In point of size, the extinct animals of this continent resembled the leading types that now inhabit the jungles of Africa and India. The Diprotodon, for instance, was a most remarkable and imposing beast—a massive herbivorous animal measuring some 10 feet in length and 6 feet in height. Its food consisted of the long and rank vegetation of the period, that flourished in the swamps and marshes and on the lake margins. That these lacustrine conditions actually existed in the inland regions of the continent has been very clearly shown by the numerous fossil remains of the Molluscan Fauna found entombed within the Post-Pliocene drifts. In relative proportions the Diprotodon would very much resemble the present African
elephant, and we may picture this giant animal moving, naturally slowly, over the vast feeding grounds of the interior, undisturbed by the intruding footsteps of man. Associated with this great vegetable feeder, was the marsupial lion (Thylacoleo carnifer)—a large carnivorous beast equal in size to the present African species, but whether resembling that noble animal in natural instincts is not known. The gigantic kangaroo (Macropus Titan) was another contemporary type of the period, and, like the present species, it was a jumper of remarkable size standing about 14 feet in height, and probably weighing a ton. The ancient wombat was likewise an animal of enormous proportions, about the size of a tapir, but differing very little in general character from the living species. Another remarkable member of the mammalian group existed in the Nototherium, a massive herbivorous creature measuring some 8 feet in length, and 5 in height. The alligator attained to the enormous length of over 30 feet, and was probably no less remarkable for its size than for its dangerous methods of attack.

The extinct Moa was one of the gigantic types of the not very numerous family of wingless birds that still inhabit the country. It averaged from 10 to 13 feet in height, and was identical with the New Zealand species. Besides all these, there occurred many truly remarkable reptiles of imposing size, including an immense lizard of some 20 feet in length. In no period of the Geological history of the continent has there existed a terrestrial fauna so distinctive in character and restricted in geographical distribution as that which dominated the interior regions of Australia during "Nototherium" times.*

Though partaking more of the geographical than of the geological character, the numerous clay-panns that occur all over the central portion of the continent are of special interest. They have been often referred to from the earliest days of inland exploration up to the present time, and their utility for impounding or conserving moderate quantities of surface rain water has been frequently acknowledged by many thirsty travellers. We are, however, chiefly indebted to Professor R. Tait and Mr. J. A. Watt, for the very latest information concerning these interesting surface features. These gentlemen, who were associated with the scientific staff of the Horn Expedition to central Australia in 1894, have given a good deal of attention to the physical and geological structure of that part of the country.

Clay-panns are small areas of very slight depression, generally from 2 to 5 feet below the surface of the ground, and they vary in size from

* It may be of some interest to mention that the special Australian Fauna did not exist until after the great outbursts of the basalts of the Darling Downs, as the remains of the extinct animals are found embedded in the drift resting on the basalt, in ravines which must have taken a long period to erode.
a mere speck up to half or three-quarters of a mile in diameter. They are only met with in flat country where adequate natural drainage is absent; here the surface rain water is drained into the natural depressions, and when completely dried up by evaporation a deposit of fine clay sediment is left behind. Thus the bed of the clay-pan becomes imperious, and water will often remain in it for some little time, probably from one to four months.

Another typical feature of the arid region of the interior is the sand-drift. The reddish argillaceous sand is distributed in the form of successive ridges resembling the waves of the ocean, and these are often arranged in parallel order, with a general north-easterly and south-westerly trend, but in some places this regularity of arrangement is not maintained.* It is almost unnecessary to state that the prevailing south-west wind exercises a potent influence in their arrangement and distribution. These apparently endless ridges, which vary from 30 to 40 feet in height—sometimes 70 feet or even 100 feet—are often covered by a coarse vegetation locally known as "Porcupine grass" (Triodia). Nothing is more distressing to the weary and thirsty traveller than these interminable ridges of sand.

The lakes of the central depression are wholly unimportant. They cover very large areas it is true, and to anyone not familiar with the local physical conditions they certainly appear very striking, the manner in which they are shown on the maps lending colour to this appearance. They have probably passed through several stages of development, and in the present state they simply represent the sites of ancient river valleys having descending grades towards Spencer's Gulf. Some of even the more important ones, particularly Lake Amadeus, are very shallow, and almost dry for most part of the year. As a rule, the surface structure of most of these lakes consists of blue clay and mud, covered in places by sandy loam flats. These again are usually overlaid with a layer of white salt, and the mud deposit sometimes contains plates and crystals of gypsum. Salt water is always present a little below the surface.† The local vegetation is very scanty, consisting mostly of saltbush and dwarfed blue gums. From the biological view point, Lake Mulligan is perhaps the most interesting of all. Here a most extensive— and quite as important as it is extensive— deposit of the fossil remains of the Diprotodon has recently been

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* The sand ridges have a northerly direction near the southern coast of Australia but in advancing towards the tropic they fan out to east and west following the course of the prevailing winds.

† The salt marshes hereabouts were originally fertile fresh water alluvial flats, during the period of an exceedingly wet climate, when the annual rainfall must have been as many feet as it is now inches. And it may further be remarked that the salt in these marshes has been derived from the Desert Sandstone, not from an ancient salt sea, as present conditions might seem to indicate.
discovered. The skeletons were embedded in soft blue clay and mud, some of the bones and teeth of these gigantic animals being actually exposed above the surface. The position of the remains indicated that most of the animals had died in a squatting position in the place where they occur, the skeletons having been found "lying with the back upward, the head on one side and the legs spread far apart and folded up under and alongside the body, and not embedded more than 2 feet or 3 feet from the surface." There were altogether about eighty specimens of the Diprotodon dug out of the Lake Mulligan basin, and these were scattered about over an area of several acres. The limbs of the animal were very thick, and the forelegs evidently longer than the hind ones. The skull was about 3 feet in length, and from the tip of the small short tail to the snout the creature probably measured 10 feet, the height at the shoulder being from 5 to 6 feet. Associated with these fossil bones were the remains of other extinct animals, representing the leg casts of a giant bird as large as the Moa, as well as the teeth and other structural portions of a large wombat and a kangaroo. The length of the foot of the kangaroo was about 14 inches. Geologically considered, the whole of the remains, to which I have briefly alluded, evidently belong to the Post-Tertiary period.

The geological as well as the physical structure of the Australian continent has been greatly influenced by the action of heat and associated volcanic forces, now quiescent. The high eastern rim of the central basin is prominently marked and scored by eruptive forces, and these were widely distributed over the northern and southern portions of the country as well, the ash beds and ash cones being still preserved throughout these regions; whilst the basaltic rocks so largely developed over wide areas of the territory in question indicate that there was a time when the outbursts were very great indeed. The south-east corner of the continent seems to have been the scene of greatest activity, for here extinct volcano cones are very numerous, and many small lakes now occupy the sites of craters that have long ceased to belch forth the liquid lava streams from the bowels of mother earth. In Queensland there is an extensive volcanic belt including large tracts of country west of the Moreton district and an enormous stretch of the eastern coastal region. The lava beds are of considerable extent, and the rich volcanic soils are distributed over very large areas. In some localities the active forces appear to have been quite recent, certainly not farther back than the Miocene and Pliocene periods. The last outbursts of all very probably occurred in the neighbourhood of the Murray mouth, in the south-eastern portion of South Australia and the south-west corner of Victoria. In the neighbourhood of Ballarat the cones of old volcanoes are freely scattered about over a considerable area of country, and in the same locality there occur several alternate deposits of basalt and sedi-
mentary accumulations which show that the period of activity must have been of long duration. The great lava streams that emanated from numerous eruptive sources spread themselves out over the adjacent regions, filling up the river valleys and forming the extensive basaltic plains which lend variety to the characteristic landscape of the country.* It would be difficult to form an estimate of the far-reaching influence of these mighty subterranean forces of past ages upon the general surface features of the continent. That they have played an important part in moulding and regulating them there cannot be any doubt whatever, and the more recent forces may have contributed to the causes which brought about the total extinction of the pre-historic fauna. This indeed is by no means an unreasonable conjecture, for many of these areas of depression occupied by lakes and marshes would probably be filled up by volcanic action, and the vegetation of these regions might also be changed by the same cause. This suggestion is offered more in the nature of a hint than anything else, for there is probably no available evidence in support of the view. Contemporaneous with these widespread convulsions there occurred great changes in the mean level of the continent, the eastern half at least being depressed some 900 or 1,000 feet lower than at present. This change would manifest itself during the Lower Pliocene period, when the base of the coast ranges and hills would probably be lashed by the ocean waves. The succeeding period saw a change in the gradual upward movement of the land, and this slow rising of the surface has continued up to recent times, not merely as a local occurrence, for there is abundant evidence in the low sandy plains between the ranges and the sea-shore to show that the western side of the continent is likewise moving upwards, probably more rapidly than the opposite one. Volcanic activity has not manifested itself in the western portion of Australia, since very probably the Carboniferous period, the physical aspect of the region indicating a long period of complete rest. In the north-west portion several extinct crater cones are said to have been discovered, and the eruptive forces of past ages are further attested by the presence of lava streams that are largely developed in the Kimberley district and in the Northern Territory.

It is perhaps of some little interest to note that in the western portion of Australia the Archaean and crystalline rocks are developed to a far greater extent than in any other part of the world. Their presence

* The basalts were erupted as a mud in many instances, as they often contain fragments of coal which has not been coked; in other instances the coal has been changed to coke and contiguous clays and shales vitrified or baked to brick. It is above these basalts that the bones of the extinct fauna are always found.

The volcanos which have merely erupted lava and gas belong to a more recent period.
is revealed in the numerous outcrops that occur all over the country, whilst the endless parallel foldings, the irregular breaks and faults of the series, show that the contortions are very pronounced. The diorite and granite dykes, by which these rocks are broken and faulted, contain quartz-veins and iron lodes, rich in auriferous deposits. The three subdivisions of this series of rocks are represented by the granite, the gneisses, and the schists, which are mostly disposed in the form of parallel belts trending north and south.

It may be interesting to allude to the rich ores associated with the rocks upon which I have so briefly touched in this very imperfect outline sketch. The natural wealth of Australia is indeed very great. Its mineral areas are vast, and, as a gold-producing country, its fame has spread to the ends of the earth. Scores of school-boys on the other side of the globe have been fired with enthusiasm and laudable ambition in reading about the Australian goldfields. The subject has always been one which appeals very largely to the romantic and adventurous side of human nature, and consequently very few escape its fascinating influence. Once the discovery of gold is announced, men of all nationalities hastily rush to the locality, very often in face of an array of physical impediments. Geographical position is rarely considered, the one consuming desire is to "get there" at all hazards, and scores of lives have been sacrificed in the doing of it—not in Australia alone, but all the world over wherever the gold fever has raged. This gold lust has proved to be a powerful factor in opening up, in settling and developing the country, the history of mining enterprise showing that even in the very heart of desert regions large and often permanent towns have sprung up with phenomenal rapidity, and apparently barren tracts have been rapidly converted into habitable ones, tenanted by large and prosperous communities. It is not at present intended to deal with the historical aspect of this subject, but rather to offer a few remarks upon the geographical side.

It soon became apparent to the first settlers on the shores of Port Jackson that minerals were to be found in the country. examples of gold-bearing rock having been picked up by some of the convicts, although there was a desire on the part of the authorities to conceal the fact. In Australia, gold occurs in reefs and in alluvial deposits. The former kind is usually found in veins, lodes, or dykes; the latter in the beds of streams or river valleys, where large accumulations of sediment overlie the sands, shingles, and gravels of old watercourses. The reefs and veins are mostly associated with the ancient Paleozoic rocks, in which the clays, the slates, the sandstones, and the schists are largely represented. Auriferous gold-mining is carried on to a very large extent in most parts of Australia, the principal mineral areas occurring in what may be considered the coastal regions, or wherever the Paleo-
zoic formation is largely developed. The site now occupied by the flourishing city of Ballarat was one of the earliest theatres of British activity in the mining field. The gold mines within this area are numerous and phenomenally rich in ores, the city itself being a striking and monumental example of something under forty years' enterprise in the hurried quest of the precious metals. The exciting incidents of mining life that have occurred on this goldfield are strange as well as numerous, whilst the name of the city itself recalls to mind the historical Eureka Stockade episode—a happening that in its inception threatened to be serious, but which luckily terminated without any very harmful consequences.

It may be said that the mineral deposits are very largely developed in the south-eastern, the eastern, the northern, and western regions of the continent. The granite rocks that form the base of the geological structure are rich in mineral veins, such as tin, lead, silver, and copper, and they have also yielded gold, although this last-named metal more frequently occurs in the Cambrian formation. At Broken Hill, in the far western portion of New South Wales, the silver deposits are wonderfully rich, the silver-mining industry being far more extensive here than in any other part of the continent. The Broken Hill Proprietary Mine is said to be the largest of its kind in the world, the quantity of silver produced annually amounting to many million ounces. The stream tin of Australia is the product of granite rocks, having been washed out of the granites and deposited in the beds of streams, where it occurs in the form of very rich accumulations. The tin-mining industry is very important, there being thousands of miners employed in it annually. At Herberton, Queensland, and in North Australia, very rich veins of tin have been discovered, which indicate that the mineral is widely distributed over an extensive geographical range.

The copper veins of the Cambrian formation occur in the southern and northern portions of the continent. A somewhat remarkable development of copper ore has been alluded to in a paper contributed by Mr. H. Burkitt to our Society here, in 1897. It occurs on the eastern coast of Queensland, at Stanage Bay, in the form of an immense pillar of about 40 feet in height, and looking somewhat like a vessel under sail, when seen at a distance. It is said to stand on the shores of the bay, in the midst of a mass of broken rocks and boulders, some being marble, others apparently a coarse ironstone intersected with bands or veins of what was taken for crystalline quartz, that stood out in sharp ridges.

Queensland enjoys the distinction of possessing what is believed to be the richest gold mine of the world, for nothing of the kind has yet been discovered to surpass the famous Mount Morgan as an auriferous gold-producing area. The gold occurs in a formation of Tertiary age,
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...and owes its origin to thermal action. The mountain itself lies within the great auriferous belt of the eastern Australian region, in which the remarkably rich goldfields of Charters Towers, Gympie, and Croydon are situated. On the western side of the continent the corresponding auriferous areas are represented by the extensive goldfields of Coolgardie, Kimberley, and Yilgarn. The first of these furnishes us with another striking example of the phenomenal growth of an Australian gold-mining town, or, to put it more appositely, "Golden City." Coolgardie is of very recent creation. A few years ago the site of the town was a barren wilderness, destitute of water and apparently unfit for occupation. The place has now all the appearance of a modern city, electrically lighted, with broad streets and imposing buildings—a wonderful oasis having been created in the desert within the short period of a few years—the whole being the result of British enterprise. The first "rush" to this rich field seems to have lacked none of the enthusiasm and excitement that characterised most of its predecessors to other gold finds in Australia and elsewhere. For some time the gold fever raged very fiercely, and steamers were despatched from all the principal ports of the continent with passengers for the newly-discovered field. Mining companies were rapidly floated, both locally and in London, the shares going up to very high prices. One very serious drawback to the development of this field was met with in the absence of water. The very scanty rainfall of the district was altogether inadequate to meet the wants of a large mining community, whilst a plentiful water supply soon became an absolute necessity for the successful working of the mines. This could not be obtained on the surface, and the geological structure of the locality rendered the prospect of obtaining water from artesian sources hopeless. The only thing to fall back on was the salt water in the bottom of the shafts and in the lake beds. To render this somewhat precarious supply fit for human consumption the water had to be condensed, and thus an additional industry was created, in which numerous condensers were actively employed. This arrangement is, however, likely to be soon superseded by the water supply scheme now under the consideration of the Government.

The especially valuable minerals, besides the ones that I have mentioned, which chiefly occur in the older rock formations of Australia, are lead, antimony, bismuth, tungsten, manganese, chromium, cobalt, mercury, and several others of less value. Diamonds and other precious gems are associated with alluvial gold in the Tertiary drifts and recent stream deposits.

The Permo-carboniferous formation has yielded coal and kerosene shale of excellent quality, and these deposits are extensively developed over very wide ranges of the territory.
The building stones include marble, granite, syenite, porphyry, and sandstone, which may be obtained in many localities.

To my mind, no satisfactory evidence of well-defined traces of glaciation in Australia has yet been brought forward, although the subject has been discussed. Drift ice-masses may probably have left their imprints on some of the shore rocks of former estuarial channels, but there is nothing to indicate that the whole of the continent was at any time involved in extensive ice-sheets. In point of fact, the past and present fauna and flora denote the occurrence of mild climatic conditions, which have prevailed for ages—conditions of climate partaking more of the tropical than the arctic character. It may, however, be stated that since this was written, the following appeared in the Brisbane Courier of 11th March, 1901:

"Maitland" (Mr. A. Gibb, Government Geologist for Western Australia), who has completed a trip from Cue, the centre of the Murchison Goldfield, to Carnarvon, reports that during his examination of the country between the heads of the Woramel and Minilya rivers, he discovered, associated with the carboniferous rocks, an extensive deposit of glacial origin. This deposit he traced and proved over sixty or seventy miles. With the deposit were a large number of ice-scratched boulders.

VI.

NATURAL PRODUCTS.

AUSTRALIAN VEGETATION.—The vegetable wealth of Australia is no less remarkable than the mineral wealth. The forests, it is true, are not adorned by the stately oaks of Old England: not even by the giant firs of Norway, nor the supple American ash. Still, they are pre-eminently grand in their luxuriance as well as in productiveness, yielding as they do the largest timber trees of the world. The colossal gums of the Dandenong Ranges are matchless in height, and, for durability, the valuable jarrah timbers of the western portion of the continent are unsurpassed. Nor are the more lowly and less vigorous forms of the vegetation less wonderful in point of variety and economic value. Taken as a whole, Australia is not a woodland country, not more than one-fourth being forested, but some parts are clothed with a mantle of most luxuriant vegetation, possessing many typical characteristic features which are nowhere else met with. The forests are vast, often enough dense, sometimes open, but always Australian in character. To those accustomed to the trees, the grasses, and the flowers of the British Isles, the flora of this continent may appear unattractive. But in reality it is not so; it possesses a beauty all its own—a beauty that is met with in the deep mountain glens of the
great Alpine cluster; in the shady groves of the Pacific slope; in the solitude of the dense tropical scrubs; in the animated scrub clusters of the inland plains; in the vigorous forest areas of the salubrious tablelands; in the grass and timber interspersed areas; in the fern-tree gutties of the highland zones; in the palm-belted tracts; in the herbage carpeted rolling downs; in the striking variety of the gums and the grasses; in the solitude of the virgin forest; in the marsupial feeding grounds; in the shady, scented bowers, by the side of the creeks; in following the wallaby tracks of the rugged rocky ridge slopes; in the cheerful home of the wild flowers; in the evergreen mangrove regions by the seashore; in the giant vegetation of the stream borders; in the lofty timber trees of marshy grounds; in the monarchs of the Dandenong Ranges; and even among the spreading feathery-leaved cycade (Bucephalandra MacDonnellii) and the lofty palms (Livistona Maria) of the Finke River basin, or midst the mud flats of the great central depression—there is wealth of natural beauty that will strike the appreciative eye; and command the profound admiration of the soulful observer. There is too great a tendency altogether on the part of new arrivals in Australia to underrate and even sneer at the natural beauty of vegetation and scenery and very few writers upon the subject are free from reproach. And there is always a certain class of people, even amongst the native-born Australians themselves, who can never see beauty or good in anything—people who, in point of fact, are born, without a soul. They are not even impressed by the beauty of a rainbow; the grandeur of a lovely sunset cannot move them; the awe-inspiring electrical display in the thunder clouds will fail to impress them, and they can see nothing to admire in celestial phenomena. It is true, there are many forest-clad areas devoid of any striking feature of what is commonly called beauty, but on the other hand there are many more where the natural beauty of the characteristic vegetation is sublimely grand. Take, for instance, the woodland scenery upon which my eye is now resting whilst these lines are being penned. In the foreground is the lower reach of a small tidal river; near at hand, on the right bank, is a densely wooded deltaic area, with a tall, scrub-like vegetation, the sun-lit foliage of which is blended with lovely tints of light and deep green. Behind the foreground is an intermediate region, made up of hills and valleys, whose mantle of lofty forest trees lends additional contrasting colours to the scenery. Far away in the background rise the rugged lofty peaks of the thickly timbered border range between New South Wales and Queensland, in whose majestic and sombre appearance the climax of beauty is reached. Now, there are probably dozens of such aspects to be seen daily in travelling through the Australian bush, but they are of common occurrence, and are passed unnoticed.
There are three great climatic zones in which the vegetation of the continent flourishes—the tropical, the temperate, and Alpine. These, in their turn, may be divided into several sub-regions, denoting the character and variety of plant life. The vegetation of the tropical coastal region flourishes with greater luxuriance than in any other subdivision of the first-named zone. The same may be said of the temperate zone. The reason for this is not far to seek. Here the rainfall is far greater than in any other portion of the continent, and the soils are rich, consequently the conditions are most favourable for the vigorous growth of plants. The wealth of the tropical forest is everywhere apparent in the stately and thickly foliaged timber trees; the impenetrable scrubs of dense vines, and other varieties; the innumerable types of lower forms of plants and profusion of the most lovely orchids. The gums predominate, but there are numerous other species, which include valuable cedar trees, a variety of figs, and many timbers of great commercial value. This tropical flora, besides its peculiar Australian character, includes, in the northern and eastern continental regions, several Indian, Malayan, and Polynesian forms, chiefly represented by the screw pines, the mangroves, the bamboos, orchids, and several varieties of palms. The dense vine and other varieties of tropical scrubs are perhaps the least valuable of all the forms of vegetation. They cover extensive areas of country, and form a tangled mass of the densest possible description, into which it is impossible for invading man to penetrate. These scrubs have always effectually blocked the onward march of the explorer, and impede the progress of the land surveyor so greatly that he is paid an additional allowance of a hundred per cent. for lines in them, and even this remuneration does not "pay," for progress is painfully slow and the labour of cutting the lines is great. The scrub lands are remarkably fertile, and when denuded of the mantle of vegetation to which they supply abundant nourishment they are capable of growing phenomenally heavy crops of many kinds of cultivated products. The scrub is apparently a valley loving form of vegetation, invading the undulating lands and plains of the seacoast, and only occasionally intruding up the range and mountain slopes in localities where the rainfall is abnormal and the air excessively humid. The scrub areas are never free from dampness, even during the dry season, consequent upon the dense nature of the vegetation, which effectually excludes the solar rays. No plant is more unwelcome to the bushman than the dreaded "lawyer" vine, armed, as it is, with sharp, powerful spines, that strike downwards and are curved inwards. The vine grows in the form of a dense tangled mass, from which it would be most difficult to extricate the unwary traveller who might happen to come in contact with it. The flora of the interior sub-region of the tropical zone is not remarkable for vigour of growth,
the forests being comparatively open, the interspersed grass areas fairly numerous and moderately extensive and the timber trees having a slightly dwarfed appearance. The absence of a copious rainfall is fully apparent in the general condition of the vegetation of this inland belt. The luxuriance of the undergrowth, which might naturally be expected in a climate essentially tropical, is mostly absent, and the surface soils have a dry, unfertile appearance, which detracts greatly from the beauty of the landscape. These existing features are all the more noticeable in localities where there is an occurrence of the Desert Sandstone, to which the lack of natural fertility may in some measure be attributed. Generally speaking, this class of country is suitable for grazing purposes, and it extends with some notable variations over the entire central basin, into the temperate zone, and across the continent to a portion of the west coast-line; again south to the head of the Great Australian Bight, embracing the whole of the vast inland territory, except the desert region. The variations consist chiefly of the distribution of the vegetation and the denuded surface patches that are met with in remote places. On the great western plains of New South Wales and Queensland, for instance, the continuity of the forest is broken and the timber trees are replaced by extensive areas of grass and other short herbage, interspersed with small belts or clusters of stunted forest growths and patches of scrub. These last-named forms differ in character from the coastal scrubs in that they are not so dense and formidable, consisting as they do mostly of dwarfed varieties of acacias, existing under climatic conditions not always highly favourable to remarkable luxuriance. The densest form is what is locally known as Brigalow scrub, which grows almost as close together as the vine species, and when an opening is cut through it the appearance is suggestive of a high-walled avenue. The explorers' "Mulga" scrub, of ill-repute, is a sharp, spiny, hardy plant, found growing in the form of irregular bushes, that spread out laterally and occur over very extensive tracts of the interior. Still more persistent in growth and wide geographical distribution is the dreaded "Spinifex" (Triodia iritans)—an irritating and animal-torturing grass, with rigid, sharp-pointed leaves that inflict painful wounds on the feet and legs of horses and other beasts of burden commonly used in the field of exploration. Many, indeed, are the sad and pitiable tales that have been told by the hardy pioneers of our country of hardships endured whilst traversing the terrible spinifex regions. This porcupine grass, sometimes so called, is a lover of waste lands, where water there is none, and flourishes in the arid sandy and rocky country where little else can grow. The appearance of such a region so destitute of other varieties of plant life is most uninviting.

The saltbush plains consist of widely distributed areas of low-lying
country clothed with a saline vegetation, rather stunted, fairly nutritious, and is a good fodder plant, when grass is scarce. The vast rolling downs and meadow-like plains of Eastern Australia support a rich herbage, consisting of an almost endless variety of grasses, upon which the vast flocks and herds of the squatting industry feed and thrive. Probably no country in the world produces such a number of different varieties of fodder plants as are met with in this portion of the continent. It is reckoned that of the three hundred and sixty kinds of grasses in Australia about three-fourths are met with in Queensland alone. A very interesting feature of this class of vegetation is exhibited in the remarkable vitality of the herbage. During periods of protracted drought the general appearance of the surface conditions of the ground impresses one with the idea that the grasses have been completely annihilated, and it is only after the first shower of rain that the deception quickly disappears. Then it seems as if some magical transformation had taken place in the restoration of the plant life.

Coming now to the temperate zone, we find a somewhat remarkable commingling of the tropical and extra-tropical flora on the one hand, and on the other a peculiar distinction between the vegetation of the eastern and western sides of the continent, the flora of the latter region, notwithstanding the comparatively poor soil in which it flourishes, being quite as rich as that of Eastern Australia, although peculiar. The reason of this difference is not clearly apparent, for geologically both regions are of the same age, the evolution of the one side being contemporaneous with that of the other. Still, the diversity is actual, not merely fanciful.

The eastern and southern sub-region of this temperate zone is thickly timbered with most luxuriant sub-tropical forests, in which many varieties of the genus Eucalyptus are highly developed. First of all, there are the monarchs of the forest, the giant "white gums" of the Dandenong Ranges (Eucalyptus amygdalina). Like everything else remarkable under the sun, these truly wonderful and noble trees have commanded a good deal of attention. "Brevity," it is true, may be "the soul of wit," and novelty the mother of invention, but curiosity is greater than either, for its stronghold is at the very foundation of human knowledge. Thus it happens that the mere curiosity excited by these forest giants has been the means of interesting a greater number of people in the flora of the country than anything else—many scores of Australians who under ordinary circumstances would have remained in complete ignorance of the wealth of vegetation at their very doors. The same cause has created quite a rivalry between the Americans and the Australians, for it has been often enough contended that the famous Wellingtonias of California are the largest trees on the face of the globe. Time after time the subject has been discussed in the
columns of newspapers and other publications, until now there is really
an interesting literature all its own. Nobody will deny that America
is a very remarkable country altogether: it produces many wonderful
things—some very large ships, mighty towers and monuments, great
industrial wealth, the loftiest buildings in the world, the finest axes in
the world, great and mighty cities, many lovely women, and men of
giant intellect—but, after all, Australia produces the loftiest and alto-
gether grandest trees in the world. And more than that, these trees
are distinctively Australian in character and genus. Many of these
white gums that adorn the gullies and slopes of the Dandenong Range,
and impart to the local landscape a most striking feature, are over 420
feet in height, and one mighty fallen monarch across a narrow ravine
measured 480 feet in length. This latter had about 20 feet of the top
broken off, so that in all probability the full height of the tree had been
about 500 feet, in round figures. The noble Eucalyptus diversicolor of
the western side of the continent is little inferior in dimensions to its
graceful congener of the south-eastern side, numerous examples having
been found to reach fully 400 feet in height. Of the numerous species
of the genus Eucalyptus none are perhaps of greater value medicinally
than the Eucalyptus globulus, from which the valuable Eucalyptus
Oil of commerce is derived. When fully matured this tree grows to a
great height, and is very graceful in appearance. The essential oil of
this species has acquired a world-wide reputation for its curative pro-
erties, being used in a variety of forms as a local application in cases
of colds and other ailments of the respiratory organs. It may be found
in almost every Australian home, and enjoys a very wide popularity—
speaking from my own experience, I may say that this is not altogether
undeserved. Most of the gum trees, I should think, possess antiseptic
properties. In Australia the Eucalyptus is represented by something
like 160 species, and these are distributed over almost the entire length
and breadth of the continent. The timbers of the Jarrah, the Karri
(Eucalyptus diversicolor), the red gum, the stringy-bark, and many
other species, are of great commercial value. The timber produced
by the Jarrah tree (Eucalyptus marginata) is now in great demand for
street-paving purposes, it having been found, after repeated tests, to
be a hardwood of great durability. It occurs in Western Australia,
where there are extensive forests of it.

The Eucalyptus dumosa grows in the form of a thick scrub, occupy-
ing extensive areas of the southern part of the continent. Locally it
is familiarly known as the "Mallee" scrub, and it covers a very large
tract of country in the western districts of Victoria, and another one,
of some 9,000 square miles, in the lower basin of the Murray River,
within the province of South Australia. When viewed from an emi-
ence the dark-brown foliage of this dense mass of vegetation somewhat resembles a great sea, extending far away to the horizon, with a wavy aspect corresponding with the surface undulation of the ground.

The Alpine flora of the continent is restricted in range to the lofty mountains of Victoria and New South Wales. Although these are naturally limited in number and area, it is surprising to find what a remarkably large and varied variety of plants are met with there, a great many of the species of which are common to both hemispheres, especially Gaultheria, Gentiana, Geum, Myosotis, Ranunculus, and others.

Besides the more remarkable types to which I have alluded, the vegetation of Australia includes many others, very striking in appearance. For instance, the peculiar bottle-tree (*Sterculia*), so appropriately named, is, in my opinion, one of the greatest novelties of the flora of the country. Its trunk is greatly bulged out, and from the middle it tapers to a narrow neck, from which the branches radiate. This tree is a lover of the inland tableland regions, where the Sandstone formation is developed, and when once seen can never be mistaken. Two very fine examples of it may be seen growing in the grounds of the Survey Office, Brisbane.

The grass-tree (*Xanthorrhoea*) is another type of Nature's peculiarly moulded plants. The rugged stem of the tree, some 10 or 12 feet in height, is crowned by long narrow bladed grass tufts, from the centre of which projects a moderately slender seed stalk, that blossoms in season. This singularly beautiful plant flourishes over a very wide range of the continent, to which it imparts an unusually picturesque appearance.

The crimson blossomed "Waratah" of New South Wales is one of the most lovely types of the remarkably numerous flowering plants of Australia. It is a short stem plant, probably 6 feet in height, and when in full bloom its brilliant colour affords a striking contrast to the rather dull appearance of the associated vegetation. The adoption of the Waratah as the national emblem has been suggested by some of the members of the Australian Natives’ Association, but to my knowledge nothing further has been done in the matter.

Altogether there are probably about 10,000 species of flowering plants and ferns in Australia, many of which are very beautiful in variety of colour and luxuriance of growth. Most of the orchids are exquisitely lovely, strange in form and very highly valued. But of all the lovely flowers that bloom, the giant "rock-lily" is perhaps the most interesting, producing as it does an enormous flower stalk of considerable height.

The beautiful acacias are represented in Australia by about 300 species, a number of which constitute many of the various scrubs that form so conspicuous a feature of the landscape scenery. The entire
flora of the continent is distributed in the proportion of about two-thirds temperate, and one-third tropical. This unequal distribution accounts for most of the peculiar types occurring in the extra-tropical vegetation.

The plant life of the country is apparently of very great antiquity as evidenced by the numerous fossiliferous impressions that have been discovered embedded in the rocks and the striking peculiarity of the genera of many existing species, all of which seem to show that for untold ages the continent has sustained a very rich vegetation.

That the remarkable floral wealth of this great country should have, for its elucidation, commanded the services of such eminent botanical workers as Sir Joseph Hooker, Richard Bentham, Baron von Mueller, and other worthies is not surprising. The scope of investigation has been very wide indeed, few fields elsewhere having afforded a wider one. It is to the energy and enthusiasm of these famous botanists and their colleagues that we are indebted for our very full knowledge of the Australian flora, knowledge recorded in the many elegant and profusely illustrated botanical tomes that adorn the shelves of the great libraries of the world. Notwithstanding all that has been done, there are still some obscure points that require further elucidation. For instance, the origin of the flora of the continent is a subject not yet clearly understood. The same may be said of the remarkable difference in the vegetation of the eastern and western sides of Australia; the strange aggregation of a number of peculiarly Australian plants in the south-west corner of the country: the reason for the close affinity between some types of vegetation common to temperate Australia, the Antarctic Islands, South Africa and Europe.

Are these merely coincidental occurrences in the evolution of plant life? Do they imply simultaneous and independent development? Or are they the result of migratory movements?

Animals.—Most people are interested in animals—old and young—and very properly so, for have they not been associated with mankind since the universal Deluge, of which the Bible tells us, when they shared a common lodging with Noah in the Ark?

There are many rare and very beautiful animals whose home is in the forests and on the vast open plains of Australia, and they range in size from the tiny creeping things up to the big jumping kangaroos. These are often objects of great interest to new arrivals, especially to those unaccustomed to the beauty of a rich and varied fauna, in the natural state. For my own part, I had not been accustomed to such faunal beauty in boyhood, and I landed on the shore of Australia fired with a burning desire to see the wonderful animals of which I had read so much. Like most ordinary folks, I had seen some lifeless examples in the museums, but that was all. Such specimens give one
a very fair idea of the shape of an animal, but life is needed to create a lasting impression upon the mind. My first experience midst the animated nature of the continent was gained about 26 years ago on a journey, on foot, from Newcastle to Armidale, New South Wales, followed by about eighteen months' life on the New England tableland, most of these notes being made at the time and on subsequent occasions, from personal observations. Every thing being quite new then, left a lasting impression upon the mind, and even the most common-place objects seemed attractive. The cockatoos and paroquets came in for a great deal of attention on the journey; so did the poor harmless native bear, it being no uncommon occurrence to chop down a fairly large-sized gum tree to procure a specimen. Opossum hunting by moonlight afforded an excellent pastime to the enthusiastic "new chum," but the greatest sport of all was perhaps the exciting kangaroo chases. The snakes were not at all obliging; nothing would coax them out of their snug winter quarters. The laughing jackass and the magpie were more considerate; they were anxious to please, and did all they could to make the journey as agreeable as possible.

The kangaroo is undoubtedly a typical Australian animal, at one time abounding in all parts of the continent, except the dense tropical scrubs. Like the poor wretched aborigines themselves, this noble creature has been forced to retire from the settled districts to the far back and less frequented parts, where it is being hunted about from place to place, and most cruelly slaughtered in a wholesale manner. There is no doubt whatever that the marsupial fauna, which has always constituted one of the most striking features of the animal life of Australia, will ere long become extinct, unless steps be taken to prevent its reckless destruction. The barbarous practice of kangaroo drives is happily not so frequently indulged in now as formerly; still the methods of extermination are most objectionable, and no true lover of manly sport would resort to them. There are several varieties of the kangaroo, the grey, the red, and the wallaroo, which is the largest of all. The first of these (Macropus giganteus) is more frequently met with than any of the others. Being a grass feeder, it loves the open forests and the plains, where it is often met with in large groups as well as in pairs, or even singly. On the tableland country, this grey variety usually camps on the timbered ridges and mountain slopes during the heat of the day. As evening approaches they move on to the feeding grounds to crop the nutritious grasses on the flats and bottom of gullies, where their food is duly seasoned by the saline substance obtained in soils surrounding what is locally called "Lick Holes." When disturbed they clear off at a great rate to hilly country, or to another feeding ground. There is really no sport in shooting these kangaroos, but it is most exciting to hunt them on horseback with a couple of good dogs.
What is known as the kangaroo dog—a species somewhat heavier than
the greyhound, though quite as swift—is most commonly used for the
purpose. An experienced dog will usually select one of the large male
animals from the group, known locally as an "Old Man Kangaroo"
(Macropus major), but it sometimes happens that a younger one is
chosen, called a "Flyer." This latter beast is the swiftest of all, and
given a fair start in a favourable locality, there are really very few dogs
able to run it down.

The "Old Man" is, however, not nearly so fleet of foot: he is an
experienced animal, with a good knowledge of local geography, and being,
moreover, fairly conscious of his own superior strength and skill in the
field of battle, he will not give the dogs a very long chase, but soon "bail
up" at the nearest water-hole, or against the root of some fallen tree; therewe will keep the dogs at bay for any length of time. These great
marsupial warriors are sometimes dangerous to the hunter as well as
to the hound, and it is scarcely to be wondered at, seeing the fight is
one for life or death. The grey Kangaroo is not a vicious animal, and
will only show fight in self-defence, when hard pressed. At such times
the female, to save her own life, will sacrifice her offspring by dropping
it out of the pouch, in which it has been safely carried over perhaps
many miles of country. There was at one time a popular belief that
the kangaroo, in its bounding leaps, strikes the surface of the ground
with its tail, which thus gives the necessary impetus to each forward
bound. This, however, is really not the case: the tail acts merely as
a balance to the animal when in motion, and serves as a kind of support
when at rest.

The great red Kangaroo (Ophranter rufus) is an animal of truly
notable proportions, less common than the grey species, and more fre-
cquently met with on the great plains of the interior and in Western
Australia, where it abounds. It is more of a brown than a red colour,
notwithstanding the name, the belly being very light in shade, and the
back much darker, but certainly not red.

The Macropus robustus, commonly called the Wallaroo, a name
which distinguishes it from the other species of the Kangaroo family,
is an animal differing in some important particulars from the ones to
which I have alluded, especially in that it is darker in colour, heavier
in structure, with comparatively powerful fore-arms, and superior
muscular development. It frequents the extremely rugged parts of the
country, abounding more especially amongst the huge granite rocks
that constitute some of the great mountain ranges and precipitous hills.
The Wallaroo is more frequently met with in pairs, or as a solitary
individual amongst the huge boulder-capped ranges, but I have never
seen it in herds, like the grey and the red kangaroo. It moves along
by great leaps or bounds, but the motion is not so rapid as that of the-
lowland-frequenting species, although it is an altogether more formidable opponent to hunter and hound than any other animal of its kind. When brought to bay, it is said to be able to seize hold of the hound in its powerful arms, carry it off with apparent ease to the edge of some precipitous rock to be thrown over and dashed to pieces, or to drown it in some convenient water-hole, and even man is alleged to have been hugged in its tenacious embrace and killed. In my own experience I have not, however, seen anything of the kind occur, although such occurrences have frequently been reported in the bush of Australia, where many exciting incidents have indeed been witnessed, unknown to the outside world.

The Wallabies are of two kinds: one variety known as the Rock Wallaby, the other species (*Halmaturus dorsalis*) being met with in the scrubs. Both animals are much smaller than the grey kangaroo, although similar in all other respects. Like the Wallaroo, the former species abounds in the rugged rocky mountain slopes and inaccessible places, where it occurs in large numbers, leaping from place to place over the rocky surface with astonishing swiftness and unerring certainty.

The smallest of this noble family of terrestrial marsupial animals is called the Kangaroo Rat, belonging to the genus *Hypsiprymnus*, of which there are several species. It is an active and elegant-looking animal, ordinarily about the size of a rabbit, but more slender in structure, swifter and probably more erratic in its movements when closely pressed by the hunter.

The Tree-Kangaroo (*Dendrolagus bennettianus*) is one of the most interesting of all the marsupial family. It differs from the terrestrial species in that its fore-legs are almost as fully developed as the hind ones, the ears are comparatively short, the neck thick, the head large, and the tail as long as the body of the beast. It is nocturnal in its habits, sleeping in the trees during the day-time, and roaming about them at night. Its food consists of the tender shoots and leaves of the trees, which it climbs with the greatest ease and facility. We have it on the authority of Carl Lumholtz, who discovered one of the only two positive species of the animal that have yet been found in Australia, that the Tree-Kangaroo (*Dendrolagus lumholtzii*) is able to leap down from a considerable height, and its movements on the ground are rapid. This latter species was found to inhabit the forest trees—often one particular lofty kind—near the summit of the coast range, in the Herbert District, Queensland, especially in rocky and inaccessible places. In Australia, the range of this tree-climbing animal appears to be limited to the north-eastern coastal districts, although it also occurs in New Guinea.

Included in the rich and varied mammalian fauna of the continent is the peculiar and widely-distributed family of marsupial animals
commonly called Opossums, of which there are probably about a score of species, said to be distinct from the American opossums, and therefore peculiar to Australasia. The several varieties include the common grey opossum (Trichosurus vulpecula), widely distributed over most parts of the continent, the scrub opossum, the striped opossum, and the flying opossum, the two last-named animals being peculiar to the northern portion of Queensland. These strange arboreal phalangers inhabit the forest-clad regions, where they sleep all day long in the hollow trunks and branches of trees. At night they sally forth to feed on the gum leaves or on the grass. In the tree tops they move about with astonishing ease and great rapidity, sometimes silently, but often enough their movements are accompanied by a strangely weird unpleasant noise, especially at day-break, when they leave the ground to ascend the trees. They are very inquisitive in their habits, and great thieves. On one occasion when camped within a paddock of ring-barked trees in the Burra District, New South Wales, the common grey species became such a nuisance that steps had to be taken to eradicate the animals. They seemed to take complete possession of the camp and made nightly raids on the ration tent. As soon as the lights were out they commenced operations, searching every nook and corner, upsetting everything, rattling about pots, pans and pannikins, eating up the "damper" and trying to open the jam tins. The noise all the time being so irritating that sleep in the adjoining tent was altogether out of the question. Many ineffectual attempts were made to drive them away, but they would simply scamper for a little way to the nearest trees, and the next moment return to continue the sport with greater energy than ever. It was not an easy matter to trap them, and any attempt to impound them within the ration tent was invariably frustrated.

Notwithstanding this somewhat reprehensible conduct, the common grey opossum is a very affectionate and unobtrusive little animal, when in captivity; being easily trained, it makes an excellent pet for those who love such childish things. The opossums are chiefly hunted for their skins, of which very fine rugs are made, the skin of the brown species being especially valued.

The skins of the several species of the Kangaroo family are also in great demand; being largely exported they constitute a commodity of considerable commercial value. The tail of the Kangaroo has perhaps done more to advertise the animal all the world over than anything else. It is a most delicious morsel, from which a famous soup is made, a decoction served at the tables of those who strive to cater for the epicurean tastes of obliging patrons.

The Koala, or "Native Bear" of Eastern Australia (Phascolarctus cinereus) is a tailless mammal, peculiar to the country, whose form and habits differ materially from those of the allied fauna, and probably
from every other member of the quadrumanous. In form, it is short and thick set, with strong legs, the ears superficially large, and almost concealed by fur, the face broad and very expressive, the eyes round and black, the nose slightly elongated and prominently tipped with a jet black skin, resembling leather. The skin, which is commercially valuable, is thick; and the fur of a light bluish grey colour, very close and soft. This bear, affectionate-looking animal, possesses a striking zoological peculiarity in that two of the five toes of each of the fore-feet are opposed to the other three. For most of its time it lives in the forest trees, feeding on the gum leaves, and when on the ground its movements are slow and awkward. In the day-time it seems to be sluggish and stupid, but it is more active at night. The offspring, when in the imperfect state of development, is carried in the mother's pouch, but afterwards it mounts on her back, and in this position is borne along in perfect safety among the topmost branches of the trees. It is a perfectly harmless animal, and when in danger, it climbs to the loftiest branches of the tree, knowingly keeping on the side opposite to the enemy, so as to conceal itself as much as possible. Its cry is very sharp and piteous, and so peculiar, that when once heard, can never be forgotten. Although easily domesticated, the native bear, or "Monkey," as it is sometimes called, never seems to thrive well in confinement. It is common to the eastern side of the continent, but does not appear to be met with farther north than Cardwell, probably not quite so far. The skin of the animal is largely used for rugs, and many are annually exported to other parts of the world.

The native cats of the genus Dasyurus, of which some half-dozen species are found in Australia, are beautifully marked animals, with long tails, rather long and compact bodies, and comparatively short legs, but very strong. Their carnivorous proclivities and nocturnal visits are not at all appreciated by the bush settlers, who value well-stocked poultry yards. They are by no means satisfied with an occasional raid upon enclosed premises, but will continue their nightly depredations with distressing and startling regularity, until the feathered family has been completely demolished.

Similar to this marauding beast, in its destructive habits, is the widely-distributed Australian Dingo, or native dog, an enemy to the sheep fold and all kinds of birds. There seems to be no doubt whatever that this truly wild animal is really indigenous to the country, and it is almost certain that it is of great antiquity, existing in all probability contemporaneously with the pre-historic animals, whose remains are embedded in the Post-Pliocene drifts of the great interior. In point of fact, Dr. Wallace's opinion, that the dingo is "a half-wild dog," introduced into the country by "the earliest human inhabitants,"* seems

to me to be one not likely to meet with general acceptance. It is, in
deed, impossible to reconcile this view with the discovery of some
fossil remains of the animal that have been found associated with the
bones of the Diprotodon, and other contemporary fauna.

Amongst the larger marsupial beasts, for which Australia is famous,
and next in size to the Kangaroo, is the curiously sluggish and harm-
less burrowing animal, called the wombat, Phascolomys. In the day
time it sleeps securely underground in a deep hole, from which retreat
it emerges at night to feed on roots and grass. Its flesh is greatly
relished by the natives, who roast it, after their usual fashion. The
wombat occurs in the south-eastern portion of the continent, ranging
from S. Queensland south to Tasmania, just as the Dingo ranges north
to New Guinea. The teeth of the animal develop continuously, a zoo-
logical feature of interest.

Included in the rich land mammalian fauna of the country are
many oddly formed creatures, whose habits are strange and novel, and
these vary greatly in size, from the little marsupial mouse upwards,
through the family of bandicoots to the more highly developed Mar-
supialia, of which I have spoken. Associated with these highly in-
teresting forms of life there occur the musk rat (Hypsiprymnus
burinus), and what are probably the lowest in organisation, and oldest
representatives of all the mammals, the platypus and echidna, or
porcupine. From a Zoological standpoint, the platypus, or duck-bill,
(Ornithorhynchus paradoxus) is the most remarkable animal on the
globe. It frequents the fresh water streams of Eastern Australia,
swimming about and feeding in the water midst unbroken solitudes.
It burrows in the stream banks in a somewhat remarkable fashion, the
excavation being continued inward and upwards from beneath the sur-
face of the water. In this underground tunnel-like retreat the animal
hatches its eggs, the young ones being very imperfectly developed when
first produced. The skin of the platypus, which is very greatly valued,
is covered with a thick short smooth fur, resembling that of the seal.

There is just one more mammalian form to which I wish to allude
before going any further—a marsupial mole of very recent discovery.
This truly remarkable animal, described and named Notoryctes
typhlops, by Dr. E. C. Stirling, of the Adelaide University, inhabits
the sandy regions of Central Australia, and the southern portion of the
Northern Territory. Of its life habits very little is known, and there
is even some doubt about the food it eats, but there is one thing certain.
that it is one of the strangest creatures yet discovered, and its burrow-
ing powers are really phenomenal. It moves about, above and beneath
the surface of the sand, its underground passage being very shallow and
barely concealed. In its active state it walks on top of the ground for
some little distance, then plunges into the sand, burrowing along most
rapidly for several yards, again up on top, and so on alternately. Its principal food very probably consists of ants and grubs.

The eastern districts of Australia are infested with a great number of flying foxes or fruit-eating bats, of which there are some five species altogether. These pests are most destructive to orchards and their numbers apparently still increase in spite of every effort to destroy them. They carry on their depredations at night, and roost in the daytime suspended to the branches of the trees.

Part of Eastern Australia is quite over-run by rabbits (introduced), and so serious a matter has this become to the pastoral industry, whose interests have been greatly affected thereby, that special legislation has been found necessary to grapple with the invaders. Rabbit infested areas have been proclaimed, and rabbit-proof netting has been erected along the lines of advance, to keep the animals from spreading; but despite all efforts, it is feared that they are gaining ground in some places. Vast tracts of country have been completely devastated by this plague of "bunny," and when every blade of grass has been devoured, the creatures eat the leaves and even the bark of the trees. It has even been stated, upon rather questionable authority though, that these rabbits develop some very remarkable habits, the most astonishing one of all being that which enables them to climb trees. The severe droughts seem to kill off great swarms of the animals, but their alarming breeding faculties soon make good the loss.

Along the north-eastern shores of the continent, as far south as Moreton Bay, and in Torres Strait, as well, there occurs a very large marine mammal called the Dugong (Halicore), about ten feet in length, and of over twelve cwt. This animal, which feeds upon submarine vegetation, yields a most valuable oil, famous for its fattening and curative properties, especially in wasting diseases; its flesh is greatly relished as a substitute for bacon; very excellent leather is manufactured from the hide, and the finest ivory is obtained from the tusks of the male Dugong. Taken as a whole, the beast is one of the most important of our natural products.

The bird life of the continent is rich and varied. Probably not to the same extent as the avifauna of our next door neighbour, New Guinea, but all the same there is a very great variety, and many remarkably striking forms occur both in the forests and on the plains. Most of these are familiar enough to the rural inhabitants of the country, and to the lonely bushman as well, whose constant companions they are, and who has come to regard them as very common things indeed because of the familiarity; still there are some that are really not common, although often regarded as such. In point of fact, no temperate country in the world surpasses Australia in the variety of form and beauty of its birds. The parrot family, for instance, exhibits
an almost bewildering array of colours in the most gorgeous plumage by which the several members are adorned. There is the Lyre Bird with its strangely equipped tail, oddly arranged habits, and power of delusive mimicry. The bower-bird, too, next claims attention, for in it we may observe an industrious, constructive habit, that is at once ingenious, instructive, and suggestive. The remarkable mound-builders also furnish another example of the instinctive doings of several distinctively local types of low organisation—forms that display some curious habits more common to reptiles than to birds. In the birds that extract the sweet juices from the flowers, we are made acquainted with many varieties of locally developed forms singularly adapted to the conditions of a luxuriant plant life. This family of honeysuckers, the members of which are numerous and varied, is perhaps more characteristically Australian than any other types of the associated avi-fauna. There are the Kingfishers as well, whose strangely arranged forms, remarkable appearance and amusing habits combine to make them as interesting as they are peculiar. One of the family, the reptile eating "Laughing Jackass," as it is most appropriately called, displays an attention-arresting peculiarity of habit and movement that is most singular. A very fine example of this particular species was duly admitted for a time into my household, and I was much interested in watching his doings. He was "early to bed and early to rise," being particularly careful to go the rounds of the house shortly after daybreak, disturbing everybody by his loud laughing cry. His instinctive habit in taking food was particularly suggestive. Given a piece of raw meat he would seize it in his beak, shake it and dash it a few times against some hard substance, before attempting to swallow it. This is precisely what the bird would do, in its wild state, with a small reptile. The common Magpie and the Laughing Jackass are, in my own opinion, the two most cheerful and entertaining birds in the whole of the continent. In the lonely forest solitude they enliven early morning and dawn of day by their familiar sounds, whilst there is always something fresh to admire in the tricky ways of the one and amusing habits of the other.

Australia can boast of two very large and remarkable birds, the Cassowary and Emu, both being little inferior in size to the Ostrich. The first occurs away in the remotely distant north-eastern part of the continent; the latter is much wider in range, occurring as it does on the vast plains and rolling downs of the country. Next to these in size are the Black Swan, ranging over most of the continent, the Pelican, the Native Companion, the Jabiru, the Bustard, the Eagle, the Eagle Hawk, the Scrub Turkey, the Tree Goose, the Musk Duck, and a large Pigeon. There are several species of the Cockatoo family, of which the white one is the most common, being distributed over a very wide
geographical range. In the Pigeon group, the migratory habit is developed in what is known as the Straits variety, a very fine bird which, with the Silver Tailed Kingfisher, comes across Torres Strait to the northern districts of Queensland in the breeding season.

But after all there is really very little to be gained by a simple enumeration of the remarkable assemblage of birds that abound all over this vast continental region, in which no fewer than 736 species occur. Most of the principal ones have been alluded to, and enough has been said to show that the country sustains a very rich avi-fauna, beautiful in variety of colours, and numerous in species.

Reptilean life is well represented and fully sustained, but unhappily it is of a kind less agreeable than anything else. It includes several well-known species, the largest and most physically powerful of all, being the dangerous saurian that abounds in the coastal rivers of tropical Australia. This reptile, known as, the Long-nosed Crocodile (Crocodilus porosus), is one of the most formidable enemies with which man has to contend, and many distressing happenings have been reported, in which valuable lives have been sacrificed to its terrible and relentless attacks. It is a gigantic animal, of about twenty-four feet in length, when full grown, stealthy in movement, and quick in attacking its prey, at which time the powerful tail and jaws of the monster are brought into active operation. There is, besides this one, a much smaller and less harmful species, known as Philas johnsoni. It attains a length of about nine feet, and appears to be chiefly confined in range to the fresh water streams that flow into the Gulf of Carpentaria.

Of an entirely different type is the Australian Iguana, whose name is perhaps more frequently corrupted than that of any of the associated fauna of the period. It occurs in the forest regions of the continent, where it procures a plentiful food supply among the smaller animals and birds. To the young opossums, it is a natural enemy, as the following trustworthy incident will clearly show. A well-known naturalist was resting for lunch on the edge of one of the coastal scrubs of north-eastern Australia. Looking up he saw a ring-tailed opossum scampering round a tree, at the same time, that an Iguana was thrusting its head into a hole which the former animal had occupied. Being curious to ascertain the particulars of this somewhat remarkable occurrence, he shot the intruding Iguana, and opening it, found two young opossums still alive in its stomach. It was considered very remarkable that no attempt was made by the mother to protect or defend her young ones, her first concern evidently being for her own safety.

The Lizard family comprises several species, among which are several very remarkable ones, including the Frilled Lizard, the Sleeping Lizard, and the Moloch horidus. Representations of the first-named...
species have done excellent duty in the shape of striking illustrations that have recently appeared in the public prints. It was very amusing to read some of the notices of these natural history illustrations that appeared in some of the British scientific journals, in which it was pointed out that the author of the work, in which the pictures had appeared, was singularly fortunate in having been able to photograph the animals in their wild and natural state, instead of having to produce figures of stuffed specimens. In seeing this, I could not repress a smile, more especially when recalling to mind the several occasions on which I had witnessed the process of photographing the self-same pictures from stuffed specimens in the Brisbane Museum. However, they answered the purpose very well, although not exactly the nature pictures to which the critics had alluded.

There is one thing about the lizards: they are quite harmless, and this is more than can be said of most of the Australian snakes, several species of which are poisonous, and as such, highly dangerous to human life, the bite of the death adder, the black snake, the brown snake, and the tiger snake, being most deadly in effect. In some parts of the continent, these reptiles are very numerous, and the death-rate from the effects of their bite is greater than could be wished. The carpet snake grows to a great length, but it is not so inimical to animal life as the species to which I have alluded; in point of fact, it is generally supposed to be quite innocuous. The death adder is a sleepy, inactive, little thing, two or three feet in length, but it strikes with astonishing quickness and unerring certainty.

The coastal waters, and many of the fresh water streams of the continent, abound in great varieties of fish, of which the numerous species that find their way to the metropolitan markets bear evidence. These vary greatly in size, from the tiny gar fish to the large groper, and include such well-known and greatly relished varieties as the giant perch, the schnapper, the whiting, mullet, flathead, rock cod, Murray cod, and many others. There are several kinds of sharks, some very large rays, there are eels, and there is a sawfish. But the rarest and most remarkable of all is the Burnett River salmon (*Ceratodus fosteri*), found nowhere else in Australia outside this stream. It is a member of the very rare Dipnoid family, whose only other known representatives inhabit the Amazon and the South African streams. It is altogether a very remarkable fish, with very large and hard scales. Then there is next to this another uncommon fish called the Barra-mundi, which occurs in the Dawson and Fitzroy Rivers. It belongs to the perch family, and is an excellent table fish. Deep-sea, and even ordinary coastal fishery is one of the almost wholly latent industries of the country. There are various local fish supplies, it is true, but even
these have never been fully sustained, and at best, there has always been a good deal of uncertainty about the industry.

Unfortunately, the Chinamen are probably not so enthusiastic in this line of business, as in the vegetable field, otherwise we might naturally expect to see well-stocked fish markets in all the coastal towns of Australia, and possibly interior wise as well.

Australia is truly rich in butterflies and many other forms of insect life, several of which have become pests. Beetles and moths are very numerous and beautiful, and it is really questionable if any other country can produce a greater variety. The ants occur in many forms, the most formidable and destructive of all being the termite or white ant that is found in many parts of the continent. This small and harmless-looking insect is one of the most serious pests with which the settlers of the country have to deal. It ravishes every kind of unprotected wood work, riddling it through and through in such a manner as to destroy it completely. Wooden houses have to be specially protected against these insects, otherwise such structures would be rapidly demolished. Wood upon which these termites have operated is completely honeycombed, nothing being left except a bare shell. The termite mounds, scattered about in all parts of the continent, are truly remarkable-looking things. There are several kinds, and they vary greatly in size, many of them being of remarkable height. and somewhat resembling great cones as they stand out on the surface of the forest-clad country or the open plains. There is a variety known as the Meridian Mounds, and these are built so that the orientation of the structure and each series of mounds, as well, coincides with the Meridian. This is something more than a mere coincidence, occurring as it does in widely separated localities. Some of the mounds are very gracefully constructed and compactly put together, so as to resist the weather, for some time at least. In operating upon a wooden building, or any other kindred structure, the white ant must have uninterrupted communication with the ground, and as soon as this is cut off, the pest can no longer continue its destructive work. The stumps of all wooden buildings are usually capped with galvanised iron plates to guard against the attacks of these insects, but despite every reasonable precaution, they often gain access. Besides this terrible wood destroyer, there are many very troublesome insect pests in Australia; the orchards are rarely free from them, and the marketable fruits are often completely destroyed by these enemies. In some of the colonies, special legislative measures have been enacted to deal with this serious trouble, but I am inclined to think that legislation is scarcely an effectual remedy, and it is sure to be found in time to come that the humble insects will hold the field against all comers. Nor is vegetable life the only sufferer in this respect. There is, in point of fact, a cattle tick that has recently
made its appearance in Northern Queensland, and this is perhaps the most serious pest yet known to the cattle owners of the country. Indeed this evil partakes more of the nature of a plague than of a pest, for it has hitherto resisted every effort to stamp it out, or even to prevent the animal from spreading. Quite a special literature has been created by the advent of this tick; maps have been prepared showing the tick infested districts, and there have been brought into force special legal enactments for properly regulating and controlling the movements of stock within the infested regions.

Cattle have died off by the thousands in a very short space of time, and numerous herds have been completely exterminated: such indeed has been the enormous loss sustained by run-holders through the tick plague, that many who were formerly prosperous, have been almost completely financially wrecked. Nor is the loss altogether an individual one, for, as a matter of fact, the country has been put to very great expense in endeavouring to stamp out the evil, so that directly and indirectly, the ill-effects of the trouble have been far-reaching. Insect-pests as a rule, are very minute, microscopic animals that rapidly develop numerically; they are harmless enough to look at, but many thousands of pounds have been spent in what has, after all, been a very poor and ineffectual attempt to fight them.

Before the reading of the paper, the President (Rt. Hon. Sir Hugh M. Nelson) said that the paper to which they were to listen was one, by the Hon. Secretary, Mr. J. P. Thomson, of a series dealing with the Physical Geography of Australia, which Mr. Thomson had been working at for a very considerable time. The matter originated at the special request of the Geographical Society in Paris, who wrote to him and to the Hon. Secretary about it, and the papers forming the series were to be published in their journal "La Geographie," but at the same time the Queensland Council considered it advisable that they should publish them also in the local journal. After the reading of the paper,

His Excellency The Governor (Major-General Sir Herbert Chermside) said he rose to propose a vote of thanks to Mr. Thomson for the very interesting, comprehensive, and suggestive paper to which they had listened. The Hon. Secretary had held the attention of the audience in the most remarkable way, considering the very wide extent of ground that he had traversed. He thought they must regret the somewhat abrupt conclusion of the lecture. In all he had put before them he had only evidenced once more those qualities of patient study, assiduity, and learned research for which he was so justly noted. There was very little in the paper that called for discussion, or was in any way of a contentious nature.

The President said he cordially agreed with the motion, and thought their Hon. Secretary was deserving of all the honour they could pay him. He was most indefatigable in forwarding the interests of the Society, and was always ready to do an amount of work that only the members of the Council and he (Sir Hugh) were aware of or could fully appreciate. Mr. Thomson had said that the marsupial might soon become extinct, and such opinion had also been expressed by many eminent authorities. He had been very much struck by finding the statement made in the 5th
edition of the "Encyclopaedia Britannica," whilst at the very time that book arrived in Australia, some 20 years ago, the marsupial had increased to such an extent as to seriously threaten the destruction of our best pasturages, and the Queensland Parliament was passing Acts to give rewards to lessen the number, which Acts still remained in force. He did not think the marsupial would disappear in the lifetime of anyone present. There were periods of increase and decrease regulated by some natural law, not yet understood, and with all the study devoted to them, there was a great deal yet to be learnt.

The Hon. A. C. Gregory seconded the vote. He said that he had listened with great interest to the paper just read, and having visited nearly the whole of the country which Mr. Thomson had described, it was very gratifying to find how judiciously he had collated the material at his disposal in regard to the local features peculiar to the several divisions of Australia. He trusted that the paper would prove valuable and useful in the better appreciation and understanding of the diverse features of the Continent, and felt assured that the practical development of the resources of our country would be materially aided by the collection of scientific information in regard to the Geological and Climatic conditions, such as had been embodied in Mr. Thomson's paper.
THE HOT SPRINGS OF KUSATSU.*

By D. S. THISTLETHWAYTE, C.E.

Mr. Chairman, Ladies, and Gentlemen,—

By way of preface, I may say at once that in the paper I am privileged to read this evening no new ground of exploration will be presented to you; we cannot all be explorers, we cannot all be the fortunate discoverers of new lands, and this paper is only the account of a short journey a little off the usual beaten track of tourists; still, I venture to think that any observations made, any facts recorded, truthfully and without exaggeration, however modest and insignificant they may appear, are, if I may say so, a gain to Geographical Science, as tending to confirm or otherwise the researches of those who have gone before, and in that way may be of some interest.

Resting in the depression of a plateau, between two spurs running down from the Kotsuake Mountains, is the village of Kusatsu. It is at an elevation of 3,800 feet above sea-level and owes its existence to the Thermal Springs—famed throughout Japan for their curative properties—immediately in the neighbourhood.

On a September morning, 1898, three of us, a doctor, a merchant—both residents of Yokohama—and the writer, left the Shimbashi Station, Tōkyō, by early train to visit these springs.

We reached Takasaki, a town of some considerable importance, 63 miles distant from Tōkyō, through a somewhat flat country, shortly after mid-day. Here we left the train, and continued the journey by a horse-tram, starting from the station precincts and running for 11 miles to the village of Shibukawa. The cars were small, built to accommodate twelve people only; we secured one for ourselves and traps, which you can do by paying a small additional fee; then a second-class car, which soon filled up with Japanese passengers, was coupled on behind us, and we got under weigh. The track was not very well laid, the road was rough, and the cars plunged a good deal, still the two "weedy" little horses, belying their looks, jogged along at a fair rate of speed without the aid of whip, and the charge being reasonable, we had no legitimate cause to complain.

Shortly after clearing the village of Kaneko, which is not quite halfway, we were witness to a small domestic tragedy. A group of laughing girls were standing gossiping amongst some pine trees on the roadside

* Read before the Royal Geographical Society of Australasia, Queensland, December 8, 1902.

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as we passed, when suddenly one of our male passengers spying one of the girls, leaped from the car with an angry shout, and made a dash to capture her. With a piercing shriek she turned and fled; her companions, evidently alarmed, tried to bar the way; her black hair fell loose as she ran, the man in hot pursuit clutching at it, and then the trees shut both out from our view, but those shrieks of terror still echoed through the wood. Pulling up directly after, some of us ran back; all we could glean was that the girl had formerly "kept company" with the man, and for some reason or other had thrown him over; it was, in fact, a case of jealousy. A fugitive fragment of Virgil, Varium et mutabile semper férmin, flitted un gallantly through our mind; it was, however, but a passing thought, for our sympathies were with the poor terror-stricken girl, and we hoped no further harm would result than mutual recriminations, explanations, and reconciliation.

At Shibukawa is the tram terminus, a large well-built shed, covering four roads, and housing a relay of cars; a number of tram employees in uniform were moving about, ricksha men touted for hire, and the place generally had an air of bustle.

Here we hired a jinricksha for our baggage, and started off on foot for Ikao, distant 2ri 17 chō, or 6 miles. For some distance the way led along a pretty sunken lane overshadowed by gnarled old pine trees on either side, then it took up a gentle ascent for the most part over grassy mountain slopes. A notice board in front of a cottage standing a little way off the track attracted my attention, and curiosity prompted me to cross over and read it. The legend in rude English characters was this:

"There are house in the selling fruits
Shibanaya, Koshiyen."

Briefly put, it would mean, "Fruit sold here."

A little further on we noticed a net hung on poles, about 20 feet high, and stretched for a distance of 50 yards across a gap or depression in the rolling down on our right; this we learnt was for catching "Isuné," a bird somewhat like and about the size of an English thrush. In the autumn the birds pack, and in their evening flight, or when driven in the twilight, make for the gap in the hill, strike the net, and fall fluttering into a bagged part of it, when they are, of course, easily captured. In the season you will see bunches of these birds, hanging with other game, exposed for sale in the shops. To our left the hills now gradually closed in on us; they were black with firs, except where replanting had recently taken place, and there the young trees were of a tender green.

* Note.—Distances are reckoned by ri and cho. One ri is equal to 2.44 English miles. One cho is equal to 358 English feet, or 1/15 of a mile; 35 cho equal one ri.
From Munematsu's Hotel, Ikao, looking down the Valleys of the Azuma and Tone-Gawa.
The forest laws of Japan seem admirably organised, for no sooner does the woodman fell a belt of forest, than at the proper season the cleared area is replanted, and thus reforestation is always in progress, and the stock of timber kept up. Generally a fringe of trees is left on the caps of the hills to check the force of the rain and, so prevent the soil being washed off the slopes into the valleys beneath; to clear the ridges altogether would unloose the binding roots and call down a landslip. Trees, of course, play a very important part in determining the general aspect and condition of a country; and, although it may still be a subject of controversy whether destroying forests and denuding a country of trees has any appreciable effect on rainfall, there can, I think, be no dispute that trees, especially on hill tops, serve to impede the down-rush of storm water, and distributes it more evenly and gently over the slopes. It is for that reason, then, that the Japanese leave the crests of their hills uncleared, a fact that you will see depicted by their artists on the most ordinary every-day requirements, in every little landscape painted on their fans, tea cups, and such-like. I cannot help thinking that some of our own people, who indiscriminately ring-bark or clear their holdings, might profitably learn a lesson in this respect.

The ascent now became steep, and turning a shoulder of the hill, Ikao, perched high up above the valley, on the flank of Mount Haruna, and bathed in the warm glow of the afternoon, opened out. The following day being Sunday, we spent in just strolling about the immediate vicinity.

Ikao, at an elevation varying from 2,500 to 2,700 feet, clings in irregular terraces to the N.E. slope of Mount Haruna. The picturesque main street, dividing the village into an eastern and a western part, consists of one almost continuous steep flight of steps. The houses west of this stone stairway hang over a deep ravine, called the Yusawa, down which rushes a foaming mountain torrent.

Ikao is famous for its mineral springs, which have a temperature of 113 degrees Fahrenheit, and contain a small amount of iron and sulphate of soda; they have been known for centuries, and the volumes of steam rising from the bath-houses form a striking feature of the precipitous village street.

From our hotel, Muramatsu's, we looked down upon and over the roof of another hotel to the valleys of the Azuma and Tene-gawa, and the high mountain ranges bordering the great plain in which Tōkyō is situated. From Ikao we devoted a day to visit Lake Haruna, 6 miles distant, and an ancient Shinto Temple, 1½ mile further on. The path leads along one of the slopes of the Yusawa ravine for about half a mile in cool shade; then, turning sharply to the right, ascends the steep mountain side by a rough and stiff climb. Arrived at the sum-
At the Shinto Temple of Haruna.

(By permission of the "Queenslander")
mit, the view is extensive and very beautiful, and the air on these upland moors bracing and perfect nectar after the climb and occasional sulphurous whiffs of Ikao.

At a cabin on the summit we halted a few minutes to sip the usual diminutive cup of tea and exchange greetings with the old lady in charge, and then descended by a long and easy grade to Lake Haruna. On the way a conspicuous conical hill, called Haruna Fuji, rises on the right, and the grassy slopes round its base form good grazing ground for a small herd of cattle—the only herd of cattle, by the way, I saw in Japan—which some one had started as the nucleus of a dairy farm.

The lake, which apparently occupies the site of an extinct crater, has an extreme length of about 1 ½ mile, by 1 mile in breadth, and contains an abundance of fish, amongst which is the salmon introduced from Yezo, the northernmost island of Japan, and of which two or three picturesque sampans, drawn up on the shore, with nets drying, gave evidence.

We left our tiffin at the tea-house on its border, and pushed on over the pass, called Tenjintöge, 1,000 feet above Ikao, to visit the temple. The pass is just a narrow divide, and from the top commands extensive views both ways. Looking backward, the eye wanders over the blue waters of the lake, with the conical hill, Haruna Fuji, rising from the opposite shore, and strange castellated peaks closing in the southern end; while in front is a deep wooded glen flanked on one side by volcanic rocks, which raise their crests in fantastic pillars and weather-worn dolmens to a considerable height above the dense foliage of the tree tops.

Into this glen the path descended, and a mile further on in a grove of lofty, solemn cryptomerias, sheltered by precipitous and overhanging rocks is the ancient Shinto Temple of Haruna. It is dedicated to Hōmusubi, the God of Fire, and Haniyasu-hime, the Goddess of Earth. The chief building is decorated with some fine wood carvings, two dragons entwined round the side beams of the porch are in high relief and especially good. But it is not in the buildings alone wherein the interest lies so much as in their site and surroundings; these are truly weird and impressive.

Leaning over the principal building is a huge rock standing on a comparatively small base, which seemingly threatens to topple over and crush the temple. No early saint or hermit could have selected a more secluded spot for meditation and prayer; the silent moss-grown courts, the perpetual subdued light under the shadows of the rocks and indigo-green grove, the gentle sighing of the breeze through the higher branches of the cryptomerias lend countenance to the thought.

Retracing our steps, as we lingered for a moment to have one last look before a bend in the path finally shut the temples out of view, the-
deep sonorous strokes of a great bronze bell boomed out, making the air
tremulous with a rich and melodious vibration. a fitting farewell to
this sacred and silent retreat. We lunched at the little tea-house at
Haruna, and pushing back the "shoji," enjoyed the prospect of the
lake and its pretty surroundings.

It was late in the afternoon as we returned homewards across the
upland, and at the very brink of it, just before dropping down to Ikao,
we stood. Deep down in the valley beneath us, all was in gloom and
the earth-shadow cast by the range of hills on which we stood was
creeping up the escarpment of the hills across the valley, but above
these the Nikko Mountains towered up and glowed golden in the level
sunlight of the evening.

After dinner a little singing girl entertained us with song; she was
a dainty little creature, and although there was nothing in the airs to
lay hold of, they were not unpleasing, and one, with a quaint turn and
abrupt ending to each verse, took our fancy.

We sent off our baggage ricksha in charge of two coolies early next
morning, and with Heihachi Kaidzu, whom we had engaged as our
factotum and guide, ourselves started soon after. Descending the stair
street of Ikao and crossing the ravine at the bottom we headed on
through distances of soft and rural scenery alternating with belts of
dense woodland, through which the narrow and uneven forest path
 twisted and turned, now to head some deep gully, now to contour the
siding slope of a mountain spur; later on out and across a long stretch
of rough moorland, and finally dropping down some hundred feet by a
zig-zag winding to the straggling hamlet of Gochôda, and to the level
of the Azuma-gawa.

We crossed the river, here about 25 yards wide, with a swift current,
in a small boat, pulling ourselves over by a rope of twisted wisteria
stretched from bank to bank, and kept along its right bank to the town
of Nakanojô. As we entered the street a number of children, boys and
girls, raced out of the school ground on our left to gaze at the foreigners
and shout "Ohio" (good morning) amid shrill laughter. We made our
mid-day halt at the village "Yadoya," and doffing our boots climbed
the creaking stairs to an upper story. The stairway opened on to a nar-
row gallery running round a small courtyard, in which was rock-work,
a miniature pond inhabited by a shoal of the bifurcated-tailed golden
carp of Japan, tender-leafed maple trees and dwarfed pines, the latter
being very fair examples of that art which the Japanese possibly alone
possess of stunting trees and producing as it were diminutive models
of large forest trees, perfect in shape though tiny in size. These
dwarfs attain a great age. It was quite a pretty little enclosure, but
we could well have spared the aroma arising from defective sanitary
arrangements that permeated it.
Our route now bore in a north-westerly direction along a main road on the right bank of a tributary of the Azuma-gawa, and mounting upwards we were soon a considerable height above the river. On the opposite side of the valley, the hills sloping down to the stream were covered with verdure. Here and there were clearings and patches of cultivation, and little paper-walled, thatch-roofed farm houses clinging to the shelter of the steep hill-sides, or nestling at their foot close to the water's edge. The stream ran strong and dashed in foam over the rocks with a muffled, musical roar, or circled round in rich brown eddies under bending branches of dense foliage.

At most of the cottages we passed on the road-side we noticed wooden racks, on which were trays of persimmons drying in the sun, and against the end walls least exposed to the weather were stacked from ground to the thatched eaves "daikon." a vegetable resembling a gigantic white radish, thus forming as it were a false wall or veneer of "daikon" against the side of the building.

The "daikon" is a favourite vegetable with the Japanese; it is, as I have just said, like a huge white radish, and when pickled, the usual mode of using it, has a most unpleasant smell; it is very strong and hot to the taste, and altogether, I thought it a most disagreeable eatable.

We reached Sawatari, our halting place for the night, 17½ miles from Ikao, a little after four in the afternoon. It is a quaint little village with hot springs and a public bath, to which patients who have taken their course of baths at Kusatsu repair for the "after-cure," the waters having a softening effect on the skin. The houses are huddled together in a little dell or depression in the hills, and are separated only by narrow stone-paved alleys, the projecting upper stories on opposite sides almost meeting. We put up at the Fukuda Inn, and while our handy man, Heihachi, was preparing our evening meal, the hostess conducted us to a bath-house at the source of one of the thermal springs, where we half boiled ourselves in the hot but soothing water.

The road from this onwards, not being practicable for jinrickshas, we hired a pack horse to carry our traps.

We were roused up at dawn from our "futons" on the floor by the musumés coming in and pushing back the "shoji" with a clatter. It was a lovely morning, and strolling out for a few minutes before breakfast to the outskirts of the village, the sleepy mist was still clinging to the hill-sides in soft pearly wreaths, the dew sparkled on the grasses and herbage, where the level sunlight searched it out, and from the woods the cock pheasants called to one another, rejoicing in the fresh morning air.

We left Sawatari amidst the hearty "syonaras" of the inn household, and following up a narrow valley, passed a number of villagers,
men, women, and children in holiday attire going to a "Matsuri," or religious festival at a neighbouring temple. The valley bottom was cultivated, and the fields divided by low embankments and small ditches into squares or irregular chequers for irrigation purposes according as the levels of the ground and natural features would permit. The farmers were busy in the fields; here was one hoeing weeds, there another turning up the soil with the spade of the country, an implement of agriculture with a blade 2 feet long, shaped like a grafting tool; a long handle provided with a prop just above the blade serves as a fulcrum; when the blade has been driven home with many laborious thrusts of the feet, both hands are shifted to the extreme end of the handle, the full weight of the body is allowed to bear on it, when the whole affair acts as a lever and a large clod of earth is upturned. It is a slow process, but very sure.

Cultivation lessened as we ascended the valley, and at its head, where the mountains closed it in, some large walnut and sweet chestnut trees grew in the natural amphitheatre thus formed. Two or three peasant women were beating down the chestnuts with long sticks for winter store. They were dressed in tight trousers of a dark blue colour, fitting close to the leg and finishing at the ankle, leaving the foot bare, and the "kimono" tucked up and tied back to allow free use of the limbs when at work in the fields. A blue and white kerchief covering the hair was tied under the chin. The unbecoming custom of the married women of blackening the teeth and shaving the eyebrows is still common in rural Japan; it is, however, gradually dying out, and to the great advantage of the women folk, for this unsightly practice added to a somewhat vacant stare with parted lips when meeting you, make them appear foolish, which they most certainly are not.

The climb up the range was now very steep, but the view from the top of the pass, Kurisakatoge, 2ri 10cho (0.5 miles) from Sawatari, is very extensive and well repaid the exertion. Two or three invalids, on their way to Kusatsu, were sitting in front of the little rest house on the summit, and from this onwards we occasionally overtook the sick going to or met convalescents returning from the hot springs. In front of the tea house grew a very old, gnarled, and spreading wisteria, its rope-like branches were trained over a trellis-work bower, and formed a grateful shelter for travellers to rest under. These outlying tea-houses are only temporary structures, and during the winter months are generally barred up and deserted.

The summit of the pass is narrow, and in front the ground fell away with an extreme declivity. We looked over mile beyond mile of broken country, hill and valley beneath us, and 7 miles away on the slope of the Kotsuke Range, all flecked and dappled with violet cloud-shadows, was Kusatsu, with the Peak of Moto-Shirane towering up behind it.
We descended the range, and winding round a steep sidling, suddenly found all trace of the track entirely obliterated, for on the hillside an extensive landslip had occurred, carrying the forest with it in its descent, and filling the valley beneath with débris; the trees were standing with branches interlocked in a confused tangle, or with trunks uprooted lay extended on the slope. We traversed this somewhat treacherous ground, and then crossing a lower divide found ourselves overlooking a deep, narrow, and very picturesque valley with a tributary of the Agatsuma-gawa racing and flashing along the bottom. The path now sank into the valley, passing as it did through the hamlet of Numazu. The village consists of only a few cottages sparsely distributed one above the other along the mountain track; narrow terraces, the low side built up with stones, were sown with millet and a few vegetables, and the necessary water trained to them in bamboo conduits from the nearest running gully, after all offering but a poor harvest to the peasant. As it was now mid-day, we halted at the inn; the kitchen and guest chamber combined was stained a rich brown by age and smoke, and from the rafters were hanging strings of "waraji" (straw sandals) and bunches of herbs; the host and his wife were in keeping with their surroundings, for they were both very old and unkempt. We overtook our pack horse with the baggage here, and on resuming our journey and nearing the bottom of the ravine we saw that the river was in full flood, and the bridge over it had been swept away. A large working party was engaged getting material together for repairing the damage; they had already spanned the stream by launching a pole from a ledge of rock on the bank to a huge boulder in midstream, and from there again by another pole, with a steep decline on to the shingle-bed on the opposite shore; and although a bamboo pole did duty as a hand rail, one had to brace one's nerves and pull oneself together to effect the crossing. For the water, of a tawny raw sienna colour, like a Highland stream in full spate, was a swirling, seething torrent foaming down and sweeping over the rocks with an angry defiant roar of thunder; very beautiful to watch from the bank, but not quite so interesting when hovering 18 or 20 feet over it on a sagging and uncertain foot-way.

Some of the bridge labourers passed our baggage over, it being quite impossible to get the pack-horse across, while we waited on the shingle bed until Heihachi had searched out and hired another with its owner.

A long and steep climb again, in the gloom of a dark pine wood, brought us up out of the shaded valley, and then on the top we kept along the sharp crest of a range for some miles until it spread out fan-like and joined the plateau on which Kusatsu is situated. This we reached between four and five in the afternoon; distant 5ri 9chō, say 13 miles, from Sawatari.
Kusatsu, nestling in a hollow of the plateau, although the resort of the sick and diseased, is full of picturesque bits; the jutting eaves of the houses and quaintly carved corbels, the tiny balconies with diminutive balustrades serve to remind one of a village in the Tyrol; moreover, being 3,800 feet above sea-level, it enjoys a cool climate even in the summer months. In the centre of the village is a large open space, in which are the public baths, more or less enshrouded in a cloud of steam; the houses surrounding it are mostly inns and lodging houses; altogether, the village is very prosperous.

The hot springs of Kusatsu have for centuries attracted thousands of people thither for their healing virtues, and are not only specially efficacious in rheumatism, gout, etc., but in cases of leprosy and other specific diseases.

The chief constituents of the springs are mineral acids, sulphur, iron, alum and arsenic, and the first effect of the free sulphuric acid in the water is to bring out sores on the tender parts of the body. The temperature of the springs is extremely high, ranging from 100 degrees to 160 degrees Fahrenheit, and a strong odour of sulphurous acid and sulphuretted hydrogen permeates the air in their immediate neighbourhood.

We passed through the village to our hotel, quaintly called the Yamamoto-kan (Pleasure-house) on the further outskirts; its private bath-house was detached from the main building, but connected with it by a covered way. The baths, of which there were four or five of varying degrees of heat, were sunk in the ground flush with the floor; the temperature of the spring which supplied them was 135 degrees; one bath was 116 degrees; we, however, contented ourselves with 110 degrees, and found that quite sufficient for comfort.

The following morning we followed up the little stream, which passes through the village to its source. Numerous hot springs join it, or well up in its rocky bed with frequent bubbles, which burst with small jets of steam, on coming to the surface. We tried the temperature in different places, the thermometer reading 125 degrees, 122 degrees, 123 degrees, etc. The slopes of the narrow valley through which it ran were clothed with delicate maples and other shrubs beautiful in autumn tints of yellow, russet, and red.

Just before reaching the head of the glen, where the stream issues from the base of a precipitous slope of grey and ochre rocks of andesitic formation, the place is called Sai-no-Kawara, lit. "The River Bed of Souls," and on the confused mass of rocks and boulders choking the stream-bed small cairns of pebbles have been piled up by visitors as offerings to their deceased children, while on one or two of the larger boulders inscriptions have been cut with infinite labour and trouble. We noticed also one or two small stone images of Jizō, the most
popular of Buddhist saints. He is the compassionate patron of travelers, and protector of children in this world and the next. His image is often loaded with pebbles, which are supposed in the Shadow World to lighten the labours of the young who have been robbed of their clothes by the hag Shizuka-no-Baba, and afterwards set by her to perform the endless task of piling up stones on the bank of the Buddhist river Styx. As we gazed on these votive offerings, so moveless, so battered by time, we could not help wondering how many sorrowing and sorrowful hearts these pathetic little tributes of affection represented.

These thermal springs obviously owe their origin to the action of subterranean fire, and are probably occasioned by the superficial waters percolating through cracks and fissures to an immense depth, where they are variously heated by the high temperature of the earth's interior according to the extent of their penetration, then returned heated to the surface and ejected before becoming cool. Their high temperature, too, would indicate the presence of great heat in the rocks comparatively near the surface, which is not surprising when we consider that Kusatsu is in a vast theatre of igneous action.

About three miles to the westward is Shiranesan, a volcano over 7,000 feet in height, and although called quiescent, shows more or less evidence of continuous activity. Its crater is oval shape, about 500 yards in extreme length, by 150 to 200 yards in breadth, and the walls are very steep. At the bottom is a sulphurous lake in a constant state of agitation, bubbling and seething and vomiting small jets of steam. A skeleton forest on the slope of the mountain testifies to the poisonous fumes exhaled during the last eruption. A little nearer Kusatsu is the solfataras of Sesshō-ga-wara, and numerous other hot springs within a radius of five miles.

Returning to the village by another route we made for the public baths; a shower of rain had fallen in the morning, and in the open square a number of bamboo-framed, oiled-paper-covered umbrellas were on the ground drying; there must have been over a hundred of them; they strangely resembled a bed of huge mushrooms.

In the chief bath house, called Netsu-no-yu, there are three baths, two at the entrance and then the main one, about 25 feet square, all of increasing degrees of heat; the bathing is conducted under the autocratic direction of a "bath-master," and the natives pay each a few "sen," equal to about a penny a day, for the right to bathe. Early in the morning a horn is sounded, the bathers assemble, and as many as can find room take their first daily dip. Before doing so, they are provided with pine planks, with which they chum the water to and fro to reduce the temperature to the required heat, accompanying the action with a chorus something similar to sailors hauling on a
...rope. Each patient is then given a wooden dipper, and kneeling, pours a hundred dippers of water over his head to guard against congestion; this done, they all lower themselves quietly into the bath, their faces in many instances showing by their contortions the agony occasioned.

Very curious is the raucous sort of chant which then takes place between the bath-master and the bathers crouching in the water. an experience which though lasting only a few minutes must seem an age to their sore and agonised bodies. After an interval of a minute, the leader cries out "Three minutes to pass," and the patients answer with a hoarse shout. Then, after the lapse of a little time he chants "Two minutes more," then "One minute more," the bathers answering in chorus each time. When at last the bath-master cries "Finished," the whole crowd of naked bodies emerge from the water with a swiftness in strong contrast to their slow and painful entry. In a short time the horn is again sounded, and a fresh batch of bathers undergo a like process; this goes on from early morn till late into the night. The usual course of baths is 120, spread over four or five weeks.

Volumes of steam were rising from the bath-house as we entered and exchanged salutations with Nojima-ko-hatchu, the bath-master; with his consent our doctor friend took the pulse of some of the bathers; they averaged between 70 and 84; the temperature of the bath was 121 degrees, and at the intake, where the stream poured into the bath, 138 degrees.

We sallied out again in the afternoon, and noticed standing in front of a cottage a little boy of 8 or 9 years suffering from some eye trouble. The Doctor examined him—it was a case of keratitis, a clouding of the cornea or window of the eye—and promised to make up a lotion that might give some slight relief, when we came back. He was a bright intelligent lad, and in the evening as we returned homeward the little fellow was in the same place waiting for us with a branch of a shrub, called by the natives "Nürushi," lovely in its brilliant autumn tints, as an offering to the Doctor. I suppose he noticed my interest and sympathy with him in his misfortune, for as he pressed the leafy spray into the Doctor's hands, he turned to me and said, "There are yet other flowers I will give thee," a promise he kept next morning. I merely mention this incident as an example of the pretty manners most Japanese children have.

Our walk had been to the lepers' quarter, some distance down stream from the village proper. We were told that the lepers are allowed to have their wives and children with them, and, in fact, from our own observation, their families seemed free to come and go; but under no consideration are the lepers themselves allowed to leave the compound. Only a wealthy leper could evade the ban of separation from his class. Segregation, therefore, is only partially maintained.
We saw a number of them in their bath, the temperature of which was 105 degrees.

We left Kusatsu early next morning, heading southerly for Karuzawa. The autumn tints of the "Nurushi" were very brilliant and of a dazzling scarlet, being in vivid contrast to the indigo-green foliage of the pine trees behind them. Presently we dropped down into a wooded glen, through which a clear, swift-flowing brook raced. A Japanese survey party was making a traverse of the watercourse. The surveyor wore the national garb, the "kimono," but there was, unfortunately, a discordant note, for his head-gear was the black "pot hat" of the Occident. I noticed the theodolite he used was one of Troughton and Sims'.

Some time before noon we forded the Azuma-gawa; here a shallow stream rippling over a broad pebbly bed. Then the path rose from the valley, and by a stiff climb led up a lofty range on to a park-like undulating table-land, where the walnut and chestnut trees threw in massive clumps of foliage. The former were laden with fruit, and here again the peasant women were knocking down the nuts with long poles for winter use. At mid-day we made the village of Okuwa-kan, a small place whose only trade is with the farmers in the neighbourhood. The inn was gloomy and stained with age, and the village street muddy from recent rain, still a number of people passed in and out, chiefly with the object of staring at us. We stayed here no longer than was necessary, for the surroundings were not inviting, and the odours unsavoury, and after a pleasant tramp through ever changing and varied scenery, with distant views of the group of peaks around Haruna, came in sight of the volcanic cone of Asama-yama.

Asama-yama is 8,280 feet in height, and is the largest active volcano in Japan. Its crater is of the typical form, circular, and three-quarters of a mile in circumference, with perpendicular walls burnt to a red hue. Sulphurous steam is continuously ejected from the bottom, and from numerous crevices in the walls. The side of the cone is strewn with large fragments of loose lava, and deep rifts extend for the greater part of the way down to its base. The last great eruption occurred in 1783, when a vast stream of lava destroyed the forest, and several villages on the North side. This lava track is still very apparent, resembling a huge blue-black serpent winding down the face of the mountain. Subsequent eruptions have vomited out showers of ashes only, but subterranean disturbances can always be heard at the foot of the steep cone. We kept the mountain on our right for some time, at a comparatively short distance off, and a continuous light cloud of vapour, sometimes slightly yellow-tinged, welled over the lip of the crater and drifted along the mountain side, following the natural configurations of its upper slopes.
As the afternoon wore on, the sky became stormy, and the mountains that had been smiling in sunshine turned a purple black. A little later, as we descended the steep spur running down from the uplands we had been traversing, down came the clouds heavy and white, and charged with rain, and for the last two or three miles into Karuizawa the mountains were shut out, enveloped in a cold mist; we arrived at the hotel just as darkness set in thoroughly drenched. We had come 11 ri, nearly 27 miles, and were glad of a hot bath, a change from our wet clothes into kimonos, provided by the hostess, and a hot dinner, well served in "European fashion."

Karuizawa is only a small village, but on account of its altitude, 3,270 feet above sea-level, is the summer retreat of a few of the foreign residents of Tōkyō; it lies on an uncultivated grassy moor, literally covered with wild flowers in the season.

The following morning we took train to Takasaki Junction. The seven miles of railway down the Usui Pass is a clever piece of engineering; the average gradient is 1 in 15, the Abt system of rack-railway has been adopted, and for almost the whole seven miles it is a succession of bridges and tunnels, the total tunnelling aggregating $2\frac{3}{4}$ miles.

At Takasaki we parted with our faithful and willing henchman, Heihachi, with mutual regrets, he journeying northward to his home at Ikao, and we southerly to Tōkyō and Yokohama respectively.
THE MURAWARRI AND OTHER AUSTRALIAN LANGUAGES.*

By R. H. MATHEWS, L.S.,
Assoc. étranger. Soc. d'Anthrop. de Paris.

This Society last year published a brief article contributed by me on the Thoorga and Yookumbill Languages,1 two of the native tongues of New South Wales. On the present occasion it is intended to furnish the principal elements of the language spoken by the Murawarri, a large tribe occupying a region of Southern Queensland, from the Warrego River to the Culgoa. Adjoining the Murawarri on the north are other tribes speaking dialects of the same language and reaching into Queensland for hundreds of miles. The grammar and vocabulary of two other native tongues of Queensland—"The Yualeai Language," and "The Pikumbil Language"—were contributed by me to the Royal Society of New South Wales.2

I have incorporated with this paper particulars of the grammatical constitution of the Burranbinya and Tharumba languages of New South Wales, and the Wuttyabullak language of Victoria. A mystic language is also referred to.

The information given in this article was carefully gathered by myself, without the assistance of any person, in the camps of the several native tribes whose languages are herein dealt with—a task involving considerable expenditure of time, labour, and money.

Through the medium of this Journal, I have now contributed the outlines of the grammar of six Australian languages—Thoorga, Yookumbill, Murawarri, Burranbinya, Tharumba, and Wuttyabullak. The Thoorga language shows the grammatical structure of all the native tongues along the coast of New South Wales from the Hawkesbury River to Cape Howe, and onward along the Victorian coast to Cape Patterson, including the whole of Gippsland.3 The Yookumbill represents the rules of speech from the Murray River, through the

* Read before the Royal Geographical Society of Australasia, Queensland, 8th December, 1902.
centre of New South Wales, into Queensland, at least as far as Maranoa and Mary rivers. The Murawarri type of language extends away up the Warrego, Paroo, and other rivers a great distance. The Burranbinya is one of the dialects of the Darling River tribes. The Tharumba is spoken on the south-east coast of New South Wales. The Wuttyabullak is representative of the native speech over nearly the whole of Western Victoria. Languages of similar grammatical constitution have also been observed by me in South Australia.

It will, therefore, be observed that I have, practically, dealt with all the aboriginal languages of Victoria, nearly the whole of New South Wales, and a large region of South-eastern Queensland. All this work has been the result of my own individual investigations—every word in the grammars and vocabularies having been noted down by me from the lips of the aboriginal speakers.

It is extremely gratifying to see that your Society is assisting me in my endeavour to preserve, before it is too late, some grammatical records of the speech of the Australian aborigines. The large amount of information thus collected and published will no doubt prove of immense value to philologists by enabling them to compare the native languages with each other, and also with the speech of the tribes of Polynesia and elsewhere.

The system of spelling adopted is that recommended by the Royal Geographical Society, London, with the following qualifications:

As far as possible vowels are unmarked, but in order to prevent ambiguity of pronunciation, in some instances the long sound of a, e, and u are indicated thus, ã, ë, û. In a few cases the short sound of u is shown thus, ù.

G is always hard. R has a rough trilled sound, as in hurrah! W always commences a syllable or word. Y at the beginning of a word or syllable has its ordinary consonant value.

The sound of the Spanish ñ is frequent; at the beginning of a word or syllable I have represented it by ny, but when terminating a word the Spanish letter is used.

Ng at the commencement of a word or syllable has a peculiar nasal sound. At the end of a syllable it has the sound of ng in "wing."

Dh is pronounced nearly as th in "that," with a slight sound of d preceding it. Nh has likewise nearly the sound of th in "that," with the initial sound of the n.

T is interchangeable with d, p with b, and g with k, in most words where these letters occur.

Ty and dy at the beginning of a word or syllable have nearly the sound of j. At the end of a word ty or dy is pronounced nearly as tch in watch or hitch, omitting the final hissing sound.
THE MUilAWARRI LANGUAGE.

In the Murawarri language, among all the parts of speech subject to inflection, there are two forms of the first person of the dual and plural—one of which includes, and the other excludes—the person addressed. I am the first author to report this peculiarity in any of the native languages of Queensland. It may be stated that I was likewise the first to draw attention to its existence in the aboriginal languages of New South Wales and Victoria.¹

Nouns.

There are three numbers, singular, dual, and plural. Gula, a kangaroo. Gulabural, a pair of kangaroos. Guladhunna, several kangaroos.

Gender.—Mugi, a woman. Men, a man. Among animals sex is distinguished by words signifying "male" and "female," thus, gündal dhiungur, a male dog; gündal guni, a female dog.


Nominative Agent: Guladyu ngunna wirrunga, a kangaroo me scratched.

Instrumental: Mendyu wagan mullinyu bundhara, a man a crow with a boomerang hit.

Genitive: Mungingu kinni, a woman's yamstick.

The genitive case of some nouns is represented by an affix corresponding to the person and number required:—

1st Person—My camp (camp my), Nguralu
2nd Person—Thy camp (camp thy), Nguranu
3rd Person—His camp (camp his), Nguralugu

And so on for all the numbers and persons.²

Accusative: This is the same as the nominative.

Dative: Dhan yanna nguranggu, Come to the camp.

Ablative: Dhirri yanna ngurango, Go from the camp.

Adjectives.

Adjectives are placed after the nouns they qualify, and are similarly declined for number and case. They are compared by saying, Thurdaburra, very large.

Pronouns.

Pronouns have number, person, and case, as exemplified in this table. There are inclusive and exclusive forms for the dual and plural of the first person:—

SINGULAR.

<table>
<thead>
<tr>
<th>Person</th>
<th>Nominative</th>
<th>Possessive</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Ngadhu</td>
<td>Ngundi</td>
<td>Ngunna</td>
</tr>
<tr>
<td>2nd</td>
<td>Ngindu</td>
<td>Ingga</td>
<td>Bunga</td>
</tr>
<tr>
<td>3rd</td>
<td>Yallunggo</td>
<td>Ngumbuga</td>
<td>Bunha</td>
</tr>
</tbody>
</table>

DUAL.

<table>
<thead>
<tr>
<th>Person</th>
<th>Nominative</th>
<th>Possessive</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Ngulli</td>
<td>Ngulliga</td>
<td>Ngullinya</td>
</tr>
<tr>
<td>2nd</td>
<td>Nula</td>
<td>Nulaga</td>
<td>Nulana</td>
</tr>
<tr>
<td>3rd</td>
<td>Yallubural</td>
<td>Bulaga</td>
<td>Buramnha</td>
</tr>
</tbody>
</table>

PLURAL.

<table>
<thead>
<tr>
<th>Person</th>
<th>Nominative</th>
<th>Possessive</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Nginna</td>
<td>Nginnaga</td>
<td>Ngurrana</td>
</tr>
<tr>
<td>2nd</td>
<td>Nura</td>
<td>Nuraga</td>
<td>Nurana</td>
</tr>
<tr>
<td>3rd</td>
<td>Yalladhunna</td>
<td>Dhurraga</td>
<td>Dhurrana</td>
</tr>
</tbody>
</table>

The foregoing full forms of the pronouns are employed chiefly in answering questions. In ordinary conversation the natives use the pronominal suffixes illustrated under the heading of 'Verbs.'

Who, ngannga? What, minya? This, nhu. That, nhurana. These interrogatives and demonstratives take inflexion for number and person. They also vary according to the position of the object referred to. The demonstrative pronouns in their various forms supply the place of the definite article.

VERBS.

Verbs have the singular, dual, and plural numbers, the usual persons and tenses. The chief moods are the indicative, imperative, and conditional. Number and person are indicated, as in the Thoorga, by pronominal particles added on to the verb stem; as in the following conjugation of the verb, bundhera, to beat:

**INDICATIVE MOOD—PRESENT TENSE.**

<table>
<thead>
<tr>
<th>Person</th>
<th><em>singular</em></th>
<th>verbal form</th>
<th>2nd person</th>
<th><em>s</em></th>
<th>verbal form</th>
<th>3rd person</th>
<th><em>s</em></th>
<th>verbal form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>I beat</td>
<td>Bundhiyu</td>
<td>Thou beatest</td>
<td>Bundhindu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td></td>
<td>He beats</td>
<td>Bundhibu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DUAL.**

<table>
<thead>
<tr>
<th>Person</th>
<th><em>1st Person</em></th>
<th>verbal form</th>
<th><em>2nd Person</em></th>
<th>verbal form</th>
<th><em>3rd Person</em></th>
<th>verbal form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>We incl. beat</td>
<td>Bundhili</td>
<td>We excl. beat</td>
<td>Bundhilinumba</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>You beat</td>
<td>Bundhinula</td>
<td>They beat</td>
<td>Bundhibula</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PLURAL.**

<table>
<thead>
<tr>
<th>Person</th>
<th><em>1st Person</em></th>
<th>verbal form</th>
<th><em>2nd Person</em></th>
<th>verbal form</th>
<th><em>3rd Person</em></th>
<th>verbal form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>We incl. beat</td>
<td>Bundhina</td>
<td>We excl. beat</td>
<td>Bundhinadyula</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>You beat</td>
<td>Bundhinura</td>
<td>They beat</td>
<td>Bundhira</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PAST TENSE.**

<table>
<thead>
<tr>
<th>Person</th>
<th><em>1st Person</em></th>
<th>verbal form</th>
<th><em>2nd Person</em></th>
<th>verbal form</th>
<th><em>3rd Person</em></th>
<th>verbal form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I beat</td>
<td>Bundharanyu</td>
<td>Thou beatedst</td>
<td>Bundharandu</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>He beat</td>
<td>Bundharabu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

FUTURE TENSE.

<table>
<thead>
<tr>
<th>Person</th>
<th>Singular</th>
<th>2nd</th>
<th>3rd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I will beat</td>
<td>Thou wilt beat</td>
<td>He will beat</td>
</tr>
</tbody>
</table>

Bunggunyu
Bunggundu
Bunggubu

It is thought unnecessary to exhibit the dual and plural numbers of the past and future tenses.

IMPERATIVE MOOD.

<table>
<thead>
<tr>
<th>Mood</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beat</td>
<td>Beat not</td>
</tr>
</tbody>
</table>

Bungga
Wulla bungga

CONDITIONAL MOOD.

I may beat Wullawurri bunggunyu

REFLEXIVE.

<table>
<thead>
<tr>
<th>Mood</th>
<th>Present</th>
<th>Past</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I am beating myself</td>
<td>I was beating myself</td>
<td>I will beat myself</td>
</tr>
</tbody>
</table>

Bundherriyu
Bundherriaiyu
Bundherriguyu

The inflexion continues through all the persons.

RECIPROCAL.

<table>
<thead>
<tr>
<th>Mood</th>
<th>Dual</th>
<th>Plur.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pres. We incl. are beating each other</td>
<td>Pres. We incl. are beating each other</td>
</tr>
<tr>
<td></td>
<td>Fut. We incl. will beat each other</td>
<td>Fut. We incl. will beat each other</td>
</tr>
</tbody>
</table>

Bumbullali
Bumbullaguli
Bumbullana
Bumbullaguna

Indiyu appears to serve the purpose of the English auxiliary verb. I am. If we take an adjective or adverb as a predicate, we get the following illustration in present, past, and future of the first person singular:

<table>
<thead>
<tr>
<th>Mood</th>
<th>Present</th>
<th>Past</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I am well</td>
<td>I was well</td>
<td>I will be well</td>
</tr>
</tbody>
</table>

Murrin indiyu (well am I)
Murrin indiyu
Murrin inguyu

This form applies to all the persons and numbers.

ADVERBS.


PREPOSITIONS.


Many prepositions can be inflected for number and person, as in the Thoorga language:—Behind me, billunggadhiga. Behind thee.
billunggabunga. Behind him, billunggabuga. Behind us, billungganga-ngurriga, and so on.

**Numerals.**

One, yaman. Two, kubbo. Several, murabirri.

*See the Vocabulary at the end of this paper.*

**THE BURRANBINYA LANGUAGE.**

The territory of the Burranbinia tribe is situated on the Darling River, New South Wales, extending from above Brewarrina downwards to about Bourke, comprising the lower portions of the Bokhara, Bogan, and Culgoa rivers, for some distance above their respective junctions with the Darling.

**Nouns.**

Nouns have number, gender, and case:—

- **Number.**—Kuranyi, an opossum. Kuranyigulli, a couple of opossums. Kuranyigalga, several opossums.

- **Gender.**—Bullu, a man. Men collectively are called murrin. Thumugan, a woman. Bullubullu, a young boy. Thummagubbalu, a young girl. Kirridya, a child of either sex.

The gender of animals is distinguished by the words dhulatya, male, and nguunmagara, female, placed after the name of the animal; thus, mirri dhulatya, a male dog; mirri nguunmagara, a female dog.

- **Case.**—To form the cases, nouns take additions by means of post-fixes:

  - **Nominative**—Thunta, kangaroo. Murli, a boomerang. Kaia, a yamstick.
  - **Causative**—Bullulu kuranyi burralalu, a man an opossum killed. Thuntallu lanu mara, a kangaroo me scratched.
  - **Genitive**—Bulluwu murli, a man's boomerang. Thummagawu kaia, a woman's yamstick.

The other cases are omitted to economise space.

**Pronouns.**

Pronouns are inflected for number, person, and case, and contain two forms of the dual and plural in the first person. The following is an example in the singular number:

<table>
<thead>
<tr>
<th></th>
<th>Nominative</th>
<th>Possessive</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Person</td>
<td>Ngunthu</td>
<td>Ngunnu</td>
<td>Lanu</td>
</tr>
<tr>
<td>2nd</td>
<td>Hintu</td>
<td>Ingga</td>
<td>Laggunni</td>
</tr>
<tr>
<td>3rd</td>
<td>Nuanara</td>
<td>Ngurrani</td>
<td>Larumi</td>
</tr>
</tbody>
</table>

Although there are numerous differences in the vocabulary, the grammatical rules governing the other parts of speech in this language are the same as in the Murawarri, and are, therefore, omitted on the present occasion, for want of space.

**Numerals.**—One, muggu; two, bulagar; several, wulliwal.
THE THARUMBA LANGUAGE.

The Tharumba language is spoken on the coast of New South Wales, between the Shoalhaven River and Ulladulla, reaching inland to the Dividing Range. This tongue is a dialect of the Thoorga, spoken to the south of Ulladulla, the grammatical structure of which was explained by me last year.1 South of the Thoorga is the Dyirringan tribe, whose speech I have also dealt with.2 The Thurrawal-speaking people adjoin the Tharumba on the north.

The initiation ceremonies of the Tharumba and other tribes mentioned consist of the Bunun and the Kudsha, which have both been fully described by me elsewhere.3 The social organisation of these tribes, and their intermarrying laws have also been already explained by me.4

Nouns.

Number and gender are substantially the same as in the Thoorga language.

Case.—The principal cases are the nominative, causative, instrumental, genitive, accusative, dative, and oblative.


Causative—Mirrigandi gurawara buddhal, a dog an opossum bit. Wanggandi wurraŋ bailla, a woman a child beat. Gurauri dyirra thunnan, an opossum leaves eats. Yuindyi warrigulla dhubbagal, a man a mullet caught.

Instrumental—This case takes the same suffix as the causative. Yuindyi wagura bingala warrangandyi, a man at a crow threw a boomerang.

Genitive—The proprietor and the property are both declined, but the suffix to the former differs from that of the latter:

Yuingu warranganyu, a man's boomerang.
Wanggangu gagauyu, a woman's yamstick.

I was the first author to report this declension of the name of the possessor as well as that of the article possessed, among the languages of the aboriginal tribes of New South Wales,5 and also in those of Victoria.6

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Every object over which ownership can be exerted is subject to

inflection for number and person:

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1st Person</th>
<th>Warrangandha</th>
<th>Boomerang</th>
<th>my</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2nd</td>
<td>Warrangangu</td>
<td>Boomerang</td>
<td>thy</td>
</tr>
<tr>
<td></td>
<td>3rd</td>
<td>Warrangannyu</td>
<td>Boomerang</td>
<td>his</td>
</tr>
</tbody>
</table>

And so on through the dual and plural. If a couple or several articles

be claimed, an infix is inserted between the noun root and the posses-
sive suffix, thus:—Warranganburrandha, boomerangs both mine.

Warranganburragandha, boomerangs several mine.

Dative—This is the same as the genitive.

Ablative—Thuganda, from a camp. Barnda, from a fire.

The accusative is the same as the nominative.

Adjectives

Adjectives follow the nouns they qualify, and take similar declen-
sions for number and case:

Yuin birraga, a man large.

Yuindyi birragandyi wurrañ bailla, a large man beat a child.

Yuingu birragangu warranganyu, a large man's boomerang, and so

on for the other cases.

There are euphonic modifications of the suffixes in all the cases of

nouns and adjectives, depending upon the termination of the word
declined.

For the comparison of adjectives, and the inflexion of some of them

as intransitive verbs, see my "Thoorga Language."

Pronouns

The following are the nominative and possessive pronouns:

I Ngaiga Mine Ngaiaanganguli
Thou Indiga Thine Indiganguli
He Dyellandyulla His Dyellulgundiwuli
We, incl. Ngaiawungul Ours, incl. Ngaiawunguli
We, excl. Ngaiawungulla Ours, excl. Ngaiawungulanguli
You Indiwu Yours Indiwuli
They Dyellandyullawurra Theirs Dyellandyaawurrawuli
We, incl. Ngaiawanyi Ours, incl. Ngaiawunyunguli
We, excl. Ngaiawanyaga Ours, excl. Ngaiawanunganguli
You Indiwunhu Yours Indiwunhunguli
They Dyellandyullawurraga Theirs Dyellandyaawurraganguli

The objective pronouns, me, thee, him, etc., are not found separat-
ly, like the nominative and possessive, but consist of pronominal

suffixes to verbs and other parts of speech:

A kangaroo scratched me Burrui garrulingga
A kangaroo scratched thee Burrui garrulinyi
A kangaroo scratched him Burrui garrula

There is a causative form of the nominative pronouns:
Ngaiagandyi. I (did it). Indigandyi, thou (didst it). Other forms are: Ngaiagamiddyi, myself. Ngaiagabah, I also. Ngaiagandyingundi, from me. Ngaiagandyina, with me. Yennaira ngurndi ngaiagaii, go away from me. Yennauwulura dhainggu ngaiaganggu, come towards me.


Demonstratives—This, near, nyinya. That near you, nyunya. Dyin, that. Dyinalibura, that, farther. Dyinginda, that yonder. Dyinnadha, that person. Nyindyiwal, this other one. Dyindyi, ever here. Nyidyila, anything this side of the person addressed. Wurridya, something beyond the person addressed. Nyulluñ, anything below the speaker. Dyullünga, something on a higher level than the speaker. Ngaiina, over there.

Most of the demonstratives are likewise used as pronouns of the third person, and are inflected accordingly, as: Nyindyiwiwurra, these two. Nyindyiwiwurraga, all these.

A native will often indicate the location of a thing by giving its compass bearing from a tree, waterhole, rock, or other known point.

**VERBS.**

All that has been said respecting this part of speech in my "Thoorga Language" is substantially applicable to the Tharumba verbs. The following additional particulars, which are common to both dialects, may now be supplied:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Verb</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Jummagangarilaga</td>
<td>I am quite well</td>
</tr>
<tr>
<td>I</td>
<td>Jummagangabullaga</td>
<td>I was quite well</td>
</tr>
<tr>
<td>I</td>
<td>Jummaganguringa</td>
<td>I will be quite well</td>
</tr>
</tbody>
</table>

Nyamundyaliang, we, dual, exchange or barter.

Warrangan yunnullaga thugandha, I have a boomerang at my camp.

Yangawamiigiin yubbunda, I will sing for thee a song.

Waddhana baiuga, it is doubtful whether I will beat.

Wunnungulla gurrugandhullingga, who called me.

Verbs take inflection for the same number as the object noun:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Verb</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Mirriga thambamulaga</td>
<td>I saw a dog</td>
</tr>
<tr>
<td>I</td>
<td>Mirrigamburra thambamulagul</td>
<td>I saw a couple of dogs</td>
</tr>
<tr>
<td>I</td>
<td>Mirrigamburraga thambamulagin</td>
<td>I saw several dogs</td>
</tr>
</tbody>
</table>

**ADVERBS.**

Yes, ngäwe. No, thuggail. To-day, nhauai. Yesterday, bugia. To-morrow, buriidya. There, dyindyiladyi. Here, nyindyi. When used predicatively, nyindyi and its variants, can be inflected for tense.

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as well as for number and person, thus:—Nyindiaga, here am I. Nyindiyulwala, here was I. Nyindiyawulagala, here will I be.

The natives can also say:—Yuin nyindiyiwula, a man is here. Yuin nyindiyiwala, a man was here. Yuin nyindiyiwuna, a man will be here. For other examples of present, past, and future forms of "here," and "there," see my "Thurrawal Language." 1 The adverbs "here," "there," "yonder," and their modifications, are also frequently used as demonstratives, and then take the same declensions as the nouns they qualify.

Yuungunyrelruga, how shall I do it?

Wingululla wagura nyin baiilla, which of you (dual) killed the crow?

Wingulul murrul, which is first?

Some adverbs admit of inflection for number, person, and tense, and ought therefore to be included among the verbs, but I will show some of them in this place in order to keep all the adverbs together:—

<table>
<thead>
<tr>
<th>Present</th>
<th>Where am I</th>
<th>Waddungabaga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past</td>
<td>Where was I</td>
<td>Waddungaluga</td>
</tr>
<tr>
<td>Future</td>
<td>Where will I be</td>
<td>Waddunga</td>
</tr>
</tbody>
</table>

See my "Thoorga Language" for other examples of adverbs.

Prepositions.

The examples of prepositions in my "Thoorga Language," and their declension for number and person, are nearly the same in the Tharum-ba, and will not be further referred to here.

The exclamations, conjunctions, and numerals are likewise almost identical with the Thoorga. But many of the words in every part of speech are quite different; some are more or less dissimilar, whilst others are so nearly alike in both dialects that their meaning can be recognized at once.

THE WUTTYABULLAK LANGUAGE.

This language is spoken in the county of Borung and surrounding country, in the western part of Victoria. It is distinguished by having four numbers—singular, dual, trial, and plural. 2 The nouns, prepositions, adverbs, etc., in addition to the verbs and pronouns, take inflexion for number and person. In all parts of speech subject to conjugation and inflexion there is a double form of the first person in the dual, trial, and plural.

Westward of the 145th meridian of longitude, and southward of the 35th parallel of latitude, all the Victorian tongues have the same grammatical structure as the Wuttyabullak, although more or less diverse in vocabulary. The same type of speech, with its trial number, extends onwards into South Australia.

Within the geographical limits indicated, the people are divided into two phratries, called Gurgyty and Garnity, with their feminine equivalents, Gurgytygirrk and Gamatygirrk. The men of one phratry marry the women of the other, and the offspring take the phratry of their mother. For particulars respecting these phratries, and a comprehensive list of totems, the reader is referred to an article I contributed to the Anthropological Society, at Washington, U.S.A., in 1898.

Nouns.

Number.—Nouns have the singular, dual, trial, and plural. Wille, an opossum. Willebule, a pair of opossums. Willebarakullik, three opossums.

Gender.—Guli, a man. Bumbanggo, a woman. Bupup, a boy. Wartibibumbanggo, a girl. The sex of animals is denoted by adding the words mamu and babu, thus:—Gure babu, a female kangaroo.

Case.—The cases are indicated by inflexions:

The nominative merely names the thing spoken of, and is without inflexion, as, guli, a man; dèr, a spear.

The causative, or nominative-agent, represents the subject doing some act, as, guliu gure dhakkin, a man a kangaroo struck.

Possessive—The owner and the property are both inflected, as in the Thoorga language: Guliga déruk, a man's spear.

Accusative—This is the same as the simple nominative.

Instrumental—When an instrument is used in the performance of any action, it takes the same inflexion as the causative: Dèru gure yungginan, a spear at a kangaroo threw I.

The other cases will be passed over.

Personal property of any description can be declined by possessive suffixes to the noun, as: My spear, dèrek. Thy spear, dèrin. His spear, déruk, and so on through all the numbers and persons.

Adjectives follow the nouns they qualify, and take the same declensions for number and case. They are compared as in the Thoorga and Murawarri languages.

Pronouns.

There are two forms of the first person of the dual, trial, and plural—one in which the person or persons addressed are included with the speaker, and another in which they are exclusive of the speaker:

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1ST PERSON</th>
<th>I</th>
<th>WALLUNGEK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2ND</td>
<td>THOU</td>
<td>WALLUNGIN</td>
</tr>
<tr>
<td></td>
<td>3RD</td>
<td>HE</td>
<td>WALLUNYUK</td>
</tr>
</tbody>
</table>

The possessive pronouns are:—Wallungangek, mine. Wallungan-gin, thine. Wallunganguk, his, and so on through all the numbers and persons. The language contains many demonstratives and interrogatives, besides objective forms of the pronoun, which are all inflected for number and person.

**Verbs.**

Verbs have the same numbers and persons, with inclusive and exclusive forms, as the pronouns.

**Indicative Mood—Present Tense.**

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>1st Person</th>
<th>I throw</th>
<th>Yunggan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Thou throw</td>
<td>Yunggar</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>He throws</td>
<td>Yunga</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DUAL</th>
<th>1st Person</th>
<th>We incl. throw</th>
<th>Yunggangul</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>You throw</td>
<td>Yungavul</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>They throw</td>
<td>Yungabulla</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRIAL</th>
<th>1st Person</th>
<th>We incl. throw</th>
<th>Yunggangulkullik</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>We excl. throw</td>
<td>Yunggandakulklik</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>You throw</td>
<td>Yunggawatkullik</td>
<td></td>
</tr>
<tr>
<td></td>
<td>They throw</td>
<td>Yungganatykullik</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PLURAL</th>
<th>1st Person</th>
<th>We incl. throw</th>
<th>Yunggangu</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>We excl. throw</td>
<td>Yunggandak</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>You throw</td>
<td>Yunggawat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>They throw</td>
<td>Yungganaty</td>
<td></td>
</tr>
</tbody>
</table>

Past tense—I threw, yungginan.
Future tense—I will throw, yungginyan.
Imperative mood—Throw! yunggak.
Conditional mood—Perhaps I will throw, windyabāga yungginyan.
A substitute for the verb "to be" can be exemplified by taking an adjective or other suitable word as a predicate:

<table>
<thead>
<tr>
<th>PRESENT</th>
<th>1st Person</th>
<th>I am well</th>
<th>Mullanda delgaia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Thou art well</td>
<td>Mullar delgaia</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>He is well</td>
<td>Mullu delgaia</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAST</th>
<th>1st Person</th>
<th>I was well</th>
<th>Mullandagaty delgaia</th>
</tr>
</thead>
</table>

| FUTURE             | 1st Person | I will be well    | Mullandanga delgaia  |
There are also reflexive and reciprocal forms of the verb, as in the Tyattyalla Language, which space will not permit me to detail.

**Prepositions.**

Several prepositions can be inflected for number and person:

- **Singular**
  - 1st Person: At my back (Warmadhak)
  - 2nd: At thy back (Warmadhangingin)
  - 3rd: At his back (Warmadhanyuk)

This inflexion continues through all the persons and numbers.

**Adverbs, Interjections, and Conjunctions.**

These are similar in character to the identical parts of speech in the Thoorga and Murawarri tongues, and some of them are capable of inflexion in the same way.

It may be as well to state that all the languages of Eastern Victoria, known as Gippsland, are the same in grammatical structure as the Thoorga and Tharumba, but the vocabularies are different. The grammar and vocabulary of two additional aboriginal tongues of Western Victoria, "The Yota-yota Language" and "The Buréba Language," were contributed by me to the Royal Society of New South Wales.²

**A Mystic or Secret Language.**

Before concluding this brief article on the speech of the Australian aborigines, I wish to refer to a secret language, used by the men at the ceremonies of initiation, but which is never spoken in the presence of women, or in the presence of those youths who have not yet entered upon the prescribed course of instruction. Whilst the novitiates are away in the bush in charge of the elders of the tribe, they are taught a mystic name for surrounding objects, animals, parts of the human body, and short phrases of general utility. This language varies in different communities.

I was the first author to draw attention to this mystic tongue,³ and during the past year I contributed to the Royal Society of New South Wales some short vocabularies of the secret languages of the Kurnu and other tribes. I consider my discovery of this secret form of speech of great linguistic importance, and recommend the reader to peruse the vocabularies referred to.

In an article on "Aboriginal Songs at Initiation Ceremonies" printed by this Society last year, I published several sacred songs in this secret tongue—the first songs of the kind ever set to music.

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3 Congrès Internat. d'Anthrop. et d'Archeol. préhistoriques, Compte Rendu, 12ème, Session, p. 494.
BY R. H. MATHEWS, L.S.

**Vocabulary of Murawarri Words.**

The following vocabulary contains about two hundred and seventy words in the Murawarri language, with their English equivalents. Every word has been noted down carefully by myself from the lips of old men and women in the native camps.

**The Family.**

<table>
<thead>
<tr>
<th>English</th>
<th>Murawarri</th>
</tr>
</thead>
<tbody>
<tr>
<td>A man, Main</td>
<td>Wife, Nubabuga</td>
</tr>
<tr>
<td>Husband, Girrinbirra</td>
<td>Old woman, Burraka</td>
</tr>
<tr>
<td>Clever man, Kubi</td>
<td>Girl, Gutheraguni</td>
</tr>
<tr>
<td>Small boy, Dharda</td>
<td>Elder sister, Mudyaububbur</td>
</tr>
<tr>
<td>Elder brother, Mudyabauin</td>
<td>Younger sister, Gidyuguria</td>
</tr>
<tr>
<td>Younger brother, Gidy umo-an</td>
<td>Child of either sex, Guthera</td>
</tr>
<tr>
<td>Father, Buddhun</td>
<td>Father of family, Gutheraira</td>
</tr>
<tr>
<td>Mother, Kaia</td>
<td>Mother of family,</td>
</tr>
<tr>
<td>Woman, Mogiñ</td>
<td>Family, Gutheragulgera</td>
</tr>
</tbody>
</table>

**The Human Body.**

<table>
<thead>
<tr>
<th>English</th>
<th>Murawarri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head, Bumbo</td>
<td>Fat, Thunde</td>
</tr>
<tr>
<td>Forehead, Ngulu</td>
<td>Ankle, Burrunggal</td>
</tr>
<tr>
<td>Hair of head, Bumbo</td>
<td>Skin, Dhundhu</td>
</tr>
<tr>
<td>Beard, Yerran</td>
<td>Back, Biila</td>
</tr>
<tr>
<td>Eye, Mil</td>
<td>Armpit, Burrañ</td>
</tr>
<tr>
<td>Nose, Nguru</td>
<td>Elbow, Gubu</td>
</tr>
<tr>
<td>Neck, Ngundul</td>
<td>Bone, Mungga</td>
</tr>
<tr>
<td>Ear, Binna</td>
<td>Penis, Dhun</td>
</tr>
<tr>
<td>Mouth, Dha</td>
<td>Erection, Thandharaiu</td>
</tr>
<tr>
<td>Lips, Dha</td>
<td>Sexual desire, Nuddhuñ</td>
</tr>
<tr>
<td>Teeth, Tirra</td>
<td>Testicles, Burnin</td>
</tr>
<tr>
<td>Belly, Dhugu</td>
<td>Semen, Burdiñ</td>
</tr>
<tr>
<td>Tongue, Thalluñ</td>
<td>Vulva, Kinni</td>
</tr>
<tr>
<td>Checks, Ngumuñ</td>
<td>Nymphæ, Dhillin</td>
</tr>
<tr>
<td>Shoulder, Bunggul</td>
<td>Urine, Kiwa</td>
</tr>
<tr>
<td>Arm, Murngu</td>
<td>Excrement, Guna</td>
</tr>
<tr>
<td>Hand, Murra</td>
<td>Copulation, Thandhirra</td>
</tr>
<tr>
<td>Thigh, Thurra</td>
<td>Masturbation, Guddhu-guddhum-badharri</td>
</tr>
<tr>
<td>Knee, Thin-gal</td>
<td>Venereal, Kauaira</td>
</tr>
<tr>
<td>Foot, Dhinna</td>
<td></td>
</tr>
<tr>
<td>Blood, Goañ</td>
<td></td>
</tr>
</tbody>
</table>

**Natural Objects.**

<table>
<thead>
<tr>
<th>English</th>
<th>Murawarri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun, Dhuri</td>
<td>Small hill, Gumbugun</td>
</tr>
<tr>
<td>Moon, Gian</td>
<td>Open plain, Bullà</td>
</tr>
<tr>
<td>Stars, Mirriñ</td>
<td>Scrubby place, Mirdi</td>
</tr>
<tr>
<td>Pleiades, Kumbul-Kumbul</td>
<td>A live coal, Gürnüñ</td>
</tr>
<tr>
<td>Venus, Tharda</td>
<td>Thunder, Yandibu</td>
</tr>
<tr>
<td>Hill, Bulguru</td>
<td>Lightning, Wung-iñ</td>
</tr>
</tbody>
</table>

E—Royal Geo. Society.
Rain, Burdu
Rainbow, Gurierri
Dew, Dhulle
Fog, Guguma
Frost, Murnda
Hail, Mugari
Water, Ngubba
Still water, Burduungubba
Running water, Nguruwrurru
Ground, M-
Mud, Millin
A stone, Buggul
Sand, Kurrawir or dhirri
Darkness, Yurii
Heat, Burriu
Cold, Murndamiu
Tears, Ngulguu
Perspiration, Nundur

Fire, Wi
Hut, Gurli
Camp, Ngura
Smoke, Thuran
Food, animal, Widyi
Food, vegetable, Munnu
Day, Gunda-gunda
Night, Yurii
Morning, Burrulla
Grass, Yaut
Leaves of trees, Yirral
Eggs, Kubon
Honey, Wean
Pathway, Kai
Shadow of tree, Kuliguli
Shadow of man, Kummunggurra
Red ochre, Gudhi
Pipe clay, Muggündhurra

Wild dog, Yugi
Dog, Gundul
Opossum, Kugai
Kangaroo-rat, Böi, or bilba
Native-cat-rat, Burbur

Crow, Wagu
Laughing jackass, Kuguburra
Native companion, Gururu
Black duck, Gundungal
Swan, Burrema
Emu, Nguru
Pelican, Thulaida
Eaglehawk, Kurra

Cod, Gudu
Black bream, Bunngulla
Yellow-belly, Kawira

Death-adder, Kundage
Black snake, Bumburra
Water snake, Baiara
Turtle, Waiamba
Tree iguana, Wurrui

ANIMALS.—MAMMALS.

Pademelon, Dugguñ
Bandicoot, Gêla
Kangaroo, Gula
Porcupine, Kuggara
Water-rat, Widdyi-ngubba

ANIMALS.—BIRDS.

Large fish-hawk, Kwiadhuna
Pewee, Bùrandalla
Common magpie, Gulbu
Curlew, Witu
Crane, Gurraga
Small crane, Badhul
Galah, Gilla

ANIMALS.—FISHES.

Bony bream, Pirgi
Cat-fish, Thunggur
All small fish, Kidyeraguya

ANIMALS.—REPTILES.

Ground iguana, Bùrna
Shingle-back, Birrira
Carpet snake, Kummul
Brown snake, Kän
ANIMALS.—INVERTEBRATES.

Blow-fly, Mugun
Louse, Muni
Nit of louse, Thinnil
Jumper-ant, Burbi-burbi
Bulldog-ant, Burrungga
Centipede, Dhuliri
Grasshopper, Bundu-bunda

Shrimp, Thunul
Common ant, Burrä
Mosquito, Börn
Scorpion, Guna
Mussel, Thungunna
Crayfish, Mamura

TREES AND PLANTS.

Any leaning tree, Bundhirri
Any dead tree, Bungun
Any large tree, Bungil
Sandalwood, Budhar
Whitewood, Burbul
Myall, Maial

Beefwod, Mumbo
Coolaba, Buggura
Gum tree, Guraua
Pine, Bailun
Brigalow, Kulbai

WEAPONS, ETC.

Tomahawk, Wugganhurra
Koolamin, Gulgo
Spear shield, Burgu
Boomerang, Murli
Net bag, Munda
Yamstick, Gunnai

Hunting club, Muru
Fish net, Kule
Spear, Gulia
Fighting club, Maimuru
Fighting boomerang, Widdyanurra

ADJECTIVES.

Alive, Kurrin
Dead, Bullibu
Large, Tharda
Small, Kittyu
Tall or long, Burndurra
Low or short, Urdagamba
Good, Murrin
Bad, Yuralmurra
Thirsty, Burriu-ngubba
Hungry, Kundulmii
Jealous, Burdhegulindu
Full, Tugu
Quick, Kurdugurdu
Slow, Iba
Blind, Nundun
Deaf, Mugu-binna
Strong, Murrin
Afraid, Kurraiu

Right, Kaila
Wrong, Yural
Tired, Mullu
Blunt, as an edge, Mugu
Sharp, as an edge, Tirraiira
Fat, Thunde
Lean, Muggabulgan
Cold, Mundamii
Warm, Burri-burriu
Angry, Kuridyurriu
Sleepy, Yumburu
Glad, Murrinkyindaiu
Sorry, Milanyurungi
Greedy, Wallungundibungunna
Sick, Marriu
Stinking, Bugabuddhibu
Pregnant, Tuguira
THE MURAWARRI AND OTHER AUSTRALIAN LANGUAGES.

Die, Bullindyira
Eat, Thaddhira
Drink, Ngubba-thaddhira
Sleep, Ngumandhira
Stand, Thinnandhira
Sit, Nia
Talk, Yän
Tell, Thurgurra
Walk, Yandhira
Run, Thunggira
Bring, Thanganga
Take, Mara
Point at, Thumburra
Fill, Kaimbusura
Stamp on, Nurrunggunya
Make, Thunnulgu
Break, Dhudhia
Strike or beat, Bundhira
Arise, Dhurria
Fall down, Wurra
Observe, Naga
Hear, Binnambi
Sing, Yänggi
Weep, Wun-gebu
Cook, as food, Mulguyu
Steal, Ngurba
Request, Ngua

Blow with breath, Bumbira
Climb, Gula
Conceal, Nunbi
Jump, Burbi
Laugh, Kinda
Scratch, Wirrungurra
Forget, Binnayualgui
Send, Dinnamara
Shine, Bullanbi
Suck, as a child, Ngummadhadhira
Suck a wound, Bindyauui
Swim, Banggi
Search for, Wurrawa
Spit, Kanggul
Smell, Buddhe
Throw, Kurrawirra
Hit by throwing, Bungirra
Whistle, Kui
Pretend, Middyin
Kiss, Mudhil
Vomit, Muralli
Dance, Burbiddyera-Kirrira, literally to jump about
Dive, Kaindyera
Chop (with axe) Burira
Sting, Bingga
THE WIDE BAY AND BURNETT DISTRICTS. *

By F. J. CHARLTON, Esq., Staff Surveyor.

Geography in its practical application has for its object the determination of all those facts, as to any given country, which will enable us to judge of its fitness to provide man with food and to promote his civilisation. The soil and climate, the elevation of the surface, the distribution into mountains, valleys, and plains, the lengths, courses and navigability of rivers, the inland seas, lakes and swamps, the temperature and moisture of the air, the direction and character of the winds, the fitness of the soil for agriculture and grazing, the forests, minerals, and other natural products, are all matters which come legitimately under the domain of geography.

Geographical Societies, such as the Royal Geographical Society of Queensland, are associations formed for the purpose of obtaining and disseminating such knowledge, and the advantages that such knowledge confers in guiding the vanguard of settlement in new countries can hardly be over-estimated.

In support of this contention we have only to consider the results of early settlement in Queensland, guided by little or no geographical knowledge or experience. The coastal towns were naturally generally located on the tidal rivers, up which the settlers sailed until further progress was actually blocked by a rocky bar across the river, as at Rockhampton; or they were tempted by an easy landing, or by an exceptionally rich area of low-lying land, and the towns which were subsequently built around these sites have in most instances proved to be, in some respect or other, unsuitably located; some, on low-lying lands suffer ruinous damage from ever-recurring floods, many are so far from the sea that large sums have to be spent in deepening the shallow rivers to accommodate a commerce which the early settler never foresaw; others occupy exposed situations and are subject to devastation by cyclonic storms.

The sites of inland towns have been decided much more frequently by fortuitous circumstances, such as the existence of water, the intersection of important roads, or the vicinity of a railway station, than from deliberate choice guided by scientific considerations. As it is now well known that there is an undoubted relation existing between subsoil and disease, that in habitations situated on pervious soils

* Read before the Royal Geographical Society of Australasia, Queensland, at the Maryborough Meeting, April 14, 1903.
there is less zymotic disease than in those situated on those which are impervious. It is evident that from this consideration alone no town site should be determined without some scientific consideration of the geological structure of the locality.

In the execution of engineering works failure has frequently resulted because due attention has not been paid to geological and geographical phenomena; large sums of money have been thrown away in mining speculations which would at once have been characterised as hopeless by anyone possessing the slightest acquaintance with the science of geology. Money has also been wasted in equally abortive searches for water; yet water-supply is as amenable to known laws as any other phenomenon of nature, and within certain limits it may be determined without experiment.

It may be safely asserted that Australia—from the vast extent of its territory, the absence in it of navigable rivers penetrating to its interior, the variety of its soils, and the variability of its climate—presents greater physical obstacles to settlement than any other territory colonised by the Anglo-Saxon race; and is essentially a land in which science should not only be the adviser of the legislator and the administrator, but be also the guide of individual effort.

These considerations, I submit, fully justify the existence of such an institution as the Royal Geographical Society of Queensland, and are such as should lead to a more general recognition of the value of its proceedings, to a larger membership and to a more generous support.

Descriptive.—Total area Wide Bay and Burnett Districts, 13,372,160 acres.

Area alienated—settled or reserved, 6,200,000 acres.
Crown Lands held under Pastoral Lease, 2,610,000 acres.
Population of Wide Bay and Burnett Districts, census of 1901, 63,598 persons.

The Wide Bay and Burnett Districts in the State of Queensland, in the Commonwealth of Australia, are situated between the 24th and 27th parallels of South Latitude, and between the 150th and 154th meridians of East Longitude, are on the Pacific slope of the continent, and have about 200 miles of frontage to the eastern seaboard of the State.

In area about 21,000 square miles, equal to about 1/32 of the State, these districts comprise the watersheds of the Burnett and Mary rivers, and are naturally well watered by these rivers and their tributaries. The features of the country are generally undulating, rising from wide and fertile valleys to broad and swelling uplands, and yet higher to mountain ranges of moderate height the peaks of which form excellent landmarks and diversify the scenery.
The whole of the country is wooded; near the coast, where the rainfall is greatest, the timber is heavier and the forests more dense than in the western part of the Burnett District, where the rainfall is less. The timber is mostly hardwoods of a very durable nature, but the evergreen scrub lands also produce pine and cedar, and many other useful and ornamental woods.

Ports.—The principal ports are the ports of Maryborough and Bundaberg, situated respectively on the Mary and Burnett rivers; these ports are under the control of local Harbour Boards, have ample wharf accommodation, and are provided with steam dredges to improve and maintain their channels. The ports are connected with each other by the North Coast Railway, and also via that railway and southern lines are in communication by rail with the ports of Sydney, Melbourne, and Adelaide.

The port of Maryborough is situated on the Mary River, about 22 miles from its confluence with Great Sandy Strait. The area of the municipality is about 22 square miles, with a population of 10,159. The port is the commercial centre of extensive agricultural, pastoral, dairying, fruit-growing, lumbering and mining activities. Among the industries of the town are two large iron foundries employed in shipbuilding, the construction of sugar-manufacturing and mining machinery, locomotive and winding engines, and steam power generally; four sawmills, cutting 12 million feet of timber annually, railway carriage, sash and door, iron-stove and fruit-preserving factories, flour and sugar mills, butter factory, brewery, soap, brick and pottery works. Maryborough is liberally provided with State schools, two Grammar schools, a fine hospital, a school of arts, and several fine churches. Maryborough may be considered the second coaling port in Queensland, since the Railway-wharf is in direct railway communication with the collieries of the Burrum Coalfield.

The Aldershot Smelting Works are situated on the North Coast Railway, six miles northerly from Maryborough. At these very complete and modern works, silver, lead, copper, refractory gold and other ores are treated by a complete reducing, smelting and cyaniding plant.

The port of Bundaberg is situated on the Burnett River, about 9 miles from its mouth, has a population of 5,200, and is the commercial centre of great sugar, pastoral, farming, dairying, and mining industries; it is the port of shipment of the gold and copper products of the Mount Perry mines. Among its secondary producing industries are a large sugar refinery, two distilleries, two breweries, three sawmills, an iron-foundry, butter factory, soap, brick and pottery works. Bundaberg also has its State schools, its hospital, its school of arts, and several fine churches. The town is laid out with wide streets, and contains some handsome buildings.
Railways.—As the rivers are not navigable for any considerable distance inland, means of communication in these districts are provided by some thousands of miles of roads, and by 345 miles of railways. The railways are the property of the State, and are maintained in a high state of efficiency.

Roads.—The construction and maintenance of the districts' roads and bridges are vested in twenty local authorities, which levy taxes on the unimproved value of the lands.

The town of Gympie, situated on the North Coast Railway, 61 miles south of Maryborough, with a population of 11,000, is on the Gympie Goldfield, which is one of the principal goldfields of the State. Since its discovery in 1866 to the end of 1900 Gympie produced 2,495,956 ounces of gold, and in 1902 it beat all its previous yearly records with an output of 140,421 ounces of gold for the year.

The town of Childers, 40 miles north-west from Maryborough, is the centre of a great sugar-producing industry on the volcanic lands of the Isis, and possesses some of the best-appointed sugar factories in the State. It is connected by 11 miles of branch railway line with the North Coast Railway.

The town of Gayndah, 94 miles west from Maryborough, is one of the oldest towns in the district, is situated on the Burnett River, and is the centre of a large area of splendid agricultural land, being 36 miles distant from the railway terminus at Degilbo. Want of railway communication with the port of Maryborough delays the development of its great agricultural possibilities.

Degilbo, 58 miles west from Maryborough, is the present terminus of the Gayndah branch railway, and is the centre of a prosperous agricultural, dairying, and mining activity.

The town of Howard, on the North Coast Railway, 18 miles north-west from Maryborough, is the seat of the coal mining industry on the Burrum Coalfield. The character of the coal mined at Howard is good, resembling the Welsh coal of Great Britain, being richly bituminous; for gas it yields 10,000 cubic feet per ton; for steam, 1 lb. of coal evaporates $\frac{8}{3}$ lbs. of water; being a good caking coal, the coke made from it is of first-rate quality. Besides supplying the local requirements of railways, sugar factories, foundries, goldfields, and the coastal steam service, this coal is extensively shipped from Maryborough to North Queensland. In the year 1900 the output from this field was 110,849 tons, valued at £41,148.

The town of Mount Perry, the terminus of the Mount Perry branch railway, is 67 miles south-west from Bundaberg. Here are situated the famous Mount Perry copper mines. These mines have been worked intermittently for the past 30 years, and now, under the ownership of the Queensland Copper Company, find employment for a large number of men. The manager's report for the four weeks
ending the 17th January last showed that during that period 576 tons of ore were smelted for 15 tons of copper and 160 tons matte, valued at £5,000; working expenses, £3,000.

The town of Nanango, about 100 miles south-westerly from Maryborough, is situated near the southern boundary of the Burnett District, on the headwaters of Barambah Creek, a great tributary of the Burnett River. The town is surrounded by an immense area of rich, evergreen scrub and forest land, affording a wide field for settlement. Heavy crops of wheat, maize, potatoes, hay, fruit and other produce are raised on these lands, and the scrubs are rich in apparently inexhaustible forests of marketable pine timber. A railway line is now in course of construction for the development of this country, and is opened to Goomeri, 82 miles from Maryborough.

The Mary River was discovered in the year 1842, before the separation of Queensland from New South Wales. The Wide Bay and Burnett districts were first occupied by pastoralists, principally grazing sheep, but the advent of the grass-seed and other troubles led to sheep being replaced by cattle, for which the country is exceedingly well adapted. Agriculture, commencing on the rich, more or less inundated river flats, under primitive conditions, has developed into a great industry. Mining, initiated by the prospector with his pick, shovel and tin dish washing the pay gravels in creeks and gullies for alluvial gold, is now represented by Gympie, Howard, and Mount Perry, with their yields of gold, coal and copper, and by many other mines in the districts producing gold and various other minerals. These results are the net gains of individual enterprise, mostly without State help or scientific direction, the outcome of experience—how dearly bought the early pioneers of the various industries alone could tell.

The discovery of the Gympie Goldfield in the year 1866 led to the construction by the State of the Maryborough to Gympie railway, 61 miles in length. This was the first section of the North Coast Railway, subsequently extended 18 miles northerly to the coalfield at Howard, then south 106 miles from Gympie to the city of Brisbane, later extended northward to the ports of Bundaberg and Gladstone, and now in course of further extension to the port of Rockhampton, duplicating—it may be somewhat unnecessarily—the service afforded by efficient coastal steamers, but certainly constructed at the expense of the Upper Burnett District, the hinterland of the ports of Maryborough and Bundaberg, and which yet awaits railway communication for its due development as a great agricultural, dairying and mining region.

A closer settlement, with a fair measure of prosperity, has, however, followed the North Coast Railway and its short branch lines.
Geological.—The principal rock formations of the districts, beginning with the oldest, and taking them in the order of their relative ages, are:—(1), the Gympie formation, or Permo-Carboniferous; (2), the Granite and Diorite masses; (3), the Burrum or Trias-Jura formation; (4), the Basalt and other Volcanic rocks; (5), the Desert Sandstones or Upper Cretaceous.

If we could reproduce the surface of the eastern part of Australia as it existed at the close of the Permo-Carboniferous times—many millions of years ago—we should see it as a fairly level expanse of country but recently elevated above the sea, the surface consisting of shales and sandstones bedded horizontally, supporting an abundant growth of ferns, cycads or false palms, but without animal life, the only life being spiders, scorpions, dragon-flies, etc., and a few reptiles; but with the surrounding seas swarming with fishes of the shark and ray types, with shell-fish and with corals, this being the geological age of fish-reptiles.

At this period the earth had a very high temperature—was constantly radiating heat into space and shrinking in size as the cooling process continued; the solid crust was consequently thrown into folds and wrinkles in its endeavour to adapt itself to the diminishing size of the interior. These wrinkles of the crust became mountain ranges, and in this way our coastal range—which runs from north to south of Queensland and into New South Wales—was formed; and during this process of "axial upheaval," as it is called, the horizontal sandstones and shales of the Permo-Carboniferous series were tilted up and contorted, fissured and baked by the molten rock, which—liberated from pressure—forced its way up from below. In this way these sandstones and shales were changed and metamorphosed into quartzites, slates and schists, which now occupy so large a portion of these districts, and are known as the Gympie formation.

This record of past ages, so clearly written in the rocks, assists us to understand why this formation is so largely the metal bearer of the State, for the fissures and cavities formed during the upheaving process became repositories in which the mineralised solutions and vapours circulating through the rocks deposited the silica which crystallised into quartz reefs, and also deposited the mineral riches which are now found in them.

It is a popular fallacy that a mountain chain with a granite core or backbone must have been formed by the intrusion of the granite through the surface rocks. This is seldom or never the case; the molten mass follows the wrinkles of the crust as the pressure is relieved by the buckling process, but the molten mass seldom reaches the surface. It is cooled and solidified at a considerable depth, and after the lapse of ages it is exposed by the denudation of the overlying strata. Large areas of Granites, Syenites and Porphyries of
both plutonic and metamorphic origin fissured—probably by the great volcanic activity of the Tertiary period—exist in these districts, and the goldfields of Eidsvold and Chowey and the Mount Perry copper region are located on these rocks.

The Burrum formation is the lowest member of the Mesozoic rocks; it extends along the whole of the coast frontage of the Wide Bay District, and covers an area of 3,000 square miles. It may be noted that all this area must have alternately sunk below the sea, and have been again upheaved during an immense period of time, during which the coal and the intervening and overlying sandstones forming the measures were deposited unconformably on the upturned edges of the rocks of the Gympie formation, each coal seam representing a period when the land was dry and the intervening sandstones a period of submergence. Over the greater part of its area the Burrum formation is covered by 20 to 50 feet of sandstones, clays, and conglomerates of a more recent age, lying unconformably on the coal measures, and which, covering them from view, make difficult the discovery of the coal seams. The Burrum formation, as worked at Howard, is the second largest coal producing field in the State.

The Basalt and other igneous rocks are well represented in these districts. These rocks welled up in a molten, almost liquid, state with volcanic energy through fissures and vents in the surface rocks, and spread over the surface of the land, filling valleys and water-courses. The conical peak of Mount Perry was probably the plug or core of an ancient volcano, and it is to these volcanic outbursts that we owe the rich red and black soils of the Woongarra and Isis sugar producing lands, and also many other areas of rich agricultural land in these districts.

The Upper Cretaceous or Desert Sandstone must at one time have covered three-fourths of the State and the whole of the Burnett District. This formation denotes that three-fourths of the State was again submerged below the sea for a long period, during which the sandstones of this series to a thickness of some hundreds of feet were deposited. This period of submergence was followed by a gradual upheaval, which, without any violent disturbance of the strata, raised the land again high above the sea, when atmospheric influence and the rainfall at once commenced the denudation of the comparatively soft sandstones, washing the formation entirely away, where we now find the older rocks exposed on the surface, but yet leaving many indications of its former extent in the flat-topped sandstone plateaus capping the ranges and mountain spurs from Degilbo to the head of the Burnett River waters, where the abrupt escarpment of Castle Mountain, glowing in the rich contrast of the bright yellows and reds of its rocks, with the greens of the foliage which clings and droops from its terraces, faces Dawes Range across the valley of the
Three Moon Creek. That this formation has been so extensively denuded is a matter to be thankful for, but yet some thousands of square miles of the Burnett District are covered with it, and we can safely conjecture that a good deal of mineral wealth is hidden by it there, undiscernible and unavailable in the present age.

Mineral Deposits.—The discovery of the Gympie Goldfield was the first of a series of great discoveries, which has given Queensland a leading position as a producer of gold, tin, copper and coal. No other field so far discovered in the Wide Bay or Burnett districts can compare with Gympie, but mineral wealth is nevertheless widely distributed in these districts, and the following is a brief description of the most notable of the known deposits:—

The Kilkivan Goldfield, on the Kilkivan branch railway, 65 miles from Maryborough, is the centre of a rich mineral district. Gold was first found in rich alluvial deposits, and is mined in reefs at Kilkivan and Black Snake. Cinnabar, both in alluvial leads and in lodes, has been worked near to Kilkivan, and cobalt is worked at Mount Cobalt, about 15 miles south of Kilkivan.

The Marodian Goldfield, on Running Creek, is about 6 miles north of Kilkivan. Here reefs are being profitably worked, and steady development work is being carried on by a Scotch company, who own the freehold of an auriferous area.

Nanango.—Gold is found in the neighbourhood of Nanango, near to the town, also at the Seven-Mile Diggings, at the Scrub Paddock, at the Golden King, the Wild Horse, the Black Watch, and other reefs.

At Gigoongan and Teebar, situated on Munna Creek, a tributary of the Mary River, a number of copper lodes have been discovered; of these, the Munna, the Teebar and Culgoa lodes are about 4 feet wide on the surface. These lodes are situated on freehold land; if this were not the case they would probably be producing ore.

The Biggenden Bismuth Mine is situated about 6 miles south of the Degilbo Railway Station, was discovered in the year 1888, and has been worked intermittently ever since. The bismuth is associated with magnetite, and occurs in bunches and shoots. Gold is also found in an actinolite slate formation locally known as "hornblende" rock. The ore is pulped in Huntington mills, and is washed over copper plates on to six Frue-vanners; the concentrates from the vanners are dried and passed dry through a magnetic separator of the revolving cylinder type which separates the heavy magnetite from the bismuth ores. At this mine 13,238 tons of ore have been crushed, yielding 307 tons of bismuth concentrates and 5,751 ozs. of gold.

The Mount Shamrock Gold Mine is situated about 6 miles northerly from Degilbo Railway Station. This rich mine is in the
form of a pipe rather than a lode, in which the metallic minerals and cementing materials were deposited from solution in water which came up through fissures. The mine yielded gold, silver and bismuth, but the bismuth decreased as depth was reached. The mine has been worked almost continuously since its discovery, and work in it is now vigorously proceeding under new ownership by a Maryborough company. In the neighbourhood of Mount Shamrock is situated Kent’s Knob, where gold was found on the surface in an iron-stained siliceous matrix; and the Allendale Silver Mines, Hannan’s Lode and the Chowey Reefs are within the radius of a few miles. The Chowey Reefs are in granite country, and the gold in them is found to be associated with molybdenite; the whole of the country in this neighbourhood would probably repay systematic prospecting.

The Paradise Goldfield is situated on the south side of the Burnett River, about 12 miles north-west of Degilbo Railway Station. In 1891 this field had a population of about 400, and numerous reefs were worked for an average yield of about 2 ozs. gold to the ton. The country rock on this field is a hard, siliceous slate, with altered sandstone in places; the quartz is tinted by finely-divided pyrites, and the gold in a very finely divided condition is disseminated very evenly through the stone. After many thousands of ounces of gold had been won on this field, it steadily declined and is now practically abandoned; yet it does not appear that the reefs cut out or that the yield of gold failed. The hardness of the country and the refractory nature of the ore in the deeper levels were, most probably, the greatest causes of the decline.

The Geebangle Goldfield is distant a few miles westerly from Paradise. A number of claims were working on this field in 1890. The gold-bearing formation is mostly agglomerate deposits in stratified mud-rock and siliceous slates. The gold was mostly contained in iron pyrites, and although assays showed the presence of gold in payable quantities, the refractory nature of the ore and the irregular distribution of the gold led to the abandonment of the field. But it is certain that both this and the Paradise Field will be profitably worked in the future, when scientific direction and suitable concentrating and reducing plants are available.

Mount Perry Goldfield.—The Mount Perry copper lode was the first great copper lode discovered in the district, and its outcrop extended for a distance of three-quarters of a mile. The lode is in granite, and the ore is principally copper pyrites and yellow ore containing a good percentage of gold. Mention has already been made in this paper of the Mount Perry Mine. The neighbourhood of Mount Perry is very rich in minerals, and many mines of gold and copper are being worked in it. Among these may be mentioned the Normanby Copper Mine, with 3 to 4 feet of cre and iron pyrites;
the Wolca, the Harpur's Hill, the Manning, the New Moonta, and the Cambria copper lodes. The Reid's Creek Goldfield is situated about four and a-half miles south-west of Mount Perry; here gold was found in alluvial and in reefs. There are many other good mines around Mount Perry, but many are held as freeholds by persons who do not work them, and who, of course, effectually bar their development by the bona fide miner.

The Eidsvold Goldfield, situated near the Burnett River, 40 miles north-west from Gayndah, has produced over 100,000 ounces of gold since its discovery in 1887. The characteristics of the field are similar in many ways to the Charters Towers Goldfield, the formation being granite with intrusive diorite dykes; the principal reefs are the Mount Rose, the Lady Augusta, the Craven Line, and the Lady Minerva. Unfortunately some of the richest shutes of gold have been exhausted, and although mining operations still continue the population has considerably decreased; but there is room for hope that new shutes of gold will be found in the reefs, and that this field will have a revival of prosperity.

The Monal and Cania goldfields, situated at the heads of Monal and Three Moon creeks, have produced large quantities of both alluvial and reef gold. Two dredges were—before the recent drought—operating at Cania, but with what success is not generally known.

The Neardie Antimony Mines, situated about 12 miles west of Guralda Railway Station, have been worked intermittently since the year 1873, and have yielded 1,139 tons of ore and crude antimony. These mines are in the same series of shales as those which overlie the auriferous beds of Gympie. Work has been confined to one lode only, and there has been very little prospecting of other known lodes.

Gold and other minerals have been found at many other places in these districts, among which may be mentioned,—Gold at Stanton Harcourt, Mount Steadman, Dykehead, St. John's Creek, Yarrol and Glastonbury, and copper at Rawbelle and at New Canindah. In fact, the Burnett District is traversed by mineral belts which are roughly indicated by the mines which have been worked; these were those which outcropped and were easily found;—only the richest have been worked, and the workers were easily discouraged by a pinching reef, a low grade or a refractory ore, and mines were lightly abandoned.

The population and the available capital are quite inadequate to the development of such an extensive mining field as these districts afford, and the proximity of the great Gympie mines has had a deterring influence and a depressing effect on the development of other mines in the districts; it has absorbed a large proportion of the available capital, and speculators are able to operate more rapidly on a field where values are ever fluctuating, and where ample mining
machinery is available, than by investing in country shows where
the slow process of development and the carriage and erection of new
machinery necessitate the continued payment of calls, and defer the
expected return even where return is eventually certain.

The mineral wealth, then, of the Burnett forms a great reserve
for future development when, it may be, that mining will be less a
speculative investment than at present, and more a business enter-
prise, assisted by improved processes, and under more scientific
direction.

The importance of the industry is not yet realised, just because
it has yet a speculative rather than a business basis; but it has a
double value to the State even under present conditions in that first.
it is an industry which is comparatively unaffected by the vicissitudes
of our very uncertain climate, and that it pays its workers higher
wages than any other rural industry; and, secondly, that it is an
important factor—by providing a local market—in the settlement
on the land of the agriculturist and the dairy farmer.

Rivers.—The Burnett River drains eight millions of acres, and
in the abnormally dry season of 1902 the grass grew in its sandy bed.
But when the flood rains fall on its watershed, and its waters sweep
down Three Moon and Splinter creeks from Dawes' Range on the
north, the Auburn River adds its tribute gathered on the broad
western lands of Redbank, Auburn, and Hawkwood, the Stuart and
the Boyne rivers add their streams, and the Barambah drowns its
basalt bars deep beneath a torrent flowing from the fertile scrub-
lands of Nanango in the south, then the Burnett is no inconsiderable
river, and the sailor-man may dip fresh water from over his vessel's
side far out in Hervey Bay.

The Mary River drains a lesser area, its watershed being about
three millions of acres; heading in the steep ranges fifty miles south
of Gympie, it flows northerly past the towns of Gympie, Tiaro and
Maryborough to Great Sandy Strait. Shed from the steep ranges,
whose slaty rocks of the Gympie formation absorb but little of the
rainfall, the Mary River, as the inhabitants of its valley can testify,
is capable of doing incalculable damage during heavy rains.

The Burrun, Elliott and Kolan rivers are unimportant streams,
dignified by the name of rivers because they severally enter the sea
without confluence with their greater neighbours, the Burnett and
Mary rivers. The Burrun River has given its name to the coalfield
which is worked on its banks; and the Elliott River is only remark-
able for its surface flow of fresh water from a watershed which does
not exceed one hundred thousand acres, and which is said to be
greater than that yielded by its adjacent neighbour—the Burnett
River—from a watershed of eight millions of acres; this has been
accounted for by the fact that the Elliott watershed is very sandy
and highly absorbent, but the Burnett River watershed has many hundreds of thousands of acres of sandy and equally absorbent country. It may be that the Elliott borrows a great part of its surface flow—by subterranean drainage—from the Burnett River.

In the days—prior to the white man’s advent—when these districts were held by their native owners, floods were, doubtless, of frequent occurrence, but were not the devastating afflictions they have since become. In those days these lands were a trackless wilderness, but lightly stocked with marsupials. Great watercourses there were, but the tributary gullies—compared with those now existing—were few; the grass grew long and rank on the flats, and with the help afforded by the fallen timber protected the surface from erosion, held and delayed the flood waters, which but slowly found their way into the rivers; these were—particularly in their lower reaches—fringed with a growth of dense evergreen jungle or scrub, which protected the banks and confined the flood waters to the channels down which it lazily swept, foam-flecked, and dotted with a few logs, which it had wrested from the land it was leaving. The white man came with his flocks and herds, the superfluous grasses were eaten or burned off, roads were cleared, and cattle pads appeared all over the land, the scrub farmer cut down the fringing scrubs that he might cultivate the rich soil, each cattle pad or track became first a tiny rivulet and then a deep gully, which in flood time was a roaring torrent. Drainage was immensely facilitated, and flood waters that once took months to reach the sea are now precipitated into it in as many days.

Nor is this all; in the days of the native occupation the great watercourses were rivers of water, now some of them are—except when flooded—rivers of sand; in those days the rivers were fed with water, now the unprotected surface of the sandstone and granitic soils melt under heavy rains, and each gully brings its tribute of water and sand, which, being steadily deposited, is filling the deep reaches and raising the beds of watercourses, and although the process is not so apparent in the Mary River on account of the hardness of the rocks on the greater part of its watershed, there is a prospect that even in our time the Burnett River will fill its reaches with sand from its sources to tidal water, and that in consequence future floods will cover more land and rise to greater heights than heretofore.

The occurrence of a flood in a somewhat dry zone should be welcomed as a blessing rather than be feared as a bane, and there is no doubt would be so welcomed in this State if sites high above flood mark had always been selected as town sites, the high land cultivated as farms and the low-lying flooded lands used as meadow lands; but too frequently in this State towns are located on flooded areas, and the low-lying lands are cultivated, and so, after a flood, which
naturally under these circumstances causes very serious losses both in town and country. the attention of the victims is for a time directed to "flood mitigation."

This is a subject that the limits of my paper will not allow me to deal with at any length; it is, however, obvious that we cannot control the rainfall. that the deepening and straightening of rivers can only be effected to a very limited extent, and that the process is of very doubtful value—as by increasing the grade by shortening the distance the velocity of the current is increased, and although a flood mark may be slightly lowered the current would be more destructive over the area beneath it. Rather we should aim at reversion to the original conditions under which the waters were delayed and the currents had less velocity, and by the impounding of the flood waters first use them as a source of power derived from the potential energy of position, and then pass them on as needed for water supply and for irrigation. One-fourth of the area of the Wide Bay and Burnett districts, as well as parts of other districts on the Pacific slope of the State, could with advantage be placed permanently under impounded water; this would increase the humidity of the atmosphere and insure a greater rainfall not only over the area dealt with, but also over the western plateau. Such a scheme, however, could only be carried out as a national undertaking, and is far beyond the present means of the State; and yet it may be safely asserted that Australia will never be densely populated until great water storage works are erected, and the primary producing industries rendered independent of the vicissitudes of climate and season.

In reference to irrigation, the Lower Cretaceous formation is not known to exist on the Pacific slope, and therefore it is not probable that artesian water will be found in these districts, and it is interesting to note the discovery of subterranean flows of water at shallow depths in the delta of the Burnett River and the recent installation there of irrigation plants. Similar supplies may be found in other places; for instance, where the edge of the volcanic soils meet the underlying sandstones at Woongarra and at the Isis. the thirty or forty feet of red soil on these areas absorb the rainfall, which percolates down to the sandstones of the underlying series, through which it filters to the rivers and the sea. And there are other means by which large supplies may be made available; for instance, by using the deep river reaches for storage purposes. The Burnett River is not navigable above the town of Bundaberg except for rowing boats and flat-bottomed punts; hidden bars of rocks are frequent in it, causing sandbanks and gravelly shoals; this is notably the case at Tomato Island, about three miles above the town. This natural shoal could be artificially increased to a height which would block

F—Royal Geo. Society.
the upward flow of the tidal water, and the deep reaches of the river from thence, 13 miles in length, up to the Bingera Falls, which are now filled with salt water, would hereafter contain fresh water available for a town supply and for irrigation. To complete the shoal across the river at Harriet Island would probably be more costly, but it would bring the fresh water within sight of the town. Where irrigation becomes of more importance than navigation other rivers could be dealt with in the same way.

In further reference to subterranean flows of water, for many years I was much puzzled to account for the cause of "melon holes." but at last I was fortunate in finding a good example in a brigalow scrub at Coonambula, and I saw that they were caused by a small subterranean flow of water, which melted the fine clay underlying the surface soil and carried it away as a milky fluid, causing cavities into which the surface soil sank, causing the familiar melon hole, which I think is only found in country having a clay subsoil.

Pastoral.—The Wide Bay and Burnett districts are splendid pastoral lands, literally carrying "cattle upon a thousand hills." The Official Stock Returns of a few years ago showed 326,000 cattle, 40,500 horses, and 35,000 sheep. These numbers have been seriously diminished by the late drought, although it only assumed an acute stage here during the last six months of its prevalence. The pastoral industry is carried on on large areas of land called "runs," from 30 to 300 square miles in extent; the tenure is a leasehold held from the Crown, and the average annual rental is under £2 per square mile; the external boundaries of these runs are generally fenced, and within these limits the stock mostly roam at will; in many cases as the water dries up on the uplands the cattle gather on, eat out, and sometimes starve on the water frontages, the grass going to waste on the waterless ranges, and becoming material for destructive bush fires. The subdivision of these great holdings into grazing farms of 10,000 to 20,000 acres, the division of these farms into small paddocks, and the conservation of water in each paddock would increase the stock carrying capabilities of the country.

Agriculture.—The Wide Bay and Burnett districts produce sugar, to an average annual extent of 80,000 tons, valued at £640,000; wheat, maize, potatoes, sweet potatoes, lucerne and oaten hay, tobacco, arrowroot, onions, cabbage, turnips, vegetable marrows, beetroot, beans, artichokes, asparagus, tomatoes, bananas, grapes, strawberries, oranges, lemons, melons, olives, peaches, passion-fruit, plums, mangoes, guavas, etc. This industry has been so long and so successfully established that it is quite unnecessary for me to attempt to describe it in detail. It has been my province to be a pioneer of new settlements rather than the chronicler of those already established. And in relation to new settlements, where large areas of splendid agricul-
tural lands—such as have from time to time been opened to occupation in these districts—it is only natural where there is so much land available that people seek the best, and so the rich, volcanic soils are those most sought for; sandstone and granite country is despised. Yet these have their uses; no better oranges and other fruits are grown in Australia than those produced on the deep, sandy soils of the Burrum formation, both on the Burrum River and at Maryborough; and the orchardist in the Warwick district cultivates the granite soils—ploughing round the great boulders; and the granitic soils there are found to be suitable and valuable for the growth of fruit trees. and fruit trees growing on these sandstone and granitic soils have been less affected by the recent drought than have trees which were grown on the more fashionable red and black volcanic soils.

Our farmers certainly suffered more severely during the drought by their losses of stock than by the loss of crops, but a farmer loses his little herd in a dry spell as the result of improvidence; the maize stalk, core and husk, the superfluous grass produced in good seasons, and other unmarketable produce that could be siloed or stacked for winter feed or for feed in dry seasons, or which—if unsuitable for feed—could be gathered to the manure heap, is too frequently burned off. The successive cultivation of the same crop on the same land year after year, and the reckless use of fire rapidly impoverishes the soil, and we have seen the average sugar crop of an area fall from these causes from 40 tons of cane to the acre to less than half that amount.

In further reference to the effect of fire as an agent in reducing the fertility of the soil, it may be remarked that an area of land is often met with, being all of precisely the same geological origin, composed, independent of the proceeds of its vegetable growths, of identically the same soil, this being simply the product of the disintegration of the underlying homogeneous rock. Part of this area is found to be growing a dense jungle of evergreen scrub, and part growing forest trees and grass. Experience has shown that the scrub land is very much richer in the elements of fertility than the grass land, and the reason undoubtedly is that the falling leaves and dead wood has been daily, yearly added to the soil, whereas on the grass land such products have been burned off by the annual bush fires.

The usual process of preparing these evergreen scrubs for cultivation is to cut down and burn off as much as suffices for present needs and to leave the remainder green and growing, to be dealt with in future years in the same way. It has often occurred to me that it would be better if the area not needed for present use were cleared of undergrowth and ringbarked; this would kill the trees, and all the immense mass of foliage which they carry would fall, to be devoured
in the—so-called—process of decay by the minute organisms which
in the process fix the free nitrogen, and add it as plant food to the
soil; the subsequent crop of vines and suckers which would grow up
could be cut down as the land was required for cultivation, and
would form a light coating, which when dry would burn off and clear
the land up for planting; most of the timber would have decayed
and been added to the soil, and any old dry stumps remaining would
burn out, and the land would be years nearer ploughing than under
the system of preparation now prevailing. Scrub lands treated in
this way would have a greater value for agricultural purposes than
those on which the heavy masses of timber and foliage are burned
off by fierce fires, which burn the surface of the land to the condition
and colour of a brick, destroying all the plant food to the depth
the fire may reach. And if any person is in doubt as to the value
of such burned soil, let him powder up a brick, put it into a flower
pot, sow some seed in it, water carefully, and note the result; this
experiment would, I am sure, convey a useful lesson as to the effects
of the reckless use of the firestick, which is so prevalent in this
country as to be a greater bane than the occasional drought, which
merely rests the land and does not destroy its fertility.

Forests.—The characteristic evergreen forests of Australia differ
from those of the other great continents of the earth. The most
prominent of the more typical Australian orders include some 160
species of eucalypts—an aborescent myrtle—some 300 species of
acacias, a few conifers, and there are representatives of many other
genera, all of which shed their bark, but remain in leaf throughout
the year; with leaves—grey rather than green—of a tough, leathery
texture, full of oil glands, exuding an all-pervading, healthful aroma.
The forests are almost shadeless, because, adapted to an exacting
climate, the leaves present their edges rather than their surfaces to
the sun, and having a pendulous habit are put in motion by the
gentlest breeze. Characteristic of the whimsical forms taken by Aus-
tralian vegetation are, the grass-trees (zanthcrrhea), the bloated
bottle-trees, the banksias, the wooden pears (xylomelon), and the
handsome tree-ferns.

The Wide Bay and Burnett districts have long been famous for
their timber; over twenty millions of feet (superficial) of hard and
soft woods have been cut annually at the mills for local use and for
export. The timbers usually sawn are ironbark and several of the
gums, yielding hardwoods suitable for bridge-building, railway
sleepers, frames of buildings, and for all purposes requiring great
strength and durability. The cedar and the hoop and kauri pines
yield soft woods of great utility, and the evergreen scrubs supply a
great variety of timbers beautiful in colour and grain, which are
used for cabinet and ornamental work. Consumption had at last
nearly overtaken the available supply of matured timber, but the
construction of the Nanango Railway—now in progress—will give
new life to the industry.

It may be noted that the growth of timber does not so much
depend on the constituents of the soil as it does on rainfall; thus
the poorest lands in the coastal belt—with an annual rainfall of
from 50 to 70 inches—produce dense forests of giant trees of splendid
timber, both hard and soft woods; but timber is seen to dwindle in
quantity and in size as we travel westwards until the plateau of the
western interior is reached, where the rainfall is least, and where we
find but little timber other than the drought-resisting acacias and
the desert conifers of black and funereal aspect.

So long as wholesale and indiscriminate ringbarking is prevented
there will be a continuous growth of the hardwood timbers in the
Wide Bay and Burnett districts for future supply. A hardwood
slayling will grow anywhere, but it is different with the soft-wooded
tauri pine (Agathis robusta) and the hoop pine (Arancaria Cunning-
hamii), from which our supply of soft woods is almost exclusively
drawn. These timbers grow in the evergreen scrubs—springing up
pari passu with the scrub timbers—and except in mountain country,
where there is great difference of level, there is no second crop of
these pine timbers produced on the same land; there may be success-
itive cuttings as the timber reaches its maximum growth, but once
the trees found there are cut there is no further growth from seedling
to maturity, because to grow it is necessary that the young pines of
these species must not only have their roots shaded, but have their
tops in the sunshine above the surrounding scrub foliage.

Although, by the proclamation and control of reserves the timber
is being conserved in this State. little has been done in the way of
re-planting denuded areas; but one experiment was made in the Wide
Bay District (on Frazer’s Island) to assist the growth of young kauri
pines. Lanes were cut among the huge scrub trees in which the
pines were planted, and self-sown seedlings were cleared around, and
for many years the lanes were kept clear of vines and scrub under-
growth that the pines might have room to grow; but the growth
was slow, so slow that the work was abandoned and the experiment
deemed a failure; yet the slowness of growth was not caused by the
poverty of the soil, although it was poor; it had grown and was
carrying an immense forest, and the growth of vegetation other than
these young pines was very rapid. Had all the scrub trees been cut
down the result would have been very different: the young pines
would have shot up, keeping their heads above the surrounding
secondary growth of scrub foliage, and their growth would have been
rapid. I mention this, not as recommending such a course as one
that would be successful from an economic point of view, but as an
illustration of the conditions required for the growth of these pines on comparatively level land, conditions which I do not think have been previously recognised. The sandstone formation of the Wide Bay District has always been fully, sometimes over, stocked with herds. Consequently there has seldom been much superfluous grass, and bush fires rather creep from leaf to leaf along the ground than fiercely rage through the forest as they did in the days of the native occupation, and consequently the wattle trees—which the fierce fires in those days kept in check—have now spread over very large areas, growing densely among the older forest trees and closely shading the ground. This wattle timber is the precursor of the evergreen scrub; beneath its shade the scrub continually advances its outposts, and the young scrub trees and the young pines commence their growth, which yearly becomes more dense, until all the ground is covered with scrub and the wattle and hardwood trees die out. Starved by the growth they protected. And on poor lands—unsuitable for other present purposes—this natural process could be assisted by the planting of the suitable seeds in the wattle-shaded country, and in this way the pine forests could be extended and a poor soil enriched for future use.

Some of the Burnett country has suffered serious damage from indiscriminate and wholesale ringbarking of the timber, every tree—good, bad and indifferent—having been ringbarked by the pastoral lessees to secure a better grass and water supply. Fortunately, although they cover a considerable area, these are exceptional cases, which, under the supervision now exercised over ringbarking by the Forestry Department, are not likely to be repeated; yet the ringbarking carried on under permit is still—in my opinion—somewhat indiscriminate, patches of country being wholly ringbarked, and patches being left wholly untouched.

It may be safely said that there is no timbered country in these districts which, being in its natural state, could not be improved by the ringbarking of the very old and the crooked timber, and of those timbers which are valueless, such, for instance, as the cabbage-gum, Moreton Bay ash, stunted bloodwood, etc. Forty or fifty per cent. of the timber on the land has no present or prospective value, and could be ringbarked with advantage to the growth of the grasses, the remaining timber, and to the water supply; and if country was dealt with in this way—no good tree or straight-growing sapling of the useful kinds being destroyed—the improvement of the country for grass and water, and the conservation of the timber would be effected together.

Climate.—It is a feature of Australasian climatology that climate is found to vary more rapidly with a comparatively slight rise in altitude than by a considerable difference in latitude; thus, tropical
products, such as the sugar-cane and the banana, flourish on the coast belt from Cape York in Lat. 11 deg. south, to the Clarence River in New South Wales, in Lat. 30 deg. south, whereas at a short distance west from the sea, within the limits of these latitudes, and at an altitude of a few hundred feet above sea level, frost is of too frequent occurrence to permit of the growth of these products. And so, while in the coastal belt of the Wide Bay District and the Lower Burnett, with an annual rainfall of 50 to 70 inches and its consequently somewhat humid climate, the sugar-cane, pineapple and banana flourish exceedingly. on the equally fertile lands outside the 50-mile belt and at an altitude of 300 or 400 feet, frosts are so severe that agricultural operations are mostly confined to the products of the temperature clime. This is perhaps accounted for by another feature of our climate, more particularly noticeable inland of the coast belt—viz., that of hot days followed by cold nights. This is due to the atmosphere being very dry; humidity, which on the one hand shelters from excess of solar heat, and on the other hand to some extent prevents the radiation of heat from the earth, is absent, and so the sun's rays pierce the dry air with burning effect during the day, and immediately the sun sinks below the horizon the rapid radiation of heat from the earth lowers the temperature so much that there may be a range of 50 deg. or 60 deg. Fah. in the maximum and minimum temperatures experienced during a period of twenty-four hours.

Nevertheless the climate of these districts is exceedingly health-giving and cheerful: it is a climate of bright, sunny days, tempered by gentle winds, and the absence of an excessive humidity in the atmosphere enables white men to work very hard without inducing the enervating languor generally experienced in sub-tropical climates.

Were it not for the irregularity of the rainfall the climate would be perfect; and of rainfall there is generally sufficient, but its distribution through the year is capricious: the winters are often dry, with cold nights, and in that season the natural pastures are frost-bitten, brown and of but little value as fodder. Severe droughts, such as experienced in 1902, are of rare occurrence, no other of similar intensity having occurred within the memory of the oldest inhabitant.

Conclusion.—Although there is no doubt but that the past activities of the white man have somewhat injuriously affected some of our lands which are not closely settled, by the introduction of the prickly-pear, the lantana, the sida-retusa, and other noxious weeds, by the indiscriminate ringbarking of timbered lands, and by being the unavoidable cause of the silting up of watercourses, these detriments, however, are insignificant compared with the blessings of civilisation which followed the footsteps of the early pioneers. That
the wilderness has been subdued, and that homes and occupations have been provided for nearly 64,000 people, is evidence of the rich capabilities of the districts, and the future is even more hopeful; the pastoral, agricultural, mining, dairying, fruit, vine, tobacco-growing and other producing industries have now the assistance of expert advisers retained and paid by the State, and the closer settlement of these great districts—with their undeveloped wealth of minerals and immense area of unsettled lands, more than nine millions of acres of which are partly now available for settlement, and the remainder of which will gradually become available by the expiration and extinction of pastoral leases—will surely follow the extension of the railways and the increase of population.

I conclude this imperfect paper by quoting some verses which I wrote a few years ago in relation to the Burnett District as an attractive field for settlement.

"WESTWARD HO."

Where the heart of Empire's beating
On an overcrowded soil.
Eastward Ho: we send you greeting
Lords of Commerce, Sons of Toil.

With fatness is your mart o'er filling?
Is your gold an idle store?
Your people landless, though so willing,
Send them to our Queensland shore.

To our stately lands of Burnett,
Uplands broad and valleys fair;
Wealth unminted, few to earn it,
Soil unwedded to the 'share.

Westways from the gates of ocean
See, we lay the shining steel,
Linking true this Land of Goshen
With the highway of the keel.

Send us Men, to raise the homestead.
To sow the smiling fields with grain;
See your vessels, laden, homesped,
Deeply plough the ocean main.

Send us Men, your markets widen.
Here your gold can earn its meed;
Deep our mines of treasure hidden.
Here the work your people need.

Come ye people: here's forgetting
That others reaped where you did sow;
Look west: the Sun in glory's setting
On the fair lands of Westward Ho.
Perhaps there is nothing in life so generally interesting and pleasurable as one's early associations: The relation of the foundation of a district sparsely settled, but now carrying not less than one-eighth of the total population of our State of Queensland, should bespeak our attention.

My first acquaintance with the Burnett District dates from the year 1846. There were then very few stations formed on its waters, and these were situated on the head branches of its tributaries, such as Barambah, occupied by Ferriter and Uhr. Burrandowan on the Boyne head waters, by Messrs. Glover and Russell, then being transferred to new proprietors; Boondooma, lower down, by Messrs. A. and R. Lawson, and the Auburn head waters by Messrs. A. and R. Farquharson. These I think formed the whole of the squattages at the time referred to in the Upper Burnett waters, and all with sheep stock.

In the latter end of 1846, and throughout the year 1847, a great and continuous migration of stock—chiefly sheep—on to the midwaters of Barambah and Burnett took place. Amongst the hardy active pioneers of the time, men capable of doing anything from driving their own teams, laden with wool, which some of them had to do, to the port, to taking active part in the administration of the affairs of the country, may be mentioned:—E. Hawkins, of Boonara; C. and P. Lawless, of Boonbygan; H. and T. Herbert, of Ban Ban; W. Humphries, of Wetheron; J. B. Reid, of Ideraway; Robert Wilkin, of Yenda; and the Archer Bros., of Coonambulah and Eidsvold—all sheep men—together with numbers of other squatters, settled and unsettled, the latter on the lookout for suitable country, and pushing out still further north.

About the same time, or perhaps a little later, two or three notable firms, with sheep, pushed lower down the Burnett and its tributaries—Messrs. Forster and Blaxland taking up the present Gin Gin country; Landsborough Brothers, Monduran; and A. and J. Thomson, Walla. Of the first-named, poor Gregory Blaxland was

* Read before the Royal Geographical Society of Australasia, Queensland, at Maryborough Meeting, April 14th, 1903.
treacherously killed by the blacks at the creek near his house after a few months' residence. His partner, William Forster, did not long retain possession of Gin Gin after G. Blaxland's murder, but sold out and became a prominent politician in New South Wales. Of the Landsborough Brothers, the celebrated explorer, William, was one. All these firms were fated to disappointment in the grazing character of the country for sheep, and soon found it necessary to remove higher up from the coast, or exchange their sheep for cattle.

There were three large squattages also formed on the extreme northern branches of the Burnett River, with the Dividing Range between it and the Port Curtis district.

Amongst the pioneers who took up these extensive runs one was W. Trevethan, of Rawbelle. He was unfortunately killed by the blacks after a short occupation of the country, and little was known as to the circumstances attending the murder. Dalgangal was taken up about the same time by the Messrs. J. P. and H. Mackay, but was not held long by them, other ownership succeeding. Yarrol and Cania first came into the hands of Messrs. R. B. and J. C. Ridler, and had a long proprietorship of that firm, in fact up to the time of their decease, and part of the country named is still held by a member of the Ridler family; this being one of the only two cases known to the writer in which family succession of country in the Burnett district has descended unbroken from the first date of occupancy to the present—viz., Mrs. Lawless, of Boonbygan; and Mr. Ridler, of Yarrol. The above named runs were all stocked with sheep, and their wool came to Maryborough for shipment. Of the whole number of pioneers referred to in this paper, sad to add, only two are still living, and these are in the old country.

These squatters, settled on the Upper Burnett waters, used Brisbane as their port, distant from 200 to 280 miles, a long and tedious journey through bush country and unmade roads; and in the event of a wet season, two to three months' delay of teams was no unusual occurrence. Although the Mary River at the time mentioned was not altogether unknown to the Burnett squatters, it was then known as the Wide Bay River, and on its banks were known to be depasturing considerable flocks, Mr. John Eales, of the Hunter River, N.S.W., having moved thereto a large number of sheep a year or two earlier than the occupation of the Lower Burnett. Still the waters of the Mary were void as far as traffic was concerned, nor had a single settler occupied its northern bank from Yengarie to its entrance into the bay in the early part of the year 1848. On the opposite or southern side a faint effort had been made at the erection of buildings for shipping and inn-keeping purposes, the locality selected being immediately opposite the old township. The chief inducement for this hazardous venture was no doubt the business
expected to arise from the Eales' large sheep establishment, formed in the vicinity, and upwards to Tiaro; but the Eales speculation, after a brief period, through heavy losses both in sheep and shepherds from blacks and other causes had to be abandoned, and after one season's shipment of wool, George Furber, the most indomitable and venturesome of men, had also to succumb and cross over the water, not, however, before he paid a heavy penalty for his temerity in the formation of his camp on that side; for one day, whilst stooping down occupied in squaring a piece of timber, one of the numerous blacks he employed about the place crept behind him and with a broad axe struck him on the back of the head, intending, of course, to cleave his skull. The blow, however, did not penetrate the skull, but slid down the back of his head, carrying the skin like a sheet of notepaper. The extraordinary vitality of the man was fully proved from the fact of his starting at once for Brisbane—a distance of 230 miles, there being no medical man nearer—with his head bandaged, riding day and night, and just arriving there in time to save his life; fortunately it was in the winter season. Within three months he turned up, apparently all right, excepting that he carried a twist in the neck, and could not look around during the remainder of his life.

After this event Furber never went about without a loaded pistol, and the opportunity of revenge did not take long, for a short time after, whilst unloading wool at the Palmers' stores, where a number of blacks were employed, Furber was seen coming from the opposite side in great haste. He came up to the store, and fixing on a certain black, drew a pistol out of his breast pocket and shot him dead, saying, "That is the man that tried to kill me!" The Commissioner for the time being was within a few yards, but he retired into his camp, apparently taking no notice of the tragic scene. Furber said nothing more than "That is the black that tried to kill me." He was known to have a warrant for the apprehension of the man, but had it not with him at the time. He rushed across in great haste in the boat to his camp on the other side, and got the warrant, returning to the store and into the Commissioner's camp, saying, "Here is the warrant for the apprehension of the man who tried to kill me. I now give myself up." The Commissioner held a temporary enquiry; he did not order the constables to take charge of Furber, but took the depositions, merely saying he would have to abide by the consequences on his sending the depositions to the head-quarters at Brisbane. The result was, no action was taken by the authorities, so that Furber had his revenge.

A great uproar took place amongst the blacks present at the shooting incident. They conveyed the body about half-a-mile away from the stores, and as it became known that they were going to have
a feast that night on the body, the writer, accompanied by the late Dr. H. H. Brown and others, hearing the noise of the blacks at the camp, went up to see what was going on. They found a considerable number of the adult aboriginals around a fire, and the body of the slain black laid out and being cut up into pieces and cooked on the embers, giving a most fragrant odour. We were not permitted to come within a certain distance, but were sufficiently near to see what was going on. The flesh, being partly roasted, was given to the men surrounding the fire, and each seemed to enjoy the feast; no females or children were admitted near, but pieces were put in reserve in dilly-bags and other receptacles. This is the first and only cannibal feast the writer ever had an opportunity of witnessing, and Dr. Brown said it was worth his while coming out from England to see the savage feast. But that was not to be the last of the exhibitions of hostile feeling between Furber and the blacks, for some two or three years afterwards, although Furber always went armed with a revolver, he was found up the Tinana Creek in a pine scrub where he was cutting timber, murdered, having been speared and tomahawked, as was also a fine young man, his son-in-law. That was the last of a celebrated pioneer—one of the most venturesome and active men on the Mary River. He was the first white man to settle on the south side.

Previous to Furber's abandoning the south side, and after the removal of Eales' sheep, the Barambah Station, then owned or occupied by the "merchant," Richard Jones, as he was called, with sheep, it was found that catarrh had broken out very badly amongst the sheep stock, and every effort having been made to eradicate the complaint, it was deemed advisable to remove them down to the Wide Bay country lately occupied by the Eales' stock.

Having digressed so far from the Burnett historical account, we now come to the pastoral settlement in the Wide Bay, which, except the Eales' misadventure, was, on the whole, very successful.

The first settler intimately known to the writer was J. D. Mac- taggart, in the year 1848, who had taken up the Kilkivan country with sheep, and Scott Brothers, of the Brisbane River, who had taken up the intervening country between Kilkivan and Gigoomgan, named Merodian. The latter also suffered seriously from the depredations of the blacks, and after a brief period found it necessary to abandon the country and move their stock to the Lower Brisbane, whence they came. On the Gigoomgan country appeared H. C. Corfield about the same time, and the Degilbo country was occupied by the late Hon. W. H. Walsh, M.L.C.

The two former did not escape considerable loss, having had shepherds killed and sheep destroyed or taken away. Mr. Walsh, being a very active man in the early days, escaped these disasters to a large extent.
It was at the instance of these gentlemen, and some squatters, friends, on the Burnett, that the writer and his brother, along with the late Mr. E. T. Aldridge, and with the assistance of an aboriginal known as "Onc Toe Tommy," and credited with being the most blood-thirsty of the Wide Bay tribe, were induced to strike out and open a road between Gigoomgan and the Wide Bay River.

Previous to this the wool from the Lower Burnett, about Gayndah, came down a line of road by way of Degilbo and Gigoomgan, and struck across the country by way of Munna Creek to the Wide Bay River, near Miva, and down on the South side to the temporary settlement formed by Furber, already referred to, for shipment, a very circuitous route, the belief at the time being that no accessible road could be found more direct between Gigoomgan and the Wide Bay River on account of the mountainous ranges, rivers, and other obstacles.

We found the difficulties of marking the road were, on the whole, trivial, and that the time occupied in doing so was only two or three days. A portion of our party, together with the drays and horses, were left at Merodian. The writer's brother returned with some of the party, and gave a favourable account of the line of road they had marked. The camp at Merodian was then broken up, and the writer and the rest of the party struck out on the marked tree line. The journey occupied only some three or four days, the party arriving without mishap at the Copenhagen Bend on the Wide Bay River on the 12th June, 1848.

The settlement then formed a little lower down the river was the first attempt made on the northern side of the Wide Bay River. It consisted of the late E. T. Aldridge and the Palmer Brothers. The arduous work then soon commenced of erecting buildings, and as labour was very scarce then, a good deal of the laborious work devolved on the pioneers, who had to work like the Israelites of old, "with sword in hand, and so they builded." But still within a few months, with their own and such other labour as by chance turned up, good temporary buildings for stores and other purposes were erected, notwithstanding the party were so few, and the blacks known to be hostile and untrustworthy.

The great drawback to the early settlers was the difficulty of getting supplies owing to the want of shipping facilities. But this was overcome in a short time, and small vessels began to find their way up from Brisbane to the new settlement, and it was not long afterwards that sailing vessels made their way up from Sydney also, the latter not before it was urgently required, as the wool began to arrive in considerable quantities from the Burnett and the Wide Bay stations. It was very difficult to find storage accommodation for the
wool, and every available hut and shelter in the place was necessary to store it, owing to the uncertainty of the arrival of sailing vessels.

Mr. J. C. Bidwell as Government Commissioner took charge of the district, and with him came a posse of constables, and a step in the direction of civilisation commenced.

In 1849 the surveyor, Mr. Labatte, was sent to lay out the township, and the present and the old township were laid out as they now exist. The arrival of a small steamer or two soon rendered it necessary for the residents of the old township to make up their minds to abandon it, as the steamers could not be depended upon to come up to the old township. The inhabitants at that time numbered from 80 to 100 persons, and on removal all the pioneering work of building, etc., had to be re-commenced.

The first land sale took place about 1851-2, when nearly all the land put up was disposed of, chiefly to the local residents.

With the survey of the town came the naming of the river, presumably through the Government official, Commissioner Bidwell. The naming of the Mary River, instead of Wide Bay River, took place in consequence of the lamented death of Lady Mary Fitzroy, wife of the then Governor, Sir Charles Fitzroy, who was accidentally killed whilst driving with Lieut. Masters, A.D.C., in a carriage between Parramatta and Sydney; from that date this river took the name of the Mary.

During the progress of settlement the blacks tried their old work of killing the shepherds and stealing the sheep, and alarms were constantly being brought across to the settlement of these depredations, and the services of the few residents were called into requisition to follow up the offenders. The writer recollects forming one of a party on one occasion who were called on to try and rescue a flock; the report being that a Chinese shepherd had been killed and the whole flock taken. This happened within three or four miles of Furbert's settlement and must be somewhere near the present One-Mile, in the village of Tinana. Very little time was given on account of the serious nature of the report, but a small party, some five or six, of whom the writer was one, started across; another small party took a flat-bottomed boat, the only one available, and it was arranged from the direction in which the sheep had been taken, which was reported to be down towards the mouth of Tinana Creek, that a boat party should go as well as the land party, so as to intercept, if possible, the blacks if they attempted to cross the creek or river.

The land party found, after crossing the river, from the report of another Chinese shepherd, the direction in which the sheep had been taken, and following the tracks a short distance we found they had been taken into the scrub that then existed between the present
settlement of Tinana down to the mouth of the Tinana Creek, thick vine scrub; and through this scrub we found the tracks of wool on the vines and bushes for a considerable distance inland. Between the forest and the river we had no difficulty in finding a camp, where they had the sheep—several hundred of them. On arrival we found they had slaughtered nearly one-half the flock, and the blacks in high uproar exulting over the feast that was going on. On the approach of the white party, and seeing so few, they all stood up, took their implements of war and commenced to bang and shout a horrible halloo, thinking they would frighten the party; a most terrific uproar was made by them. A small creek intervening between the white party and where the uproar and slaughtering was going on, it was necessary to cross this to get at them; but one or two of the leaders of the white party got up to the middle in water and mud, and the others that remained behind commenced firing. Seeing the determination of the party the blacks soon took to their heels, leaving cart-loads of mutton and dead sheep strewn about. Large quantities of mutton having been cut up in parcels and stowed away ready for removal, the fat being stowed in parcels in old trouser legs, hung on the branches of trees ready for the whole tribe of men, women, and children to carry away the mutton and fat. It did not take long for them to take to their heels. The whole of the white party had then got across the creek. Although some firearms were of very little use, if required, through getting into the water in crossing, yet the persistence with which the party acted had the desired effect, and the whole of the blacks took to their heels and stealthily rushed through the scrub, taking very little of the mutton with them. The trophy was mutton and trouser legs of fat, of which we took possession, but before doing so we followed them up through the scrub so as to run them into the river where the boat party would be likely to be lying in wait for them, we following in hot haste behind. If their intention had been to cross the river the presence of the boat there prevented them from going further that way, so they turned, broke up into small parties, scattered through the scrubs to make down towards Tinana Creek, and it was quite impossible to come up with them afterwards. There was nothing left for the party but to return to the slaughtering encampment, where the blacks had left the mutton. The only thing then they could do was to put it in heaps and set fire to it. All the mutton and fat were put in heaps and burned by the party. The party returned late in the evening to where they started from, and on making inquiry about the shepherd said to be killed, no account of him could be got except that he had taken to his heels when the flock had been taken from him by the blacks, and they followed him up and killed him. The following day, however, the Chinese
shepherd supposed to have been killed, turned up all right. It appeared he had run several miles until he was quite exhausted, so that the rumour about the shepherd's death was a false one. This formed one of the many alarms and depredations, false and real, that the residents of the old township were subjected to in the early days.

After the decimation of the Barrambah sheep by blacks and catarrh, the remainder had to be removed back to the station by the way they came; and finding no cure could be effected, the whole flocks were afterwards destroyed. That was the last of the sheep at Barrambah, so that the occupation of the Wide Bay country, near the Mary River, for depasturing of sheep proved its unsuitability.

Before concluding, it may not be out of place here to again revert to the Burnett, and make a few remarks or notes in reference to the grazing and other capabilities of the Burnett district, upper and lower, as they appeared to the writer during a two years' residence in the former portion in the very earliest days of its settlement.

Sheep, being the principal stock introduced by the first squatters, undoubtedly did remarkably well for a period of four to five years—the Burnett wool of the time referred to bringing extremely good prices; over 2s. per lb was no unusual price in Sydney markets, the writer having participated in the same. For carcasses, too, considering the breed was entirely of the merino class, not much fault could be found, wethers from the Auburn, boiled down at Maryborough, having averaged 70 lbs. As for cattle, much need not be said here. The whole of the district, upper and lower, appeared naturally well adapted to their improvement and thriving, so much so that within a decade or two they have quite superseded sheep farming, which at the present time may be said to be almost extinct in the Burnett. The cause or causes which have led to the abandonment of the Burnett for sheep depasturing should prove a most interesting subject to stockholders having a stake in the district, as the natural grasses still exist, as do its rivers and creeks of permanent water, and its box-wood and silver-leaved iron-bark forests. Is there not a strong inducement for settlement of a grazing farming community—men with a few thousand sheep knowing their business? It strikes the writer these could hardly do better than try their fortune on the Upper Burnett waters. As to country for agriculture on the main Burnett waters, it is very scattered, the Nanango district on the whole being the best both for area and climate. Scrub lands, both brigalow and vine, may be found more or less on all the branches from the heads downwards, but these in quality of soil for agriculture are generally inferior, whilst the open forests of the upper branches indicate excellent wheat-growing country.

Although these scrub lands referred to may not be suitable for wheat-growing purposes, they certainly are excellently adapted for the growth of maize and other crops.
The adaptability of the Lower Burnett for sugar-growing purposes has been fully proved by the formation of large and numerous plantations extending down to the sea-coast, resulting in the foundation and establishment of the very important town of Bundaberg.

The banks of the Lower Burnett, where Bundaberg now stands, were known to the writer when there was not a white inhabitant on either side, and it was fully fifteen to sixteen years after the foundation of Maryborough, that a few people, not exceeding twenty in number, commenced the first settlement on the northern side of the Lower Burnett, where North Bundaberg now stands. This was in or about the years 1867 or 1868; and the first plantations started near Bundaberg on the river bank did not take place till 1870 and 1871, at which period there were only one or two residents on the site of the present important town of Bundaberg. All this tends to show that the large town of Bundaberg, as it now exists, is almost entirely due to the sugar-growing industry.

The naming of the Burnett River and district took place in the year 1847 or 1848, called after a surveyor of that name who was sent by the Government to report on the river and country. He and party coasted round to the mouth of the river in a whaleboat, and thence up as far as it was navigable. It is not known how far he succeeded in getting, but he and party left the river and struck south-west, passing through the Degilbo country, and on upwards along the Barambah, and finally down the Brisbane to headquarters.

At the close of the paper, the President said he was sure they all felt grateful to Mr. Palmer for the very interesting address which he had given them. It was very satisfactory to get from an old resident like Mr. Palmer an account of his early experiences, especially as they were given first hand, and were therefore authentic and genuine. He thought Mr. Palmer might have made his paper still more interesting if he had prefaced it with a short account of the discovery of the district which was now so thickly populated. So far as his (the President's) memory served him, the Mary River was discovered in the year 1842 by the late Mr. Andrew Petrie, whose granddaughter, at present a resident of Maryborough, he had the pleasure of meeting yesterday. Previous to that date little, if anything, was known of the country beyond the running surveys of the coast made by Cook, Flinders, and other early navigators. Petrie was then in the service of the Government, and acting under instructions from His Excellency Sir George Gipps, the Governor in Sydney, he equipped a small expedition from Brisbane northwards. They were provided with a five-oared whale boat, built by one of the prisoners in Brisbane, and were accompanied by five ticket-of-leave men to pull the boat. The trip proved to be one of startling incidents. Petrie was accompanied by Henry Stuart Russell, who, in his work, "The Genesis of Queensland," gives a most interesting account of the expedition. As they coasted along near what is now known as Noosa Head, they picked up a runaway convict named Bracefield, who had been living with the blacks for a considerable time. He, it turned out, had been the means of rescuing, a year or two previously, Mrs. Fraser, the wife of Captain Fraser, of the "Stirling Castle," which had been stranded on what is now known as

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Fraser Island. The Captain and most of his crew had been killed by the blacks, but Mrs. Fraser had been spared, only to undergo untold hardships. The ship "Stirling Castle" left Sydney on 15th May, 1835, bound for Singapore. She was wrecked about eight days afterwards on a coral reef about latitude 24°. The Captain, his wife, and crew took to the pinnace and longboat, and eventually landed on the island I have mentioned, which was subsequently named "Fraser's Island." Bracefield enabled Mrs. Fraser, who appeared to be then the only survivor, to escape from the blacks, and guided her to the vicinity of Brisbane, at that time known by the name of "Meginehen." He, however, did not accompany her into the settlement for fear of re-arrestment and subsequent punishment. Bracefield, on a subsequent promise of emancipation, went with the party, and, continuing the journey, they succeeded in negotiating the Wide Bay Bar, that channel being previously untraversed. After a search they found the mouth of the Mary River, subsequently so named after the unfortunate Lady Mary Fitzroy, who was killed by an accident when driving at Parramatta, and ascended it for some miles to a point opposite Mount Boppol. Another startling incident occurred at this stage of the journey, for here they found another white man living with the blacks, also a deserted convict. He proved to be the now well-known Durramboi, and him also they rescued; but it took a deal of persuasion to get his consent to return with them to the settlement. Durramboi's real name was John Davis, a native of Glasgow, who had been transported at a very early age. He was emancipated, and afterwards lived a long time in Brisbane, acquiring considerable property. The records of the Brisbane Hospital show that he was one of the principal donors towards the maintenance of that institution. The expedition was unable to proceed any further on account of the hostility of the blacks, and returned to Brisbane with the men whom they had rescued. At this time the only known settler was Eades, but the following year Stuart Russell again set out to explore the country, this time not from the coast, but inland, direct from the Darling Downs. Shortly afterwards he took up Burran-dowan run, at the head of the Boyne River. Pioneer settlers followed, and gradually took up the country as Mr. Palmer has already described to you, his personal experience commencing about a couple of years later than the time I have referred to.
THE ANTARCTIC:

BEING THE ANNIVERSARY ADDRESS TO THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

By the Right Hon Sir HUGH M. NELSON, P.C., K.C.M.G., D.C.L., etc., President.

Your Excellency, Ladies and Gentlemen.—

It once more devolves upon me to tender to you my most sincere thanks for having again elected me as your President—an honour which, as I have on more than one occasion intimated to you, I most highly appreciate and esteem. It is very gratifying to find, as you have been informed by the Report, adopted, that notwithstanding the untoward adverse circumstances which Queensland in particular, and Australia as a whole, have experienced during the last few years, our Society has been able to hold on its course not only financially, though I may parenthetically observe with a somewhat reduced income, but has also been able to maintain its usefulness in a very encouraging way, and that our work has likewise been recognised as satisfactory by our fellow colonists and by other kindred institutions.

In my address to you on the first occasion of my election to preside, I had the honour of addressing you very briefly on the subject of Antarctic exploration. since which time much has been done and much written on that now absorbing subject, and I think it may be agreeable to you to again refer to it, as to what is now being done, commencing with a brief resume of the previous history of Antarctic exploration.

On this occasion I will not again refer to our great navigator, Cook, who in 1772 to 1775 in the "Resolution," accompanied by Capt. Tobias Furneaux in the "Adventure," attained the farthest south of 71 degs. 10 mins. latitude, 106 degs. 54 mins. W. longitude.

The early explorations, not going further back than the 19th century, may, I think, be conveniently divided into two classes:— Firstly, those that were sent out purely for scientific purposes by various European Governments, and conducted by ships and officers of their respective navies; and, secondly, those which were made by vessels commissioned by private owners, stimulated by the hope of commercial reward. Of the first class, the earliest worthy of

* Delivered at the Anniversary Meeting of the Royal Geo. Soc. of Australasia, Queensland, August 28, 1903.
note—leaving out for the present the voyages of Captain Cook—was that of Fabian Gottlieb Bellingshausen, in command of the Russian man-o’-war, “Vostok,” accompanied by Captain Lazareff, in command of the “Mirny,” who visited South Georgia and circum-navigated the earth in a high latitude, reaching 69° 21' South, in the longitude of 2° 15' West, and latitude 69° 53' South in the longitude of 92° 19' West. They discovered Peter I. Island and Alexander I. Land, and sailed over 46 degrees of longitude within the Antarctic Circle.

Next in order comes the French expedition, which was engaged in exploring these southern seas from 1837 to 1840. It was in command of J. Dumont D’Urville, in the corvette, “Astrolabe,” with Jacquinot in the “Zelée”; but there does not appear to be any record of their having gone as far south as Bellingshausen, although they explored between the 60th and 70th degrees of latitude.

About the same time the United States of America sent out a squadron of five vessels under the command of Charles Wilkes, who explored to the south and west of Palmer Land, and reported Wilkes’ Termination Land, south of the Indian Ocean, the existence of which is still problematical. D’Urville and Wilkes both did good work, and added greatly to the then existing knowledge of the Antarctic.

Next and most important of all, the last regularly fitted out expedition that took place until quite recent times, was that of the celebrated Captain James Clark Ross. who, himself, in H.M.S. “Erebus,” and accompanied by Francis Crozier, in command of H.M.S. “Terror,” between the years 1839 and 1841, made three voyages into the Antarctic, and reached the furthest south of 78° 10' lat. in longitude 161° 27' West.

You will notice, therefore, that in the period extending from 1837 to 1841 considerable activity was manifested in Antarctic discovery, due no doubt to a spirit of friendly rivalry and emulation originally stimulated by the indefatigable energies and powerful influence of that great scientist, Alexander Von Humboldt, who brought into the foreground and made a subject of universal interest, the necessity for a careful study of terrestrial magnetism. That was the subject par excellence which was agitating the scientific world, then looking for the solution of problems of the greatest importance, which could not be elucidated except by a series of actual observations in the regions of the southern pole. It seems to be admitted that the friendly rivalry, to which I have referred, to some extent precipitated the expeditions of the United States and of France, so that when Ross arrived at Hobart and there received the news that he had been anticipated by D’Urville and by Wilkes in the explora-
tions of the regions in which it was conjectured that the South Magnetic Pole was situated, no doubt he was naturally and justifiably surprised and annoyed on finding his purpose thus forestalled by explorers who were well aware of the preparations that were in progress for fitting out his expedition.

Fortunately his instructions from the Admiralty gave him large discretionary powers, and he accordingly struck out a course of his own towards the south, not caring to follow in the footsteps of other nations. And it must be remembered that Ross had great advantages over other navigators of his time or of those who had preceded him.

Born in 1800, he formed one of the party who accompanied Edward Parry on three of his great Arctic voyages between 1819 and 1825. Then, during the period from 1829 to 1833, he spent four winters in the midst of Arctic ice on the great polar voyage of his distinguished uncle, John Ross, and on this occasion reached the northern magnetic pole. Following on this, he was engaged for some time in surveying the shores of Great Britain. By hard study, training and large experience, he had developed a high degree of scientific aptitude, and must be regarded, not only as a remarkable hydrographer and skilful polar navigator, but as a physicist of first rank in the domain of meteorology and terrestrial magnetism.

And it must also be borne in mind that he was provided with ships properly fortified for southern exploration, so that he was able, with conspicuous bravery, to sail through close pack ice, which neither Wilkes nor D'Urville, with their unprotected vessels, would have been justified in attempting. We can sympathise with that brave explorer when, after discovering Victoria Land, with its prominent mountains, named "Erebus" and "Terror," circumstances compelled him to return before he had accomplished the great object he had in view. He says:—

"To the north-westward we observed a low point of land, with a small islet off it, which we hoped might afford us a place of refuge during the winter, and accordingly endeavoured to struggle through the ice towards it until 4 p.m., when the utter hopelessness of being able to approach it was manifest to all, the space of 15 or 16 miles between it and the ships being now filled up by a solid mass of land ice. Had it been possible to have found a place of security, upon any part of this coast, where we might have wintered in sight of the brilliant burning mountain, and at so short a distance from the magnetic pole, both of these interesting spots might easily have been reached by travelling parties in the following spring. It was nevertheless painfully vexatious to behold, at an easily accessible distance under other circumstances, the range of mountains in
which the Pole was placed, and to feel how nearly that chief object of our undertaking had been accomplished: and few can understand the deep feelings of regret with which I felt myself compelled to abandon the perhaps too ambitious hope I had so long cherished of being permitted to plant the flag of my country on both the magnetic Poles of our globe.

With steam Ross would undoubtedly have accomplished what, with a sailing vessel, was quite impossible. He, however, added enormously to previous knowledge concerning south polar territory by the discovery of Victoria Land, and his voyage along the great ice barrier for hundreds of miles, down to the southermost point of the globe as yet seen by the eye of man. Above all, he demonstrated what could be achieved in these inhospitable climes by a skilful, competent and energetic leader. This he proved, not only by the boldness of his enterprise, but it is also greatly to his credit that he conducted his expedition with the minimum of hardship to his officers and crews.

With respect to the commanders or owners of vessels of the second class to which I have referred, who were attracted to the Antarctic seas by motives of commercial gain, the most distinguished perhaps was James Weddell, the seal hunter, who left the Thames on 17th September, 1822, and reached a point (lat. 74° 15' S., long. 34° 17' W.) further south than any previous record. On 20th February, 1823, he there discovered a sea clear of field ice, and with only three icebergs in view. A couple of days before that, he says: — "In the evening we had many whales about the ship, and the sea was literally covered with birds of the blue petrel kind; not a particle of ice of any description was to be seen." This is now known and shown on the maps as Weddell's Sea: and I may here mention, as showing the variableness of the local conditions that when Ross, in his third and last trip south, arrived (February 2, 1842) at the same latitude and almost the same longitude he was completely blocked by pack ice, and was obliged to steer along the edge of the pack to the north-east. He was therefore on that occasion unable to penetrate as far south as Weddell by three degrees of latitude, and steered a course for Capetown.

After Weddell, I think the navigators deserving particular mention are Biscoe and Balleny, whose narratives in manuscript were presented to the Royal Geographical Society on their return to England, and after remaining for half a century in the library of that institution have been published in an elaborate "Manual," edited by Mr. George Murray, of the British Museum. Director of the scientific staff of the "Discovery" expedition, and supplied to all the members and crew thereof. These explorers were sent out by a com-
pany of London merchants, of whom Mr. Charles Enderby, the great promoter of Antarctic voyages, was the chief. These narratives, to which I have alluded, contain "Journal of a Voyage towards the South Pole on board the brig "Tula," under the command of John Biscoe, with the cutter "Lively" in company": also "The Journal of the schooner, "Eliza Scott,"" commanded by Mr. John Balleny, as well as the log kept by his second mate, John MacNab. Biscoe twice effected a landing, and was the first to put human foot on land within the Antarctic Circle. This was on Adelie Land, in 1831. His achievements met with generous recognition in Europe at the time, the Geographical Societies of London and Paris conferring high distinctions upon him. Eight or nine years after this Balleny discovered the Balleny Isles and Sabrina Land. The size of the schooner in which he sailed, the "Eliza Scott," was 154 tons, and the cutter, "Sabrina," which accompanied him under H. Freeman, had a tonnage of 54. very little bigger than a man-o'-war's long-boat now-a-days. After discovering the lands mentioned, being perplexed by violent storms, he sailed homeward bound to the north-west and crossed the 60th parallel of south latitude in longitude 100° East. In one of the storms the schooner was sorely pressed, and the little cutter disappeared, leaving not a trace behind. Balleny arrived in London just in time to impart the particulars of his discoveries to Captain James Clark Ross, who was on the point of sailing.

All Antarctic exploration up to the time we have now reached, 60 years ago, was carried on in sailing craft, and it is a marvel how such voyages were carried out with such vessels, possessing no powers of propulsion beyond those supplied by the wind. It may be here mentioned that although the profits from the fisheries at the beginning of the 19th century averaged a fair amount—stated to be as much as £100,000 a year—yet the gradual failure of the seal fisheries has led to a disappearance of all commercial motives for such expeditions, and consequently voyages to the Antarctic are now usually undertaken in the interests of science alone.

The first steam-ship that crossed the Antarctic Circle was H.M.S. "Challenger," under the command of Sir George Nares, who reached lat. 66° 40' in longitude 78° 30' East, and was destined to increase scientific knowledge in every department connected with the regions we are now dealing with. On 25th February, 1874, she was enabled to get within 15 miles of the supposed position of the land which Wilkes had reported, but although the weather was clear no land was visible either to the east or south. One of the subjects they particularly investigated was the nature and dimensions of icebergs, and generally they contributed immensely to our previous scientific knowledge. The next expedition of any consequence was in the
years 1892-3, when the Dundee Fishing Company sent out four-steam whalers, two of which carried scientifically trained men—Charles William Donald in the "Active," and W. S. Bruce in the "Balena." They were further provided with the best scientific instruments then obtainable. Each of these gentlemen has given us a narrative of his expedition, which were published in the Scottish Geographical Magazine in January, 1894. They visited Louis Phillipe Island, and their observations as to the temperatures, etc., have proved highly useful. About the same time that locality was visited by the Norwegian whaler, "Jason," sent out by a German company, under the command of Leonard Larsen, who on the second voyage picked up a good many fossils which had fallen from a decomposing cliff on the shores of Seymour Island. These fossils are very important, as they are held to indicate the previous existence of a warmer climate than now prevails in the high southern latitudes. Up to the period at which I have now arrived in this short resume all Antarctic observations have been made during a few months in the summer of each year, and so far as meteorology, at least, is concerned, are consequently imperfect. But in 1897 to 1899 an expedition was organised in response to the efforts of the Geographical Society of Brussels, which obtained the support of the Belgian Government, and a three-masted barque, the "Belgica," 250 tons, with auxiliary engines of 150 horse-power, and with her hull strengthened and protected with a casing of hardwood, was despatched from Antwerp (on 16th August, 1897). The expedition was under Commander D. Gerlache, and I gave a brief account of her experiences when I last brought the subject of Antarctic exploration before you. They discovered and surveyed Belgica Strait, and drifted for a year on the ice to the West of Graham's Land, and they were the first of the human race to spend a winter in those ice-bound regions. All the scientific researches made by them have been published, and are now in our library, and Mr. Henry Arctowski, of the scientific staff, gave the Royal Geographical Society in London a most interesting account of the voyage, which was published in the Society's Journal in October, 1901. A further most interesting article by the same gentleman, dealing with the whole subjects of explorations of Antarctic lands, is published in Mr. Murray's "Manual," to which I have already referred. We have also a very popular account, written by the medical officer of the party, Dr. Cook. This was the first completely equipped purely scientific expedition that explored the Antarctic since the time of Ross, and they achieved great results in geology, ice-work, oceanography, biology, and meteorology.

But in 1898 the well-known Sir George Newnes fitted out at a personal expense of £40,000 an expedition of which Borchgrevink:
was the leader. The ship they sailed in was a Norwegian whaler of 522 tons, which was adapted for the purpose and re-christened "The Southern Cross." They effected a landing at Cape Adare on an undulating bank of triangular shape about 20 feet above water level, formed of rounded boulders, pebbles, gravel, and near the mountain side angular masses of debris, and there established themselves in winter quarters. On the 1st of March, 1899, "The Southern Cross" returned to Australia, leaving a land party of ten men including the Commander, and Mr. L. C. Bernacchi, an Australian, who held the position of astronomer and physicist; also Lieutenant Colbeck, magnetic observer and chartographer; also Nicolai Hanson, who unfortunately died in October, and was buried at Cape Adare. They spent the winter making continuous observations and several sledge journeys. Mr. Bernacchi has furnished us with an excellent narrative of the whole expedition, containing in the appendix a synopsis of the observations made in terrestrial magnetism, zoology, geology, astronomy, etc., and he also relates many interesting incidents that occurred during their sojourn throughout the long, dark winter. His meteorological observations, which extended over an entire year—Feb., 1899, to Feb., 1900—are very valuable. The minimum temperature they experienced was on the 4th August, when at 9 p.m. it reached minus 43.5° Far. They also collected many specimens of rocks, which upon examination curiously confirmed the resemblance previously observed to some of the Australian sedimentary rocks.

Indeed, there seems a probability that the old theory of a vast Antarctic continent, named by the old geographers the Terra Australis Incognita, the existence of which was first disproved by Cook, may after all have had a reality at some very early period in the history of the globe; as otherwise it is very difficult to understand how some curious connections between animal life of South America and Australia can have originated. The fact that one of the great groups into which the marsupials are divided is only represented in South America and Australia is in itself extraordinary, and from recent observations it appears that the number of South American forms allied to the Australian marsupials is much greater than in past times was supposed. There are also other points of connection, and the whole subject is one of great interest, upon which further geological exploration may throw light.

No land animals were found, which might serve to supply food for men or dogs during winter, though there were plenty of seals along the shore line both in summer and winter, which were always valuable for food, as well as penguins during four months of the year. Altogether the party spent a very hard and hazardous winter,
and were not sorry when, early in the morning of the 28th January, all of them being at the time asleep in their tiny hut, a voice accosted them, calling out "Post," and awakened them from their slumbers. It was the voice of Captain Jensen, the sailing-master of "The Southern Cross." After joining the ship they sailed down in sight of Mounts Erebus and Terror. The furthest South latitude they attained may be taken as something between 78° 45' and 78° 50', or about 40 miles further South than Sir James Clark Ross in 1842.

During the last few years matters connected with the Antarctic have prominently occupied the attention of geographers throughout the scientific world, and thanks to the indefatigable exertions of Sir Clements Markham and Sir John Murray, who have been untiring in their efforts, we have now in those regions an expedition more fully equipped than any previous one for the execution of the important scientific work offered to investigators by the unknown territory surrounding the South Pole. I refer to the equipment and despatch of "The Discovery," the first ship that has ever been built for purely scientific purposes in the United Kingdom, under the command of Captain R. F. Scott, with a complement of officers, scientific staff and crew. This is in conjunction with the German expedition under the leadership of Professor Dr. Erich Von Drygalski.

The German expedition has been in complete co-operation, from its initiation, with our own, both as regards equipment and method of work. Provision has been made for simultaneous magnetic and meteorological observations, and in some instances for the use of instruments of identical construction. A friendly understanding has been arrived at, whereby the British ship is to explore the Ross quadrant, that is to say, the region of which we already possess the greatest amount of knowledge; while the Germans have chosen the entirely unknown area of the Enderby quadrant, which no ice-protected steamer has yet attempted to penetrate. The "Gauss" made for Kerguelen Island, and left there a party of four scientists, with the object of carrying out a year's magnetic and meteorological observations. This party has, according to the latest news been very unfortunate, the long winter months having evidently tried them severely. One member died on the island, and when the ship that relieved them reached Sydney in April last two others of the party were seriously ill. The sufferings of the members of the Kerguelen party are the more unfortunate in view of the fact that its members were not engaged in actual exploring work, which must always carry a strong element of danger, but were established in permanent quarters intended to shelter the party for a year.

The "Gauss," after establishing the scientific station on Kerguelen Island, sailed away, fully equipped and provisioned for two
and a-half years, on 31st January last year to the practically unknown regions of the South. We have just received news of her return to Simonstown after a successful year's work.

She intended to remain there for three weeks and re-fit, and then to sail for home. The vessel showed outward signs of her contact with the ice. The "Gauss" reached the floating ice on February 14th, 1902. The ship was ice-bound on February 22 in latitude 66° 15', longitude 90° E. New land was discovered, which was named Emperor William II. Land. This was covered with ice with the exception of an inactive volcano. The expedition was ice-bound here for almost a year, and many scientific investigations were carried out during this period. When at last winter quarters were left it was found that the season was too far advanced, and progress was hampered by snowstorms and by darkness. The ship made her way out northward, and left the ice on April 8. She proceeded to Durban, passing Kerguelen Island, and calling at St. Paul and New Amsterdam islands. The members of the expedition enjoyed good health, there being no case of sickness, accident, or death during the whole cruise. Professor Drygalski speaks in the highest terms of the vessel's behaviour, both in the sea and in the ice. The equipment and provisions, he says, were sufficient for another two years. The expedition did not sight the "Discovery" or her relief ship. The specimens collected during the expedition are being sent to Berlin.

There are two other expeditions out, one from Scotland and one from Sweden. The latest information we have respecting the "Scotia" of the Scottish National expedition, is to the effect that she made a good voyage to Port Stanley in the Falkland Islands, and that Mr. W. S. Bruce, the Commander, intended to leave there on the 25th of January last, steering a south-east course to Weddell Sea, until reaching longitude 30° West, unless diverted by ice. "Our general course," he says, "will then probably be South into the unknown. Should we be successful in finding a comfortable harbour the 'Scotia' will winter there, and will return to the Falkland Islands as soon as she is released in the spring of 1903-4." According to that arrangement she will be due at Port Stanley sometime during the ensuing summer, when we hope to hear of the safety and success of the expedition.

With regard to the Swedish expedition, the "Antarctic," with that experienced polar navigator, Captain Larsen, in command, finally left Falmouth on October 26, 1901. She visited the Argentine Magnetic Observatory on Staten Island on January 6, 1902, and sighted one of the South Shetland Islands on the 11th. From the 12th to the 21st of February, 1902, the "Antarctic" was engaged in landing Dr. Nordenskiold and a small party at the northern end
of Graham Island, at Admiralty Inlet, Snow Hill Land. South of Cockburn Island (Louis Philippe Land). Here he wintered and intended to do some sledging work in the spring, but he was 250 miles North of the Antarctic Circle, by the coast. The "Antarctic" was back at the Falkland Islands by March, and visited South Georgia in the winter. In February, 1903, it was expected that the ship, after returning to the winter quarters and taking Dr. Nordskjold and his party on board, would return to the Falkland Islands. But she has not appeared, and some anxiety is felt in consequence. I notice that the Swedish Parliament has voted a sum sufficient to equip a vessel, under the command of Dr. Otto Nordenskjold, to go to their relief. They should have reached their winter quarters last December, and were expected to be picked up at Port Stanley last March.

I need not trouble you with the details of the building and equipment of the "Discovery"; but you may acquire some idea of the splendid work done by our countrymen in the far South, and of the nature of that work, and of the general results from the following notes which I have compiled, principally from the proof sheets kindly sent to me from London of an address by Sir Clements R. Markham, President of our Parent Society, under whose personal superintendence the expedition was organised.

On Monday, August 5, 1901, the "Discovery" proceeded at 9 a.m. from Stokes Bay to Cowes, and at 11.30 the King came on board from the "Osborne," and was accompanied by the Queen and Princess Victoria. Their Majesties were received by Sir Clements Markham, and Mr. Longstaff and Captain Scott were present. Sir Leopold McClintock and Sir Allan Young were also in attendance. Their Majesties addressed a few gracious words to Mr. Longstaff, and the King then received the officers and civilian staff, who were presented by Captain Scott. The men were inspected, and the Royal party went round the upper deck and the living deck, showing great interest in all the arrangements. Before leaving the ship, the King, who was in the uniform of an Admiral of the fleet, addressed the officers and men to the following effect:—"Captain Scott, officers, and men of the "Discovery,"—I have had great pleasure in visiting this ship with the Queen, because of the interest I take in the Antarctic expedition and its objects, and in order to wish you all God-speed. You are going on a service from which, I believe, great results will accrue. I have often visited ships in order to say farewell when departing on warlike service; but you are starting on a mission of peace, and for the advance of knowledge. The results of your labours will be valuable not only to your country, but to the whole civilized world. I trust you will be able to achieve the great work that is before you, and that you will all return safe and well." Before leaving the ship,
the King decorated Captain Scott with the Victorian Order; and on moving off their Majesties received three hearty cheers from the officers and men of the 'Discovery.' The explorers left Cowes on their adventurous voyage at noon on the 6th August.

The President then gave a graphic description of the voyage to New Zealand, and afterwards read from Sir C. R. Markham's notes, with some interpolations from Dr. Shackleton's narrative, kindly forwarded from San Francisco by our Hon. Secretary, Dr. J. P. Thomson, who was a fellow passenger of his from Sydney last May.

"The 'Discovery,'" says Sir C. R. Markham, "has proved most admirably adapted for the work. It has been said that she is the most expensive vessel that was ever built in this country for scientific purposes. It is equally true that she is the cheapest, for she is the only vessel that ever was built in this country for scientific purposes. She has been a great success, and she will be a great success even if she has to be abandoned in the Antarctic ice. The famous voyage performed in her, the vast and important scientific results achieved through her means, will remain for ever as the record of her success, even though the staunch old 'Discovery' leaves her ribs in the far South. But this will not be if human help, guided by no ordinary ability and skill, can avail. For if the ship is strong and adapted to her work, still stronger and still better are her crew. No more striking proof of this is needed than the way they have rallied round their beloved commander. Captain Scott's deeds speak for themselves, and he was supported by such officers as Armitage, Royds, Skelton, Shackleton, and Barne; by Koettlitz, Wilson, Bernacchi, Hodgson, and Ferrar; and by twenty-six seamen and marines, all good men and true. Alas that one of the best of all, the devoted and chivalrous Shackleton, is no longer with them! The Admiralty has lent the men, without whom the work could not have been done; but we must always remember that we owe this to the good offices of our lamented associate, Admiral Sir Anthony Hoskins. We owe much more to his memory than even that."

Lieutenant Shackleton wrote: —

"Under such auspices the expedition left New Zealand on Christmas Eve, 1901, and entered the Antarctic ice. Her objects were to study the nature of Ross's great ice barrier; if possible, to discover land to the eastward; to secure various scientific results during the voyage and in winter quarters; and from winter quarters to explore the volcanic region, and to make discoveries to the south and inland to the west. Most thoroughly and completely have the explorers carried out these instructions. Their deeds have far exceeded all that I had hoped, or even conceived possible.
"The ship entered the ice pack December 23. 1901, in latitude 67 degrees south, and reached Cape Adare January 9, 1902. On January 22nd Cape Crozier was reached, after which the ship sailed along the barrier with in a few cables' lengths, examining the edge, from which rose high snow slopes to heavily glaciated land. On February 3rd, the 'Discovery' entered an inlet in the barrier, and good winter quarters were found near Mount Erebus. Here huts were made and other preparations for a long stay, and on March 24th the ship was frozen in."

Sir Clements R. Markham, continuing:—

"On reaching safe winter quarters, the great work of sledge-travelling was commenced with some autumn journeys. The severity of the weather was intense, both from low temperature—42 degrees to even 57 degrees below zero—and from the furious gales; but the journeys were of great use, both for obtaining information respecting the lie of the land, and for the acquisition of experience. There was one fatal accident, which is admirably described by Captain Scott:—

"Mr. Barne reached the crest of the hills at about noon on March 11, and camped for luncheon, during which meal the wind sprang up very suddenly, bringing a heavy drift. the temperature fell, and the party, not experienced in such conditions, suffered much from frost-bites and general discomfort. In these circumstances, and imagining themselves closer to the ship than they actually were, they decided to leave the sledges and make for her. Soon after their start the gale increased, and they were enveloped in a whirl of drifting snow and entirely lost their bearings. Mr. Barne did his best to keep the party together, the more so when it became evident that the slope on which they stood was affording a less and less secure foothold. Before long, however, one of the men, Evans, slipped and disappeared from sight. After shouting and receiving no reply, Mr. Barne, cautioning the men to remain where they were, decided to follow, and very deliberately started to slide down the slope himself. He was firmly under the impression that the slope was one well known to us all close to the ship, and that after making certain he would be easily able to regain the summit and bring the men on. After waiting for some time, another of the men (Quartly) decided to follow Mr. Barne, and was immediately lost to sight. The experience of these three was identical: after the first start they were soon going at a speed which left them absolutely no control of their movements, and this continued for some 400 or 500 yards, until they were suddenly brought up in a patch of soft snow within 15 feet of a sheer drop into the sea."

"Meanwhile, of the party above, one, Hare, had decided to go back to the sledge to change his footgear, and the remaining five..."
after a long wait, proceeded along the slope, as they supposed, toward-the ship, led by an able seaman (Wild). Luckily, Wild had nails in his boots, for, after travelling some distance, he suddenly and without warning (so thick was the snow) found himself within an ace of stepping over the cliff into the sea. He had the presence of mind to shout to the others to stop, which they were able to do; except poor Vince, who missed his footing, shot past Wild, and was immediately lost to view. Vince was a thoroughly good man, always cheerful and bright, and popular throughout the ship. With great difficulty the remaining four men succeeded in retracing their steps, and eventually reached the crest of the hill, from whence, taking a more easterly course, they fell on some landmarks and found their way to the ship. Great credit is due to Wild for the manner in which he conducted and kept together the small party. A large search party was immediately despatched on their return to the ship, and the siren was kept going. With some difficulty the search party succeeded in finding the sledges, and in the vicinity they found Mr. Barne, Evans, and Quartly, half frozen and wholly dazed; they did not know how they had again reached the summit of the hill. No trace was found of Hare or Vince. A further prolonged search was made on the following day, a roped party descending the slope with crampons, but without result. On the third day I got up steam on the bare possibility of finding an ice-foot below the ice-cliff over which Vince had fallen, and whilst we were preparing to weigh, Hare was seen descending the hill opposite the ship; he was quickly brought on board, and found to be neither frost-bitten nor in any way hurt by his exposure; he had turned to find the sledges, failed to do so, wandered aimlessly about, and finally lost conscious ness; thirty-six hours later he awoke, to find himself buried in snow and only a trifle stiff: he imagined it to be the morning after the accident, and was astounded to learn that he had slept through a whole day.

"On taking the ship round to the scene of the accident, we found an ice-foot, and it was evident that Vince must have fallen directly into the sea from a cliff 150 to 200 feet in height.

"When Captain Scott addressed the ship's company in a few words after service on the following Sunday, there was scarcely a dry eye. All mourned the loss of their comrade, George Vince, a cheerful and popular messmate, and an excellent seaman.

"The winter passed cheerfully, although the expedition experienced 123 days without the sun, and 104 days of complete darkness. There were plenty of amusements; but there was also plenty of hard work. Mr. Bernacchi tended his magnetic instruments with zealous care, and took regular observations with the electrometer. The temperature and salinity of sea-water at various depths were-
ascertained. Mr. Hodgson was indefatigable in all weathers, keeping holes open in the ice for his nets and fish-traps. Dr. Wilson's work, as regards vertebrates, is exceedingly valuable; and I am assured that the biological collections are most important, and will form one of the great features of the expedition. The meteorology is under the charge of Lieutenant Royds, and nothing can exceed his care and diligence. A series of meteorological observations for two years, in 77° 50' S., more than 500 miles further south than any ship has ever wintered before, will be most valuable.

"As the sun began to return, the magnificent range of mountains to the westward began to appear in surpassing grandeur. The glow of the sun when it was still below the horizon just caught them, and the sides facing the north were lit up with a pinkish-orange tint—the other sides being dark and shadowy. In September, the early spring travelling commenced, when the cold was even more intense than in the autumn. Royds and Skelton were the chief explorers of the volcanic island on which Erebus and Terror rear their giant cones. With four men, they were away twenty-one days, with the thermometer always —40°, and once as low as —58°. This cold is too intense for sledging, and in addition they encountered a furious gale, which lasted for five days. In spite of the weather, Skelton and two men found a way over the big ice-ridges of the barrier down to the sea-edge, using crampons and ice-axes, and being roped together. A close examination was thus made of the position where the barrier abuts upon the land at Cape Crozier. In a subsequent journey Royds found the post cairn at this point, and deposited a notice for the relief ship.

"There were several sledging journeys for short distances conducted by the scientific staff, chiefly with the object of geological investigations; but the great results were to be obtained from the southern and western parties.

"Captain Scott established a dépôt 60 miles to the south in a journey of ten days, from September 23 to October 4, when there was a heavy gale, and the thermometer fell to —51°. On November 1 he started with eighteen dogs, accompanied by Lieutenant Shackleton and Dr. Wilson. A supporting sledge under Lieut. Barne went as far as the first depot. At first all went well, but after a fortnight the dogs got weaker and weaker, and a long tract of soft snow had to be crossed, which occupied them for thirty days, bringing the sledges up in relays. Practically the dogs became useless. The explorers had to do all the work themselves. But, nothing daunted, the gallant men pushed onwards, lightening the weight by leaving a dépôt in 80° 30' S.

"They reached 82° 17' S., at a longitude of 163° E. On their return Lieut. Shackleton broke a blood-vessel, and was only just
able, owing to his extraordinary pluck, to keep up with the sledge; while Scott and Wilson, suffering from snow-blindness and hunger, dragged the sledge back, 240 lbs. each, and reached the ship on February 4, after an absence of ninety-four days.

"I calculate that they must have gone over 981 statute miles. The story will be told by Scott himself—a story of heroic perseverance to obtain great results; a story which is unmatched in polar annals. It will tell us, too, of new geographical facts and deductions of intense interest; of a new and hitherto unknown world in the far south, reached with such extreme difficulty—

"Yet even here Britannia’s flag has thrown
Her shadow on the ice, and hailed the land her own."

"The achievement of the great western party, dragging sledges over mountains and glaciers, with such leaders as Armitage and Skelton, is only second to Scott’s memorable journey. They were dragging 240 lbs. per man; first over 29 miles of sea-ice, and then for 19 miles up a snow-felled valley to the foot of the mountains. They also had to work by relays. Crampons, blocks and tackle, ice-axes, and crow-bars were needed; and so they climbed the ice-slopes with loaded sledges, and travelled many miles over bare blue glacier amidst magnificent scenery, reaching an elevation of 9,000 feet, at a distance of 142 statute miles inland from the ship as the crow flies. They were fifty-three days away."

"The loss of the dogs was felt as a great calamity, because each dog was given in charge to a man, who became much attached to it. There are, however, several puppies.

"If our dogs had not died," said Lieutenant Shackleton after this point in the narrative had been reached, "we should have gotten much farther south than we did. You must understand, however, that this was not an expedition to attempt reaching the Pole. It was planned on scientific lines wholly, and no one subject was to be benefitted at the expense of another. I am taking back reports of the expedition with my diary, and the five copies of the South Polar Times, which was published farther south than has been any other magazine. There were only five copies and five editions. I was the editor of this most southerly publication in the world. The first edition was issued and read by the members of the party, nearly all of whom contributed to it, on March 23, 1902, when the sun left us, and was succeeded by editions on the 23rd of each month until August 23rd, when the sun reappeared.

"The Times was typewritten, and consisted of about fifty pages each edition, each page containing about 600 words. The articles were in popular form and were on subjects of general science, besides chronicling all happenings. Each officer wrote articles on H—Royal Geo. Society."
his particular line of work, and even members of the crew contributed. These articles and the whole series of events recorded in the Times will be published by the Royal Geographical Society when I reach England, and then given out to the world. There were three or four artists, who contributed water-colour and pen and ink sketches, which will be very valuable.

"We were dressed in Burbery clothes, and discarded furs. We had protection for our faces, but the apparatus did not amount to much. When you get to pulling against the wind you will perspire, and then you must stop, for the perspiration on the face will freeze. We had the lowest temperatures under clear skies. Our dress consisted of a blouse and trousers. We wore woollen caps under the Burberry caps and had on finnesko boots, which are made of fur from the neck of the reindeer. In the bottom we had sennegras, which the Laps use, and we wore four or more pair of socks. We had to change our socks every night. They were the only items of wearing apparel which we did change during the ninety-four days' sledge trip."

Sir Clements Markham concludes:—

"Another calamity was the loss of all the boats, which during the winter got frozen into a mass of solid ice. After hacking at this ice for months, it was found impossible to extricate the boats.

"But now all the travelling parties had returned, and the longed-for relief ship 'Morning' hove in sight on the 23rd of last January.

"You are acquainted with the history of the relief ship; how she was bought, fitted out, equipped, and despatched last year by the Geographical Society, with funds subscribed almost entirely by our Fellows. We all know the great dangers of Polar navigation, and that a ship in those regions may be in need of succour after the first winter. Consequently, annual communications has been the rule with all Government expeditions since the Franklin disaster. We were bound to follow this example; and the necessity for our action has since been proved.

"The 'Morning,' fitted up with provisions, including a good supply of frozen meat, and coals for the 'Discovery,' left Lyttleton, N.Z., on December 6th, and crossed the Antarctic circle on Christmas Day. She is commanded by Captain Colbeck, a very able and capable ice-navigator, who has under him zealous officers and a good crew. In about 67° 40' S., an interesting discovery was made of a new island, of which several excellent photographs were taken. A landing was effected, and a survey was made; it was named Scott Island.

"Outside the pack the 'Morning' encountered a heavy southeast gale, bergs and heavy floe pieces being a source of continual danger, and the ship was subjected to a most severe straining. At
one time she could show no canvas. The season was very late, and the navigation difficult. But Captain Colbeck followed up his clue, found the record at Cape Crozier, and finally sighted the 'Discovery's masts.

"It was found that several miles of ice intervened between the two ships, and it was not long before it became clear that the ice was not likely to move during that season, and all hands at once went to work to transfer stores and provisions on sledges. But there was barely time.

"The arrival of the 'Morning' was most providential, but she leaves the 'Discovery' with only provisions to last until next January, and eighty tons of coal.

"In returning, the 'Morning' was in some danger of being detained. She was beset, but was saved by her skilful ice-navigation, aided by a strong south-westerly gale. Her detention would have been a terrible calamity. She, however, returned safely to Lyttleton, N.Z., last March.

"Captain Colbeck deserves high commendation for the skill and ability with which he conducted a very arduous and difficult voyage; for his excellent judgment in finding the winter quarters of the 'Discovery,' his rapid transfer of stores, and the seamanlike qualities which enabled him to work his vessel safely out of the ice under circumstances of no ordinary difficulty. The officers worked under him with zeal and intelligence, and the conduct of the men was excellent throughout the voyage.

"It will be seen that a second voyage of a relief ship is absolutely necessary for the safety of our gallant countrymen. There are thirty-seven souls in the Antarctic ice, consisting of five naval officers, one officer of the naval reserve, five members of the scientific staff, twenty-four naval seamen and marines, and two other good men.

"As regards the voyage of the 'Morning' and the meeting with the 'Discovery,' it is stated that the Antarctic circle was crossed on Christmas Day, three weeks after leaving Lyttleton, two islands being discovered the same day. On January 3 Victoria Land was sighted, but it was not until the 8th that a landing was effected at Cape Adare. Proceeding through heavily packed ice, a party landed at Possession Island, which was covered with penguins. A wide track has been made by the birds to the centre of the island, the larger stones being removed from the paths. In the neighbourhood of Wood Bay and Coulman Island the ice was especially heavy. On January 14, a landing party left a record at Franklin Island, and four days later letters from Captain Scott, which had been deposited at Cape Crozier, were taken off. The 'Morning' continued to force her way through the pack, and on January 23 sighted the 'Dis-
covery,' which was separated from the relief ship by ten miles of fast ice, so that the two expeditions effected a junction by means of sledges. Subsequently some of the ice broke away, and by February 26th, the distance between the two ships was reduced to five miles; but not even the heaviest gales did anything further to break up the intervening ice-fields. Captain Scott considers that the season was exceptionally bad, for last year, after the one year's ice found at the spot originally had broken away, the water remained open for at least six weeks. At the time of writing, shortly before the departure of the 'Morning,' the weather was getting much colder and more blustering. The leader regretted the enforced detention, principally on account of the waste of time, for all the party remained as keen as ever, and had it been possible to return to New Zealand this season, he had fully intended, if possible, to return for a third season's work. He says that it would be difficult to imagine a happier or more comfortable community, though the relief party saw evident traces, in the appearance of the explorers, of the hardships they had undergone, the men looking years older than when they set out. The position of the winter quarters was 77° 51' S., 166° 42' E.

"With regard to the main work accomplished by the expedition up to date, the following summary by one of the scientific staff is of interest:—

1. The discovery of extensive land at the east extremity of the great ice barrier. 2. The discovery that McMurdo Bay (?) is not a bay, but a strait, and that Mounts Erebus and Terror form part of a comparatively small island. 3. The discovery of good winter quarters in a high latitude—viz., 77° 50' S., 166° 42' E.—with land close by suitable for the erection of the magnetic observations, etc. The lowest temperature experienced was 32° of frost Fahrenheit. 4. An immense amount of scientific work, over twelve months, in winter quarters, principally physical and biological. 5. Numerous and extensive sledge journeys in the spring and summer, covering a good many thousand miles, of which the principal is Captain Scott's journey, upon which a latitude of 82° 17' south was attained, and an immense tract of new land discovered and charted as far as 83° 30' south, with peaks and ranges of mountains as high as 14,000 feet. 6. The great continental inland ice reached westward at a considerable distance from the coast and at an altitude of 9,000 feet. 7. A considerable amount of magnetic work at sea, also soundings, deep-sea dredging, etc.'

"These are simply the large and principal results; there are, of course, many other minor ones."
Hon. AUGUSTUS CHARLES GREGORY.
FIRST PRESIDENT, ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.
AUGUST 1st, 1902.

This was a meeting to celebrate the 83rd anniversary of the birth of the Honourable Augustus Charles Gregory, C.M.G., F.R.G.S., etc., first President of the Society, and one of Australia’s greatest explorers, who had rendered eminent services to the Empire and to Geographical Science in the field of exploration and discovery.

The first part of the celebration took the form of a river trip in the Government steam yacht “Lucinda,” kindly placed at the disposal of the Society for the occasion by the Hon. the Premier, Robert Philip, Esq., M.L.A.

Members of the Society and their friends were received on board by the President (Rt. Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.), the Hon. Treasurer (Mr. D. S. Thistlethwayte, C.E.), the Hon. Secretary (Mr. J. P. Thomson, Hon.F.R.S.G.S., etc.), Lieut.-Col. James Irving, M.R.C.V.S.L., etc.), Ald. R. Gailey, J.P., John Cameron, M.L.A., L. F. Schoenheimer, J.P., and Thos. H. Owens, members of the Council. The yacht, which was well-filled by a most representative gathering of ladies and gentlemen, started from the Queen’s Wharf at 2.30 p.m., and steamed down the river to the Hamilton Reach, where afternoon tea was served by Mrs. J. P. Thomson, who was kindly assisted by Mrs. Owens and Miss Nicholson. The weather was gloriously fine, and the venerable guest of the occasion looked remarkably well and happy as he moved about receiving the numerous felicitations of his many personal friends and acquaintances.

In response to invitations sent out jointly by the President and Hon. Secretary, the following bodies were represented at the celebration by the gentlemen, whose names thereafter appear in parentheses:—The Manchester Geographical Society (Mr. J. P. Thomson, Hon.F.R.S.G.S., Hon Corresponding member); the Royal Society of Victoria (Mr. F. M. Bailey, F.L.S., Hon. Corresponding member); the Royal Geographical Society of Australasia, Victorian Branch (Mr. George Fox, M.L.A.); the Field Naturalists Club of Victoria (Mr. F. M. Bailey, F.L.S.); the Royal Society of Queensland (Dr. John Thomson, M.B., President; Hon. A. Norton, M.L.C., Hon. Treasurer; Mr. J. F. Bailey, Hon. Secretary; Messrs. R. Illidge, A. C. Jackson, C. J. Pound, and F. Whitteron, members of Council); the Royal Anthropological Society of Australasia (Mr. George Fox, M.L.A.); the National Association of Queensland (Lieut.-Col. James Irving, M.R.C.V.S.L.,
PROCEEDINGS.

Messrs. John Cameron, M.L.A., and D. Jones; Brisbane Technical College (Hon. A. Norton, M.L.C., President; Dr. John Thomson, M.B., Messrs. S. W. Brooks and J. S. Badger); Public Library of Queensland (Rt. Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., and Dr. John Thomson, M.B.); Queensland National Art Gallery (Mr. R. G. Rivers); Queensland Art Society (Mr. M. Roberts, President, and E. Colclough, Secretary); the Queensland Institute of Surveyors (Messrs. John Allan, Hon. Secretary; J. F. Charlton and E. Bostock), members of Council.

After the "Lucinda" had anchored, the President (Rt. Hon. Sir Hugh M. Nelson) opened the proceedings by delivering an address as follows:—I have the honour and extreme pleasure of bringing before you the occasion for which we are now assembled. It is, as you are aware, to do honour, so far as in us lies, to an illustrious member, and first President of our Geographical Society. (Cheers.) The Hon. A. C. Gregory is well-known to us all, and we are all aware that during his long career in Australia, extending now over 73 years, he has filled many offices, and discharged an innumerable number of duties. In all cases, though they may have involved much labour, many hardships, and fearful anxieties, he has invariably carried out the duties imposed upon him with an amount of zeal and ability which, I may say without exaggeration, is unparalleled. (Applause.) I shall not now enlarge upon his great exploratory works. They will be dealt with more fully when we meet again this evening. Nor need I expatiate upon the skill with which he has invariably conducted his professional services. He, for a long time, held the office of Surveyor-General of this colony, combined with that of Government Geologist, and I need only now say that he has added fame to himself and earned an illustrious name both in the annals of exploration and throughout the scientific world. As a legislator Mr. Gregory has been for some 20 years a member of our Legislative Council, and enjoyed the opportunity, which he has been at all times ready to embrace, of moulding our legislation in the interests of the community as a whole. He has always evinced the keenest interest in every important question that has come up for debate. I may mention, by way of instance, that he has given us the benefit of his critical mind and large experience in framing laws for the administration of our lands, and the settlement of the people thereon; also such important subjects as immigration from Europe and from the Pacific Islands, the laws dealing with patents, with New Guinea, and with Federation, in all of which, as well as in other important matters, Mr. Gregory has freely and fearlessly given the country the benefit of his unbiased advice. While he has carefully eschewed the heat of party politics, and reviewed all matters coming before the legislature with an evenly balanced mind, I will venture to say that it would have been well for the State if upon some of those subjects his advice had been more earnestly listened to. But it is not in Queensland alone that his splendid services have been recognised. The Royal Geographical Society of London, our parent society, long since awarded him their gold medal. The Royal Society of New South Wales has done likewise. Her late gracious Majesty conferred upon him the distinguished order of Companion of St. Michael and St. George, and many other societies, too numerous to mention now, have honoured him with tokens of their appreciation.

We have just received from the Royal Scottish Geographical Society, whose headquarters are at Edinburgh, a diploma of honorary fellowship in that distinguished society, which was conferred upon him when it came to their knowledge that we were to meet on this auspicious occasion to celebrate the 83rd anniversary of his birthday. I beg Mr. Gregory to accept the assurance which I now give him, not only from myself, and on behalf of the Geographical Society over which I preside, and of all present, but I might say of the whole body of
science societies of the world, that in doing him honour to-day we are not indulging in any formal or merely complimentary ceremony. (Hear, hear.) We are expressing from the very depths of our hearts, not only our reverence and respect for him, but also our heartfelt esteem and sincere affection. Certain it is that he is now able to look back with the fullest satisfaction to a career which he has carved out for himself. He has established for himself a high character, a spotless reputation, combined with the most marked ability. His character has now stood the test of time. He has borne himself amongst us well for many years, during which he has shown a pleasant urbanity and kindness to all and everyone, combined with justness of judgment, and immense powers, both mental and physical. (Applause.) I may conclude by expressing the hope—the earnest hope, in which you will all join me—that Mr. Gregory may yet have before him many years of happiness in which he may enjoy the well-deserved rewards of his arduous labours and honourable services.

Congratulatory communications were then read by the Hon. Secretary, from: The Société de Géographie, Paris, the Royal Geographical Society, London, the Royal Geographical Society of Australasia (Victorian Branch), the Royal Geographical Society of Australasia (South Australian Branch), the Royal Society of Victoria, the Colonial Museum and New Zealand Institute, Wellington (by Sir James Hector), the Australasian Association for the Advancement of Science, the Polynesian Society, Wellington, the Royal Anthropological Society of Australasia, Professor David, of Sydney University. Heartly felicitations and apologies for unavoidable absence were also received from His Excellency the Governor and Lady Chermside and Miss Webb. Hon. A. J. Carter, M.L.C. Messrs. John Norman, George Story, J. Tolmie, and T. de M. Murray-Prior. M.M.I.A., J. G. MacDonald, P.M., F.R.G.S., W. J. Weatherill (U.S. Consular-Agent), and G. Vaughan (Government Printer). Mr. A. Meston then recited the following poem which he had written for the occasion:

IN COMMEMORATION.

83 RD BIRTHDAY OF HON. A. C. GREGORY, C.M.G., ETC.

None can tell us when dark Chaos from her womb Australia hurled,
Back before the dawn of Being, in the morning of the world.

Long before the lost beginning of all human hopes and fears,
Through the misty dreadful darkness of a thousand thousand years.

Rocked in cradles of the Earthquake, nursed by weird and awful Forms,
Lullabied by thunder music in the wild Laurentian storms.

Back through immemorial Ages, Space and Silences sublime,
Whence no dim historic pages tell us of the Elder Time.

All has vanished, save the secrets which eternal Nature locks
In the mountains and the valleys, in the drift beds and the rocks.

O'er the great Silurian fishes, children of the stormy Deep,
O'er the great Jurassic flora the unmeasured Ages sweep;

Furious rivers, yellow waters, in the ocean depths expire,
Far and wide the red volcanoes threw their lava floods of fire.

Rolled the vast Cretaceous ocean from the Gulf Shore to the Bight
East and West, by man untrodden, rose the unknown land in sight.

There Leviathan lashed the surges into circling wreaths of foam,
There the Ichthyosaurus sported in his deep unfathomed home.
Storm swept waters, wild and wasteful, by no keel of vessel crossed,
On that shore no human Mother ever mourned her loved and lost.
Sobs and sighs from caves and beaches, voices of the mournful Deep,
Like the World's unhappy women mourning in a troubled sleep.

Eons passed and lofty mountains heard the ancient eagle scream,
While the Cenozoic Fauna fed by mighty lake and stream.

There the giant Nototherium the herbivorous army rules.
There the Saurian Palimnarchus, tyrant of the olden pools.

There the dark and dismal cavern where the stricken victim groans,
As the fierce marsupial lion bites through quivering flesh and bones.

Ages passed, a transformation through a million years serene,
Man, the monarch of the Fauna, stalks across the magic scene.

Man, the wild primeval savage, all the onward changes rang
From the Trogodytic cavern to the spear and boomerang.

Ages more—dark, unrecorded, ages of historic rest,
Broken by the wild white sailors from the ocean to the west.

French and Dutch and dark Iberians, fair-haired fearless; Saxon men,
Faced alike that unknown region, far beyond all sailors' ken.

Torres, Tasman, Cook and Flinders, rise from out that gallant band,
Honoured names to future ages while the nations' records stand.

Recks it not whence came the valiant, what the race or where the clime,
Honour all the brave sea rovers, heroes of the olden time!

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Years again of silence broken when the land explorers came,
Men with equal hearts of valor, "arm of strength and soul of flame."

Sturt and Leichhardt, Gregory Brothers, Kennedy and Burke and Wills,
Mitchell, Stuart, John Mackinlay, each an honoured name that fills
One bright in memorium tablet in each true Australian breast,
That can treasure of its country all the bravest and the best.

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All has changed; where rolled the ocean, that unknown Cretaceous Deep,
Stand to-day the peaceful homesteads in the circling flocks of sheep.

Where Leviathan, Ichthyosaurus, held their undisputed reigns,
Roam a thousand herds of cattle over undisputed plains.

Where the seaweed waved and quivered with the undulating Deep,
Stand the mulga and the gidja in a silence as of sleep.

Where the Saurian Palimnarchus swam around the ancient pool,
March the groups of happy children playful on their way to school.

Where the fierce Marsupial Lion roamed and raged in search of prey,
Maids and Matrons join the farmers in the fields among the hay.

Where the gallant old sea rovers sailed unknown uncharted seas,
Steel-clad steamers plough the surges, heedless of the tide or breeze.

Where the reckless old explorers faced mysterious solitude,
Railway whistles break the silence of the grand primeval woods.

Where of old the dread volcano and the rending Earthquake shock,
Stand the mighty thunder shattered silent cones of trachyte rock.
We behold this vast Australia—born in Ages far away
Child of some dread Orient Morning—in its manhood here to-day.
Old sea rovers, brave explorers, came and vanished—time shall tell
They were worthy of enshrining where the Earth's Immortals dwell.
All have gone except one hero whom a kindly Fate has cast
As the one sole link that binds us to the unforgotten Past.
When the roll of the explorers' Fame in future years shall call,
That of "Veteran Gregory" shall be with the noblest of them all.
Wanderer through the Austral forests, wherever Fate decrees,
Barrier Reef to Indian Ocean, Tasman's Isle to Tinner Seas.

O'er the peak of dark "Toressa" the wild tempests sweep their wings,
On the crest of "Chooriechillam" flow the sparkling granite springs.
Long dead forms of long dead Ages, sleep there in their rocky shrouds.
While the storms draw lightning daggers from their sheath of warring clouds.
In the solemn Central Desert, where remorseless Nature decks
Red Sandhills and stoney ridges with the cruel spinifex.
In dark jungles of the tropics, where the sunlight fitful shines,
On the grand old northern mountains with Eolian harp of pines.
And the still blue lakes reposing on the old Volcanoes' breast.
Where the eagles build their eyries on the lonely mountain crest.
Far lone west Acacian forests murmur to the mournful breeze.
And the homeless rivers wander o'er the basins of dead seas.
All the scenes our land possesses, shall we them not sacred call
To that band of brave explorers who at first revealed them all?
Honour then the Veteran Gregory, honour to the stainless name—
That a proud Australia places in the highest niche of Fame.

A. MESTON.

BRISBANE, AUGUST 18, 1902.

The "Lucinda" afterwards returned to the Queen's Wharf, which was reached
at 4.30 p.m.

In the evening the celebration was continued at the rooms of the Society, where
the proceedings were resumed at 7 o'clock. The audience was very large, and
included a great number of ladies, Judges and Ministers of the Crown. After some
short preliminary remarks by the President, the Hon. Secretary (Mr. J. P. Thom-
son, Hon.F.R.S.G.S., etc.), delivered the following address:—

MR. PRESIDENT, LADIES AND GENTLEMEN,—

To the contemplative mind, the subject of Australian Exploration is suggestive of
some of the most enduring and heroic deeds that have won for the British
race pre-eminence in the march of Empire, and the history of colonisation. It
brings to mind many thrilling accounts of great personal endurance, marvellous
hair-breadth escapes, devotion and self-sacrifice, privation and the horrors of
death from thirst, desolation and starvation, and all the additional trials that
make life miserable and call into requisition the noblest qualities of man. It
covers a period concurrent with the progress of human knowledge, as repre-
sented by our own Department of Geographical Science, during which some of
the greatest discoveries and most brilliant achievements in the World's history
have been accomplished. The subject restores to our mental vision many of the
great exploits in the field of Pioneering Enterprise that have occurred in all parts of the Globe during the glorious reign of our good Queen Victoria. It stimulates our imaginative faculties in the highest degree, and commands the profound admiration and respect of all. On the present occasion, when assembled together to celebrate the 83rd anniversary of the birth of one who has accomplished so much in the field of Exploration and Discovery, we may very happily allude to this fascinating subject with singular appropriateness. To myself, then, has been allotted the task of speaking of some of the work of the Hon. Augustus Charles Gregory, as one who has rendered signal services to Geographical Science by his journeys of Exploration across the Australian Continent. For a number of years I have enjoyed the privilege of being closely associated with our friend Gregory in scientific labours, and I may say without the slightest hesitation whatever, that this is a duty which affords me especial pleasure and gratification. For let me assure you, sir, that I yield to none in my profound admiration of his eminent attainments as a fellow worker; of his endearing nature as a friend and companion, and of his noble character as a citizen of the Commonwealth. Few indeed can realise the great services rendered to the Empire and to the progress of human knowledge by the heroic band of men, who, with slender resources, set out from the early settlements to traverse the wild and inhospitable regions of an unknown country, and carry the flag of British colonisation across the Continent from the Pacific to the Indian Ocean. In the present day of railways, telegraphs, roads, and steamers, it is quite impossible to realise the dangers of such enterprises, nor is it possible to comprehend their significance and bearing on the progress and development of the country as a whole, and we have no conception of their far-reaching influence on the intellectual and industrial life of the Nation. That such is great we may assume to be a fact from the experiences we have gained in India, Africa, and Canada, where the British flag floats proudly over His Majesty’s dominions beyond the seas, indicating the rapid march of Empire and supremacy of the race.

Gregory first landed in Western Australia in the year 1829, being then a mere boy of ten years of age, and it was in that Colony he commenced his successful career as a Land Surveyor and Scientific Explorer. Leaving home at so early an age, he had received no elaborate University training in the arts and sciences, but nature had shaped him well for his future career. She had turned him out of her plastic mould a perfect cast of manhood, as a living example of the classical saying "that genius is the gift of Heaven."

"Time, Place and Action," said Dryden, "may with pains be wrought,"

"But genius must be born; and never can be taught."

Gregory’s mechanical genius began to develop early in life. At the age of 14 he designed and constructed a clock that went for some 7 or 8 years, and at 18 he built a flour mill, forging all the ironwork for it from old bedsteads and exploring the neighbouring ranges for the mill-stones, which he picked out and fashioned with his own hands, from local granite. He appears to have acquired a wide and favourable reputation for his mechanical and constructive proclivities, as he was afterwards occupied at the request of the Government, designing some apparatus for the first revolving light on Rottnest Island, it having been found necessary to erect a lighthouse there for the safety of shipping. After several experiments with a working model, the task was accomplished with complete success, and the contrivance wrought without a hitch for some 35 years or so, until replaced by a larger one. It is interesting to note, because the circumstances are unique and probably not now known to anyone except Mr. Gregory himself, that the castings for the revolving apparatus were done by a lunatic, who, at
the time, was confined in an asylum. At the suggestion of Attorney-General Moore, this man, a wheelwright by trade, was brought in a strait-jacket to see Gregory's working model. This appeared to affect the man's mind so greatly that within a fortnight, he was able to resume duty at his workshop where he turned out the necessary castings satisfactorily. He afterwards wrought at his trade for some 20 years without showing any signs of madness.

Having discovered a bed of iron ore near the Swan River, Gregory fused a portion of the ore in a Smith's Forge, and fashioned the resulting small piece of steel into a penknife blade, and mounted it in a handle of kangaroo bone. This having been shown, doubts were raised as to it being a bona fide production, and the Governor, Sir James Stirling, sent a Mr. Nash to inquire whether the steel was really the product of Western Australia ore. To prove that it was so, a piece of the ore was melted down into a small ingot of steel, and this set the question at rest. Gregory's inventive genius and mechanical accomplishments stood him in good stead on many important and critical occasions during his journeys of exploration, as well as in after life, when his important professional work called into requisition these rare gifts of the man.

At the age of 20, he took to surveying as being a profession more congenial to his naturally active disposition, and best calculated to qualify him for the arduous life that lay before him, and the responsible positions which he was called upon to fill in the public life of the country of his adoption.

A short time afterwards he gave further proof of his rare natural abilities, by designing the bridge over the Swan River at Guildford, being a task usually requiring the exercise of great judgment and professional experience.

Recognising, however, that my own present duty lies more in the direction of the geographical, rather than the professional or the political side of Gregory's activities, I will allude to some of his greatest achievements as an explorer.

"There are two things necessary for a traveller," said Arthur Warwick, "to bring him to the end of his journey—a knowledge of his way and a perseverance in his walk. If he walk a wrong way, the faster he goes the further he is from home; if he sit still in the right way, he may know his home, but never come to it; discreet stays make speedy journeys."

Had Warwick known much about Australia he would have recognised the necessity of other things for a traveller, whose aim is to reach the journey's end in safety. He would, for instance, have readily seen that a successful explorer must be a man of boundless resource and energy, fearless, tactful, resolute, and capable of finding his way anywhere, even though he does not know it. Like our friend Gregory, he who would explore well must have a knowledge of how to map out his path by observing the sun, moon, and stars with scientific accuracy, and to comprehend intelligently the geological and botanical conditions of such regions as may be traversed. And there are other things, too, that must enter into the physical and mental equipment of a traveller who wishes to render a good account of himself in the pioneering fields of Australia.

About the middle of last century exploratory enterprise was very actively pursued in many parts of the Continent, large tracts of country being then entirely unknown, and a great deal of land lay just outside the settlements which had scarcely been examined at all. The colonists were naturally anxious to know more about the geography of the place, and parties were sometimes sent out to explore the unknown regions in the far off interior. Thus, it happened, that the years 1846 and 1848 found our friend Gregory actively employed as an explorer, examining some of the vast unexplored fields in Western Australia, where there was ample scope for his great natural abilities, as a leader and scientific traveller. Here he travelled for the first time extensive regions and discovered
many important geographical features of special interest. The Arrowsmith and Murchison Rivers were amongst the numerous features which he investigated, and his carefully conducted researches here contributed much to our knowledge of the geographical conditions of the large basins of these streams.

Besides obtaining minute and detailed information of the general topography of these regions, Gregory entered into an investigation of their geology and mineralogy, resulting in the discovery of a seam of coal on the head of the Arrowsmith, and an important lode of galena on the Murchison. But the expedition was greatly baffled by salt marshes and impenetrable scrubs, which restricted the operations of the party to a comparatively narrow belt of country. It was whilst accompanying Governor Fitzgerald to the Murchison that Gregory came in conflict with the blacks, who made a hostile attack on the party, spearings the Governor in the leg, he being the second of Her Majesty's Australian representatives who had received a wound at the hands of the natives. But this was a small matter in those days, when every pioneer explorer carried his life in his hand, whether on the borders of civilisation or in the vast wilderness, where so many brave men have perished from thirst and starvation.

Gregory's next great journey is one that will, no doubt, live longest in the history of Australian colonisation—a journey for which it would be difficult to find a parallel anywhere in the annals of exploration and discovery, and one carried out with unprecedented skill and ability to a completely successful issue. To Brisbane citizens the story of Gregory's North Australian Expedition—for it is of this I am now speaking—will always be specially interesting, for it was from Pinkenba that the Explorer sailed in the barque "Monarch," with another vessel called the "Tom Tough," for the Victoria River. On board the former as supercargo was Mr. (now Sir) George Dibbs, of Sydney.

Associated with Gregory in this great exploratory enterprise was a man who afterwards attained universal fame as one of the greatest botanists of the 19th century—Baron Sir Ferd. von Mueller—and who directed the affairs of the sister society in Victoria from its inception till the day of his death, which melancholy event occurred in Melbourne a few years ago.

Landing at the mouth of the Victoria River, Gregory formed a camp there, and afterwards devoted some time to an examination of the basin of that important stream, which he traced for some considerable distance, and extended his explorations right into the interior of the continent, where some important geographical features were discovered. After despatching the "Tom Tough" to Timor for repairs, in charge of Baines, who was the artist of the expedition, preparations were made for the great overland journey through the unknown regions of Northern Australia. Historically, it is of some considerable interest to note, that Baines was afterwards leader of the first expedition sent out to develop the Rhodesia Gold Mines of South Africa.

The question of transport had always been of vital importance to Australian explorers, who, in travelling the vast interior desert plains of the Continent, were cut off entirely from all supplies of food and often enough, water.

But before setting out from the Victoria on the final journey, Gregory hit on a plan for reducing the weight of his provisions considerably. The salt pork, for instance, was found to greatly diminish in weight by melting in the heat of the tropical sun, and to devise some means of overcoming this very awkward state of affairs, it was arranged to try some experiment before leaving the main depot. The happy idea occurred to the leader of making meat biscuit. This was done by mixing flour and tinned beef together. The experiment was highly successful, the biscuit turned out good, and was about half the weight of the meat and flour separately. But this was only one of the many instances in which
Gregory's resourcefulness contributed to the complete success of his enterprises and led to the discovery of many valuable facts, upon which our present knowledge of the Geography of Australia is largely based. In mending the winding chain of a chronometer watch—a job he actually had to do on this journey—or in making anything from a needle to an anchor, to use a well-worn expression, Gregory was equally in his element, and no difficulty was ever too great to overcome by his indomitable will and natural genius. But, to continue, the overland trip from the Victoria River to the Gulf of Carpentaria was successfully accomplished, and resulted in a vast addition to our knowledge of the great interior regions and of the Northern Territory, whose characteristic tableland formations were carefully examined and clearly elucidated, with results that, in some important particulars, differed from others. On arrival at the Albert River, where a meeting place had been arranged between the two divisions of the expedition, it was found that the schooner had not arrived from Timor. Rather than incur the serious risk of indefinite delay, Gregory started overland and reached a station on the Dawson River, after a sixteen months' journey, during which some five thousand miles of country were traversed. The party travelled up the Gilbert River, crossed the basaltic plateau at the head of the Burdekin which led to the Suter, and this stream was traversed upwards till the explorers came on to the Belyando and connected with the explorations of Major Mitchell.

It was universally acknowledged that this was one of the most remarkable and successful journeys ever accomplished in the field of Australian exploration, resulting in valuable accessions to our knowledge of the geographical conditions of the Continent, and paving the way for commercial enterprise, industrial development, and colonisation. Nor was it unattended with great dangers or serious risks, for at times we find the brave and heroic little band attacked by hostile blacks, and again confronted by the prospect of starvation, or the possibility of death from thirst. Towards the end of the journey, pressing needs required that the empty larder should be replenished, by the last filly, which was accordingly killed and helped to satisfy the craving appetites of the hungry party. On the 8th November, 1866, this entry appears in the "Journal"—"Having camped, we shot the filly, which was now eleven months old, cut the flesh into slices and hung it up to dry in the sun during the day, and over a charcoal fire at night. The skin was cleared of hair, and was thus made into a species of gelatine, from which excellent soup was subsequently prepared." Two of the horses had previously been made to serve a similar purpose during the progress of the expedition.

It seems perfectly clear that under the leadership of a less experienced and competent commander, this exploratory enterprise, like several others of the kind, would have ended in disaster and great loss to the country.

Not contented with what he had already accomplished, Gregory again set out in 1858, on the Barcoo expedition, in search of the ill-fated Leichhardt. On this occasion he fully established the identity of the Barcoo and Cooper's Creek, but beyond the finding of what was probably one of the last camps occupied by that long lost traveller, no fresh information was obtained. This practically concluded Gregory's activities in the pioneering field of exploration and discovery. He had conquered the great sandy desert tracts of the Continent; he had overcome many barrier obstacles that forced some of his brave contemporaries to retreat; he had achieved success where others have perished in the attempt; he overcame difficulties where others had met with disaster; he led his companions safely through the wilds of an unknown country, beset by many trying conditions; his instrumental equipment was simple, and his store of provisions but scanty, still his labours were fruitful, and led to the occupation of vast tracts
of country as well as to occupation and settlement, and he has made many important additions to our geographical knowledge of the Continent as a whole, and contributed not a little to our conceptions of Australian geology and botany. But apart from his scientific knowledge and professional experience, he was altogether a man of superior attainments, possessing in the highest degree the power of applying such knowledge to the very best advantage, to which rare attributes must be added the great gift of organisation, enabling him to cope with emergencies in a masterful manner, where an inferior organiser would have failed. Above all things, Gregory was a man of action, and his naturally active disposition went a long way in bringing about the success of his undertakings, both as explorer, geologist, mineralogist, chemist, botanist, mechanic, and professional. In communing with the heavenly bodies whilst observing the order of their movements, he acquired an efficient knowledge for the accurate determination of astronomical positions as commendable to himself as an explorer, as it was afterwards useful to others. In this respect alone, he was more fortunate than many of his contemporaries, and there can be no doubt whatever that much of the success which attended his explorations is to be attributed to his knowledge of observational astronomy and its proper application. The habit of determining his route positions by stellar in preference to solar observations, gave him a great advantage over others, who where obliged to halt whenever an observation of the sun was necessary, which naturally caused delay and much loss of time on the march. But Gregory avoided this by observing the stars after the party had camped for the night, which involved comparatively simple calculations, and gave more satisfactory results. This astronomical knowledge, which contributed so largely to the acknowledged success that happily attended his journeys across unknown regions, and his operations in the field as a surveyor enabled him to supply valuable data for the preparation of maps, which some of the leading British Cartographers thought were the results of actual surveys, instead of mere explorations. This, of course, was the outcome of accurate astronomical work, and as a matter of fact, many of Gregory’s positions stand good to the present day, and have not been superseded by the permanent surveys of the Government. Some of the field surveyors who have picked up his old stations often allude to their remarkable accuracy, with expressions of admiration and wonder. Chief amongst his trusty guides on those celestial explorations were: Canopus, Achernar and Alpha Centauri, brightest gems in the glorious Southern constellations to which they belong, that are nightly marshalled before the intelligent gaze of Brisbane’s citizens.

In all his field operations, too, method and thoroughness were characteristic features, the record books and journals being perfect models showing a clear and beautifully simple system of noting details and marking in the route traverse. Nothing of the kind could be better, and recorded data stand out as clear and legible to-day as at the time they were entered.

In conclusion, let me express the hope that steps will soon be taken to prepare and bring out a new edition of Mr. Gregory’s journal and explorations properly edited and annotated, and illustrated by a route map.

Then came the following address by Mr. G. Phillips, C.E.:—

It has been said that the child is the father of the man, which is only another way of saying that man is the product of environment and training.

Every man gains some advantage from his general training—and I think that professional men especially are greatly aided in their judgment and conduct of affairs, by their special, as distinguished from their general experience.
The Surveyor and Engineer trained in exact mathematical and mechanical science, acquires method, exactness, sound judgment and love of truth, because his professional work—if based as it should be upon eternal verities—stands or falls in exact proportion to its conformity with, or departure therefrom.

Science, whether ancient or modern, is great in proportion to its conformity with truth—but the startling question propounded by the Roman Governor, Pilate, may be repeated even in these days—for much that was regarded as true yesterday, may be doubted to-day, and exploded or superseded to-morrow.

Not so, however, with those who drink deeply of the pure fountain of exact science, who build—not upon the sand—but upon truths older than the pyramids, truths, well understood of divine intelligences what time "the morning stars sang together, and the sons of God shouted for joy"—truths that will survive the destruction of time and matter.

The subject of this address (Hon. A. C. Gregory, C.M.G., etc.), commenced his career as a Surveyor in Western Australia, where he gained an experience which peculiarly fitted him for his subsequent work as an Australian Explorer in the widest sense of the term—in the course of which he contributed more to the exact physical, geological, and geographical knowledge of this Continent than any other man—for his explorations have extended throughout Western, Northern, Eastern, Southern, and Central Australia.

Mr. Gregory might have been a Missionary like Livingstone, a doctor of Medicine like Sir William MacGregor, a soldier like Speke and Grant, a journalist like Stanley, and yet have been a great explorer: but I venture to affirm that no other calling than that of the Surveyor could have developed to the same extent those particular qualities of mind and body which are requisite to ensure in the highest degree success in the peculiar and difficult work of Australian Exploration.

To a body inured to fatigue and exposure of every description—capable of resisting the effects of disease, of bad food and worse water—were added a mind self-contained and self-reliant, calm in the hour of danger, yet full of imagination and resource: dispassionate yet firm—commanding both the respect and the obedience of subordinates—a mind well stored with surveying, astronomical, geological, mineralogical, and botanical science—having a thorough knowledge of the use of instruments, such as the compass, the chronometer, the sextant, the artificial horizon, and the aneroid barometer: a good mathematician, a good rider, a good walker, a good swimmer, a good bushman—in fact, a well-equipped man, mentally, physically, and morally—I say morally for I cannot conceive that an immoral man could ever make a great and successful explorer.

Forty-two years ago, Mr. Gregory brought to this Colony, as its first Surveyor-General, a ripened experience which falls to the lot of but few, and probably no appointment to a high official position in Queensland was ever more happily made, or more worthily filled.

The duty of formulating instructions for the guidance of Surveyors throughout the length and breadth of this vast State (at that time but only half explored, whilst the other half was but very imperfectly known), with its varying and divergent physical and climatic conditions, was no light task.

That is was well done by Mr. Gregory is known and recognised by the profession, and I may say after forty years' experience, that Mr. Gregory's methods and instructions were admirably adapted to the conditions of the Colony, and have stood the test of time and experience.

The staff of appointments made by Mr. Gregory has uniformly testified to his knowledge and judgment of men, for I cannot recall an instance of any gentleman selected by Mr. Gregory for an important position, either in the office or the field, who failed to reflect credit upon his selection.
Nor is Mr. Gregory to be regarded merely as a land Surveyor, for his work—as I will show later on—has comprised both civil and mechanical engineering of a high order. A good artillerer in metals, he could make a horseshoe and put it on, make a sewing machine and with it make his coat; whilst the Gregory pack saddle and the Gregory pocket compass for horse-back work are known and used throughout Australia.

As Surveyor-General, Mr. Gregory personally delimited portions of the Southern boundary of the Colony, at points where the 29th parallel of South latitude intersects important rivers, and in the vicinity of border towns.

This work involved more than ordinary astronomical, instrumental, and mathematical knowledge, and at that time Mr. Gregory was probably the only man in the Colony who could have done the work in a satisfactory manner.

Mr. Gregory’s advice and assistance has been sought by Governments in relation to railway routes: the determination of waterways on important railways; the establishment of the Enoggera Reservoir, which, but for Mr. Gregory’s advice, would undoubtedly have been destroyed with great loss to life and property in the valley below. In all these things and many others Mr. Gregory’s labours have stood the test of time and experience, and they reflect the highest credit upon his skill, knowledge, and judgment as an Engineer.

Mr. Gregory’s work, as the first Geological Surveyor of the Colony, as the first Chairman of the Brisbane of Waterworks, and subsequently as one of the Examiners of Patents, has been of the greatest value to the State, but time will not permit of enlarging thereon.

In my opinion, however, the most valuable service that Mr. Gregory ever rendered to the people of this Colony in his official capacity, and the one that is least known and valued—was in connection with the framing of the Great Liberal Land Act of 1868—which embodied several valuable and fundamental principles of land legislation for this State, namely:

(a.) Classification of the land, at time of Survey, by the Surveyor, under three heads—(1st.) Agricultural, (2nd.) First-class Pastoral, and (3rd.) Second-class Pastoral.

(b.) The adjustment of price according to classification at 5s., 10s., and 15s. per acre respectively.

(c.) Limitation of area according to classification.

(d.) Time payments, extending over 10 years.

(e.) Homestead selection of areas not exceeding 160 acres, at 2s. 6d. per acre.

(f.) Free selection before Survey.

(g.) Freehold tenure when payments completed.

Speaking as a Surveyor who worked under that Act in various districts of Northern, Southern and Eastern Queensland, I am well within my personal knowledge when I say, that the Land Act of 1868 attracted more bona fide settlers to this State, and did more to plant a substantial yeomanry on the land, than any other Act either before or since, and it is much to be regretted that the Act was allowed so short a life.

Mr. Gregory has always taken the greatest interest in the profession of Surveying. He was the first President of the first Institute of Queensland Surveyors. He did much by personal effort and example to keep the Institute alive, whilst he was almost the only contributor of papers. He is a life member of the present Institute.

Of recent years, Mr. Gregory has been better known as a Member of the Legislative Council, where his advice might have been of the greatest value on such a vital and but little understood question as that of Australian Federation;
unfortunately in this, as in many other things, youth was not disposed to be
guided by age and experience, so that sentiment carried the day against experi-
ence and sound judgment.

Within the last two years, however, Mr. Gregory has rendered a notable
service to the people of Brisbane by investigating in an exhaustive manner the
Flood Mitigation Scheme recommended by an eminent Engineer.

In this matter, I am in entire accord with Mr. Gregory, and recognise to the
full the very great but thankless service he rendered in opposing a most expensive
but popular scheme, which, at its best, could only have proved partially success-
ful, and might have been a source of great danger to the whole valley of the
Brisbane River below Esk.

Time will not permit to dwell upon Mr. Gregory's career as a private citizen,
or as a Mason of high degree, but I would personally bear testimony to the kind,
just, and considerate spirit which invariably characterised his administration
of the Survey Branch of the Lands Department.

It is difficult to understand—and to me it has always been an enigma—why
such great and varied services as those rendered by Mr. Gregory, to this State in
particular, and to Australia in general, have not received more marked recognition
and a more adequate reward.

With Hamlet I would say:—

"He was a man, take him for all in all:
I shall not look upon his like again."

Brisbane, 1st August, 1902.

The President then presented Mr. Gregory with the following address:—

Royal Geographical Society of Australasia, Queensland—"To the Hon.
Augustus Charles Gregory, C.M.G., F.R.G.S., Hon. F.R.S.G.S. Edin.),
etc., etc. Dear Sir.—The members of the Royal Geographical Society of Aus-
tralia, Queensland, embracing the opportunity afforded by the eighty-third
anniversary of your birth, desire to offer you their heartiest congratulations on
the ripe and honoured age to which you have attained. They feel that the
occasion is a fitting one for emphasizing their recognition of your many invaluable
services in the cause of Geographical Science, and particularly your arduous
and highly successful labours in the field of Australian exploration, the result of
which has been to place you in the forefront of those distinguished pioneers to
whose devoted efforts this great Southern land is so largely indebted. While,
however, it is this aspect of your varied life work that naturally holds a prominent
place in the regard of the Society, whose objects you, as its first President and
Honorary Councillor, have done so much to promote, the members are also very
deeply impressed with a sense of the eminent assistance which you have so long
and ably rendered to the cause of colonisation, and the influence you have
exercised on the intellectual and public life of Queensland and Australia genera-
ally, of the admirable manner in which you have filled the various highly im-
portant and responsible professional positions which you have been called upon to
occupy, and last, but not least, underlying and accompanying all these, of your
sterling merits as a man, so amply evidenced throughout an unusually lengthy
and equally serviceable and honourable career. It is the fervent hope of the mem-
ers individually and collectively that they may long enjoy the privilege of your
kindly presence and esteemed advice. Signed, on the behalf of the Council,
Fellows, and Members of the Society, Hugh M. Nelson, President; J. P.
Thomson, Hon. Secretary."

As an Honorary Fellow of the Royal Scottish Geographical Society, the
Hon. Secretary then delivered into the hands of the President the Honorary
J—ROYAL GEO. SOCIETY.
Diploma of Fellowship of that esteemed body which had been conferred upon Mr. Gregory in recognition of his eminent services as an Explorer and Geographer.

This was formally presented by the President to Mr. Gregory, who thereupon rose to reply. In a conversational style he referred to incidents of his early career. In his boyhood in West Australia he played not at cricket or football, but with other youngsters at warfare in aboriginal style, with spears and other native weapons. This practice was of great use to him later on when he had on several occasions to dodge the flying spears of hostile aborigines. He had had a mechanical gift which he had developed to the best of his ability, and without the cultivation of which he would not have been able to take charge successfully of exploring parties of men and the necessary equipment. With his mechanical bent and the fortune to have had his lines cast in a Government groove, he achieved success, but the secret of his success was an intelligent attention to details. He could not have taken charge successfully of large parties of men and of the equipment necessary if he had not previously made a study of industrial and scientific work. He had to learn to be a blacksmith, a carpenter, a saddler, and so on; and he had to acquire the knowledge and skill requisite for the construction and regulation of surveying and astronomical instruments. He told some very interesting stories as to his early experiences in West Australia, and of how he surprised the authorities by the smart carrying out of expeditions to distant parts. He attributed much of the credit of the ability he had been able to display to his instructor, Lieutenant Roe, but he emphasised again the importance of a knowledge and attention to details. He had worked on a system, and had so arranged his field notes that other scientists could work from his books. He found advantage in finding his position when travelling from observation of stars. This was the most accurate way of determining positions, and it gave the whole of daylight for progress without interruption. Continuing, Mr. Gregory, who was very warmly greeted, said: I have to thank you most sincerely for the high honour you have conferred upon me by the address which the Hon. Sir Hugh Nelson has on your behalf presented me, but in addition to the gratification, I may experience at the recognition of my fractional part, I view the proceedings of this evening as equally a recognition of the services rendered by the army of Explorers by Sea and Land, who, during a period of 350 years, sought to develop the problems of Australian Geography, and it is but due to them to advert to some, at least, of the more important explorations they conducted.

Though there are several somewhat obscure records of discovery of a Terra Australis, yet the first claim which has been advanced is that of De Quiros in 1606.

DISCOVERY AND EXPLORATION OF AUSTRALIA.

1606. De Quiros claimed to have discovered the N.E. coast of Australia, but the myth of his having landed near Gladstone is negatived by his sailing, thence south-west for several days without sighting land, and that such a course from Gladstone is inland, but that his colleague Torres by a westerly course, discovered the south coast of New Guinea and Torres Straits. During the next 20 years several Dutch navigators traced the N.W. and W. coast, but none appear to have formed favourable opinions of the land or its productions.

1629. Pelsart in the Batavia was wrecked on the Abrolhos, and in his voyage to Java for relief described passing through Port Gregory. But the most important incident was that some of the crew were landed on the Continent. And that the Aboriginal Tribe which now occupies 70 miles of the adjacent coast,
differ from other Australians having more robust limbs and yellow skins, while their language differs materially from that of the adjacent tribes. In the early days of settlement, they exhibited a beligerent attitude and proneness for close combat, indicating the probability of an admixture of Dutch blood.

1642-4. Tasman explored the south coast as far as Tasmania. Also the west shore of the Gulf of Carpentaria. He was instructed to search for the men who were landed by Pelart from the Abrolhos.

1653. Van Diemen visited the west coast discovering and naming the Swan River. One of his instructions was to search for the wreck of the "Ridderschap," a vessel supposed to have been lost on the west coast some years previous, and it is possible that this ship was identical with the wreck which has been found in a lagoon near the Vasse Inlet, Geographe Bay.

This wreck is wholly covered by the tide, and was found by a bather, who, resting on what he took for the stump of a tree, found that it was the mast of a sunken vessel. Several articles were recovered from the wreck, and their patterns are similar to those of Dutch ships of that period.

1688. Dampier landed on the N.W. coast while repairing his ships. He revisited the place in 1699.

1705. Van Delft investigated the Northern coast.

1770. Capt. Cook, in the course of his voyage to the Pacific for the purpose of observing the transit of Venus, passed through Endeavour Straits, explored the east coast, landing at Botany Bay.

1778. Governor Phillip established the first settlement on the Australian Continent, and explorations of the land commenced, but before entering on this subject, it is convenient to complete the series of maritime surveys.

1791. Vancouver visited King George's Sound.

1799. Bass and Flinders commenced a detail survey of the east coast. Bass's Straits were discovered.

Flinders continued the survey of the South, East, North, and N.W. coasts until 1803, when, on landing at Mauritius, he was detained a prisoner of war by the French Governor for six years, during which time a large portion of the Australian coast was examined by the French Expeditions, under Baudin and D'Entrecasteaux, and their maps published.

1802. Baudin in command of a French Expedition, visited the west and south coasts, but nothing of importance was discovered.

There is however an occurrence recorded which is interesting, though there are some discrepancies in the records.

In one of the accounts it is stated that the vessel anchored in Geographe Bay, and that in landing one of the sailors named Vasse was drowned, and the Vasse Inlet named after him.

In another account it is recorded that the Botanist M. Vasse was one of the party who landed, but he did not return to the boat before it returned to the ship. That a fresh breeze rose in the night, and the ship sailed out of the Bay and left M. Vasse to his fate.

Shortly after the settlement of West Australia in 1829, the Vasse District was settled, and the aborigines had a tradition that an old white man had lived in the locality, who used to ascend the sandhills and gaze to seaward and then return to his hut and weep bitterly.

1818. Captain King commenced a survey of the east coast and Great Barrier Reef, and the Inner and Outer passages and Torres Straits accurately charted.

Lieut. Roe, Captain King's surveying officer, showed a special talent for conducting such an arduous survey, and the Maps were so complete, that in 1835, I had no difficulty in piloting the ship "Monarch" through the intricacies of the Inner passage.
Lieut. Roe was appointed Surveyor-General of West Australia in 1829, and after a service of fifteen years in his department, I have to record a high appreciation of his abilities, and the kind manner in which he imparted practical instruction in the conduct of surveys, and the Astronomical determination of Geographical positions.

1837 to 1845. Captain Wickham, who was succeeded by Capt. Stokes, proceeded with the general survey of the Australian coast. 1837 to 1845. Capt. Wickham, and his successor, Capt. Stokes, continued the survey of the Australian coast, and this expedition practically completed the maritime survey of the Australian Continent, though much has since been done as regards details.

The Maritime surveys gave only the outline of the sea coast, and Capt. Stokes was the first to attempt inland investigation by ascending the rivers on the north coast, and especially the Victoria River, which was traced inland for 100 miles.

1778. Thus it was not until Governor Phillip formed the Settlement at Botany Bay, that any information with regard to the interior was obtained. 1823. The first explorations were very limited on account of inexperience and want of horses for transport, so that little was known beyond a radius of 100 miles from the settlement, until Surveyor-General Oxley, in 1817, commenced his systematic exploration of the country between Port Phillip and Moreton Bay, that geographical positions were scientifically determined, and there was material for the construction of a Map of S.E. Australia (1823).

1830. Capt. Sturt, in a boat navigated the Murray River down to its confluence with the Darling River, and thence to its Estuary.

1839. Capt. Grey landed on the N.W. coast, but adverse conditions and being speared by the aborigines, prevented any important discoveries being made. He subsequently undertook the examination of Sharks Bay, but leaving his boats at the Murchison River, travelled on foot along the coast to Swan River, suffering severe privation.

1840. Mr. Eyre followed the shore of the Great Southern Bight from Adelaide to King George’s Sound, but no additional rivers were found to break the monotony of this long stretch of coast line.

1844. Capt. Sturt started from the Darling River, and after encountering the difficulties of drought and desert country, discovered Cooper’s Creek (Barcoo River), and Eyre’s Creek, features of the greatest importance in the further investigation of the great system of Salt Lakes or Marshes, which absorb the waters flowing into the vast central depression.

1831. The next important explorations were conducted by Sir T. Mitchell, 1831 to 1846, who, by his knowledge of surveying and a special talent for sketching the features of the country, was able to locate with accuracy positions which had been very imperfectly described by other travellers, and he was also the first to discover the sources of the rivers which flow into the Great Central Depression of the Continent, tracing the Barcoo to its junction with the Alice.

1844-1845. Dr. L. Leichhardt made his extraordinary journey from Moreton Bay to Port Essington. His equipment was very limited, carrying but a small supply of flour on pack bullocks, which furnished a supply of meat when game was not abundant. The route followed was governed by the conditions of water and grass and the record of travel very imperfect. So that there has been difficulty in determining some of his positions.

1848. Dr. Leichhardt started from Mount Abundance to cross the Continent, but the information regarding the proposed route is imperfect, and little has been
found to indicate his fate. One camp with a tree marked L was found on the Barcoo River in lat. 34, 35 long. 146, 6.

A camp having all the characteristics of those known to have been made by Leichhardt was found by the North Australian Expedition in 1856, on Elsey Creek in lat. 15° 3' long, 133° 10', to the west of the Telegraph Line.

1846. The Gregory Brothers started to explore the interior of West Australia, but though they reached Mt. Jackson (long. 199, 16), which is now one of the Goldfields of the Coolgardie series, the desert country precluded further advance to the eastward.

It is singular that the explorers observed at the base of Mt. Jackson special developments of Palaeozoic slates in contact with igneous metamorphic rocks, intersected by quartz veins. These conditions were noted to closely agree with Sir R. Murchison's description of the occurrence of auriferous deposits in other countries that had time permitted search would have been made for the precious metal, though it was many years prior to the actual discovery of payable deposits of gold in Australia.

Although Sir R. Murchison never visited Australia, there are few individuals who have contributed so largely to the development of the resources of the Continent by his energetic encouragement of exploration when President of the Royal Geographical Society, and by his lucid explanations of the Geological conditions which define the formations which indicate the conditions favourable to auriferous deposits, the practical development of which have proved one of the bases of Australian development.

1855. At the instance of the Royal Geographical Society, the Imperial Government dispatched an expedition to the N.W. coast to explore the Victoria River and the conterminous portions of the Continent, under the command of A. C. Gregory.

A considerable area of country available for settlement was discovered. The Central Desert penetrated to latitude 20, deg. 16, m. s.

The expedition then crossed the base of Arnhelm's Land and upper courses of the rivers flowing to the Gulf of Carpentaria then, thence to the valleys of the Burdekin and Fitzroy Rivers to the settled district of Port Curtis, and to Brisbane.

1858. The Government of New South Wales organised an expedition in search of traces of Dr. Leichhardt's missing party, the command being entrusted to A. C. Gregory.

Only one camp of the missing explorer was found on the Barcoo River, with a tree marked (L), latitude 24, 35, long 146, 6.

The Barcoo was traced to Cooper's Creek and by Strzelecki Creek into the Torrens Basin.

1857-1861. F. T. Gregory discovered a practicable route from the Murchison River to the N.W. coast, and explored the country to the Oakover River.

1860. Is memorable for the expedition organised in Victoria for the exploration of Central Australia, under the command of Burke and Wills.

Unfortunately the start was made from the Darling River with 300 miles of dry barren country to cross to Cooper's Creek. Had the South Australian route been adopted there were roads and stations to within 180 miles of Cooper's Creek, and then level open country to cross to the Depot.

Burke proceeded to Cooper's Creek in advance, and was too impatient to await his supports, and with Wills and two men started to cross the Continent. The records of the courses and distances travelled were very imperfect, and there was a deviation of about 100 miles to the east, which brought them through what are now the pastoral districts of Queensland. The mouth of the Flinders River was reached.
The return journey was nearly on the same route, but on reaching the Depot they found that it had been abandoned that morning. Then through a series of accidents, mismanagements, and inexperience, both Burke and Wills perished from starvation.

1861. McDowall Stuart made a third and successful attempt to cross Central Australia from south to north, the country was desert till he reached the Roper River.

1870. Sir J. Forrest retraced Eyre's route along the coast between South and West Australia.

1874. Sir John Forrest crossed the desert from the Murchison River to the Transcontinental Telegraph Line.

1875. Major Warburton crossed the desert from Alice Springs to the De Grey River.

While searching for Gregory's Sturts Creek, a tomahawk was found at a native camp, this was no doubt the one accidentally left by Gregory at the termination of Sturts Creek.

1875-6, Giles crossed the desert from the Telegraph Line to the Murchison, a little to the north of Forrest's route.

1879. Alexander Forrest traversed the country between the De Grey and Victoria Rivers, thereby completing the land exploration of the Australian coast.

In the foregoing outline of Australian discovery, want of space has necessitated the omission of numerous explorations, which have contributed important details subsidiary to primary routes, to which reference has been made. The exploration may be briefly tabulated as follow:

AUSTRALIAN EXPLORATIONS.

1606. De Quiros and Torres.
1629. Pelsart, the Abrolhos.
1642. Tasman.
1688. Dampier.
1695. Vlaming.
1699. Dampier.
1770. Captain Cook.
1788. Governor Phillip, Botany Bay.
1791. Vancouver.
1798. Bass and Flinders.
1817 to 1822. Captain King.
1829. Captain Sturt, Murrumbidgee River, Murray River.
1837. Captain Grey, Glenelg River.
1837 to 1843. Captains Wickham and Stokes, H.M.S. "Fly" and "Beagle."
1840-1. Eyre, South Coast.
1844-5. Captain Sturt, Central Australia.
1844-5. Leichhardt, to Port Essington.
1848. Gregory, Murchison River.
1848. Governor Fitzgerald, Murchison River.
1848. Kennedy, Cape York.
1848. Leichhardt, last expedition.
1854. Austin, Murchison River.
1858. F. T. Gregory, Murchison and Gascoigne Rivers.
1858. A. C. Gregory, Barcoo River to Adelaide.
1861. Burke and Wills, to Gulf of Carpentaria.
1861. Stuart, Central Australia to North Coast.
1874. Sir J. Forrest, Murchison River to Central Telegraph.
1875. Major Warburton, Alice Springs to Oakover River.
1875-6. Giles, Telegraph Line to Oakover River.
1879. Alex. Forrest, De Grey River to Victoria River.

The Survey of the principal features of the Australian Sea Board had been completed by Capt. Stokes in 1845, and the exploration of the country contiguous to the Sea coast was finished by Alexander Forrest in 1879.

Thus the localities of the principal Mountain Ranges, areas of available and desert country, the principal rivers, and approximately the geological and climatic conditions of the different parts of the Continent had been ascertained, and though much has been done during the last 25 years, it has been limited to filling in the minor details between the primary routes of the earlier explorers.

During the past 23 years most of the leaders of expeditions have gone over to the "great majority," and I can only name two as survivors. Mr. Robert Austin and Sir John Forrest. While of my companions in exploration, there are only Mr. H. C. Gregory now residing in England, Mr. Chas. Dean, a prosperous settler on the Tweed River, and Mr. John Melville, the manager of the Brisbane Cemetery, and whom I am pleased to welcome here this evening.

And now, Mr. President, ladies and gentlemen, it only remains for me to again express my gratitude for the honour you have conferred on me and my co-freres, and also for the patient attention with which you have listened to the somewhat monotonous abstract of the history of Australian Exploration, and finally to congratulate this Society on the success it has achieved in the cause of Geographical Science, and feel assured that it will continue to maintain its position in the wide field of scientific research which still lies open before us.

Short congratulatory speeches were afterwards made by Sir Arthur Rutledge (Attorney-General), Mr. George Fox, M.I.A., F. M. Bailey, F.L.S., and the Hon. A. Norton, M.L.C., all of whom alluded to Mr. Gregory's services in terms of warm appreciation.

The celebration then concluded, and light refreshments were afterwards provided by Mrs. J. P. Thomson, with the kind assistance of Mrs. Owens and Miss Nicholson.

SEPTEMBER 22nd. 1902.

The President, Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., in the chair; and he was supported by His Excellency the Governor, Major-General Sir Herbert Chermise, G.C.M.G., C.B., Patron—who was accompanied by his Private Secretary, Mr. Wingfield—by the Hon. A. C. Gregory, C.M.G., F.R.G.S., Lieut.-Colonel J. Irving, Messrs. D. S. Thistlethwaite (Hon. Treasurer), A. S. Kennedy (Hon. Librarian), A. Muir, R. Fraser, L. F. Schoenheimer, Thos. H. Owens (Councillors), the Hon. John Leahy, M.L.A. (Minister for Works and Railways), and Ald. L. G. Corrie (Mayor of Brisbane). There was a very large and representative attendance of ladies and gentlemen, the hall being filled.

On the motion of Mr. A. Muir the minutes of the previous Annual General Meeting and of the Gregory Birthday celebration function were taken as read and duly confirmed.
Apologies for absence were received from: Miss Webb, Mrs. Cheverton Parr, Hon. A. Morgan, Hon. E. B. Forrest, Hon. F. H. Holberton, Hon. Lewis Thomas, Messrs. J. G. MacDonald, W. B. Slade, and T. H. Affleck.

Mrs. B. Edwards (proposed by the Hon. Secretary), Miss E. O'Shea (proposed by Wm. Jones), E. C. Barton (proposed by J. D. Quaid), T. J. Bell, M.L.A., proposed by C. B. Lethem), Hon. F. T. Brentnall, M.L.C. (proposed by the Hon. Secretary), J. Christensen (proposed by the Hon. Secretary), Edward E. Edwards, B.A. (proposed by the Hon. Secretary), G. Fox, M.L.A. proposed by the Hon. Secretary), F. A. Huet (proposed by R. Fraser), T. de M. Murray-Prior, M.L.A. (proposed by the Hon. Secretary), R. D. Neilson (proposed by J. D. Quaid), John Sinclair (proposed by the Hon. Secretary), were elected Ordinary Members of the Society.

The President announced, in connection with the Peak Award of the Royal Geographical Society, London, awarded to the Hon. Secretary (Mr. Thomson) that the piece of plate selected to represent the award had not yet arrived, but it was expected shortly, and it was the intention of the Council of the Society to call a special meeting of the members for the purpose of formally presenting it to Mr. Thomson. A small committee had been appointed, and as soon as everything was ready members would be notified. Further, he announced that the Journal of the Society for the seventeenth session was now ready for distribution amongst members.

The Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S., etc.), then read his paper on "The Physical Geography of Australia: Parts V. and VI.—Geology and Natural Products." (See page 1).

The vote of thanks to the author of the paper was moved by His Excellency the Governor, seconded by the Hon. A. C. Gregory, supported by the President, and carried unanimously.

Mr. Thomson briefly responded.

The Hon. Librarian (Mr. A. S. Kennedy) reported the receipt of a large donation from the President of mounted maps (13 altogether), and a very fine enlarged photograph (framed) showing the ceremony of presenting an address of welcome by the Society to His Excellency the Governor, on his arrival at Government House, Brisbane. The vote of thanks to the generous Donor for his most valuable gifts was moved by the Hon. Librarian and carried by acclamation.

The meeting then adjourned for refreshments prepared by Mrs. J. P. Thomson, with the kind assistance of Mrs. T. H. Owens and Miss Nicholson.

PRESENTATION OF THE PEAK AWARD OF THE ROYAL GEOGRAPHICAL SOCIETY, LONDON, TO MR. J. P. THOMSON.

OCTOBER 31st, 1902.

The President, Right Hon. Sir Hugh M. Neilson, K.C.M.G., D.C.L., occupied the chair, and he was supported by His Excellency the Governor (Major-General Sir Herbert Chermside, G.C.M.G., C.B.), who was accompanied by his Private Secretary (Mr. Wingfield), the Hon. A. C. Gregory, C.M.G., F.R.G.S. (Past President andHon. Councillor), the Hon. Treasurer (D. S. Thistlethwayte, C.E.), the Hon. Librarian (A. S. Kennedy), and Messrs. Alex. Muir, J.P.; C. B. Lethem, C.E.; Lieut.-Colonel Irving, M.R.C.V.S., etc.; L. F. Schoenheimer, Thos. H. Owens, members of the Council.

There was a very large and representative attendance of ladies and gentlemen, the hall, which was decorated with beautiful pot-plants, kindly lent and arranged.
by Mr. P. McMahon, Curator of the Botanic Gardens, being crowded in every part. The President apologised for the absence of the Right Hon. Sir S. W. Griffith, Chief Justice, the Hon. F. H. Holberton, and Mr. L. A. Bernays. Letters expressing regret at inability to be present and congratulating Mr. Thomson on the well-earned honour conferred upon him by the parent Society, London, were received from the Sydney and Melbourne Councils of the branch societies there, and from the Vice-President—the Hon. Arthur Morgan, Speaker of the Legislative Assembly. The following letter from one of the Past Presidents of the Society was also brought forward:—

"Tamrookum, October 29th, 1902.

"The Hon. Treasurer, Royal Geographical Society of Australia, Queensland.

"Dear Sir,—I should have had great pleasure in attending the conversazione and presentation of the Peek Award of the parent Society to Mr. Thomson, but I find that, unfortunately for myself, I shall not be able to go to Brisbane again this week.

"Mr. Thomson's zeal and energy have been untiring, as we all know, and the success of the Queensland Branch of the Society has been so largely due to its Hon. Secretary's work that I am sure every member will rejoice that the London Society has seen fit to confer the Peek Award upon him.

"His Excellency will have a gracious and pleasant task in making the presentation.

"Regretting my unavoidable absence, but with all good wishes,

"I am,

"Yours sincerely,

"R. M. Collins."

The President: We are met this evening on a very unique occasion and one unprecedented in the history of the Society—viz., to present to Mr. Thomson the Award which has been given him by the parent Society in Great Britain, the largest Society in the world connected with geographical matters. Perhaps you would like to know a little about what the Peek Award is, and what it is given for. The Peek Award was instituted by Sir Cuthbert Peek, a Baronet of England, whose seat is at Rousdon Castle, Devon. He himself was a man devoted to science, and he gave sufficient money to found this Award, which is presented annually by the Royal Geographical Society of London. He is not altogether unknown in Queensland, because he was one of the party who came out here in the year 1882 for the purpose of observing the transit of Venus of that year. The party fixed up a station at a beautifully selected place on Jimbour Station, Darling Downs, and made all their arrangements, had all their instruments fixed for observing this transit, which I need scarcely say, is a most important matter in astronomical affairs, and one by which the distance of the earth from the sun is determined. It is an occasion that does not happen always, Venus being rather shy of making transits, and, unfortunately on that occasion, the sky was unusually clouded, and the observation proved a failure so far as Queensland was concerned. The next transit of Venus will not take place until the year 2004, so that I am afraid very few of us will be here to see it. The Award is given in the first instance to practical explorers, who, in many cases, take their lives in their hands and go into new countries, partially survey them, and report what their discoveries may be; and in the second place to gentlemen who have rendered signal service to the cause of Geographical Science. And it is worthy of notice that the Award with which we are now dealing is the first instance on record where it has been made to a gentleman who was not actually engaged in
PROCEEDINGS.

the field of exploration and discovery at the time. The Award has been made to Mr. Thomson by the Society for his great services to Geographical Science in particular and Science in general, in Queensland and Australia. It is a somewhat remarkable coincidence that whilst Sir Cuthbert Peck was in Queensland endeavouring to observe this transit of Venus our worthy Secretary was engaged in the same occupation in the colony of Fiji at the same time. The first intimation we had of the Award being granted to Mr. Thomson by the Royal Geographical Society, London, was, of course, the cablegram through the Press, on March 17th. This was subsequently amplified by the following correspondence, some of which I shall now read to you:

"Royal Geographical Society,

"London, 11th March, 1902.

"Dear Sir,—It affords me much pleasure to inform you that the Council have awarded you the Cuthbert Peck Grant in recognition of your successful efforts to promote the interests of Geography in Queensland." . . . "You can have a cheque for the amount of the Grant, or you may have it in the form of a watch or instrument, or piece of plate with a suitable inscription." . . . "A Diploma will be forwarded in due course."

"I am,

"Yours very truly,

"J. P. Thomson, Esq."

"Royal Hospital, Chelsea, S.W

"18th March, 1902.

"Dear Mr. Thomson,—I think it probable that you may have heard by last mail of your being elected to receive the Peck Grant from the Royal Geographical Society, but anyhow I send the printed papers.

"I congratulate you most heartily on receiving this distinction, which I hope will be gratifying to you and tend to encourage the cause of Geography and the success of the Society for which you have worked so well in Queensland.

"I also congratulate Mrs. Thomson,

"In haste,

"Believe me, yours sincerely,

"H. W. Norman."
"Royal Geographical Society of Australasia, Queensland.

"Brisbane, April 3rd, 1902.

"Dear Sir Henry Norman,—I now write to you on the suggestion and at the unanimous wish of our esteemed President (Sir Hugh Nelson), and Council to once more solicit your good offices, not only in my own favour, but more especially in the interests of our Society and the State of Queensland, whose devoted servant it is my privilege to be.

"The agreeable, and indeed unexpected, news has just reached us, by special cable message, that I have been specially selected by the Royal Geographical Society to receive the Peck Award, for services in Queensland. As this, with other high honours, will be presented at the Society's great annual public function, which usually takes place at London in the month of May or June, we would esteem it a very great favour if you would kindly receive the Award on my behalf, from the Society.

"As one of the distinguished and greatly esteemed members of the Council of that honoured body, you will no doubt be called upon to take an important part in the ceremony of presenting the Awards to those fortunate enough to receive such high distinctions, and I shall feel greatly obliged if you will express to the President and Council of the Society on the occasion our very deep sense of the honour conferred and my own warm appreciation of their recognition of services rendered to Geographical Science, and to this the country of my adoption.

"We are especially gratified by such a tangible mark of favour at the hands of the parent British Society, which not only acknowledges the high value of individual services, but completely endorses the action recently taken by our Society here to recognise them, besides showing to the entire world that Queensland is well able to take an honoured place amongst the British Dominions beyond the seas that have contributed so largely to the intellectual and material development of the Empire as a whole.

"We have also been very gratified to find that the Award has given much general satisfaction in Australia, an indicated by the Commonwealth Press notices and numerous congratulatory messages, and it may be added that our labours in the interests of a great cause will not be inadequately rewarded if in the future we continue to sustain the good reputation of this State for meritorious work, such as the Royal Geographical Society has now been pleased to recognise.

"We shall feel very thankful if you will have the goodness to arrange for the Award to be sent for me through the Agent-General to the Honourable the Premier of this State, who will kindly hand it over to me, according to your instructions.

"With great respect and kind regards to Lady Norman and yourself,

"Believe me to be, dear Sir Henry,

"Yours very faithfully,

"J. P. Thomson."

"Brisbane, 4th April, 1902.

"Dear Sir Henry,—You would doubtless receive with much pleasure the intimation that the Royal Geographical Society has bestowed on our friend, Mr. J. P. Thomson, the Peck Award, as a recognition of his services in Queensland in the promotion of Geographical Science. The welcome news was cabled to the Press here, and Mr. Thomson has requested you to receive the Award on his behalf. When doing so, will you kindly express to the parent Society the extreme gratification the Award has afforded to the Council, Fellows, and Members of our branch. Such recognition by the highest authority in the world of the work of one of our number we greatly appreciate and esteem a very high honour, and I
trust and believe it will be the means of stimulating all connected with our society throughout Australia to make more strenuous exertions in furtherance of the science in which we are devoted though humble co-operators.

"With the best wishes and regards of our Society,

"Believe me, yours very truly,

"Hugh M. Nelson,

"President Royal Geographical Society, Queensland.

"General Sir H. W. Norman, G.C.B., etc., London."

"Chief Secretary's Office,

Brisbane, 4th April, 1902.

"Sir,—I understand that the Queensland Branch of the Royal Geographical Society of Australasia are communicating with you on the subject of the Peek Award assigned to their Secretary, Mr. J. P. Thomson, by the mother Society, and that they are requesting you to receive the Award on behalf of Mr. Thomson and to express his and the Society's thanks for the distinguished honour conferred upon him and upon the Queensland Branch in selecting him for this distinction.

"In connection with this matter, I have the honour to add my request that you will at the same time state on the part of this Government that it is a matter of great gratification to them that a member of this State has been thought worthy to receive this honour, and to express their appreciation of the recognition therein implied of the services rendered to Science by a Queensland Society.

"I have the honour to be,

"Sir,

"Your most obedient servant,

"(Sgd.) Robert Philp, Chief Secretary.

"General Sir Henry W. Norman, G.C.B., G.C.M.G., etc.,

"Royal Hospital, Chelsea, London, S.W."

"Alsatia,' Dornoch Terrace, S. Brisbane.

5th April, 1902.

"Dear Sir Henry Norman,—. . . . We have been considering as to what form will be most suitable and acceptable for the Award to take, and have finally agreed to ask you to kindly decide for us, believing as we do that such a course will give very general satisfaction to our people here. In a case of this kind, I think one should put oneself in second place and consider the bearing of such a thing on those who are to follow—the probable influence of such an Award on the progress of Geographical Science in this country and on one's own offspring, rather than on the individual. This is how I feel, and, although comparatively poor in so far as the world's wealth goes, I hold the same view now as I did at the time our own Society was arranging to recognise my services: that is to say, I scorn to accept money for my services to Geographical Science, for I am strongly of opinion that an acceptance of such is inconsistent with a true scientific spirit such as ought to animate every man whose life is devoted to the pursuit of human knowledge. I should like the Award to be of some form that will be permanent—something that will remain when I am gone, and probably have an influence on the active life of my children; something that they themselves might like to obtain for similar work; something that may inspire.
them with geographical enthusiasm. Of scientific books and instruments I have as many as I shall require for the present, so they may be left out of consideration, which will help to narrow down your selection. Sir Hugh Nelson thinks it is better for me to state these exceptions, as such will be helpful to you. The rest I leave entirely in your own hands, with results that will give pleasure to all concerned, I am sure.

"J. P. THOMSON."

"April 20th, 1902.

"Dear Sir,—I was very greatly pleased to receive your letter of the 11th ultimo, conveying the gratifying information that the Council of the Royal Geographical Society had seen fit to award me the Cuthbert Peck Grant in recognition of my "Successful efforts to promote the interests of Geography in Queensland." I have requested Sir Henry Norman to receive the Grant on my behalf, and he will let you know what form he wishes it to take, the whole matter having been left entirely in his hands, except that it is not to be in the shape of money, instruments, or books. Sir Henry has been instructed . . . to thank you . . . In the meantime, I must ask you to still further express to your eminent President and Council my own very deep sense of the gratifying manner in which they have been pleased to acknowledge my small efforts to promote the best interests of our common cause here, to which the main energies of my life have been cheerfully devoted, and will, I trust, continue to be so till the end, freshly stimulated as they have now been by this mark of recognition at the hands of the highest and most distinguished body of its kind in the world.

"Apart from the great encouragement derived by the award of this Grant, and the recent action of our local Society to recognise my humble services, I esteem it a very high honour indeed to be the recipient of an Award bearing the famous name of the late Sir Cuthbert Peck, whose enlightened and devoted services to Astronomy, Geography, and the allied sciences are widely known and appreciated, though by none more so than—

"Yours, etc.,

"J. P. THOMSON.

"To Dr. J. Scott Keltie, LL.D., etc.,

"Secretary Royal Geographical Society, London."

"'Alsatia,' Dornoch Terrace, S. Brisbane,

"27th April, 1902.

"Dear Sir Henry Norman,—Your welcome and feelingly expressed letter of the 18th ultimo, with the interesting papers accompanying it, which came to hand yesterday, afforded my wife and myself the utmost gratification and pleasure. We felt deeply gratified to receive the hearty congratulation of yourself, whose personal friendship it has been our great good fortune to enjoy for so long, and it was very pleasant to feel that you were still with us in our geographic work here, to the success of which your personal influence and active co-operation have so largely contributed . . .

"I have already written you concerning the Peck Grant, and there is therefore little more to be said at present, further than to add, that, in the light of the papers which you have so thoughtfully sent for my own information, I would like you to mention to the President and Council of the Royal Geographical Society that of all the honours in the gift of that learned body the highest in my estimation is the Peck Grant, which they have been pleased to award me. To the student of the sciences of Astronomy and Geography, it is the greatest of all..."
honours, and its value is doubly increased by a present knowledge of the fact that my proposer in the Council of the parent Society was, by some
happy combination of circumstances, none else than yourself. This, I can cheer-
fully say, is the most pleasant feature of the great distinction, which it has been
my real good fortune to receive at the hands of the highest authority in the
world, for services rendered.

"Permit me to mention that the late Sir Cuthbert Peek was here in Queens-
land, at Jimbour, observing the transit of Venus, in 1882, with the British Ex-
pedition, at the same time that I was doing similar observations of the transit
in Fiji. . . .

"J. P. THOMSON."

"Royal Hospital, Chelsea, S.W.,
"29th May, 1902.

"Dear Mr. Thomson. . . . I am happy to tell you that on the
26th instant, I attended the Annual Meeting of the Royal Geographical Society,
and received at the hands of the President the Diploma of the Peek Award for
transmission to you. I duly thanked Sir Clements Markham on your behalf, and,
also communicated to him, and to the Fellows assembled the letters on the subject
of the Award from Sir Hugh Nelson and from Mr. Philip. I delivered the Diploma
to Sir Horace Tozer, who will transmit to the Queensland Government. In con-
junction with Dr. Keilie, I am about to purchase a piece of plate with the money
portion of the Award, and this also will be sent through Sir Horace Tozer. . . .
As I am very hard worked at present, I trust you will excuse me from
saying more than that I again congratulate you and Mrs. Thomson on the grant of
an honourable Award, and I sincerely trust you will be pleased with the piece of
plate, I will send you, though I would much prefered that you should have
selected for yourself.

"H. W. NORMAN."

"Royal Hospital, Chelsea, S.W.,
"29th May, 1902.

"Dear Sir Hugh,—in answer to your letter of the 4th April, I wish to inform
you that at the Annual Meeting of the Royal Geographical Society, on the 26th
May, when the yearly awards of the Society were given out, I received the
Diploma of the Cuthbert Peek Grant, and, besides thanking the Society for the
Award on behalf of Mr. Thomson, I conveyed to the President an expression of
the extreme gratification the Award had afforded to the Council, Fellows, and
Members of the Queensland Branch of the Royal Geographical Society of Aus-
tralia, in the terms requested by you.

"I have handed the Diploma to Sir Horace Tozer for transmission to Bris-
bane, and I will shortly send through Sir Horace a piece of plate, about to be
purchased with the sum of money which accompanies the Award.

"Believe me, yours very truly,
"H. W. NORMAN."

"Royal Hospital, Chelsea, S.W.,
"London, 10th July, 1902.

"Dear Mr. Thomson,—As you delegated to me the duty of selecting for you
some article to represent the money of the Cuthbert Peek Grant, I undertook to
do so, but this is not a sort of duty that I like or that I expect to succeed in.
With the limitations you mentioned, I thought after consideration that a silver salver . . . with a brief inscription on it would perhaps be the best article I could select, and in consultation with Dr. Keltie, I made a purchase accordingly. There was much delay about the inscription, and only yesterday the salver was sent to me. To-day I handed it over to the Agent-General to forward to Brisbane, and I hope it will reach you safely.

"I think the salver will be a handsome ornament on your sideboard, and it will be a lasting evidence that you obtained the complete approbation of the Royal Geographical Society of England in your efforts to help Geographical Science in Queensland.

"I again congratulate you on winning this prize, and hope you will like the salver.

"With kindest regards to Mrs. Thomson and yourself,

"Believe me, yours very truly,

"H. W. NORMAN.

"P.S.—I see that interesting papers continue to be read by the members."

"26. Wilton Crescent, London,

"8th May, 1902.

"Dear Mr. Thomson,— . . . I congratulate you on the receipt of the Peck Award, which is decidedly worthily bestowed in recognition of your unswerving fidelity to the advancement of Geographical knowledge, and of its progress in Queensland. . . . With renewed felicitations and best wishes for your health and prosperity,

"I am, yours truly,

"LAMINGTON."

Extracts from the report of proceedings at the anniversary meeting of the Royal Geographical Society, London, 26th May, 1902, when the President (Sir Clements R. Markham, K.C.B., F.R.S.), handed to Field-Marshal Sir Henry Wylie Norman the Peck Award for presentation to Mr. J. P. Thomson.

The President (Sir Clements R. Markham): "The Cuthbert Peck Grant has been awarded to Mr. J. P. Thomson, the founder of the Queensland Branch of the Geographical Society of Australia, for the many excellent papers he has written on Geography, and for his work in connection with the founding of that Society. We naturally have a very warm feeling for the colony of Queensland, for the colony of Queensland alone has subscribed to our Antarctic Expedition the sum of £1,000, while all the other Australian colonies declined to give us anything; and I believe it is due a great deal to the President of the Society and to Mr. Thomson, and to their representations, that the Government of Queensland was induced to act so generously towards us. Sir Henry Norman has kindly undertaken to receive the Award for Mr. Thomson, and to decide what form it shall take, and I therefore now have great pleasure in handing to Sir Henry Norman, the former Governor of Queensland, the Diploma for Mr. Thomson."

Field-Marshal Sir Henry Norman: "On behalf of Mr. Thomson, and at his particular request, I return you very hearty and sincere thanks for the honour that has been conferred upon him. And from my personal knowledge he deserves this reward, and I have no doubt whatever, Sir Clements, that why Queensland was the only colony that gave £1,000 was owing to the great unpaid exertions of Mr. Thomson for many years past. I think perhaps you would like to hear that your estimation, sir, of Mr. Thomson is borne out by two little extracts which I will
read. Sir Hugh Nelson, the President of the Royal Geographical Society of Queensland, says:—"The welcome news was cabled to the Press here, and Mr. Thomson has requested you to receive the Award on his behalf. When doing so, will you kindly express to the parent Society the extreme gratification the Award has afforded to the Council, the Fellows, and Members of our branch. Such recognition by the highest authority in the world of the work of one of our members we greatly appreciate and esteem a very high honour, and I trust and believe it will be the means of stimulating all connected with our Society throughout Australia to make more strenuous exertions in furtherance of the science in which we are devoted, though humble, co-operators.' I also received a letter from the Prime Minister of Queensland, in which he says:—'In connection with this matter I have the honour to add my request that you will at the same time state on the part of this Government that it is a matter of great gratification to them that a member of its State has been thought worthy to receive this honour, and to express their appreciation of the recognition therein implied of the services rendered to science by a Queensland Society.'"—"The Geographical Journal," July, 1902, vol. xx., No. 1, p. 116.

The President (Right Hon. Sir Hugh M. Nelson) continuing said: "The Diploma and the piece of plate have now arrived, and I feel great gratification in now handing to Mr. Thomson the Diploma which the Society has awarded him. The Diploma bears the signatures of Sir Clements R. Markham, President; Leonard Darwin and J. F. Hughes, Hon. Secretaries, and is dated May, 1902. I have very great pleasure, Mr. Thomson, in presenting to you this Award, and to express the gratification of this Society, and I think the whole of Queensland, that it has been awarded to the right man. (Applause.) I ask your Excellency to be kind enough to present this piece of plate which accompanies the Diploma to Mr. Thomson. (Applause.)

His Excellency the Governor Major-General Sir Herbert Chermside, G.C.M.G., C.B.: Ladies and Gentlemen,—I am asked on your behalf and that of the President, who has deputed to me the honour of this duty to present to our Honorary Secretary this very handsome piece of plate inscribed—

"Royal Geographical Society Cuthbert Peek Grant for 1902 Awarded to J. P. Thomson, for his great services to Geography in Queensland."

I will not detain you by going over the ground that our honoured President has just traversed. I think it will suffice to remark that all here present recognise what a scientific and geographical enthusiast our Honorary Secretary is. I have had the opportunity, as doubtless you have had, of reading a record of his long labours in the cause of Science. The number of his publications alone is very high: it must be by this time nearly, if not quite 100; for I remember I was reading one written in the early '90s, which bore a number above 80. I need hardly enlarge before an audience like this, on the very great value to all nations, in the present age, of Science and of scientific training. The accuracy given by scientific training (and Mr. Thomson is scientific, not only as a Geographer, but he has followed Astronomy, and Surveying, and is interested in Meteorology, Geology, and kindred sciences, all of which require that accuracy of eye and recording which causes scientific societies whenever they get reports on interesting physical matters, to at once wish to know whether they have been recorded by a trained observer), is always valuable, and is becoming daily and yearly a more indispensable part of that intellectual equipment which is necessary to success in the struggle for life and in the competition amongst nations. I am sure, therefore, that you, Mr. President, and ladies and gentlemen feel here in Queensland that we are honoured
by being assembled to present to a resident Queenslander here on this occasion, this Award of that grand parent Society which is, in its interest in its own particular science, omnipresent throughout the civilised universe. Mr. J. P. Thomson, I have great pleasure in presenting you with this handsome silver plate. (Loud applause.)

MR. THOMSON: Sir Hugh Nelson, Your Excellency, Ladies, and Gentlemen,—
The difficulty on an occasion like the present is in replying to the very kind remarks which have been made in my favour. The difficulty is in knowing where to begin and where to end. Had I myself to consider merely, I should be contented simply to thank you in a few words for your very great kindness; but there are associated with me in my work, and there have been associated with me in time past, many who have contributed in the respective spheres which they have occupied in this Society a very great deal indeed towards the success of this institution, in its efforts to promote the interests of Geographical Science here in Brisbane. I must, therefore, crave your indulgence if I say a few more words than I should be tempted to say under ordinary circumstances. When a boy I had a very good appetite indeed for philosophical literature and for scientific literature, and I was sometimes considered by my companions to be rather dry and uninteresting. Amongst the literary treasures to which I had access, and which I always loved to peruse so well, there were two works that had for me a peculiar fascination, indeed, and these were the "Teachings of Epictetus" and the "Meditations of Marcus Aurelius," two very remarkable books, which to the ordinary reader would probably seem of very little interest at all. But in the latter one there is a little paragraph which always had a peculiar influence on me. It seemed to contain some of the best elements of the real philosophy of life. It stimulated me, and I have endeavoured always to follow the principles enunciated by this paragraph, which I will now give you:—"If you will be governed by reason and manage what lies before you with industry, vigour, and temper; if you will not run out after new distractions, but keep your divinity pure, even as though you must at once render it up again, your mind staunch and well disciplined, as if this trial of behaviour were your last; and if you will but cleave to this, and be true to the best of yourself, fearing and desiring nothing, but living up to your nature, standing boldly by the truth of your word and satisfied therewith, then you will be a happy man. But the whole world cannot hinder you from so doing." It seemed to me that amongst the many guiding truths in classical and philosophical literature, Biblical proverbs, and so forth, it was one that, if a man tried his very best to know, he could not go very far wrong. My chief reason for mentioning this is to give you an idea of the kind of literature which young lads of my way of thinking were encouraged to read in the land of my birth, where men are more highly esteemed for their mental qualities and scientific achievements than for their worldly riches. For in this connexion it must be remembered that any fool may be rich, but no fool can be wise. My scientific labours in Queensland, as I have remarked to you, have been a good deal associated with the work of this Society, of which you all know about, I dare say, as much as I do myself. Our actions are public, but there are many things connected with the working of a Society like this which do not always appear before the public; and in the initiation of the work and early life of the Society there were many discouragements met with. These had to be overcome. These had to be overcome by one who set himself about the work with a determination to carry it out, and to do it honestly. But in doing so it is needless to say it that no man singlehanded can achieve any very great success. Therefore, he must, to some extent, depend upon the assistance of others, and in this respect I am very happy indeed to acknowledge this evening that I have received

K—ROYAL GEO. SOCIETY.
the very cordial and very able assistance of those with whom I have had the honour of being associated in this work for many a long day. First of all this Society, as you all know, has been singularly fortunate in its Patrons—the several gentlemen, under whose patronage its affairs are conducted, that is, the gentleman standing at the head of the social and industrial and political life of the country, the representative of His Majesty the King. We were singularly fortunate in Sir Henry Norman, as you all know, for the active part he took in our work and the encouragement which I received at his hands was very great indeed, and on numerous occasions quite unknown to anyone else except myself.

In a variety of ways he assisted me, and was ever ready with kindly advice and material help. His interest in my own individual labours was constant and undiminished and contributed not a little to their success. We were stimulated by his presence at our meetings, and in other respects he nobly and loyally furthered the best interests of our cause. Our library was enriched by the numerous and valuable books which it received from time to time at his hands. Then we were fortunate in his distinguished successor, Lord Lamington, who came here, a gentleman who had newly left the Council of the parent Society, in London, and understood the work, and who had been trained not only as a distinguished geographer, but also as a traveller. He also, as you all know, extended to this Society his very warm patronage and cordial assistance, for which we have all felt very thankful. From him I also received material assistance and encouragement in my geographical work, to the success of which I owe him much indeed.

Then we come down to the distinguished gentleman who succeeded him (Sir Herbert Chermside), and who not long ago accepted the position of Patron of this Society. (Applause.) A gentleman, who—I may say without any desire to flatter any man to his face, yet with a desire withal to speak the truth fearlessly and honestly—a gentleman who, since his arrival in this country, has indentified himself very closely indeed with the active life of this Society, and who has shown us very practical sympathy, and who has altogether taken an active and intelligent part in the work of this Society. (Applause.) Coming next to the list of Presidents, beginning with our revered and my own distinguished friend, Mr. Gregory, here—(Applause)—down to the present distinguished occupant of the presidential chair—(Applause)—this Society. I say, has not only been exceptionally fortunate in its Patrons, but it has been exceedingly fortunate in those who have occupied the position of President. I think there is not a single one whom I could mention from the beginning who has not done his very best in the interests of the Society, and all deserve the cordial thanks of the members and of the colonists of this State. Associated with those Patrons and Presidents we have had a number of gentlemen who have rendered very able and very valuable assistance indeed to this Society as officers and Councillors. Without enumerating them, as the list is a very long one, I may say that one and all have done their very best to further our work. You must all remember, ladies and gentlemen, that the Council—the officers of the Council in this Society—do their work without any remuneration at all. (Applause.) They simply do the work for the love of it, and in a community like ours, in which men have to attend a great deal to business, and to the other practical affairs of life, it must be a sacrifice on their part to take an active interest and identify themselves closely with the work of a Geographical Society and its administrative affairs, and, therefore, our very warm thanks indeed are due to them in this respect. And I may say this, that after all the work that they have done, all the services which they have rendered, Patrons, Presidents, and Councillors, I have myself been singularly fortunate in enjoying their complete confidence. I have received very great assistance from them, and it would be vanity on the part of any man, no matter what his
abilities may be, to say that he could achieve any very great success in the field of Science single-handed, and he must, therefore, to some extent indeed, be dependent upon his co-workers, and these closely identified with him in the field of his activity. You will, therefore, understand that I consider it my duty to thus refer to those who have helped me to achieve what little I have been able to achieve. The ordinary routine work of the Society itself is very great indeed. The Society has grown, is comparatively large at present; and is yearly growing, and its ramifications are very wide indeed. We correspond with all parts of the civilised world. Our publications and the papers read are published by us, and reach the very ends of the earth as it were. They are deposited in all the great libraries, in the libraries of the scientific institutions, and the Government departments. But our domestic or home correspondence is considerable, and I can tell you that we also correspond a very great deal with sources outside of Australia altogether. There is scarcely a single meeting of the Council held at which we have not to deal with voluminous foreign correspondence. And in this respect I would like to say a word or two about the complete harmony which always exists in the working of the Council. We come here and sit down and do our work. There are no contentious subjects dealt with at all. We dismiss them entirely from our programme, and come here imbued with a desire to do the best in the interests of the Science in whose behalf we assemble. The Society is, I say, very wide in its scope, and both in the current scientific journals and in the daily Press itself, are published from time to time voluminous extracts from our publications, and in other ways they let us see that they appreciate the work we do here. I will give you one little instance, ladies and gentlemen, to show how very closely the proceedings of this Society are watched in different parts of the world, and how careful, very often, we have to be in our utterances in impromptu discussions that may take place upon papers read on subjects brought before the Society. This is not a secret, but I will simply narrate it to you as between ourselves. In the beginning of the South African War, I was surprised one day to receive a communication that had been sent to one of our distinguished Governors by one of the leading men in Holland. This communication, as a matter of fact, called upon him for some information concerning a speech which he was reported to have made here in our Society. The text of the speech, I may remark, had been cabled from Paris to Holland, and they were quite startled by the nature of the cablegram, which indicated that the English or British had designs upon the Dutch East Indian Possessions, and the merchants in Holland and other public men there became alarmed at this, apparently an authenticated speech, emanating from the Governor of the country, and it was sent to me with a simple little note asking me if I could throw any light upon it. I did throw light upon it, but I could see that there was something underlying the communication, and it was evidently done with the intention of creating a bad feeling between the two countries, at a critical time, and I made up my mind in the reply to administer a very caustic snub, so I simply stated that the speech of His Excellency the Governor and our other distinguished Patrons at the General Meetings of our Society here were characterised by their scientific value and interest rather than by their political significance; that Science was a stranger to such discussions and designs as tended to divide men and nations, or words to that effect. I thought it would show them on the Continent of Europe that we fully understood the functions of a Geographical Society, and that they would probably profit by the example, and the fact of not having heard anything more about the matter led one to believe that the answer was considered satisfactory in Holland. (Hear, hear.) That is one little instance to show you that when we read papers and discuss them we are not merely doing so to the audience
whom we address, no matter how distinguished the audience may be, but we are speaking to a much larger audience, exceeding even the limits of the British Empire itself. Now, with respect to this Peek Award, I may tell you candidly and honestly, that it came to me as a very great surprise indeed. I knew nothing at all about it, did not expect it, and the first one to see the intimation in the cablegrams to the "Courier," on the morning that it appeared, was my eldest boy, a little before sitting down to breakfast. I had the choice, as you have seen by the correspondence that our President has read to you, of taking this Award in any form I liked; in money, if I liked. I considered the matter very carefully indeed, and I see no reason to change my mind on this occasion, for the decision I then came to, in regard to the very great honour which the home Society has seen fit to bestow upon me in recognition of my services, and I decided that as my labours had been carried on for many years here and elsewhere in the interests of Science gratuitously, that I should do my very best to sustain the dignity of that position which I had always occupied, and that I had always built up in my mind as an ideal position. (Hear, hear, and applause.) I thought, ladies and gentlemen, that a man on an occasion like this had a right to practise self-denial, and to consider what influence an award of this kind was likely to have on others besides himself. There are one's own children to be considered, for instance. These are growing up, and who can tell but that a thing like this may strike some chord, some hidden chord, which may inspire them with enthusiasm to take up similar work. And who can tell, ladies and gentlemen, who can tell, I say, but that there may be here present some in whom a chance chord may also be struck, and who will make an effort to obtain a similar award for equally meritorious services in the interests of human knowledge. Therefore, I considered it a duty to efface myself to a certain extent, to put myself in a secondary place. As I explained to Sir Henry Norman, I did not want money. But I want to disillusionise you by stating that my refusal to accept money did not originate in the fact that I had no very good use for money, and that I did not need it at all—(Laughter)—but I thought that no man who is a student of Science can be poor. His mind is enriched with a richness which the wealth of the world cannot purchase; his companionships are formed in paths and ways outside the paths and ways of wealth altogether, and I maintain that the man who has his heart in his work, and who is truly to the very core of his heart a scientific man, would rather beg than accept an award like that in the shape of money, and that is the way I take it, ladies and gentlemen. (Applause.) I considered, and I still consider, that it is vanity to suppose that this Award, the greatest of its kind, is merely for one individual; I consider it is a great honour to this Society with which I have the privilege of being associated. It is an honour to the Society, and I feel perfectly certain it is also an honour in the country. It is an Award for work which has been performed mostly in this State—honest, and hard work, and it goes a long way further than that, because it shows to the entire world that we have in Queensland, with a very small population comparatively speaking—a State that has for some time past been struggling under many difficulties indeed—that we have in this State men, at all events, who, in their intellectual and scientific attainments, can compare favourably with men who occupy similar positions in other States of the Commonwealth and in other parts of the world, and in that respect alone, ladies and gentlemen, I feel immensely proud to think that we are assembled here to-night to receive an Award like that, the first of its kind to come to Australasia. (Applause.) It will show those, ladies and gentlemen, who are inclined to carp and to sneer at the achievements of Queenslanders in the other States and elsewhere that we can hold our own. (Hear, hear.) Now, ladies and
gentlemen, having said so much there are three ways in which this Award has an important bearing. First of all it raises the standard value of our local work here; it, as a matter of fact, endorses the action which the Council of this Society took last year to recognise my services; and, on the other hand, if I may say so, it places the *imprimatur* of the highest authority in the world upon the scientific and literary work that I have done here and elsewhere. Therefore, I may tell you that I regard this, first of all, as a very great distinction indeed, being as it is the first of its kind received at the hands of the mother Society. I also esteem it a great privilege to have the Diploma of the Award presented to me at the hands of one who has been so long and honourably associated with the public life of this State, our distinguished President. (Applause.) The Award itself again I value most highly, coming as it does so opportunistly from the parent British Society—that grand old Association of which Britishers are so justly proud—and especially do I regard it as a very great honour and privilege indeed to receive it at the hands of the Patron of this Society, who has had such a long, honourable, distinguished, and illustrious a career in the services of the British Empire. (Applause.) Therefore, Sir Hugh Nelson and your Excellency, I thank you both in the most cordial and warm terms at my command for the very great honour which you have done me on this occasion by presenting this Award to me. And, ladies and gentlemen, in completing my desultory remarks, there is one little duty which I dare not neglect, and that is a very pleasant one, too. I do not want to detain you any longer with a speech, which has already exceeded reasonable limits, but must give others an opportunity of speaking. There is one other little duty which is exceedingly pleasant to me. You perhaps—some of you at least—know that this function has been organised by a committee of the Council appointed for the purpose, consisting of four members—that is, our President, our respected Hon. Treasurer, one of the oldest members of our Council, Mr. Alexander Muir, and one who who is not so old, but who, I hope, will render equally good services, Mr. Schoenheimer. I am here to-night solely as your guest. When I came in and saw the whole place illuminated and everything in order, I felt that I was free, and had a day off, so to speak; and, therefore, I am sure you will agree with me when I beg to move that the cordial thanks of this Society be tendered to those gentlemen for having so willingly and efficiently, and affectionately, so far as I am concerned, performed these duties of organising the function. I dare say someone will be found to second the motion, and that someone else will be prepared to speak to it. (Loud applause.)

**MR. R. EDWARDS, M.H.R.:** It affords me very great pleasure indeed to second the resolution proposed by Mr. Thomson, that a hearty vote of thanks be accorded to the Committee or to the Society for having organised this function. I only wish to say that as an old Queenslander, I am very glad indeed that the parent Society in the old country has decided to confer this distinguished honour upon Mr. Thomson. We who have known him for many years know the valuable service which Mr. Thomson has rendered to Geographical Science and kindred sciences; a value that cannot be over-estimated so far as Queensland is concerned. I beg to second the vote of thanks.

The vote was carried with acclamation.

**THE PRESIDENT, continuing, said:** There is one part of the correspondence I think I ought to read here. When we got the intimation of this Award and the piece of plate being shipped, I wrote to the Federal Minister of Customs, drawing his attention to the fact that we were expecting them to arrive, and suggesting to him that he might admit them free of duty. I had the pleasure, a few days ago, of receiving this telegram:—
From Melbourne, 5 p.m., 29th August, 1902.

"Message for Hon. Sir Hugh Nelson, President, Royal Geographical Society of Australasia, Brisbane.

"I have had much pleasure in directing free admission of Peck Award of the Royal Geographical Society London won by your Society. It will be entered under the exemption of trophies won abroad. Hearty congratulations to yourself and Society."

C. C. KINGSTON."

But while thankful to Mr. Kingston for his favour, I think there is one vote of thanks which I ought to submit to you. You are already aware from the correspondence which I have brought under your notice that the Council and the members of the Society have to thank the parent Society for their kindness in making this Award to one of our members. This has been done by deputy through our late Patron and always esteemed friend, Sir Henry Norman, now Field-Marshal. I think, however, that it would be fitting for us, especially at such a large meeting as is now assembled, if we directly from the meeting tendered our thanks to the Royal Geographical Society of London, for their kindness to us in awarding this prize to our Hon. Secretary, Mr. J. P. Thomson, and I would propose accordingly. (Applause.)

Mr. WOOLNOUGH, M.A.: I have been asked to speak on this occasion. The Treasurer was good enough to tell me that if I said just a few words, that would be enough. Now, the man that calls me up to make a short speech wakes the wrong passenger. If he thinks I am going to sit down in a minute he is mistaken. There is every probability that words spoken here to-night will reach the parent Society; then, Sir, with your permission, I will say a few; and if their ears were nearer I would make them hear, and no mistake. There now is an opportunity for the parent Society, which has not occurred for many a year. It is an opportunity to send out an expedition which may reach the North Pole. Now, I know very little about Geography. I can find my way about town very well, but in the matter of this North Pole I am a bit of an enthusiast, and have been for many a year. I am persuaded that it is possible to reach the North Pole, and I am equally persuaded in my own mind of the way to do it. Now, Sir, I have for some years been accustomed to say that one of the first things to be done is to establish a line of depots as far towards the North Pole as possible. The reason for that is plain. If you are familiar with the history of these things you know that nearly always the losses that have been suffered in these expeditions have occurred when the intrepid parties were returning, not when they were going out, and they perished because they had no base of operations from which to start. Well, some of you know better than I do that the attempt made by Lieutenant Peary a little while ago was made along a line of depots, but unfortunately they were in the wrong place. Now, it has been my conviction for the last 20 years that the depots must be along the western shore of Franz Josef Land, and that the northernmost of these depots must be at 82, if not at 83, and from that 83 depot the dash may be made for the Pole. Well, Sir, we all are gratified to know that great minds run in the same channel. Lieutenant Peary has just returned after a three years' attempt to reach the Pole. He went, as I said, along his line of depots. He now says, "I started from the wrong point. I am convinced that if I start from the northernmost part of Franz Josef Land, I can reach the Pole." (Hear, hear.) This is what he said also, and that is new to us all, an! it is most astonishing to us, excepting to those who are Englishmen. He says "I found no more trouble in travelling between 70 and 80 than I found in travelling between 60 and 70, and am fully persuaded that it will be as easy to travel between 80 and 90 as between 70 and 80. I would," he said, "as soon winter
at Cape Hecla as at Sabine Island or at Etah." Now, that is the opinion of a man who has had three years' experience in the northern regions, and we must take it for granted that he knows more than we do, and that it is possible for a man of European stock to live—well, I was going to say—at the North Pole itself. Well, now, beside him we have Mr. Baldwin, who headed another expedition, and who has just returned after spending fifteen months in those regions. Mr. Baldwin says, "I fully agree with Lieutenant Peary that we can reach the North Pole only from Franz Josef Land. Let us take the northernmost point from there, and then we can reach it." Peary says, "I have made four journeys by sleighs, which would have taken me beyond the Pole, longer journeys than I should have to make from $3$ to $90$, and I know it can be done. but my means are exhausted." There is an opening for the old Society at home, and now I am going to give them a reason for it. Baldwin is an American. What do you think he says? "I confess our mission was to plant the Stars and Stripes at the North Pole." Well, if he were here. I would put him on the back; I would indeed. But we must not let him get there first. Should he do that you would see that there would be a factory, then there would be a tramway, and then a newspaper. (Laughter.) And if the railway does not run to the pole you will say it ought to run away from it. There is a chance of reaching that North Pole. and should that be done we cannot tell what may result from it. People say, "What is the use of getting to the North Pole?" What is the use of getting anywhere? for the matter of that. Who can tell the knowledge that may be acquired; what influence it would have in connection with our weather calculations, commerce, everything, in fact, that enters into modern life as we know it to be. I have pleasure, very great pleasure indeed, in speaking to our vote of thanks to the "old folk at home," and send word with it that we are glad to say we are true to them. (Applause.)

The motion was unanimously carried.

Mr. Alexander Muir: May I be permitted to draw attention to the fact that although all the nice, kind things which have been said about the Council and the Geographical Society are perfectly true, it must be distinctly understood that we, as a Society, cannot very well get on without money. I am not here to advocate the mere acquisition of money, but I am often asked—incessantly asked, in fact—as to how ladies and gentlemen may join this Society, and I think it would be helpful. Mr. President, if it were known that nominations of persons desirous of joining the Society may be received at any moment, and especially on such an occasion as this; all ladies and gentlemen who wish to join the Society may do so by simply giving in their names to one of the Councilors, or to the Hon. Secretary, or Hon. Treasurer. The fee is a very small one, being £1 1s. per annum. I think, sir, it is desirable, in consequence of the very many inquiries made of me individually, that this information should be given.

The Hon. A. C. Gregory, C.M.G., said: I think there is one individual whom we ought to remember on this occasion as having been one of those who has taken a very important part both in the working of this Society here and also in supporting its interests in England, and that is Sir Henry Norman. (Applause.) He was one of those who was able to practically amalgamate himself with the community and become one of us, not merely one of those distinguished men who entered the place and left it again, but one who took such a great interest in all our proceedings, especially with regard to all questions of Geographical Science. I have had several opportunities myself of being to a great extent associated with him in carrying out matters in regard to Science, and investigations which have been so important to the advancement of Australia, and especially in Queensland, and I think we cannot do better than pass a hearty
vote of thanks for the great services performed for this Society by him in England as our representative, and not only directly for the Society, but also the great interest which he has shown in the interests of Queensland generally. I, therefore, ask you to pass a hearty vote of thanks to Sir Henry Norman, which will be communicated to him in the regular and due course. (Applause.)

The vote was carried with acclamation.

The President: Ladies and gentlemen, that finishes the formal part of the business to-night. The Hon. A. C. Gregory has very kindly offered to exhibit to us some scientific instruments used when out exploring. I may mention that Sir Henry Norman, in the last letter which our Hon. Secretary's wife received from him, refers to the occasion which we celebrated not long ago, in honour of Mr. Gregory's birthday, expresses his regret that he was not present to join in it, and sends his very highest regards for our friend, Mr. Gregory. I know he esteems him very highly, and I am very glad to see him mentioned in his last letter. (Hear, hear, and applause.)

The function then took the form of a conversazione, at which the following exhibits were arranged on tables for inspection:

Exhibited by the Hon. A. C. Gregory, C.M.G., F.R.G.S., etc.—

Box of fossil bones (extinct animals from Clifton Creek, Darling Downs).

Practical demonstrations of the various uses of these unique and interesting instruments were given by Mr. Gregory to a highly appreciative audience of members of the Society and their friends who were fortunate enough to enjoy the privilege of being present on the occasion.

Exhibited by the President:

A very fine collection of 101 photos of clouds, taken and lent for the occasion by Mr. H. C. Russell, C.M.G., B.A., F.R.S., etc., Director of the Sydney Observatory.
Large collection of maps of the 12th century.
Captain Cook's charts and maps of New Holland (Terra Australis), as originally published with illustrations.
Flinders' charts and maps, etc.
Major's two works.
A number of facsimiles of maps of Australia (in the British Museum, London, from the earliest period.
"Dampier's Expedition"—original edition.
"Hunter's Exploration"—original edition.
"King’s Exploration"—original edition.
The "De Situ Orbis" of Pompomious Mela. London. 1739 (lent by the Hon. Secretary).
Also the following Ethnological specimens loaned for the occasion by the Queensland Museum:

1 food bowl, 1 woman's dress, 1 bread-cord, 1 shield, 1 dancing shield, 1 stone club, 1 stone adze, 1 drum, 1 paddle, 1 float, 1 mucatcher, 1 pig-catcher 1 yam basket, 1 grass-seed shirt, 1 bow, 1 arrow, 1 tappa cloth, 1 fish trap.
Under the superintendence of Mr. Alexander Muir, an interesting demonstration was given of how maps and other similar drawings were placed on the lithographic stone and printed. A lithographic printing press had been supplied from Mr. Muir's establishment, and Mr. J. A. J. Ferguson, lithographic artist, explained the process of drawing work on the stone, while Messrs. D. Lax and N. Henderson, lithographic printers, exhibited the process of actual reproduction. Samples of beautiful and artistic lithographic work in colours were also shown, and were much admired. The map of Queensland, exhibited and printed, was contributed by Mr. H. Macintosh, of the Survey Department.

The following is a list of Mr. Alexander Muir's exhibit:—

A lithographic press.

Exhibit of maps printed from stone, also maps printed in presence of audience, also pictorial advertisements.

Signatures written in hall transferred to stone, copies pulled from stone and distributed amongst the audience.

The Hon. Secretary (Mr. J. P. Thomson) gave a most interesting and instructive lantern slide exhibition of beautiful celestial objects, of which the following is a list:

**Planets**—

**Lunar**—

**Miscellaneous**—

The lantern was kindly lent for the occasion by Mr. George Matthews, who also operated it to the entire satisfaction of all. The slides were briefly explained by Mr. Thomson, who likewise made a scientific comparison of the various celestial phenomena and lunar features exhibited, the whole of the exhibition being very greatly appreciated and frequently applauded.

Refreshments were prepared by Mrs. J. P. Thomson, who was kindly assisted by Mrs. T. H. Owens and Miss Nicholson.

In accordance with the action taken at this meeting the following letters were subsequently sent to the President of the Royal Geographical Society, London, and to Field-Marshal Sir H. W. Norman, G.C.B., G.C.M.G., C.I.E., etc.:—

* The hours, minutes, and seconds are omitted.
"Royal Geographical Society of Australasia, Queensland,"  
"Brisbane, 8th November, 1902.

"The President of the Royal Geographical Society, London.

"Dear Sir,—Our Society held a special meeting on the 31st ultimo, in celebration of the auspicious event occasioned by the bestowal of the Cuthbert Peck Award for the year upon Mr. J. P. Thomson, one of our members and our Hon. Secretary, and the arrival in Brisbane of the Diploma and handsome piece of plate representing the Award. The meeting was one of the largest I have ever had the pleasure of presiding at, and I was instructed to convey to you a resolution, which was carried unanimously and with much enthusiasm, tendering our thanks to the Royal Geographical Society for their kindly recognition of the services to Geographical Science in Queensland of one of our number, and the great honour thereby conferred, and also our dutiful respects to the parent Society.

"Allow me to add our best regards to yourself.

"I am, dear sir, yours sincerely,

"H. M. Nelson, President, etc."

"Royal Geographical Society of Australasia, Queensland,"  
"Brisbane, 8th November, 1902.

"Field-Marshal Sir H. W. Norman.

"Dear Sir Henry,—One of the largest and most successful meetings ever held by our Society took place on 31st ultimo, on the occasion of the arrival in Brisbane and formal handing over to Mr. Thomson of the Diploma and handsome piece of plate (which you kindly selected), representing the Cuthbert Peck Grant, awarded to him by the parent Society. On the motion of the Hon. A. C. Gregory it was unanimously agreed that the thanks of the Society were due to you for your kind services to the Society on this and numerous other occasions, and the active interest you have always taken and continue to take in the Society's progress and welfare. The resolution was received with expressions of the highest esteem and cordial regards by all present for yourself personally and as a past Patron of the Society.

"It gives me sincere pleasure to be now the vehicle to convey to you the vote of the meeting.

"I am, yours etc.,

"H. M. Nelson, President."

In reference to the presentation of the Peck Award to Mr. Thomson at this meeting the following, which shortly afterwards appeared in the local "Observer" and in the "Queenslander" is of interest in its bearing upon the work of the Society:

"The Cuthbert Peck Award, given by the Royal Geographical Society for services rendered to the cause of Geographical Science, was presented to Mr. J. P. Thomson, the energetic and able Secretary of the Queensland branch. In making this Award, the parent Society not only honours Mr. Thomson, but the Society and the State he represents. It is very pleasant to find that this young country is being represented in the ranks of Science, and Mr. Thomson's work will serve to bring our territory under the notice of the members of the Royal Geographical Society, whose ramifications are to be traced all over the world. Painstaking and original work on behalf of any branch of Science makes a demand upon the intellectual resources of any country. Our own continent has afforded a field for the explorer, and within very recent times many chapters of heroic
enterprise have been written by men whose memories are embalmed in the archives of the Commonwealth. The presence of the venerable A. C. Gregory at the Geographical Society's function was a reminder of not only his own labours as a practical explorer of our own territory, but of those devoted endeavours of the honoured men who thirty or forty years ago gave up their lives in the effort to understand and make known to the world the nature of the topography of Australia. Mr. Thomson is not classed as an original explorer, but his work has none the less a value all its own. The mere task of performing the duties of Hon. Secretary to a Society with such an enormous correspondence as the Geographical Society is no mean one, and when, as Mr. Thomson informs us, the correspondence deals with matters of more than merely scientific interest, as on the occasion of speech-making by highly responsible personages whose words may be misunderstood by readers from afar, the business of accurately reporting such observations and skilfully interpreting them to outsiders involves the exercise of qualities worthy of special recognition. These qualities our Queensland geographer has in no small degree, and therefore the Peck Award is recognised as having been well bestowed on Mr. J. P. Thomson."

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**DECEMBER 8th, 1902.**

In the unavoidable absence of the President at Toowoomba, Mr. R. Edwards, M.H.R., occupied the chair.

On the motion of the Hon. Treasurer the minutes of the first ordinary monthly meeting of the session and of the conversazione and special meeting were taken as read and duly confirmed.

J. H. Forrest (proposed by A. Muir), John Lang (proposed by J. D. Quaid), Hon. John Leahy, M.L.A. (proposed by the President), W. A. Rigby (proposed by Thos. H. Owens), and James Tolmie, M.L.A. (proposed by the President), were elected ordinary members of the Society.

A telegram was read from the President regretting his inability to be in town in time for the meeting. Apologies for absence from the meeting were received from the Hon. Librarian, and Messrs. L. F. Schoenheimer and L. A. Bernays.

The following special correspondence was read:

"Royal Hospital, Chelsea, S.W.,
20th August, 1902.

"Dear Mr. Thomson,—I have received your letter of the 21st June, in which you inform me that the Council of the Royal Geographical Society of Queensland have unanimously conferred upon me the Honorary Fellowship of the Society in recognition of the services I have for several years rendered to the Society in my official and private capacities.

"I ask you to convey to the Council the expression of my most sincere thanks for the honour thus conferred upon me, an honour which I very highly appreciate.

"It is a great satisfaction to me to have been able in any small degree to help the Society, and I must sincerely trust that prosperity and success will continue to attend its efforts in the cause of Geography. I am not aware of any Geographical Society except the parent Society which does more useful and successful work than the Queensland Society, and I shall certainly always be interested in its labours."
"Lady Norman acknowledges with her thanks the kindly message of your Society, and

"I remain, yours very truly,
"H. W. NORMAN.

"The Secretary, Royal Geographical Society of Australasia, Queensland."

THE "HUGH NELSON RANGE." NORTH QUEENSLAND.

"Telegraph Chambers, Queen Street,
"Brisbane, 6th October, 1902.

"J. P. THOMSON, Esq., Hon. F.R.S.G.S., Honorary Secretary,

"The Royal Geographical Society of Australasia, Queensland.

"Dear Sir.—In the month of May, 1898, I made a barometrical examination of the country between the town of Geraldton, situated at the junction of the North and South arms of the Johnstone River, in S. Lat. 17deg. 32min. and E. Long. 146deg. 4min., and the town of Herberton, situated on the Wild River, a tributary of the Herbert River, in S. Lat. 17deg. 23min. and E. Long 145deg. 26min.

"In the course of my flying survey, which was undertaken at the instance of the Johnstone Divisional Board, for the purpose of ascertaining whether it would be possible to connect the Herberton district with the Johnstone River, at Geraldton, by means of a light railway of 24-inch gauge, I traversed the most extensive area of tropical jungle that I have met with in Queensland, extending from Geraldton for a distance of 51 miles, and reaching to within 12 miles of Herberton.

"At 51½ miles by my route, which followed the North arm of the Johnstone River and its tributary, the Beatrice River, right up to the head waters of the latter. I crossed the divide between the Johnstone and Herbert River waters, at an elevation of about 3,430 feet above sea-level.

"The range, which is one of the highest in Queensland, dominating a region of unsurpassed fertility and natural beauty, was at that time unnamed, and as I was the first authorised surveyor to ascertain its height, and deal with the question of the practicability of constructing a railway by that route, I named it the 'Hugh Nelson Range,' in honour of the then late Premier of Queensland and the present Preisdent of our Society, the Right Honourable Sir Hugh Muir Nelson, P.C., K.C.M.G.

"My report to the Johnstone Divisional Board, dated 27th May, 1898, was printed and circulated by the Board, and copies thereof were forwarded to the then Premier, the late Mr. T. J. BYRNEs, and the members of his Ministry, including the Honourable the Secretary for Public Lands.

"I understand that the name, 'Hugh Nelson Range,' has not been officially recorded on the maps of the State, and I think it would be well if the Society moved in the matter with a view to having the name officially recognised and duly recorded on the State maps.

"I am, dear Sir, yours faithfully,
"GEO. PHILLIPS, Licensed Surveyor."

On the motion of Lieutenant-Colonel Irving, M.R.C.V.S.I., seconded by Mr. A. Muir, it was resolved that a copy of the letter should be sent to the Government with a recommendation in favour of Mr. Phillips's suggestion.

THE HON. SECRETARY (Mr. J. P. Thompson, Hon. F.R.S.G.S.), submitted a paper by Mr. R. H. Mathews, on "The Murawarri and Other Australian Languages." On the motion of Mr. Muir this was taken as read. (See page 52.)
THE Hon. Treasurer (Mr. D. S. Thistlethwayte, C.E.), then read a paper on "The Hot Springs of Kusatsu." This was profusely illustrated by a very fine series of photographic and other pictures of the scenery and people there. (See page 83.)

The vote of thanks to Mr. Thistlethwayte for his interesting paper was moved by Mr. A. Muir, seconded by Lieutenant-Colonel Irving, supported by the Hon. Secretary, and carried unanimously. On the invitation of the Chairman, the Rev. D. Parry and Dr. Ahern made some interesting remarks on the subject of the paper, which they eulogised.

The meeting then adjourned for refreshments, which had been prepared and arranged by Mrs. J. P. Thomson.

MEETING AT MARYBOROUGH.

APRIL 14th, 1903.

Following the decision of the Council to hold meetings in the provincial towns of the State from time to time as opportunity occurred, and at the cordial invitation of the Mayor of Maryborough and others, the Third Ordinary Meeting of the Eighteenth Session of the Royal Geographical Society of Australia, Queensland, was held in the Town Hall, Maryborough, on Tuesday afternoon, April 14th, 1903, at 3 o'clock.

The President (Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.) occupied the chair, and was supported by His Excellency the Governor, Major-General Sir Herbert Chermside, G.C.M.G., C.B. (Patron), accompanied by Lady Chermside and Captain Webb, A.D.C., the Mayor (Alderman Dunn), Mrs. Dunn, the Hon. John Leahy (Minister for Railways), Hon. B. B. Moreton, M.L.C., Messrs. Henry Palmer, G. Stupart, F. J. Chariton, A. Jones, K. Miller (Town Clerk), Jas. Marsden and the Hon. Treasurer (Mr. D. S. Thistlethwayte), who in the unavoidable absence of the Hon. Secretary acted for him.

The hall was well filled with a most attentive and fashionable audience, amongst whom were many ladies and early residents of Maryborough.

In opening the proceedings, the President said the occasion of their meeting in Maryborough arose out of a desire on the part of the Geographical Society to hold meetings in various parts of the State, outside of Brisbane. They had had one about 11 months ago in Warwick, and it was very successful. Immediately afterwards the Society received a very warm invitation from the Mayor and local council to hold its next provincial meeting in Maryborough, and the Council of the Society gratefully accepted the proposal. He did not think it necessary to say much as to the objects the Society had in view. They looked upon geography as one of the most extensive and far-reaching of the sciences, embracing nearly all the other sciences as handmaidens. They encouraged as far as they could the study of geography throughout the whole of Queensland, and believed that in the first instance each locality should devote its attention to its own environment, so that the people might be informed as to the formation and natural characteristics of the country in which they lived. Geography, like most other things, began at home, and their aim was to instruct, as far as possible, the various centres of population as to what their environment was, and what the capabilities were of the district in which they lived. The design they had in view in visiting the provincial towns was, not so much to get members to join the Society—though they were always particularly glad to get members from all parts of the State associated with them—but to gain syn-
pathy and support for the objects of the Society. They now received no endowment, but every other kind of encouragement from the Government. He would be only too glad if this meeting should result in additions to their numbers. He was much struck with Mr. Stupart's description of the Eisteddfod as a great educational engine. That was what the Geographical Society was, but without the attraction of the music. If their meeting was not entertaining, he hoped it would be instructive.

The minutes of the previous Monthly Meeting were taken as read and duly confirmed.

A telegram from Mr. George Phillips, just returned from New Caledonia, was received, apologising for being unable to attend.

The following candidates were elected ordinary Members of the Society:—F. J. Charlton, Staff Surveyor (proposed by the Hon. Secretary), Peter Fleming (proposed by A. S. Kennedy), John Watts (proposed by the President).

Letters were read from Field Marshal Sir Henry W. Norman, G.C.B., G.C.M.G., etc.; from the Bishop of Likoma, Central Africa; as well as from the Under Secretary, Public Lands, the last-named consenting to a certain range being called the "Hugh Nelson" Range.

The President then called upon Mr. H. Palmer to read his paper on "Reminiscences of the Wide Bay and Burnett District up to the time of forming the present port of Maryborough." (See page 89.) Mr. Palmer, in a few preliminary remarks, apologised on the plea of ill-health for his inability to read the paper himself, and asked Mr. J. Marsden to do so for him. At the close of the paper, the President invited discussion, and added a few interesting comments on the first discovery of the district. Mr. C. F. S. Booker also spoke from the body of the hall.

Mr. F. J. Charlton then read his paper on "The Wide Bay and Burnett District." (See page 69.)

After the reading of the papers. His Excellency the Governor remarked on the value of preserving at first hand the records of early settlement, which in the lapse of time become historical, and complimented both authors on their interesting papers. The President also added a few remarks.

Alderman R. Jones moved a hearty vote of thanks to the contributors of the papers, which was carried by acclamation, and to which Mr. Palmer and Mr. Charlton briefly returned thanks.

After the Mayor had proposed a vote of thanks to the R.G.S.A.Q., in which he included the Governor as a member, for holding their meeting in Maryborough, carried by acclamation, the interesting proceedings terminated.

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SPECIAL GENERAL MEETING.

THURSDAY, APRIL 30th, 1903.

A Special General Meeting was held at the Society's Rooms, William Street, on Thursday, April 30th, 1903, the purpose of which was to accredit the Hon. Secretary on his departure on a tour round the world.

The President (the Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.) occupied the chair. On the President's right hand was His Excellency the Governor, Major-General Sir Herbert Chermside, G.C.M.G., C.B. (Patron), and on his left Mr. J. P. Thomson, I.L.D., Honorary Secretary. His Excellency was attended by Captain Harman, A.D.C. There was also present, in addition to the officials of the Society, a large and distinguished company.

The President said: Your Excellency, Ladies, and Gentlemen.—Before we begin the special business for which we have assembled here to-night, I have
an announcement to make to you which I am sure will be received with a deal of gratification. The announcement, I may say at once, is that Queen's University, of Kingston, Ontario, Canada, have advised, by letter dated February 24th, 1903, the Royal Geographical Society of Australasia, Queensland—that is ourselves—to the following effect:—“Dear Sirs,—I have pleasure in informing you that in view of the distinguished services to Science rendered by James Park Thomson, Honorary Fellow of the Royal Scottish Geographical Society, the Senate of the University of Queen's College has decided to confer upon him the honorary degree of Doctor of Laws (LL.D.) at its Annual Convocation on 29th April. I have, etc.” (Signed) Geo. J. Chown. (Applause.) I think it is extremely pleasing to know and to feel that the distinguished honours which Mr. Thomson—or, I should rather designate him, Dr. Thomson now—has received, as this follows the Peek Award given by the London Royal Geographical Society at a recent meeting, have been won by him without any outside patronage or influence whatever, and by sheer force of merit. (Applause.) He has devoted himself, and devoted those very distinguished qualifications which he possesses, all of a very high order, voluntarily to the cause of science, and it is very gratifying to me, and I think it must be so to the whole of the members of this Society, to know that these merits have been appreciated, not only by ourselves, but also by others, who perhaps are more qualified to judge of the merits of Dr. Thomson than even we are. The very high honour paid to him reflects itself upon this Society, of which Dr. Thomson has been the distinguished Honorary Secretary from its very foundation; in fact, he is the Founder of this Society; and doubtless without the immense exertions that he has put into it the Society would never have flourished in the way it has. I have the greatest pleasure, Dr. Thomson, in congratulating you on the distinguished honour which has now been conferred upon you. (Applause.)

His Excellency Sir Herbert Chermside said: Sir Hugh Nelson, Ladies and Gentlemen,—I have been requested to move that the thanks of the Society be conveyed to the Senate of the University of Queen's College, Kingston, Ontario, for the honour conferred upon the honorary secretary of this Society. I have very great pleasure in moving this resolution. I will not go over the ground that has just been touched upon by the President in pointing out the merits of the recipient of this honour, but I feel that in matters of reciprocity of this sort we should be only too glad to send a most cordial message of thanks for the distinction that has been conferred upon a representative Queenslander; it is this interchange of ideas between scientific societies—and not only scientific, but also artistic societies, embracing art, music, and all those branches in which in the present age there is such great activity of human thought—that promotes that higher international concord, as the result of which we all hope to see established, if not in our time, at a not very remote date, the general concord of the civilised world. I therefore feel an honour to move that a message of thanks be conveyed to the University in question for the distinguished honour conferred upon Dr. Thomson. (Applause.)

Lieut.-Colonel Irving: I have much pleasure in seconding the motion.

The President: It has been moved and seconded. “That the thanks of this Society be conveyed to the Senate of the University of Queen's College, Kingston, Ontario, for the honour conferred by them on the Honorary Secretary of this Society.” All of that opinion please signify in the usual way.

The motion was carried with acclamation.

Dr. Thomson said: Sir Hugh Nelson, your Excellency, Ladies and Gentlemen,—After the very lucid and complimentary remarks which our President has been pleased to make in announcing this matter to the Society, and after the very flattering manner in which he has conveyed his congratulations and the congratu-
lations of this Society to myself, I think very little remains for me to say at all. However, I should like to have this opportunity of expressing my very high sense of the appreciation of the cordial manner in which you have received this announcement, a manner which indicates complete unanimity. It gives me the supremest satisfaction to receive this honour, and to know that this motion has been received in such a cordial way. I regard it as another acknowledgment of the work that this Society has been doing for many years, and I look upon it as a compliment and a very high distinction indeed, not only to myself personally, but also to every member connected with the Society at large. It would be entirely out of place for me to dilate upon any of my achievements in the cause of science, but I may say this, that I have always endeavoured to do my very best in the interests of human knowledge, and I can honestly say that one of the first questions that has always occurred to me when about to do any act connected with the Society for the advancement of science has been—Is this in the interests of science?—Is it for the good of the Society?—Is it creditable to myself? If, after analysing the matter under consideration, I found that it satisfied these three conditions or questions, I then went into it heart and soul, and endeavoured to carry it out to the very best of my ability. I think that is the feeling which should animate everyone who makes a special study of scientific matters. I do not think I shall say any more, but give someone else an opportunity of speaking—further than to add, that I am very pleased indeed that this honour has come to me in Brisbane—that I have not had to leave Brisbane for the honour to be conferred upon me—that it has come upon me before starting on my all-round-the-world tour. I look upon that as a very great point indeed. I shall do my best in the interests of science to maintain the dignity of this Degree, ladies and gentlemen (hear, hear), and to uphold the honour pertaining to it. I shall do my very best to do that in every possible way. I shall endeavour to shape my course of life and acts to do so, and I hope I may be able to do it with your assistance and approbation. I thank you very heartily indeed, Sir Hugh Nelson, for your kind congratulation, and your Excellency for moving the motion, and I thank you, ladies and gentlemen, for the very cordial manner in which you have received it. (Applause.)

The President: Ladies and Gentlemen.—The occasion of our meeting to-night arises from the fact that our Hon. Secretary, Dr. Thomson, is about to make a tour through America and England, and part of the Continent of Europe. I think it is a very fortunate circumstance for us, because it will give our esteemed Honorary Secretary an opportunity of bringing our Society under the notice of other kindred societies in various parts of the world. The Government of this State have so far aided Dr. Thomson, in that they have granted him six months' leave of absence. I wish they could have treated him more liberally, but with all their desire to help, the times were such that they were only able to allow him to go on half pay. However, with private assistance from his friends, Dr. Thomson will be able to make this journey, and I would like before he goes that the Society should send him away fully equipped as our representative. That he will be able to disseminate information with regard to Queensland to a large degree, and that he will make the most profitable use of the opportunities that will be afforded him throughout the various centres which he will visit, none of us, I think, have the slightest doubt. That information is still required amongst the people at home with regard to Queensland and other parts of Australia we find instances almost every day. Very little is known, in fact, about us, even now, in the old country. As a matter of fact the average Australian knows a great deal more about England than the people of England know about Australia. I had a rather amusing instance of that by the last mail. An editor
—and editors, as you are aware, are generally supposed to be capable of instructing other people—wrote me a letter, asking me to further the circulation of the paper with which he was connected, a very nice paper, beautifully illustrated. When I opened it, the first thing that attracted my attention was a paragraph calling attention to the fact of which I have now spoken, as to the ignorance of people regarding the outlying portions of the British Empire. But this editor himself afforded a most striking instance of what he was trying to cure in other people, because he took a copy of his journal, put it into an envelope, and addressed it to me at New South Wales, Toowoomba. (Laughter.) That is only an instance of what occurs almost every day. We sometimes get letters addressed to "Brisbane, Victoria." Sometimes indeed I have letters addressed to me at New Zealand, and so on. But I am sure that the information that Dr. Thomson will be able to lay before the public through the means of kindred societies by whom he will be received, will be extremely useful, and I am sure will conduces very materially to the advancement of the State which we all love. Without further preface, because I am sure you will all at once recognise the importance of the matter to which I have drawn your attention, I shall move the following resolution:—"That, in view of our Honorary Secretary, Dr. James Park Thomson (LL.D.), Hon.F.R.S.G.S., being about to visit Great Britain, America, and the Continent of Europe, we now appoint him our delegate to all kindred societies in such places as he may visit, and authorise him to interview and confer with them on subjects of common interest, and that the geographical and other societies in the chief centres comprised in his tour be requested to receive Dr. Thomson as our accredited representative." (Applause.)

His Excellency said: Sir Hugh Nelson, Ladies and Gentlemen,—I rise to second the motion of our President, and in doing so I ask you, as representing this branch of the Society in Australasia—the Queensland branch—to reflect on what we are doing in naming a representative. Thought, science, and art, in their relations to a nation are not measured by its numbers. All history tells us that, and all here realise the great importance of national culture. Communities must take their place in the vanguard of progress according to what differentiates them from such stagnant and stationary civilisations as, say, China. What is necessary for young communities, we all feel, is that their mental activity should be indicated at as early a stage of their national existence as possible. It is a truism that nations are great by the amount of thought that they show, and their idealism. In history we always see that owing to some great contest, or some great movement, such as that of combining under military despotism, or something that makes a call on the national energies, there is a tendency to uniformly suppress the individualism of energy which marks the aspirations of young communities. It therefore appears to me, in seconding this motion, that it must be in accordance with the wishes of all present that Queensland, as soon as possible, should take her place as one of the communities advocating the advance of modern science and progress in that purely disinterested way that communities do who realise the importance of their own national characteristic in an equal number of these branches of human science. You are therefore asked to appoint on your behalf a representative, not only to the grand old parent Society in England, but to any other societies which your delegate may visit I have great pleasure in seconding the President's motion. (Loud applause.)

Lieut.-Colonel Irving said: Sir Hugh Nelson.—I have very much pleasure in speaking in support of the motion, and feel sure that Dr. Thomson will do this Society credit when he comes in contact with kindred societies in various parts of the world. I have been associated with him in connection with the work of this Society for the last sixteen years, and must say that a more thorough and conscientious worker I think it is impossible to be associated with, and I think L—Royal Geo. Society.
kindred societies will receive great benefit from his knowledge of geographical science in connection with Australia, New Guinea, and the Pacific Islands. We will be able to give them information they really require, and I hope he will also receive benefit from his tour. I wish him a pleasant trip and a safe return. (Applause.)

The Hon. F. T. Brentnall said: Sir Hugh Nelson, your Excellency, and Ladies and Gentlemen,—It has been suggested that one of the unofficial members of the Society should say a word or two in support of the motion which is now before the meeting. There can be no hesitation, I think, on the part of any member of this Geographical Society to say a word of commendation of the Honorary Secretary, whose labours have been indefatigable. He, to a very large extent, I think, has been the author of the Society, the founder of it, and the sustainer of it; for it has seemed to me, as long as I have had any knowledge of it, and certainly as long as I have had a connection with it, that the Society depended to a very large extent upon the earnest, diligent, assiduous labours of its Honorary Secretary. (Applause.) When it was decided that a word or two should be said in support of this motion by someone who does not occupy an official position in connection with the Society, I felt it would be ungracious to refuse a request of that kind. I am quite sure that the rank and file of the membership of the Society will give their heartiest good wishes to Dr. Thomson, and wish him a very happy and pleasant journey round the world, and we may feel satisfied from the manner in which, in the past, he has pursued the main object, the scientific side of his life, that he will acquire useful information, do credit to this Society, and come back a better-informed man, to be more fully equipped for the discharge of similar duties. I am quite satisfied that he will do credit to this Society wherever he may go, and I, therefore, on behalf of the ordinary rank and file membership of the Society, have the greatest pleasure in expressing our good wishes to Dr. Thomson on his departure from the colony. (Applause.)

The President put the motion, which was carried with acclamation.

Dr. Thomson said: Sir Hugh Nelson, your Excellency, Ladies and Gentlemen,—I feel it a very great honour indeed to be delegated by you to represent this Society on the other side of the world, or in any place where I may go where kindred institutions exist. I may tell you that for some years—for the last fifteen years, as a matter of fact—I have had, in the discharge of my duties as Honorary Secretary of this Society, to supply to kindred institutions, and to some of the leading men in Europe, a great deal of information indeed concerning this country. That is to say, not merely information filtering through the papers which I have contributed from time to time, and which have appeared here and in Europe, but information supplied by letter, in the ordinary course of correspondence. It is many years since I was asked by the Tyneside Geographical Society to supply information to some of the merchants there, who desired to know something about Queensland and its resources. It commenced there, and it has continued in England, Scotland and elsewhere, and sometimes on the Continent of Europe, and I can assure you that for many years past scarcely a week has passed that I have not had to convey information in the course of my correspondence. Now I may tell you another thing, which is not generally known. At a similar function here a little while ago, at the presentation of an award which the Royal Geographical Society, London, had been pleased to give me, his Excellency the Governor alluded to the fact that when scientific societies or business corporations desired information they called upon scientific men or scientific societies to supply that information and report upon it. It struck me at the time as being very remarkable indeed how accurate his Excellency's information was upon that very point, and I may give you an illustration to show
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how very applicable it was. About a year ago, the French Messageries Company thought of extending its operations to Queensland, and contemplated a call by their steamers at Brisbane and other Queensland ports. That company, strange to say, did not go to the Chamber of Commerce, or to any other body of the kind in Brisbane for the information they required, but came to me in the Geographical Society for information. (Applause.) The representatives of the company at Sydney, who are very old and distinguished members of learned societies in France, placed themselves in communication with me, and asked to be furnished with certain information, which would enable them in their position as representatives of their company to report faithfully upon the scheme which the company had in contemplation. I received this request, and by the act of the Premier of the State here, I collected the information and communicated it to the representatives of the company at Sydney, with my own remarks and observations, and with the result that I had a communication in fact several of them, from Sydney and from France, intimating that the representatives of the company had made a voluminous report favourable to the extension of the company’s operations to Queensland, and that that report was based largely on the information I had furnished. So highly valued, indeed, was this report not only to the company, but to the whole of the mercantile community of France, and to the scientific world of France, that they had most of it read before various institutions in Paris and other French centres, and published in their journals, and they acknowledged in the most cordial manner the valuable information which had been received from me, as representing this Society, upon subjects they then had under consideration. Now, I think that in itself is an ample confirmation of the remarks which his Excellency used on the occasion to which I have alluded, and more than that, it is a very great compliment indeed to this Society, and shows how essential it is, for the welfare and progress of the community, that attention should be given to the scientific side of our life as well as to the industrial. I have often had calls for similar information from home, and been asked frequently to take a trip to the old country to give it. I had never been in a position to do so, but an opportunity offered quite recently. I had an invitation from my brother in Sydney to accompany him to the old country, to see our old home, and thought it would afford me an opportunity of doing, in the interests of this Society, what I had long had at heart. My wife, I am very happy to say, and my children, facilitated the acceptance of this offer in the most cordial manner imaginable, and it affords me the greatest possible pleasure to acknowledge the fact on this occasion. I decided on accepting the invitation, and I hope in going home that I am doing so thoroughly equipped, because from the very day I accepted this invitation I have busied myself in making adequate preparation for the journey, so that I shall be able to do credit, not only to the Society, as I hope to do, but also to the interests of this country, of which I have the honour to be a citizen. (Applause.) I can assure you that the trip itself means no mere pleasure to me; it means that I shall have a very great deal of hard work to do, but it also means, at the same time, I shall be able to do that work, or I hope to be able to do it, under the very best auspices, because I shall be able to arrange with kindred institutions in the old country to work under their auspices; and receiving from you to-night, as I have done, such a cordial reception and greeting, I cannot help thinking that I shall go away much sustained and very much comforted indeed after the wrench from my own family and from those in this Society for whom I entertain the greatest esteem and respect. I have always made it a point in labouring for the Society, and in labouring for the interests of this country, to do so as unselfishly as possible I think I can honestly say, on the eve of my departure, before such a distinguished audience, that I have never considered myself in the glorious work of the
Society. I consider it a work which is not only universal, but that it is a most useful branch of science, and that it is yearly and daily becoming more important and more recognised that a wide, comprehensive study of geographical science in all its branches is a most necessary equipment for a man socially, intellectually, and industrially in the pursuits of life. I would like to see greater interest and enthusiasm in the work, and I hope that, as the people of this country become better acquainted with the importance and scope of such an institution as ours, there will be a more active interest taken in its working. The other day, we read in the "Courier" of a very important judicial matter which had occurred in the old country, and connected with a portion of the British Empire—I mean New Zealand—where the Chief Justice referred in regrettable terms to the lack of geographical knowledge of the conditions of New Zealand and other parts of the Empire, which, he said, very materially affected the administration of justice and the progress of intellectual and industrial life. Until people realise how closely connected this knowledge is with the industrial progress of the community, the community itself cannot hope to progress industrially, scientifically, and intellectually, as other nations of the world do. Without dwelling further upon this subject, I can only say that I shall go away very fully equipped, feeling grateful for the kindly remarks which have passed from Sir Hugh Nelson in proposing this motion, and to His Excellency in dilating so eloquently on the advantages accruing from scientific knowledge. I think when we have gentlemen of the standing of the Governor and Sir Hugh Nelson expressing their views in such a manner as they have done, the visitors whom we have the pleasure of welcoming here from time to time will take heed of the remarks made, and continue to give their support and sympathy to matters of geographical knowledge—to the advancement, the material and intellectual progress, not only of themselves individually, but of the whole country. I thank you very much, Sir Hugh Nelson, and ladies and gentlemen, for the very kindly manner in which you have received this resolution, and can assure you that I shall go away from here with the full determination to do my best to sustain the honour and credit of this Society, and to advance its interests and the State as a whole. (Applause.)

Mr. D. S. THISTLETHWAITE: A resolution has been placed in my hands, but before moving it I should like to add my congratulations to Dr. Thomson for the very great honour recently conferred upon him. For the last four or five years I have been intimately associated with Dr. Thomson in the work of the Society, so that I am in a position to testify to his untiring zeal and energy in the cause of science generally, and the advancement of the Society. He has worked very hard, and has very deservedly earned his reward. I have often been very much astonished at the amount of time and labour he has been able to bestow upon it. Still, ladies and gentlemen, I would not wish you to think that we entirely leave the work to our esteemed Honorary Secretary. I do not wish you to think we are like that memorable board of directors, of whom you may have heard. You will perhaps recollect that it was at a very stormy meeting of shareholders, and the directors were having "un mauvais quart d'heure." They were being severely criticised for their mal-administration, when one of their number in defending himself and his colleagues for their action, very indignantly wound up his speech in this way—"You appear to think, gentlemen, that one half of the board do all the work and the other half do nothing at all. But I can assure you it is quite the reverse." (Laughter.) We are fortunate in having a Patron and a President who take a real and intense interest in the Society, and ungrudgingly give of their time and their labour, very much to our benefit and advantage. I heartily wish Dr. Thomson a very enjoyable trip home, and generally a good time of it, and I beg to move the
resolution standing in my name—"That a letter be addressed to the president of kindred societies in each of the chief centres to be visited, enclosing a copy of the foregoing resolution."

Mr. Alexander Muir: I have very great pleasure indeed in seconding the motion which Mr. Thistlethwaite has just read. In doing so, I am also prompted, if I may be permitted, although a little belated, to offer my congratulations to Dr. Thomson on the honour conferred upon him. I have had the good fortune to have been associated with him for some eighteen years in connection with the work of this Society—since its foundation, in fact—and I know something of the work he has done. At the same time, I was rather amused at Dr. Thomson himself, when, in his remarks, he referred to the amount of work which he had undertaken to do on his proposed journey. Now, if I were to undertake a journey of this sort, I think I should have considered it a splendid opportunity for having a real good rest, an opportunity for thorough relaxation, but I am perfectly certain that Dr. Thomson has mapped out for himself a very great deal of work indeed, and that he will perform it to the advantage of the Society, to the good of the State, and I sincerely hope to his own good also. It may be taken for certain that, if Dr. Thomson had thrown anything like the energy into his own private affairs that he has put into the work of this Society, he would have been a wealthier man. Still, I scarcely think he would have been a happier man; because I quite believe that if the distinction just conferred upon him had been offered him on the one hand, or £10,000 on the other, he would have chosen the distinction. (Dr. Thomson: Hear, hear.) I feel quite certain if I know Dr. Thomson at all—and I ought to know him—that he is a man who values the work he has devoted his life to, his life’s work, much more than personal aggrandizement or wealth. (Hear, hear.) I have very great pleasure indeed in seconding the motion.

The motion was unanimously agreed to.

The remainder of the evening was spent in social intercourse, the partaking of refreshments, and the leavetaking by members and friends present of Dr. Thomson, whose departure was fixed for the following morning.

ANNUAL GENERAL MEETING.

18th SESSION: 1902-1903.

The Eighteenth Annual General Meeting of the Royal Geographical Society, Australasia, Queensland, was held at the rooms of the Society, Public Library Building, William Street, Brisbane, on the evening of Friday, the 28th August, 1903, at 8 o’clock.

The President, Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L., occupied the chair, and was supported by His Excellency the Governor, Patron (who was attended by Lieut. Newton, acting A.D.C.), and officers of the Society. A very large number of the Fellows, Members, and friends of the Society were present, together with very many ladies, the hall being filled.

On the motion of the Hon. Treasurer (Mr. D. S. Thistlethwaite, C.E.,), the minutes of the previous ordinary Monthly Meeting of the Society were taken as read and duly confirmed.

Messrs. A. St. Ledger and G. S. Hutton were elected as ordinary members of the Society, and the Hon. W. L. Allardyce, C.M.G., Colonial Secretary and Receiver General of Fiji, as an hon. corresponding member, on the motion of the President.
THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

REPORT OF COUNCIL.

EIGHTEENTH SESSION. 1902-1903.

In submitting this, the Eighteenth Annual Report of the proceedings of the Royal Geographical Society of Australasia, Queensland, your Council desires to express its pleasure at the continued advance in the Society's operations in its efforts to encourage the study of geographical science, and in the interest taken in the work of the Society by its members and the public generally. The monthly meetings have been well attended, while of the value of the papers read at them it is unnecessary to refer, since ample testimony of their repute is provided by the number and character of the audiences which they attracted.

The past year has seen an addition of sixteen new Members to the Society, while on the other hand we have to deplore the loss by death of Thos. H. Owens, Esq., an esteemed Member of Council, and of T. de M. M. Prior, Esq., M.L.A., who had but recently joined the Society. The total number of Members is 210, and of Honorary and Honorary Corresponding Members, 26.
The Hon. Treasurer, whose statement of receipts and expenditure is herewith submitted, reports that the funds of the Society are in a fairly satisfactory condition, notwithstanding the heavy expenditure which the Session's transactions have involved. Still, there has been a considerable falling off in the amount of annual subscriptions received; and it would be of great assistance if Members would bear in mind that the work of the Society must necessarily suffer and be seriously hampered if annual subscriptions are allowed to fall in arrears.

Additions to the Library are most satisfactory. Donations and exchanges from the principal kindred institutions throughout the world continue to arrive, and steadily increasing in number. A valuable gift of three volumes of Cook's Voyages (1784 edition) was presented to the Society by the Hon. B. B. Moreton, M.L.C., and an interesting relic of one of our early explorers, viz., a prismatic compass used by the late William Landsborough when examining the country around the Gulf of Carpentaria, was donated by Chris. Francis, Esq.

The seventeenth volume of the Society's Journal was issued to Members and our exchange institutions early in the session, and it is gratifying to note the increasing applications for the publication, as evidence of the growing interest taken in the geographical work of this State.

The ordinary monthly meetings have, as stated above, been well attended; and, in accordance with a previous decision to hold meetings in the provincial towns of the State from time to time, the second country meeting was held at Maryborough in April last, when an exceedingly interesting paper dealing with the early settlement of the district, entitled "Reminiscences of the Wide Bay and Burnett District up to the time of forming the present Port of Maryborough," was read by Mr. H. Palmer; this was followed by an exhaustive paper on "The Wide Bay and Burnett District," by Mr. F. J. Charlton, Staff Surveyor. The meeting, which was a large one, was held in the Town Hall, on the invitation of the Mayor, and His Excellency the Governor (Patron of the society) and Lady Chermside were present. On Aug. 1st, 1902, the Society celebrated the 83rd birthday of the Hon. A. C. Gregory, C.M.G., F.R.G.S., by a river trip in the Government steamer "Lucinda" in the afternoon, and a conversazione at the rooms of the Society in the evening. Mr. Gregory was the first President of the Society, and is well known as one of Australia's greatest explorers. Both functions were very largely attended by a representative gathering of scientific bodies, and ladies and gentlemen. During the evening Mr. Gregory was presented with the Honorary Diploma of Fellowship of the Royal Scottish Geological Society. A Special Meeting and conversazione was held
on the 31st October in the Society's Rooms, when the Cuthbert Peek Grant of the Royal Geographical Society of London was presented to the Hon. Secretary (Mr. J. P. Thomson, Hon. F.R.S.G.S.), "for his services in promoting the interests of geography in Queensland." The award took the shape of a handsome piece of plate, and was handed to the recipient by His Excellency the Governor, the Diploma being presented by the President. The attendance of ladies and gentlemen was exceedingly large, the Rooms being crowded in every part. On the 30th April a conversazione was held in the Society's Rooms to bid farewell to the Hon. Secretary, prior to his departure on six months' leave of absence to visit America, Great Britain, and Europe. Additional interest was given to the proceedings by the announcement by the President that the Senate of the University of Queen's College, Kingston, Ontario, Canada, had decided to confer on Mr. Thomson the honorary degree of Doctor of Laws (LL.D.), at the annual convocation to be held.

The following papers were read before the Society during the session:—The Anniversary Address, by the President, Right Hon. Sir Hugh M. Nelson, K.C.M.G., D.C.L.; "The Physical Geography of Australia, Part 5. Geology and Natural Products," by J. P. Thomson; "The Murawarri and other Languages," by R. H. Mathews, L.S., etc.; "The Hot Springs of Kusatsu, Japan," by D. S. Thistlethwayte; "Reminiscences of the Wide Bay and Burnett District up to the time of forming the present Port of Maryborough," by H. Palmer; "The Wide Bay and Burnett District," by F. J. Charlton, Staff Surveyor.

Carrying out the Society's object in instituting "The Thomson Foundation Medal,"—competitive essays—open to the public generally as well as Members of the Society—were invited, the subject being "The Commercial Development, Expansion, and Potentialities of Australia." To this invitation two papers were received, and are now under consideration.

Your Council takes this opportunity of again recommending:—(1) The suspension for the ensuing session of so much of the Rules as provides for the payment of an entrance fee; (2) the re-appointment of the Hon. A. C. Gregory, C.M.G., F.R.S.G.S.; Messrs. Alex. Muir, J.P.; and C. W. de Vis, M.A., as Hon. Councillors and Referees.

For the Council,

D. S. THISTLETHWAYTE.

Pro Hon. Secretary.
# BALANCE SHEET, 1902–1903.

**THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.**

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Examined with Bank Pass Books, Vouchers, &c., and found correct.

25th Brisbane, July 24th, 1903. C. W. DE VIS, **Auditor.**

D. S. THISTLETHWAYTE, **Hon. Treasurer.**
The Royal Geographical Society of Australasia,
QUEENSLAND.

DIPLOMAS OF FELLOWSHIP.

The following gentlemen have been awarded the Diploma of Fellowship under Section IV. of Clause 3, Constitution and Rules (See page 2 of cover):

Honorary:
His Excellency Sir William MacGregor, K.C.M.G., C.B., M.D., D.Sc., Hon. F.R.S.G.S., etc.
Hon A. C. Gregory, C.M.G., F.R.G.S., Hon.F.R.S.G.S. M.L.C., etc.
The Right Hon. Lord Lamington, G.C.M.G., B.A., F.R.G.S., Hon. F.R.S.G.S., etc.
Field Marshal Sir Henry W. Norman, G.C.B., G.C.M.G., C.I.E., etc.

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C. B. Lethem, Esq., C.E.
D. S. Thistlethwayte, Esq., C.E.
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(P) Members who have contributed papers which are published in the Society's "Pro-
ceedings and Transactions." The numerals indicate the number of such contributions.

(PP) Past President.

A dagger (†) prefixed to a name indicates a member of the Council.

Life members are distinguished thus (†).

Should any error or omission be found in this list, it is requested that notice thereof
be given to the Hon. Secretary.

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QUEENSLAND

GEOGRAPHICAL JOURNAL

(NEW SERIES).

INCLUDING THE PROCEEDINGS OF THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

19th SESSION,
1903-1904.

J. P. THOMSON, LL.D., Hon.F.R.S.G.S., Etc., Etc., Honorary Editor.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. XIX.

PUBLISHED AT BRISBANE BY THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.

NOTE.—All communications should be addressed to the Hon. Secretary, at the Rooms of the Society, Brisbane.
THE
Royal Geographical Society of Australasia,
QUEENSLAND.

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His Excellency Major-General Sir HERBERT CHERMSIDE, G.C.M.G., C.B., etc

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His Excellency The Right Hon. Sir HUGH M. NELSON, K.C.M.G., D.C.L.,
F.R.G.S., Etc.

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D. S. THISTLETHWAYTE, Esq., C.E.

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QUEENSLAND.
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N.B.—All Donations presented to the Royal Geographical Society of Australasia, Queensland, are acknowledged by letter and in the Journal of Proceedings.

NOTE.—All Communications should be addressed to the Hon. Secretary, at the Rooms of the Society, Brisbane, Queensland.
THE MYSTERY OF ANCIENT OPHIR.*

By the Hon. F. T. BRENTNALL, M.L C.

Our subject opens to our review remote periods of history. It supplies interesting materials for archaeological reflections and investigations. It suggests important historical comparisons. It sheds a side-light upon a wide-spread system of ancient religion, known by the term of litholatry—the worship of stones of a particular shape. It takes us to a region which has passed through many forms and conditions of occupation; through many phases of civilisation; but which, through all its variations of production, and all its vicissitudes of domination, has maintained its reputation as a vast and prolific producer of gold.

It exhibits to our observation an extensive series of mysterious ruins, which have been a wonder and a problem for centuries. At different periods during the last 500 years those ruins have astonished travellers, soldiers, and missionaries. Often have the questions been asked:—Whose hands piled up these immense structures? For what purposes were they built? For forts intended to protect men and precious property? Or, For temples for nature-worship?

There cannot be any doubt about the golden wealth of the region formerly known as Monomotapa. Numerous Portuguese authorities asserted this at a time when Portugal had the run of the entire country. Portuguese missionaries stationed themselves in some of the important centres of the country. Had Portugal been a colonising power the whole of the territory now known as German East Africa and British Rhodesia might have belonged to that country. But, with our traditional British pride, may we not say that a better fate awaited it? Perhaps it is to the credit of Portugal that in the

* Read before the Royal Geographical Society of Australasia, Queensland, 19th October, 1903.
16th and 17th centuries its rulers were more eager to win the Kaffirs to the faith of the Catholic Church than to subjugate them and seize their territory.

In the archives of the Propaganda of the Faith in Rome there is a letter from Lisbon, dated June 28th, 1631; in which is the following:—"The kingdom of Monomotapa is very large and full of people; nearly all pagans, and without knowledge of religion. It is rich in gold mines, ebony, and ivory. And in the opinion of many it is the ancient Ophir, where Solomon sent his ships which sailed through the Red Sea to the coast of Africa. A very easy navigation and full of ports. In this kingdom the Portuguese hold possession of many places near the sea, and an immense number in the interior. I shall commence with the city of Sofala, which beyond the Cape of Good Hope is the first we find inhabited by Christians. It is a fortress of the king of Portugal, governed by a Portuguese Hidalgo, subject to the Governor of Mozambique."

In those sacred archives are many important letters bearing on the condition of the people, and on the forms of government prevailing in south-eastern Africa, two or three centuries ago. Since then many travellers have gone, for various objects, to those interesting districts. By some of them wonderful stories were told of splendid ancient ruins, which led the imagination back to periods and conditions of occupation now lost in the haze of antiquity.

The first exciting flush of interest in the Titanic ruins of the ancient empire of Monomotapa led to exaggerated conceptions of their character and objects. That period of sensation has passed away, but a certain fascination still invests the subject. The period of calm investigation has come. This is an age when investigators desire and aim to get at the origin of material things, and at the beginnings of all history; an age of scientific research. There are not many new countries to be explored, so scientists dive into the depths of remote history. Able men devote their lives to the interpretation of the signs and symbols of ancient sacred worship, and of the hieroglyphic records of worn-out national life and history. Especially are they eager to search out all that can be discovered concerning the sayings and doings of peoples whose supremacy among their contemporary nations has for ever passed away. Nations which lived their day, made their display, then lost their power and glory.

One of those decayed nations was Phoenicia, a small maritime country on the shores of the Mediterranean Sea. This insular power was in the brilliant zenith of its glory about 30 centuries ago. What Great Britain is to the commercial intercourse and the maritime relations of the world now, Phoenicia was to the international trade and traffic of the age when Hiram was king of Tyre, and David and Solomon were successive kings of the land of Israel. On this point
we may quote from a book written by the Hon. A. Wilmot, the following:—"The history of the people of Phœnicia, to whom we trace the litholatry exhibited in ancient monuments on the shores of the Mediterranean, in the fertile country of Arabia, and amidst the ancient gold-mines of South-eastern Africa, is a study of absorbing interest. What the great British Empire is to the 19th century Phœnicia was to the distant ages when Solomon’s temple was built at Jerusalem, and Hiram, king of Tyre, sent out expeditions to the distant shores of India, Arabia, and South Africa."

It is in those ancient historical annals of the Hebrews, which the religious belief of many peoples has invested with a superior sacredness, that we find the most precise, explicit, and reliable references to some region of enormous wealth, which then was designated "Ophir." Was Ophir the name of a specific and exclusive locality or country? On this point opinions differ. Most of the earlier critics were agreed that it was some particular locality, or region, where gold could be easily obtained. In Dr. Smith’s "Dictionary of the Bible" we read that it was:—"A seaport or region from which the Hebrews in the time of Solomon obtained gold." The erudite article which thus begins names three or four countries on which conjecture expended itself. These were Armenia, Arabia, India, Africa, and many arguments are cited in favour of each hypothesis. One writer quoted in that article allowed that there might have been two Ophirs; one in India, the other in Arabia. In the interesting book written by the Hon. A. Wilmot, who was commissioned by Cecil Rhodes "to make the best researches in his power in the archives and libraries of Europe with the object of discovering all possible traces of the history of Monomotapa, the land which is marked ‘rich in gold’ on the maps of the 16th and 17th centuries; also of the great Zimbabwe ruins which have been brought to notice almost simultaneously with the conquest of the country in which they are situated," the author says:—"Ophir was a generic title for a rich commercial country, used in the same way as ‘Tarshish.’ The latter name we know was given to more than one place; so there may have been an Indian as well as an African Ophir. The former would be on the Malabar coast; the latter was inland from the Sofala coast, in South-east Africa (Monomatapa)."

A preface to this book was written by Mr. Rider Haggard; he says:—"Within the last thirty or forty years Baines and other travellers, now dead, reported the existence of great ruins in the territories known as Matabeleland and Mashonaland, and on the banks of the tributaries of the Zambesi River, which, from their construction, must have been built by a race of civilised men, and in 1871 Herr Mauch re-discovered the fortress-temple of Zimbabwe, that now, as in the time of the early Portuguese, was said to be
nothing less than the site of one of the ancient Ophirs.” Here again we have the idea of more Ophirs than one.

Gold is inseparably associated with the designation “Ophir.” The gold of Ophir was renowned for quality as well as quantity. King David, in the last days of his life, inspired by reverent regard for the temple and worship of Jehovah, gave out of money which he held by his own right, 3,000 talents of gold for the adornment of the sacred structure which his son Solomon was to build. The nobles of his kingdom also contributed 5,000 talents of gold. According to one authority the talent of gold contained 2,750 ozs.; so that the 8,000 talents handed to Solomon for his great building contained 22,000,000 ozs. Truly the precious metal was plentiful in those days! And somewhere, within navigable distance of Palestine, there must have been a vast auriferous region whence that gold came. During the reign of David’s successor it continued to come. Always the region, whence it was obtained, was designated “Ophir.”

It is only in recent years that we have had definite and confident statements by competent travellers that the Ophir of the Phœnicians and Hebrews was in South-eastern Africa. With most of the old writers it was a matter of conjecture and surmise. Even the larger British Encyclopedias dispose of this important subject in a few sentences. It should not have been either too trivial or too abstruse for a contribution to the Encyclopedia Britannica. Thomas Baines, a British geographer and artist, was early in the field of exploration. His book, “The Gold Regions of South-eastern Africa” was published in 1877. Since he called attention to the stupendous evidences of mining on a gigantic scale at some remote period of the world’s history, many intrepid travellers have gone on his tracks. One after another have endorsed his convictions; till now it has become an accepted fact that, no matter where other Ophirs may have been, nor how many of them, the principal source of supply of gold for Tyre and Jerusalem was Africa.

But for the sacred books of the ancient Hebrews the account of one of the most interesting periods of human history would be shrouded in the impenetrable mists of antiquity. Thanks to those narratives, and to the historian Josephus, we know that when king David was in the prime of life Hiram ascended the Tyrian throne and soon became his friend and adviser. After the death of David the alliance continued with Solomon for twenty years. It was an alliance of mutual service and interest, as well as of friendship. Many of the subjects of Hiram were men of the sea; expert mariners. Solomon owned the famous port of Ezion-geber, on the Red Sea; which was made by him a mart of commerce and a harbour of navigation.
In I Kings ix, 26-28th verse, we read:—"King Solomon made a navy of ships in Ezion-geber, which is beside Ezloth, on the shore of the Red Sea, in the land of Edom. Hiram sent in the navy his servants, shipmen that had knowledge of the sea, with the servants of Solomon. And they came to Ophir, and fetched from thence gold—420 talents, and brought it to King Solomon." This navy made triennial voyages, and always came back richly freighted with gold, silver, gems, birds, valuable odorous timber, and apes. In the next chapter we find an amazing statement:—"Now the weight of gold that came to Solomon in one year was six hundred threescore and six talents of gold." Although outside these Hebrew records we have not much confirmation of these statements, they cannot be treated as legends. We must accept the fact that there were millionaires in those days.

The commercial eminence of Tyre was no less renowned than its voluptuous nature-worship. Mr. Wilmot writes:—"Luxury fostered the love of gold, and all that could gratify the desires of a sensual people. Now, more than ever, were immense efforts made by the most skilful mariners, miners and colonists of antiquity. Arabia was treated as the pivot, or point of departure, and Ophirs of the southern seas were opened to the world. It is probably to a period shortly before the establishment of the large Tyrian commercial relations with Ezion-geber that we may trace the first visit of Phœnician Nature-worshippers to Monomotapa, where they built the colossal edifices whose remains now stand sphinx-like for explanation."

It would, did time permit, be worth while to bring within tangible vividness some indisputable evidence that this conclusion is not without foundation. One of the most reliable of recent explorers is Theodore Bent, whose book entitled " Giant Cities of Mashonaland," is now a standard. After describing "The Great Zimbabwe" in the territory of the British South Africa Co., between the Zambesi and the Limpopo, he contends that the buildings were erected by people who practised the nature-worship of Phœnicia. On many stones the phallus is realistically, or conventionally represented, while numerous towers and pillars are of the same character.

In passing it may be instructive and interesting to consider the real meaning of the astounding figures found in the Bible, relating to gold. They sound almost like a fairy-tale. The mind does not readily comprehend what is meant by a yearly income of 666 talents of gold. It means 1,831,500 ozs. Truly a royal revenue! It is very nearly as much as all the miners at Gympie have got in 19 years; more than all the Rockhampton district, Mt. Morgan included, has produced in 11 years; more than the great Charters Towers field has yielded in four years. All the goldfields of Queensland during the years 1901 and 1902 did not produce so much gold by 135,494 ozs. as one year's
income of King Solomon. As the gold of Ophir is always described as "fine," we may compute its value at £4 per ounce. This would give that renowned monarch an annual income of £7,326,000. It sounds like fiction—like an inflated legend of some old story-teller. But the records of ancient Judaism are not composed of romances.

Where was Ophir? While a lot is said about the good things that came from that place, nothing is said definitely about its geographical situation. This is a remarkable omission. Its location is a hoary mystery; a riddle of thirty centuries. When the pomp and magnificence of Solomon disappeared, and the rival factions of the nation, after his death, indulged in civil strife rather than maritime commerce, the mists of oblivion seem to have begun to gather over the region from whence that luxurious king had drawn the material elements of his splendour.

What conjectures and surmises have been indulged—what theories and hypotheses have been invented—about the interesting problem of the source of the gold and gems which contributed so profusely to the regal opulence and renown of the most affluent and voluptuous of all the Hebrew Kings! Whither went those fleets which triennially made voyage to some distant and unfailing El Dorado? From what perennial source came the precious metals, the dazzling gems, the gorgeous birds, the ornamental feathers, the superior timber, and the grotesque animals, which gratified and enriched a monarch whose reputation for wisdom, and whose renown for opulence and splendour had been circulated far and wide?

These are questions which, for many centuries, have puzzled the brains of antiquaries and philologists. A place of so much maritime and commercial importance must have a history, however obscure. Where are the records? The sublime poetry of Ezekiel, which describes the downfall of Tyre, says nothing of the mysterious source which contributed so substantially to the power and grandeur of that small kingdom. Where was the secret of lost tablets and inscribed parchments to be found? Many able men have tried by conjecture, by cupidity, by research, to locate the fascinating region. They have recognised the probability of gold still being found there. But the problem could not ever be solved by archaeological investigation in schools and academies. The search had to take another form; had to be made by hardier methods; to be consummated amid more substantial evidences. Not by leisurely pursuit of thought on tracks of philology and theoretical conjecture could this riddle be solved; but by tiresome exploration on the tracks of miners who have slept the sleep of the dead for ages. Wherever the Ophir of Bible history was, there must have been extensive mining.

Mining, especially deep-mining, leaves palpable evidences in mounds of excavated debris, tangible proofs and monuments of large
industry. Surely also, where masses of toiling men have annually turned out gold and silver by millions of ounces there ought to be relics of human habitation, and remains of public buildings. Naturally also one would expect that mausoleums would be found where the dead workers were buried.

Many travellers have gone in search of Ophir. It is their narratives which interest us now. We are not much concerned with the derivation of the word Ophir; nor with the fine-spun theories of academic philologists about the meaning of the word, or the place to which it referred. This is not a matter of fable or fabrication. It is a question of fact to be settled on the spot.

On the eastern side of the continent of Africa, laved by the everlasting surges of the Indian Ocean, the most valuable stretch of coast line has for four centuries been in the possession of the un-enterprising Portuguese race. There has been a deplorable lack of colonising genius. How different might have been the condition of South-eastern Africa if that door of entrance had been in the keeping of the race which, more than all others, has displayed a genius for colonising, and for wise, amicable, and honourable dealing with the native races of any country which it has secured by discovery, or acquired by conquest. By what are called "Concessions" Great Britain has secured rights of access to central Africa of a most valuable kind. From Beira on that coast runs the railway to Mashonaland, which forms a part of that extensive and fertile territory which now, through the sagacity and enterprise of one of Britain's noblest sons, bears his worthy name "Rhodesia"; and for the good alike of England and Africa is painted red on modern maps. About 150 miles further north is Chinde, at the entrance of the mighty Zambesi.

Dr. Peters says:—"As England gained a foothold in Beira by the Mashonaland Railway Concession and a customs treaty, which gives goods destined for the British hinterland duty-free transit through Portuguese territory; so in Chinde—the actual harbour of the Zambesi—England has procured for herself an exceptional position through the so-called 'British Concession.' The navigable Chinde estuary was discovered by an English officer, and the Zambesi was thus opened up to modern navigation." From this port, on Easter Monday, A.D., 1899, Dr. Peters and his party started up the Zambesi on a search for ruins and riches. It was a quest worthy of a dash- ing explorer.

A few days afterwards he wrote in his diary:—"For years I had had certain fantastic ideas about Fura. This time, for once, the reality far surpassed all my fancies. Anything more picturesque, and at the same time more mysterious, even the fancy of a Rider Haggard could not have depicted, than the entrance into this an-
cient and fabulous Eldorado. Like two rock castles the masses of slate stood on the left and right of the Muira River, overgrown on the top by a dense growth of green. Below the waters of the river rippled, reflecting the dark blue sky of the tropical world. Before us a river valley opened, into which, on both sides, the dark rock walls descended; at first like waves of hills; then steep and wide; and above this charming landscape lay a sinister silence of death; Sabbath stillness, as it prevails in the tropics at midday. Thus did I find the eastern entrance to Fura, on Saturday noon, April 15th, 1899." In this extract there are three noticeable expressions: "Fura," "Masses of slate," "Fabulous Eldorado." Already the glow of hope has kindled the enthusiasm of the explorer for auriferous country.

At many points of his subsequent journeyings he gives us glimpses of beautiful scenery. Here is one:—"These mornings on the African high plateaux represent the finest weather one can imagine; a bright air plays around hill and veldt; the atmosphere becomes transparent; every sound is distinctly heard. The light is like that of a sunny September day in England, but much more intense. Light and shade are sharply contrasted. The eye penetrates for an immense distance; and, above all this splendid manifestation of Divine greatness the dome of the sky is extended deep and wide; with a beauty which the poor inhabitant of the north has no chance of seeing at home. The Italian blue sky is dim compared with this radiant brilliancy. Dewdrops sparkle on grass and trees like millions of pearls and diamonds, for a light hoar frost is spread over the landscape. Towards seven o'clock the burning sun-ball rises higher, and absorbs all these jewels with which Queen Night has decked the earth. A march amid such surroundings is better than all the luxuries of Europe, and fully repays all the worries and exertions of African travel."

But we are told of other things besides natural scenery. He sojourned in the region of diversified zoology, where animals of monstrous structure abounded. He tells us of the ferocious alligator, the repulsive crocodile, the ungainly hippopotamus. He points us to a group of chattering monkeys, or a family of baboons. He writes of the stealthy panther, the pretty but treacherous leopard, the roaring monarch of the forest; of giraffes, bisons, elephants. Besides these were sundry flocks or herds of lesser game; sport for the rifle, or food for the travellers.

But the main object of Dr. Peters was something more practical, more substantial, more serviceable, than admiring scenery, or shooting game, or studying zoology. His was not the exclusive mission of the geographical explorer. He gives detailed descriptions of the topography of the country; he describes, with the touch of a literary artist's hand, some of the exquisite scenery through which he passed; he occasionally grows enthusiastic about the foliage on the banks of the
majestic rivers, the grandeur of massive mountain scenery, the fantastic shapes into which the magic hand of nature has formed huge upheavels of mountain granite; for example: "The country now became extraordinarily rich in water; rivulet after rivulet runs from the eastern margin straight through the valley towards the Ruenje. A schist mass rose on the eastern side; the west was still granite in fantastic shapes and forms. We could turn again to contemplation of the landscape, which had become most charming, particularly on the western side, where the granite still continued to cheat one's fancy. There, big and distinct, rising from the rock, the figure of a knight with mantle and sword stood, hand on hilt, gazing over the wide valley at his feet. When we approached nearer, the stony head was as the head of a skeleton. The likeness was so deceptive that Herr Gramann and I stopped for a moment, not knowing whether we had a trick of nature or a work of art before us. Around him the usual caricatures and forms of fantastic pinnacles and rocky castles fronted us."

Dr. Peters was really after the discovery and acquisition of mineral properties rather than the excitement and pleasure of travel. He was curious to see the most marvellous and interesting remains of a lost civilisation about which the haze of mystery hung, but more eager to find the sources of the precious metals about which ancient history tells such marvellous stories.

Gold has always had the fascination of the most precious of metals. Men make sacrifices for any object that is fascinating. For gold they will submit to hardship and privation, to sacrifice and suffering. No danger terrifies them; no obstacle deters them; nothing but absolute failure disheartens them.

What the splendour of precious gems is to the Moguls and Rajahs of India in this age the glory of gold was to the Pharaohs and Kings of ancient history. It was the emblem of majesty and the evidence of wealth. The 10th chapter of 1st Kings is like a fairy tale out of Oriental romances. So abundant was gold that silver was of no account. King Solomon drank wine out of golden goblets, lifted his meat off golden plates, washed his hands in golden ewers, rested his foot on a golden footstool, and made his songs and proverbs by lights standing in golden candlesticks. In that luxurious age silver was of no account because of the profusion of the better metal. But gold is no product of fairy fancy, nor of magician's wand. It never was, never will be, got without risk, trouble and enterprise. In spite of the obstacles which often lie between the gold-seekers and the deposit of the metal, there always have been, there always will be, men prepared to take the trouble.

When we have steamed up the Zambesi with Dr. Peters we may gaze in reflective amazement on the pathetic ruins of an effete civilisation which long ago retired from business, and left stupendous evi-
dences of its industry to perish under the intense natural elements which prevail in equatorial Africa. We look with startled bewilder-
ment on the remains of massive works reared ages ago by hands which have utterly disappeared from human sight or discovery. The enormous ruins of their work are visible; but the workers have van-
ished into an undiscoverable oblivion. Were it not for those ancient annals of a surviving race which has a vitality far superior to its instinct of nationality, annals which have been preserved because of human faith in a God whose supreme will and wisdom are believed to control human destines; modern explorers would have found it diffi-
cult to link that dead past of ingenuity and gigantic structure with any phase of remote life, or with any section of ancient nationality.

While our traveller was in the district of Inja-ka-Fura one me-
cerable noon-day one of his party entered his tent, in a condition of suppressed excitement. and said:—"I have good news. I have seen the ancient ruins." During the afternoon of the same day Dr. Peters and Mr. Gramann visited the spot. This was what they saw. "Round the margin of a hill appeared the remnants of an old cyclo-
pean wall, the stones of which had apparently been worked with a pick, as they showed certain triangular forms with the edges turned outwards. Far back from the margin, towards the centre of the hill, we found a mighty horizontal ledge, which we first took to be the entrance to a cave. Later researches proved this was a mistake. Round this ledge a wall of stones, that were artificially shaped, in the form of a heart, had been built. Near this wall we found a great number of curiously formed stones which I am inclined to regard as betyle, which were objects of religious worship in the oldest Semitic cults. Among these betyle I found a phallus. Phallus-worship was connected with the original Semitic sun-worship. That these stones are the work of man, and not the sports of nature, is proved by the fact that they are formed of sandstone, while the rock and the whole formation of the hill is crystalline slate. We had little time in that afternoon to study this find. Before everything I wished to examine the cyclopean wall which intersects the middle of the hill, which Puzey had seen from below. We therefore broke a new way to the north of our ascent; across vast debris once more; which lay in stupendous heaps on the edge of the precipice. About thirty feet below the hillside we discovered a sort of court-yard, and had the wall before us; which in a mighty circle, following the outlines of the hill, stretches to both sides. Here it stood fifteen feet and higher; there it was half broken down; there broken down altogether. At some places the stones stood bare; at others overgrown with a dense vegetation. Reverence and awe filled us as we stood spell-bound before these relics of a remote civilisation. . . We were both over-
powered by the historical significance of what we saw; and we were
thrilled with the mystery of a past whose years were numbered in thousands."

For what object were those great buildings erected? For the abodes of workers!—or the stores of wealth!—or forts of protection? They could not have been built solely for temples of worship; nor wholly for theatres; nor for purposes of art and culture. They were too plain, massive and practical. They do show evidence of the stonemason's work, and of the builder's skill. They conform exactly with Phcenician work found in other parts of the world. They were shaped and fitted with expert skill for some definite and permanent purpose. No mortar was used. When they ceased to fulfil their primary object; when or why they were abandoned, we know not. The ruins are there; but no elucidating records. We are in a region where scope has to be given to surprise and surmise; to reflection and conjecture.

We seem to be compelled to join in the consensus of modern opinion that these colossal ruins are relics of that golden age when the Hebrew king of peace surrounded himself with all the luxurious contributory to Oriental life and splendour; when a host of expert handcraftsmen were engaged in setting gems, and shaping and chasing gold from the affluent sources of Africa. The ancient names of Solomon and Hiram will, for all time, be associated with the golden age. Between that remote period and this there have been national developments, aggressions and disruptions; dynastic revolutions; rising and falling of empires; the prominence and the disappearance of nations that once flourished in the pride, power and prestige of undaunted bravery and majesty; the rising of new nationalities whose barbaric origins have vanished into the mystery of the unrecorded past. Was it the enervation of the divided monarchy of Israel which led to the decline of the mining industry in the African Eldorado?

We cannot follow Dr. Peters into all the details of discovery and argument by which he strives to connect Solomon, Hiram, and the ancient Egyptians with the gold regions of East-Central Africa. He succeeds to his own satisfaction. Nor can we closely pursue his track of travel. The ruins of old cities and mining works abound. Here is one account of ruins that appear to have been found in Kaiser Wilhelm's Land. Laid out on some definite plan were ancient walls; some in quadrangular shape. Terraces ran round a hill, one wall above the other. These ruins gave a vivid impression that they were the remains of ancient dwellings. Below the buildings were hundreds of heaps of stone similar to those they had been seeing for weeks past; all artificially filled with debris of quartz. Dr. Peters says:—"It was clear that we stood here on the field of former activity, but now the silence of death lay over the landscape. . . . Bewildered, and brooding over the mysteries of our surroundings
we went on, crossing the eastern escarpment by a pass. Over and over again mysterious groups of stones were passed. . . Very often walls stood in a circle, like the mouths of our wells, built of schist or granite, and filled with rocks of another kind. Again and again we encountered quadrangular and round stone walls, evidently the remains of human dwellings. . . In the afternoon I explored the settlement more carefully. In the centre stood a large quadrangular building, 24 feet long and 7 feet wide. On the left-hand side, in front, were five circular walls; to the right of these, directly in front of the house, were a number of the characteristic stone-heaps of quartz, as we had seen them throughout the morning, I had two of these opened, as the thought had struck me that they might be, perhaps ancient burial-places. Gramann, who controlled this excavation, stated that the quartz at the bottom had been subjected to great heat, and he took the holes in which the debris was lying to be a kind of stove, which might have served to prepare the quartz for crushing. His theory seemed to receive a certain confirmation by the fact that behind the main house were three washing dishes, cut into the rock, inclined to the one side, with a small margin on the lower side, which might have been used to wash the crushed quartz. A strong round-house into which wound a spiral path, protected on both sides by a wall, was the strangest of these ruins. This house, we thought, might have been the treasure house. We had, then, here the dwelling of the mining engineer, with houses for the boys, distinct traces of quartz that had been worked by fire; dishes for washing the crushed quartz, and a treasure-house on the bank of a running water-course."

The party pursued their journey. They had not proceeded far before they came upon more remains of ancient civilisation. A labyrinth of stone buildings. A mountain-side along the face of which had been cut "a gigantic system of artificial terraces." The doctor writes: "Underneath this terraced mountain we found a number of old stone walls; it took more than an hour to march through them. At the northern end of the ruins I found a circular building, which had apparently been a place of worship. Exactly opposite the east stood an altar of stones, on both sides of which stood five smaller altars completing a circle. Here, again, we found the artificially formed curious stones which we had found on the height of the Fura ruins; among others I found again a Phallus. The strangest feature was a road bordered by stones, which in manifold mysterious windings led from the western side towards the temple. Might this road have served the purpose of processions? I had no answer to this and many other questions which rushed upon me, and in a sort of bewildered restlessness I wandered through this tangle of apparently unsolvable riddles."
Dr. Peters declared that from the beginning of his South African enterprise he had decided to extend his explorations at least as far as the Sabi River. To him the very name of this river suggested the Hebrew epoch of South African history. From the Sabi and Lundi rivers the traveller is beckoned onwards by the chain of ruins first explored by Bent, whose most brilliant example of ruins is found to the east, in the so-called Zimbabwe, near Victoria Falls. Dr. Peters writes in his journal:—"On April 3rd, 1900, I arrived at Umtali in order to prepare for my Sabi expedition. Fifteen days later, after crossing the mountain torrent Nyanyaswi, no less than eighteen times, the party camped 3,450 feet above sea-level. They passed a beautiful waterfall. The next day the picturesque views on the Umtali warmed his enthusiasm. He wrote:—"The mountain sides rise ruggedly often with fine effect, on both sides of the river. The bright colours of sycamores and other trees glow on the mountains. Then come whole strips full of Euphorbia, palms, and bananas. The mountain chains are split up in places into picturesque cones and domes 6,000 to 7,000 feet high. Then again the glowing red slate forms whole fortresses, with turrets and platforms. Fancy grows alive. One imagines one has entered the kingdom of legend, and passed into the fairy world itself." On this journey he had shooting practice at big game. He describes a visit from a lion and how he killed it.

But we are concerned with gold, not with game. Dr. Peters insists that the theory that Solomon's gold came from India is discredited because no traces of old gold mines have been found there. "No chain of ruins are there which lead one to suppose that a pre-historic mining population once dwelt there." But in South Africa he finds "indisputable geological proof of one of the richest and most extensive gold formations existing on our planet. Here many thousands of old mines have been found which were sunk to a depth of 50, 150, 400, 600, 900 to 4,000 feet, and from which millions of tons of gold must have been extracted. This chain of ancient gold mines stretches from the north of the Zambesi to the Murchison Mountains in the Transvaal, from Gorongoza and the Lower Sabi to beyond the Hunyati, and as far as Bechuanaland to the west. Here, at last we find the ancient ruins; whole cities, fortresses, and temples, estimated to number 500; characterised by the civilisation of the Himyarites of South Arabia, and by the symbols of the ancient worship of Baal-Ashera. 'What other country in the whole world can enter the lists in the face of these facts?'"

It is impossible for us to follow Dr. Peters through all the arguments by which he has reached the conclusion that South-eastern Africa was the Eldorado of the ancients. But before closing our references to those arguments we must make one or two important
extracts. In the recapitulation of his researches and discoveries he says:—"On the Zambesi we found the old half-fabulous district of Fura again, with its ancient ruins, which plainly showed that they formed part of the old Semitic sphere of civilisation. The wall round the middle of the hill, the betylæ, the phallus that I found by chance, are typical of Punic buildings. Round those ancient ruins, from which the figure of Baal looks down on us across thousands of years, lives the Makalanga nation, which in its worship of the Kabulu Kagore has preserved the old Semitic natural religion until the present day. Here, as thousands of years since, sacrifices are still made to Baal on the hills and heights, fire-worship is still practised, and stones are still objects of veneration. Simultaneously, mining of the precious metal has gone on here steadily from the time of the ancient pioneers, and still continues."

He then recounts the discoveries of the ruins of Inyanga, which he says:—"Tower like a note of interrogation written by some vanished and forgotten hand. Among the ruins of the Inyanga valley all travellers have noticed, as I did, the remarkable pit-like buildings sunk in the earth, walled in with cyclopean stones and provided with covered side-passages."

Our last extract is an important one: The Doctor says:—"Let us make a final summary. It is shown that in South Africa, far back in the second thousand years before Christ, a Himyaritic colony existed. It is shown that the great temple of Zimbabwe was built about 1100 B.C., that is, about a century before the allies of Solomon sent ships to Ophir. The Sabæans, allies of Solomon, were predominant here at that time. It is shown that throughout this whole region gold was mined on a large scale at that time, but that precious stones, copper, and tin were also obtained here. All the other products of the Ophir voyages—ivory, apes, indiarubber, and guinea-fowl were also obtainable here.

But our task is not quite finished. We have not quite done with Dr. Peters. Looking closely at some of his envious references to the large possessions of the British in South Africa; and at his rueful contrasts of the British and German methods of colonisation, it is not difficult to perceive the gall in the ink with which he writes. In his opinion German methods are too timid and conservative. They have no "go" in them. They are selfish and exclusive. He likes the British open-door policy better. But he cherishes no amicable feelings towards the British. To him they are restless, crafty, greedy aggressors; willing, if permitted, to gobble up all the territory of the earth. He applauds their pushful and adaptative skill; beyond that he has little that is good to say of them. He would infinitely prefer that those splendid territories which he so graphically describes, with their fertility of soil, their variety of scenery, their majestic
rivers, their stores of mineral wealth, were owned by his own Father-
land. He is specially aggrieved that the grand territory, known as
"Rhodesia" should, by the amazing foresight, the keen and prompt
alertness, the broad-minded patriotism, of one of Britain's noble and
courageous sons, have passed for ever into British possession. It
was, I believe, owing largely to this same traveller that the section
of African territory at the back of Zanzibar, which precludes the
line of communication between the Cape and Cairo being "all red"
as Cecil Rhodes desired, became German.

When the last journey of Dr. Peters and his party through the
Sabean territory was ended his reflections were these.—"Interesting
to me personally in this my last African enterprise is the fact that
the regions traversed were the object of my first colonial scheme.
When, in 1883, I began to associate myself with the colonial ques-
tion in Germany, I handed the foreign office a petition in which I
proposed to take possession of this part of South Africa for Germany.
The scheme was coldly received by the German Government, because
the 'countries south of the Zambesi are regarded as belonging to the
British sphere of interest.' This was six years before Cecil Rhodes
received his charter for Matebele and Mashonaland. . . Also the
German Colonial Society turned its back on "youthful" projects of
this sort. How much grander would the position of Germany have
been in Africa had it begun by laying hands on the cool, well-watered
gold regions south of the Zambesi! The annexations further north
could have been added with ease. A German Colonial Empire from
the Limpopo to the Upper Nile, and the Gulf of Aden was possible,
whose southern frontier would have had, not the English but the
Boers as neighbours. At one blow we would have possessed a country
for settlers, and in the gold mines a field for the employment of Ger-
man capital."

Rhodesia! Envy of the nations! Triumph of colonising genius!
Monument of a world conqueror, who with small help from Imperial
arms or Imperial diplomacy, by will-force and money-force, over-
came the racial enmities of some of the fiercest warriors of Africa.
Expansive exemplification of the inventive brain of a man whose
schemes and projects were so stupendous, and whose success was so
marvellous, that his countrymen were amazed, while their empire
was enormously extended. If Dr. Peters found the German Foreign
Office unsympathetic with his scheme for the acquisition of the terri-
tory between the Limpopo and the Zambesi, in the same decade Cecil
Rhodes found the British Colonial Office hard to convince that the
same areas would be a valuable accession to the British Empire. But
his invincible will-force conquered. What has it meant? That a
territory equal in extent to British India has been secured: That in
a few years, towns grew up, as it were out of the earth; population
was attracted by liberal mining and land concessions; the principle of self-government was adopted; a railway was rapidly constructed from the Transvaal to Bulawayo, connecting the Cape, via Kimberley, Mafeking, Tati, with Bulawayo; a journey from Capetown to the northern terminus occupying four and a-half days.

In drawing to a conclusion let us, as briefly as possible, summarise the conclusions reached by the German Explorer. His last search for gold began in April, 1900. His objective was the Sabi River. "The mere name of this river," he says, "suggests the Hebrew epoch of South African history. Here we actually come to the hinterland of the ancient port of Sofala, which has long been regarded as the chief harbour of the Ophir region." He started from Umtali, a British town, on April 13th, 1900. He returned on May 25th. He expresses his satisfaction thus:—"What interesting impressions we had obtained on this journey! To form a clear opinion about South Africa, considered as an ancient Eldorado, one must regard the Sabi chain of copper mines as the necessary complement to the gold mines of Mashona and Manica lands. We can now establish, that gold, copper, and iron certainly, possibly also precious stones, have been worked from time immemorial in this part of the earth. We had already known whence came the gold for the temple of King Solomon. Our journey to the Sabi had by personal observations provided us with a sign-post by which we could perhaps find an answer to the question: From whence did the Egyptians obtain the copper of their voyages to Punt?"

At Umtali Dr. Peters saw fresh memorials and relics, in newly-discovered paintings and sculptures. There were figures much resembling those on the tablets and stones of ancient Egypt, which convinced him that in old times relations subsisted between Mashonaland and Egypt. He sums up results thus:—"My travels between the Zambesi and the Sabi cover a period of exactly two years, and I look back on this space with a feeling of gratitude. Not only was I permitted to reach the practical ends which I had set before me, the opening up of the gold formations of Fura, the acquisition of the Manica gold mines, the examination of the copper workings on the Sabi, fall into this section of my task; but I also think that I am able, in connection with the researches of others, to form for myself a definite judgment upon the mysterious Eldorado of the remotest of human civilisation. On the banks of the Zambesi and the Ruenje, in the mountains of Maniceland, on the tablelands of Inyanga and Melsetter; in one word, among the ruins of a prehistoric and antique mining industry, more sure evidences towards the solution of this riddle are to be found than in the libraries of Leipzic, Berlin or Oxford."
I would now ask you to consider, for a few minutes, the marvelous transformations of history which this subject suggests. When the after-glow of ancient Egyptian glory still threw its charm over the wondrous land of the Nile; when Babylon was in the zenith of its power; when the navy of Tyre, manned by Hiram's seamen, made regular voyages to Sofala, on the east coast of Africa, and returned laden with gold, silver, gems, brilliant birds, costly timber and apes, the alleged ancestors of man; who, and what were the inhabitants of those small islands lying off the north-west coast of Europe? Who will describe to us the rude semi-barbaric conditions of their rough and nomadic lives? The cult of their rudimental religious credulities? The occupations of their hands? The aims and pursuits of their intellect? Did any Druidical vates predict that in those isles lay the embryo of a nation which should dominate the course of the Nile from its rise in equatorial Africa, to its debouchure at several mouths into the classic Mediterranean? Which should, by the indomitable enterprise and the masterful energy of its emigrant nation-builders win, by the diplomacies of peace or the arbitraments of war, the territory of boundless wealth in Central Africa from which Solomon drew the accessories of his glory nearly 3,000 years ago?

We, sons of the old sea-rovers, have with millions of voices lustily sung "Britannia rules the waves." But it seems to be the destiny of Britain, and another section of the Anglo-Saxon race who, by unkindness, were driven out of her empire, to rule most of the fairest and richest portions of the solid earth. They owned and opened up the golden stores of Australia, California, Vancouver, Klondyke. For the last decade they have been opening up the marvellous auriferous deposits of Witwatersrand, and as the fruit of a deplorable war that source of fortunes has come under British rule. And those diamond fields of Kimberly: Is that where the precious stones came from which composed a dazzling portion of the magnificence of which we read in the Hebrew annals of King Solomon's reign? To me, may I say to us? the word Imperial has no repugnance; the noun Empire stands for a glorious history and a glorious destiny. I have faith in that destiny.
DRAYTON AND TOOWOOMBA—THEIR EARLY HISTORY.*

By JAMES TOLMIE, M.L.A.

The first visit of the Royal Geographical Society to Toowoomba seems a fitting opportunity to withdraw from the oblivion in which they have become enshrouded a few of the facts associated with the formation and the progress of the "Queen City" of the Darling Downs, which is giving every indication of becoming in a not very distant future the finest city in inland Australia. It is not, however, possible to treat of the early days of Toowoomba without associating with them the development of the still older town of Drayton, which, from the light thrown by historical research, appears to have been doomed to but a short career of importance. There are still living in our midst men and women whose memories carry them back a long way in the direction of the early beginnings of both Drayton and Toowoomba, and from them I have had frequent opportunities of gleaning reminiscences of a highly interesting nature, which might lend a charm to a paper of this kind. But since my desire is to produce something of scientific value, which may be preserved in the annals of the Geographical Society, I have been careful to abstain from the use of any information to which a suspicion of legendary or traditional character might attach, and have tried to bring under your observation historical facts based on State papers, and on the reports contained in the newspaper Press of that early period—the "Moreton Bay Courier" and "Darling Downs Gazette"—circulating in what was then known as the northern districts of New South Wales, and now as the southern districts of Queensland.

A discussion which took place in the New South Wales Council on the 3rd Sept., 1854, and was published in the "Moreton Bay Courier" of the 23rd Sept., gives the first account of the manner in which the town of Drayton came to be established, and as there is some divergence of opinion concerning the reason of the choice of the particular site it is desirable that short extracts from the debate should be given without drawing any deductions, since the manner of the foundation is not disputed.

Speaking in the Council, the Rev. John Dunmore Lang, the father of democracy in Australia, who at that time represented Stanley, which embraced the whole of the present Moreton districts, in the New South Wales Council, moved for the production of papers

* Read before the Royal Geographical Society of Australasia, Queensland, at Toowoomba, October 30, 1903.
containing the correspondence which had passed between the Government and the Survey Department on the subject of the township of Drayton. Addressing himself to the motion, he said: "The country between Drayton and Warwick was one of the most magnificent he had ever passed over, and was evidently destined to support at some future date a very large population, although at present occupied solely for pastoral purposes. It was in this way the Downs through their length and breadth were exclusively occupied at the present time. To these districts the presence of population, and the creation of wealth attracted adventurers in various departments of the mercantile world. About ten or twelve years ago an adventurer of this description arrived on the Downs, and planted himself at a place called Bomba, on one of the great runs of the Darling Downs, as he conceived, at a sufficient distance from the occupants of the squatting station. He was ordered off by the gentleman owning 220 square miles of station property, and went to a gap in the range, ten miles away from the nearest station. He was again ordered away by another squatter. A gentleman in occupation of one of the stations, which he had since disposed of, pointed out to him a gully that occupied a sort of intermediate position between three of the great stations in that part of the country (Eton Vale, Westbrook, and Gowrie.—J.T.), and had a small waterhole. In despair of getting any better locality to fix himself down upon, he settled himself in this spot, which had since become the present town of Drayton, and there disposed of his wares. A mechanic's hut and a sly grog shop were soon set up, and these were followed by an hotel. Much antipathy was shown by the neighbouring squatters, but those who had erected houses petitioned the Government to lay out a township, which was done; but the allotments as surveyed differed from those applied for. The waterhole which was the first inducement to settlement dried up, and great difficulty was experienced in getting water. The township should have been at a spot where the roads from the south, east, and west converge (Toowoomba.—J.T.). Now this point was some considerable distance from Drayton, in a place where there was some level ground sufficient, and plenty of water available, and which the Government would have selected for the township if they had duly considered the wants of the people, and looked with a prospective eye to the future of the country. He would recommend the removal of the township, as had been done in the case of Gundagai, and to pay compensation to those who had erected houses, out of the 'Waste Land Fund.' A vote of £200 was passed by the Council in 1851 for the construction of a reservoir at Drayton, and a similar sum was contributed by the people themselves, but the expenditure was in vain. Although there was a far preferable spot at a short distance the people were condemned through the act of the Govern-
ment to locate themselves in this gully, and to subject themselves to many inconveniences. He concluded by asking the Government to lay upon the table of the House the correspondence which had passed between the Government and the Survey Department on the subject of the township of Drayton."

Mr. Campbell seconded the motion.

Mr. Morris, Liverpool Plains, supported it because he believed it was impossible to imagine a more unsuitable site for a town than that in which Drayton was built, and the mistake was the more glaring inasmuch as four miles from the present township an excellent site could be found (Toowoomba.—J.T.).

Mr. H. Stuart Russell (partner with Mr. Jas. Taylor in Cecil Plains.—J.T.), "though not opposing the motion, would show that the allegations of the honourable and reverend member—that the first settlers in the township of Drayton were forced as it were into their position—were incorrect. Though the reverend gentleman in his tour had visited some of the shepherds' huts, he had never heard of him calling at the residences of any of the squatters, and therefore it was to be presumed his information was of a one-sided character. He (Mr. Russell) had been in the district twelve or thirteen years, and therefore knew the facts of the question. The adventurer who had first settled in the township had pitched upon the gully in question because two roads met there (Eton Vale and Cambooya roads, as will be seen on reference to the plan.—J.T.), and it was therefore the most eligible site for a public house, and by which and the store he set up he made considerable money. When the honourable and reverend member for Stanley alluded to the spot beyond Drayton being a more desirable site, because some roads passed there, he should have borne in mind that those roads were not in existence at the period of the first formation of the town, but were subsequently formed by the squatters of the district."

"The Colonial Secretary, in declaring his intention to lay the papers upon the table of the House, in deference to the remarks of Messrs. Morris and Russell, said he thought it was desirable measures ought to be adopted to remove the town to a more suitable site. As to the adventurer who had been referred to, and who appeared to have made a fortune in the place, he did not think his case should be taken into consideration in any subsequent proceedings."

The correspondence asked for by Dr. Lang was laid upon the table of the House, and it is replete with interest relative to the early days of the two townships.

The first of the correspondence is a letter from Mr. E. Deas Thompson, Colonial Secretary to Mr., afterwards Sir, T. L. Mitchell, written on the 4th Sept., 1848, just six years prior to the date of the discussion in the Council. The letter is as follows:—
BY JAMES TOLMIE, M.L.A. 21

Sir,

As it appears from a report received from Mr. Commissioner Rolleston that a number of persons are establishing themselves on the so-called township of Drayton, in the district of Darling Downs without license from the Crown, I am directed by his Excellency the Governor to draw your attention to this subject in order that you may have an early opportunity of causing a township to be marked out in that locality, and bringing the allotments to sale.

The present instruction will not, however, extend to those allotments of land which have been occupied under proper authority by inn keepers, storekeepers, etc., for other than pastoral purposes, previously to the taking effect in the Colony of Her Majesty's Order in Council of 9th March, 1847.

I have, &c.,
(Signed) E. DEAS THOMPSON

The next paper is a memorial from "Eighteen inhabitants of Drayton," squatters and others, in which the memorialists, among other matters, declare:—

"That the town sprang up naturally, and the inhabitants from local knowledge chose the best site, and that £3,000 had already been spent in Drayton in the erection of stores, inns, etc.

"That the land in the vicinity is of excellent quality, and if allotted in areas not exceeding 50 acres for farms would meet with a ready sale.

"That the memorialists solicit that the chief town of the northern part of the Darling Downs district be fixed at Drayton."

On the 8th May, 1849, the Surveyor-General wrote to the Colonial Secretary, informing him that early opportunity would be taken to lay out a township at Drayton, and submitting an enclosure from Mr. J. C. Burnett, the surveyor in charge of the northern districts of New South Wales, forwarding a plan of Drayton, a photographed copy of which I am able, through the courtesy of Messrs. A. A. Spowers and Hugh MacIntosh, of the Queensland Survey Department, to submit to the inspection of the ladies and gentlemen here present. Following is the enclosure:—

Camp near Drayton.
24th February, 1849.

S r.

In compliance with the instructions contained in your letter of the 7th September last, No. 48,337, I do myself the honour to forward herewith a plan of the ground at Drayton, showing the buildings which have been erected there.

2. The private buildings which may be considered of value are the inns of Messrs. Meehan and Horton, and the stores of Messrs. Alford, Handreck and Lord.

3. These parties with the exception of Mr. Lord all occupied under license, and have expended considerable sums in permanent improvements. Mr. Lord only built recently, and of course without authority, and at a much less outlay than the others.

4. The remainder of the buildings are not of much importance.

5. A well recently sunk affords a supply of water sufficient for the present inhabitants.

Mr. T. L. Mitchell,
Surveyor-General.

I have, &c.,
(Signed) J. C. BURNETT.
In a letter dated Sydney, 8th June, 1849, and signed W. Elyard, Junr., the Colonial Secretary conveys to the Surveyor-General His Excellency's approval of the plan of Drayton, prepared by Mr. Burnett, and asks that a copy of the plan be forwarded to the Bench at Drayton.

An interval of more than three years passed before there was any further correspondence with the Survey Office at Sydney concerning either Drayton or Toowoomba. When it does take place, the suitableness of the Toowoomba site as a place for a township is stated in no uncertain terms by Mr. Assistant Surveyor Moriarty, who writes to the head of his Department in the following strain:—

Drayton, September 1st, 1852.

Sir,

Before proceeding to lay out any more farm allotments on that part of the Drayton Reserve called the Swamp, I consider it my duty to inform you that I believe the object of the parties who have purchased land there, and who are applying to purchase it, is not with a view to agriculture, but with the hope of being able to form a township in opposition to the Government one at Drayton. Were a township to be formed there, I have no hesitation in stating that I believe not another allotment would be sold in Drayton.

The Swamp possesses many advantages for a township which Drayton does not. The soil is exceedingly rich, the ground level, and there is abundance of water, and the finest timber for building. Drayton on the contrary is built on a number of ravines, and ridges, and possesses no permanent water.

I have the honour, therefore, to request that you will inform me, whether I should lay out any allotments on the Eastern side of the water-course at the Swamp for parties wishing it, and, in general, whether it is the practice of your Department to lay out allotments for parties on any portion of a reserve where they may select them.

I have, &c.,

(Signed) E. O. MORIARTY.

Sir Thos. L. Mitchell,
Surveyor-General.

The following reply was received:—

Surveyor-General's Office.
Sydney, 26th November, 1852.

Sir,

In reference to your letter of the 1st September last, wherein you inquire whether you should lay out any allotments on the Eastern side of the water-course, at the Swamp Drayton, for persons who are wishing to purchase. I have to request that you will make a design for laying out, and measure and mark out some allotments of one and two acres, in the situation referred to, preserving ways of access, and forward to me a plan and description thereof, in order that the wishes of the public may be met in this matter.

I have, etc.,

S. A. PERRY,

This embraces the whole of the correspondence asked for by the Rev. Dr. Lang, and establishes the fact that the design of the town of Drayton was prepared by Mr. J. C. Burnett in the last months of 1848, and the first month in 1849, and the existing township was
confirmed in February and May of the latter year. A glance at
the photograph of the design shows that Mr. Burnett had to lay out
his design without relation to the cardinal points, in order to meet
the exigencies of the situation as disclosed by the location of the
existing buildings in positions best suited to the requirements of
business, or other considerations affecting the welfare of the owners.
If the theory advanced by Mr. H. Stuart Russell be correct—that
the adventurer who founded Drayton located himself at a point
where two roads met, then from the design prepared by Mr. Burnett
we may with some degree of certainty assume that the first settler
in Drayton was Mr. Meehan, whose inn and probably store is located
at the Spring, close to the intersection of the roads from Eton Vale
and Cambooya. None of the old families whose names appear on the
design have now representatives living in Drayton. The Police
Paddock Reserve still remains the Police Paddock, but is never used
for its original purpose. The Court House, sold two years ago to the
Drayton Shire Council as a recreation hall, is now situated close to
where Horton's Inn formerly stood, and which is now converted into
a private residence, and is occupied by Mr. Lynch.

The first survey of allotments in Drayton was made by Mr.
Burnett in February, 1850, when four sections of town allotments
and two suburban sections were marked and submitted to sale on the
31st July, 1850, at Drayton the prices fixed being £8 for town
allotments, and £3 for suburban. Of these, twelve town allotments
were sold, the purchasers being Eliza Lord, William Horton, M.
Meacham, S. Smith, Arthur Hodgson, D. Barry, and E. Dolan. One
suburban allotment was sold to Mr. T. B. Yates.

From the records of the Survey Office, it would appear that
Toowoomba is an older township in the sense that a survey was made
there before the one in Drayton. This survey was carried out by
Mr. Burnett in April, 1849, and embraced twelve portions on the
west side of the West Swamp, extending from the Black Gully to the
neighbourhood of South Street. These were in area from 27 to
40 acres each, and were termed suburban allotments, presumably
suburban to Drayton, since the site of the present capital of the
Downs was at this period and for many years after known as the
"Swamp" in general conversation, as well as in all official documents.
Consequently what is now known as the West Ward, and extending
in the South Ward as far south as South Street, marked in red on
the plan submitted, is the oldest portion of Toowoomba, though until
recent years it is the portion which has made least progress, presum-
ably because with but few exceptions the allotments remained unsub-
divided. Six of these portions were offered for sale at Brisbane on the
10th October, 1849, at 40s. an acre, but no offer was made for them.
They were re-submitted to auction on the 9th October, 1850, when
two portions were purchased by Mr. William Horton, of Drayton. These two portions are readily discernible on the plan. They are now south of Russell Street, though at that time no such street existed. When the Street was first opened it went by the name of Farm Road. Mr. Horton subsequently sold his portions to Mr. Jas. Taylor, and Clifford House now stands on a part of one of them.

The interest attaching to the laying out of the towns of Drayton and Toowoomba is of sufficient importance to warrant a short biographical notice of Mr. James Charles Burnett, who carried out the work. He was the son of Mr. William Burnett, of Burnetttsland, Hunter River District, and was born in Scotland in 1815, the year in which Waterloo was fought. He came to New South Wales with his parents, and entered the Public Service in 1834 or 1835. He was chosen for his ability by Sir Thomas Mitchell to continue the survey of the Dividing Range from Hanging Rock Northward. He commenced the work in October, 1841, and traced the range to about the 30th parallel, and thence made his way to Brisbane, in September, 1842. Subsequently he was engaged in surveys on the Richmond and Clarence Rivers, and was finally appointed to the charge of the Moreton Bay District. He named the Mary River after Lady Mary Fitzroy, wife of the Governor, and as a compliment to him Sir Charles caused the other large river in that district to be named the Burnett in honour of him. Mr. Burnett died at his residence near Brisbane on the 18th July, 1854, from premature decay of the system, which was probably the manner of describing tuberculosis in those days. A few days prior to his death he had the satisfaction of learning of his election as a Fellow of the Royal Geographical Society of London. Speaking of his death the "Moreton Bay Courier" says:—"By his death society has lost a worthy member, and the Government an active and zealous officer. There is some talk of a tablet to the memory of the deceased. If the devotion of a life to the public service gives any claim to such a tribute, it should not be left to private friendship, but should emanate from the country at large."

The second survey of allotments at Toowoomba appears unmistakably to have been due to the representations made to the Surveyor-General by Mr. Assistant Surveyor E. O. Moriarty in his letter of the 1st September, 1852, in which he pointed out the special advantages of the "Swamp" as the site for a township. Though Mr. Moriarty received instructions for the second survey of allotments at the "Swamp," the work did not fall to his lot, but was performed by Mr. R. C. Bagot in April, 1853. Four sections of the town included in the portion of the plan marked blue, and extending from a large morass, which occupied the portion of the town where Campbell Street now intersects Ruthven Street, southward to the corner of what is now known as Ruthven and Herries streets.
being bounded on the east and west sides by the swamps. These sections now form the main business centre of Toowoomba. The allotments were each about two acres in area, and in subdividing them three streets were laid out, Ruthven, Hume, and Margaret streets. These were the first streets named at the "Swamp." These allotments were submitted to sale at the Police Office, Drayton, on the 11th November, 1853, forty-seven being sold, no offer being received for five, and one forming part of the present Russell Street being reserved for the purpose of giving access to a waterhole situated in proximity to the spot where the Dominion Mill now stands. It would be wearisome in a paper of this kind to recall the names of the purchasers of the different allotments in the four sections comprised in the second survey, but as showing the increased value of land in Toowoomba since November, 1853, practically fifty years to a day, it will be interesting to compare the values of that day with the values of to-day, as estimated by the Municipal Valuator, which values may be taken as being about two-thirds of the owners' values. The first allotment sold on that occasion was the two-acre block on a portion of which the hall in which we now sit is erected. It realised £6 10s. per acre, and was purchased by Mr. A. Hodgson. Its present valuation is £20 per foot. The opposite corner of Ruthven and Herries streets, the latter then unnamed, was purchased by Mr. G. Partridge, father of Alderman Partridge, of this municipality, for £5 per acre, and the Council's valuation is now £28 per foot. The corner of Ruthven and Margaret streets, on which is built the Bank of New South Wales, was bought by Mr. C. Underwood for £10 per acre, and is now valued by the Council at £76 per foot. The opposite corner, on the west side of which is the warehouse of Billingtons Limited, was secured by Mr. W. Handcock at £11 per acre, and to-day the Council's value is £80 per foot. The corner on which the Australian Joint Stock Bank is built was purchased by Mr. J. P. Bell at £8 per acre, and is to-day valued by the Council at £80 per foot. On the opposite side, on which the Club Hotel now is built, Mr. W. Handcock bought two acres at £12 per acre, and the Council now estimates its value at £86 per foot. As already stated, the allotment forming a portion of Russell Street was reserved to give access to a waterhole, but the one south of it fell to the bid of Mr. T. Price at £9 per acre, and as an indication of the rise in values, some three or four years ago the balance of the Russell Street reserved allotment was sold at £107 per foot, with the improvements on it. Across the street Mr. C. Pottinger bought the allotment on which Messrs. Campbell Bros.' butcher's shop is located, at £9 5s. per acre, and its present valuation on the Council's books is £65 per foot. The Queensland National Bank corner was secured by Mr. T. Price at £12 per acre, and its present valuation is £58 per foot. No
better idea of the extent to which property has increased in value during the last fifty years can be secured than by a careful study of these statistics of the present and the past. The next sale of land at the Swamp took place in June of 1854, when three blocks extending from Herries Street to Long Street on the west side of Ruthven Street were sold in two-acre allotments, at upset prices of £2 10s. and £4 per acre. The whole of the land was sold, but at very little beyond the upset values, the two highest prices being realised for the allotment at the corner of Ruthven and Herries streets, on the side of which this hall is built, which was purchased by Mr. J. McLelland at £7 5s. per acre, and the allotment at the south-east corner of Herries and Water streets, which fell to the bid of Mr. T. Price at £9 per acre.

We need not pursue land sales any further as the town at the Swamp was practically outlined, though it still rejoiced in the name of the "Swamp." The next feature of interest to us is that the settlement on this part of the Downs had assumed such proportions that Sir Charles Fitzroy, the Governor of New South Wales, thought it worth his while to visit the district when on a tour through the northern districts. He arrived at Drayton on the 29th March, 1854, the first Governor to visit the district, and was presented by the people with an address signed by Mr. afterwards Sir, Arthur Hodgson, at that time the leading man in the district, and by fifty-six others. He was also presented with an address from the school children, signed by each of them, and written by a pupil under ten years of age. At this early period of the settlement's history we have indisputable evidence that the young community had aspirations after a high civilisation, and was well disposed towards the education of the youth of the district. The new road from Ipswich, the head of navigation, to the Downs, was now approaching completion, and a "Government Gazette" notification in December of this year states that the new turn-pike gate on the road from Ipswich to Drayton shall be established as from January 1st, 1855. The remains of this old turn-pike, which was veritably a gate to the richness of the South and West, are still to be observed. The "Swamp" continued to participate in all the progress which was being made, as the two following extracts from the "Moreton Bay Courier" will show. Its Drayton correspondent, writing on September 22nd, 1854: "The new township, or, as it is called, the Swamp, is rapidly assuming an attractive appearance. It bids fair to outdo the old township. The situation is much better adapted for a town, and ere long we doubt not but that it will become the Goulburn of the northern districts. It is much to be regretted that the Government did not at first make the township of Drayton higher up the Swamp. It will sooner or later be the principal place of business." These
were prophetic words, for not only is it the principal place of business, but it has outrivalled Goulburn.

Writing in May of 1856, the same correspondent says:—"The two settlements are going ahead rapidly. In the course of two or three years Ipswich will be nothing to them. At the Swamp in particular houses are erecting week after week. There is a great outcry for land there. One gentleman residing at the "Swamp" is selling portions of his estate as high as £100 per acre. Respecting the old town of Drayton, or West Drayton, as it will probably be called, it is not dying away as some people thought." From this passage we may gather that a choice of a name is beginning to agitate the minds of the people of the "Swamp," from which no doubt may also be dated the commencement of the rivalry between the two places which for a period of six or seven years disturbed the harmony of the settlements.

So far I have to acknowledge my indebtedness to the Survey Office, and the files of the "Moreton Bay Courier" for the information I have been able to place before you. Unfortunately the files of the "Moreton Bay Courier" are missing from 1st January, 1857, to 1st July, 1858, a period of almost absorbing interest, since it is within that period that the name Toowoomba was given to the "Swamp," by whom, and under what circumstances, must, I think, remain in doubt and be for ever legendary. It is generally accepted that Toowoomba is an aboriginal word, but various meanings are assigned to it. By some it is declared to mean "the meeting of the waters." As early as 1860, in discussing the incorporation of the town, Mr. J. C. White, by implication rather than by direct statement, declared that the meaning of the word was "great in the future," but Mr. A. Meston, an accepted authority on aboriginal nomenclature, informs me that there can be no possible doubt that the name is derived from "choowoom," the name of a small melon about the size of a duck's egg, which once grew prolifically within the district. The suffix "ba" means the place, or "there"; hence Choowoomba means the place where the "choowoom" grows. There is still another origin assigned to the name. Just as the name "Yankee" is a North American Indian corruption of the French attempt to pronounce the word "English," so it is asserted that the word Toowoomba is a corruption of a corruption. It is held that the best efforts of the aboriginals to pronounce the word "swamp" could only produce "Tchwampa." which by easy transitions became "Twamba," and finally "Toowoomba." This latter origin may after all be the true one, though Mr. Meston is most emphatic as to the correctness of the meaning he assigns, and declares he was personally acquainted with aboriginals who described the "choowoom," and the place where it grew to him. But whatever may have been the origin
of the name, it is certain that when we once again get on the solid ground of authentic history the "Swamp" has become Toowoomba.

On the 10th June, 1858, the "Darling Downs Gazette," now the property of Mr. S. C. W. Robinson and myself, was first published in Drayton by Mr. Arthur Sidney Lyon, who previously had called into existence the "Moreton Bay Courier" in Brisbane, and the "North Australian" in Ipswich, and the growth of the town in commercial and social importance is noted from week to week in its files. In the very first issue we note that the Rev. Dr. Nelson, father of the President of the Royal Geographical Society, Sir H. M. Nelson, whom we have with us to-day, solicits subscriptions for a new "Church of Scotland," which it is proposed to build in Toowoomba. He required about £180, and asked that the subscriptions might be sent to Ipswich, his then headquarters, or to the local secretary, the late Hon. W. H. Groom, who from that time forward was identified with almost every social movement in the district up to the time of his death two years ago. In a leading article in the "Gazette" on the 20th June, 1858, the fact that there were no public houses in Toowoomba is deplored, and Drayton is urged to attract people to that township or she will be left behind in the race for supremacy. During the next week or two land changed hands, at from £60 to £130 per acre, the latter being given for land situated near the reservoir, close to the bridge in Margaret Street East. About this time the late Hon. Jas. Taylor seems to have become a leading figure in the social life of the community, invariably presiding on the bench at Drayton, and in other ways promoting the commercial and social interests of the inhabitants. Among other things it may be noted that at this time he introduced the first steam saw-milling plant capable of turning out at that period the astonishingly large quantity of 1,000 feet per day. The incensed sawyers on the Range threatened to punch holes in the boiler. The stigma of no hotel accommodation was removed in July, 1858, for Captain Witham re-opened the "Queen's Arms" Hotel, on the site of the present Club Hotel. Mr. F. Mole the present Royal Hotel, and Mr. John Dare the Sovereign Hotel, which stood near the site of Mr. W. Williamson's residence in Ruthven Street South. In other ways the town is showing signs of progress, for a School of Arts became an accomplished fact on the 19th August of the same year. Mr. Jas. Taylor was elected President, Mr. D. W. Campbell Secretary, and Messrs. W. H. Groom, M. Boulton, J. Wilson, and J. Berkman the provisional committee. This was the first instance of the ballot being used on this part of the Downs. August 28th of this year is important in the annals of Toowoomba, since on that date a public meeting was held at the Royal Hotel, with Mr. Jas. Taylor in the chair, for the purpose of protesting against the annexation of Toowoomba to Drayton. A memorial was addressed to the Secretary
of Public Lands and Works on the subject, pointing out the injustice which would be done to Toowoomba, which contained a population of nearly one thousand, of whom about two hundred were freeholders, owning land in the township valued between ten and twenty thousand pounds sterling. St. Luke's School for girls was opened on October 14th of the same year, and was followed by one for the boys a few weeks later. In November, Mr. A. Hodgson, from his place in the House, asked why Toowoomba had not been proclaimed a township, and was informed that the reason was the boundaries had not yet been determined. In May, 1859, extreme dissatisfaction was expressed at Mr. Burrowes, the Land Commissioner, having fixed the boundaries of Toowoomba between the two swamps, cutting out the whole of the present West Ward and portion of the South. A correspondent to the "Gazette" declares that Mr. Burrowes had attended a dinner in Drayton where the proposed boundaries were discussed, and that the discussion influenced him. On the 12th May a public meeting was held with Mr. Jas. Taylor in the chair, and it was resolved to memorialise the Secretary for Lands and Public Works, the Hon. John Robertson, on the need to include in Toowoomba the first survey of Toowoomba, and also the land on the east side of the East Swamp to the summit of the range. In June the present Racecourse Reserve was granted for the purpose of a recreation ground for the people of Drayton and Toowoomba. Owing to there being no suitable building at Drayton, the committee of the Drayton Benevolent Society, Messrs. Jas. Taylor, John Watts, W. Armstrong, M.D., and the Rev. B. Glennie, determined to establish the Home in Toowoomba. This was done, and in time the Drayton Benevolent Society became the Toowoomba Hospital, whose foundation may therefore be said to date from 1859. A correspondent of the "Gazette," writing on August 25th of this year, estimates the value of landed property in the township at £18,000, and suggests the imposition of a tax of one shilling in the pound in order to raise funds for a proper water supply. Fifty years have not removed the water supply grievance, but the bare suggestion of a shilling in the pound tax for the purpose of securing a sufficient supply of water would cause the taxpayers of to-day to break out in a cold perspiration. At the end of twelve months the attendance of pupils at the St. Luke's schools was found to be sixty-seven. As separation was practically an accomplished fact, many schemes were suggested for the division of Queensland into electorates. One such scheme was outlined by the late Hon. W. H. Groom in the columns of the "Gazette," suggesting one representative for Drayton, with a population of 400, and one for Toowoomba, with a population of 1,000. These statistics prove that the early prophecies had come true. Drayton was far outdistanced in the race by the younger township of Toowoomba.
The question of the proclamation of Toowoomba as a town is again brought up by a "Gazette" correspondent, under date 3rd January, 1860, when he asks for information on the subject, and is informed that as separation has now taken place the proceedings to secure that object will need to be commenced de novo. The growing jealousy between Drayton and Toowoomba found vent at a public meeting held in the latter township on March 12th, 1860, for the purpose of making arrangements for the reception of the new Governor, Sir Geo. Bowen. A suggestion that both townships should combine was negatived by the Toowoomba people, who were determined to stand alone. Next night a counter meeting was held in Drayton at the Royal Bull’s Head, with Dr. Armstrong in the chair, and the narrow mindedness of the Toowoomba people was severely commented upon by the chairman. Drayton also decided to have its reception. On the 12th inst. the Circuit Court sat for the first time in Toowoomba, being previously conducted in Drayton. Judge Lutwyche presided.

On the 29th March, His Excellency Sir G. F. Bowen visited Toowoomba on his way from Warwick and Drayton. He was met on the road by two hundred horsemen and conducted to Toowoomba. A triumphal arch was erected in front of Dare’s Hotel, where a brass band was also stationed on the verandah, and played "God Save the Queen," as His Excellency passed on to Mole’s Hotel, where apartments had been provided for him. There he was presented with an address by Mr. J. C. White, and in replying to it His Excellency urged Drayton and Toowoomba to unite under the new name of "Victoria." In the evening he was entertained at a dinner given in his honour at Witham’s Hotel. It is thus seen that the honours of the reception were equally divided among the three inn-keepers, which then, as in small communities of to-day, no doubt tended to preserve harmony in the district. Meetings at Drayton and Toowoomba urging the establishment of municipalities now became very frequent. On the 10th April a meeting was held in Drayton, and a deputation was appointed to a meeting to be held in Toowoomba on the 13th to see if a basis of union could be agreed upon. The meeting was held, and the deputationists having expressed their views, Mr. W. H. Groom moved: "That this meeting, having heard the reasons assigned by the Drayton deputation for seeking the co-operation of the Toowoomba people in the formation of a joint municipality, courteously declines the proposed amalgamation, and desires to record its opinion that as the rapid progress Toowoomba has made within the last four years, and its present healthy and flourishing condition, is entirely owing to the industry, untiring perseverance, and indomitable courage of the Toowoombians themselves, it is expedient and highly necessary they should take the constitutional course to have their locality proclaimed a municipality,
free and distinct from any other town." This was seconded by Mr. Annand, and carried with a considerable majority.

The result of this meeting was considerable bitterness between the two townships, and some newspaper correspondence. But while Toowoomba and Drayton are fighting for incorporation, the first political battle in Queensland is being fought. The candidates for Drayton and Toowoomba were Mr. John Watts, a brother-in-law of our President, the Right Hon. Sir H. M. Nelson, and Mr. T. B. Stephens, father of the present senior member for South Brisbane. The election took place on 2nd May, 1860, and resulted as follows:—Watts, 119; Stephens, 37; majority for Watts, 82. On the 17th May about 120 persons met in the Argyle Rooms to urge the incorporation of the town. A suggestion that a memorial be presented to the Governor, asking for an incorporation of the two townships under the name of "Queenstown," was negatived, and on the motion of Mr. J. C. White, seconded by Mr. Boulton, it was resolved to ask for the incorporation of Toowoomba, either with or without Drayton, as the Governor thought fit. On June 23rd, a petition for incorporation bearing over a hundred signatures was sent to Sir Geo. Bowen, through Mr. J. Watts, M.L.A., and in response to his request Toowoomba was proclaimed a corporate town on the 21st July, 1860.

Several months were spent in making the preliminary arrangements before a municipal election could be held. The election finally eventuated on the 4th January, 1861, when the following gentlemen were returned as the first Municipal Council:—W. H. Groom, 51; M. McCarty, 40; Jas. Berkman, 35; W. Shuttlewood, 31; M. Boulton, 30; John Robertson, 26; W. Annand, 25; Jas. Peardon, 24; and Patrick Ryan, 23. The same evening a meeting of the newly-elected Council was held, and Mr. W. H. Groom was chosen to fill the position of the first Mayor of the municipality. Of this first Council, Mr. P. Ryan is still alive, residing in James Street, and I believe Mr. Peardon is also alive. The whole of the others have passed to their rest, having well done their part in laying the foundations of the municipality whose history from that time has been one of uninterrupted progress.

The election of the first Municipal Council marks the closing of the early history of Toowoomba. From that time it enters upon a new era. My work is completed with the first period of the township's existence and struggles for a more fully developed commercial and social life. If the records of a bygone period which I have been able to dig up out of a buried past have proved of interest to those who are present, and if they are likely to be of value to the Royal Geographical Society of Queensland, I shall feel pleased that I have been able to contribute to your pleasure, and to have assisted in the work of the Society.
MARITIME BOUNDARY OF QUEENSLAND.*

By the Hon. JOHN DOUGLAS, C.M.G., F.R.G.S.
(Hon. Member Royal Geographical Society of Australasia, Queensland.)

I am honoured by thus having audience of the Royal Geographical Society of Queensland, and I beg to crave the attention of members for a brief space while I expound my theme on a matter of some general geographical interest, and one of special local significance to those of us who are connected, as I am, with the islands of Torres Straits, and the somewhat important little dependency of Thursday Island and Port Kennedy.

There is a tradition that a commission was sent out to Sir John Young, authorising him to extend the boundary of New South Wales to the 10th parallel of south latitude. I cannot ascertain whether it was ever acted on. Let me, however, relate how it was that the islands of Torres Straits came to be annexed.

In 1876-7 certain adventurous spirits connected with the pearl-shelling industry had pushed out beyond the recognised bounds of our jurisdiction, and it was found that there was no legal authority which could be brought to bear upon them. It became necessary, therefore, to extend the boundaries of Queensland, and after a good deal of correspondence this was finally accomplished by the passing of an Act of the Queensland Parliament in 1879, which had been duly authorised by letters patent under the Great Seal.

Thus it was that "certain islands in Torres Straits and lying between the continent of Australia and island of New Guinea, that is to say, all islands included within a line drawn from Sandy Cape northward to the south-eastern limit of the Great Barrier Reefs, thence following the line of the great Barrier Reefs to their north-eastern extremity, near the latitude of 9½ deg., thence in a north-westerly direction, embracing East Anchor and Bramble Cay, thence from Bramble Cay in a line west by south (true), embracing Warrior Reef, Saibai, and Tuan Island, thence diverging in a north-westerly direction, so as to embrace the group known as the Talbot Islands, thence to and embracing the Deliverance Islands, and onwards in a west by south direction to the meridian of 138 deg. of east longitude." 

That then is the present boundary of Queensland. When it was thus defined it was considered desirable to annex everything up to the shores of New Guinea. The annexation of British New Guinea did not take place for some nine years after this, but it then soon became

* Read before the Royal Geographical Society of Australasia, December 22, 1903.
apparent that some modification of the boundary in Torres Straits was necessary. This became the subject of correspondence between Sir William McGregor, the Colonial Office, and the Government of Queensland. . . In 1892 Sir Samuel Griffith, then being in office visited Torres Straits on purpose to satisfy himself on the merits of the case, and I have no doubt that it would then have been settled, but unfortunately for this particular matter then in hand. Sir Samuel became Chief Justice, and nothing more was done until the correspondence was again revived, and at last various propositions were made and rejected. In May, 1898, an Order-in-Council altering the boundary, was passed, and such alteration was to take effect upon the passing of an Act of Parliament by Queensland endorsing it. The Act was duly drafted, printed, and prepared for the approval of Parliament, but unfortunately again, it was never brought in, and nothing more was done. I shall now proceed to describe to you what the alteration was which it was thus proposed to effect.

Starting from a point three miles south-east of Bramble Cay, on the existing boundary line, it was designed to pass midway between Pearce Cay and Dalrymple Island, then by the centre of Moon Pass in the Warrior Reef, thence by a line passing three miles to the south of Turnagain and Deliverance Islands, westerly, thence west by south to the meridian of the 138th degree of east longitude. But, as I have said, this was never authorised. Soon after the Commonwealth came into existence, and with it the capacity of Queensland to deal solely with the matter, passed to the Commonwealth. Now, we know that the Commonwealth Parliament is about to legislate for British New Guinea, or for Papua, as it is to be called, and that is why I am anxious to draw attention to the maritime boundary of Queensland as affecting the maritime boundary of Papua, in order that it may be clearly understood.

In the first place, allow me to say that, in my opinion, the boundary, as defined by the Order-in-Council of 1898, ought to be accepted as a fair and reasonable solution of the question. It was arrived at after an exhaustive correspondence between the parties concerned. and would, I feel sure, be gladly accepted by the Papuan Government authorities as a just solution of their claims, for they have undoubted claims to a rectification of the existing boundary. So far as regards the Government of Queensland, it ought to be a relief to them to be able to hand over to the Papuan Government islands which they are not able satisfactorily to govern from Thursday Island. Moreover, the Papuan Government, by its special ordinances, made applicable to native requirements, is much more capable of administering justice and maintaining order than we are. I have done the best I can to administer justice and maintain order in a patriarchal kind of way through the head men, or mamooses, as they are called, of the different

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islands, and the people generally carry out my wishes, but something more than this is now required. It is difficult, nay almost impossible, to apply our Queensland laws to such islands as Saibai, Dowan, and Boigo. To the magistrate at Daru, with his native ordinances, and his proximity to these islands, it is another matter altogether. The people inhabiting these islands are Papuans. They are most amenable to order. They have improved immensely. When I first knew them they were literally naked savages. Now they are among the most intelligent and enterprising of our islanders. But, like most natives, they are easily led astray. Unprincipled men, both white and coloured, give or sell them drink, and through Saibai a good deal of liquor has been supplied to the natives of New Guinea. Indeed, so frequently has this been lately done that the authorities at Daru have prohibited our Saibai natives from landing on the shores of New Guinea. I have done the best I can to stop this nefarious traffic in liquor, and I am happy to say that I have secured two convictions; but this is not such an easy matter, for the proceedings have to be conducted in accordance with the laws of the State before the court at Thursday Island, which is eighty miles from Saibai. In the last case five witnesses had to be brought in and taken out again in order to secure the necessary evidence. Such cases would, I can assure you, be much more easily and effectually disposed of at Daru, the western headquarters of administration in British New Guinea. That is one very good reason why I should like to see Saibai under the jurisdiction at Daru. There are many other reasons, but geographically—and you, gentlemen, are specially interested in the question from that point of view—it does seem ridiculous that a large island like Saibai, being almost within gunshot of New Guinea, should still belong to Queensland. Nor must it be forgotten that as Government Resident at Thursday Island I have now no steamer in which I can visit these Islands. This year, it is true, I have visited the coast of New Guinea four times in order to investigate matters of this kind; but it has always been in a small sailing vessel, and this does not further prompt action. What I have said of Saibai holds good of Dowan (Tuan) and of Boigo. They are both visited and occupied by Papuans, and they are both tarred with the same brush so far as the distribution of liquor is concerned. I am sorry to say it, for the Papuan, as a rule, has no great longing for our liquors, unless he is educated in that direction by the white man. He is satisfied with the mild excitements of the betel nut until he reaches a higher exaltation under the influence of our liquor essences. Of course you all know that under our laws persons are prohibited from supplying liquor to aboriginal natives, or to South Sea Islanders, and at Thursday Island we are sometimes held up as examples of how a good law may be violated with the most impunity. A distinguished visitor, a senator from the
South, for instance, remarked the other day that he saw aboriginal natives served at the bars of public-houses with the police looking calmly on. This, I admit is perfectly true. There appears to be great apathy on their part. When challenged, however, with negligence of duty, they say that they arrest offenders who exceed, and that they prefer the open violation of the law as practised to the illicit sale of bottles and cases of grog through intermediate persons. They also say that it is almost impossible to secure a conviction against a publican who sells to an aboriginal across the bar, for the law requires proof that the liquor so sold contains or contained so much per cent. of alcohol. How are they to prove that, they say, when the alcohol is absorbed into the stomach of the participant? I fancy myself that a way out of that difficulty might be found. Still, the fact remains that no complaints are lodged, and convictions are rarely obtained. To revert, however, once more to the theme of my paper, which I do not wish to make tedious, there are manifest advantages connected with the proposed rectification. No one can question its geographical justification. It will fairly meet the claims of the Papuan Government, and it will in no way prejudice the territorial rights of this State. The trade of that portion of New Guinea, such as it is, gravitates to Thursday Island, and will continue to do so. It gives reasonable scope to the natives of Papua for the prosecution of their pearl-shelling industry, to which they are by no means indifferent, and it will enable the Papuan Government to control and repress altogether, I hope, this nefarious dealing in liquor, which is calculated to do so much harm if it is allowed to go on.

Before I close this paper I must honestly tell you that before the desired object can be attained considerable difficulties stand in the way. The rectifications could easily have been effected in 1892, after Sir Samuel's exploration, or, indeed, in 1898, when the Order-in-Council authorising it was passed; but now there is rather a formidable lion in the path. The 123rd clause of the Commonwealth Constitution provides that "the Parliament of the Commonwealth may, with the consent of the Parliament of the State, and the approval of the electors of the State voting upon the question, increase, diminish, otherwise alter the limits of the State, on such terms and conditions as may be agreed on, and may, with the like consent, make provision respecting the effect and operation of any increase, diminution, or alteration of territory in relation to any State affected." As I have said, this is rather a formidable lion; but it can be tackled and required to retreat in this particular case if we can show, as I think we can, that he stands in the way of what would be a decided improvement.

Sir S. W. Griffith, in proposing a hearty vote of thanks to Mr. Douglas, said very few persons even in Queensland knew how very interesting these parts were. They were attracting attention from scientific people in Europe, and there was an expedi-
tion on its way now to study natural history in that part of Australian waters, which had peculiarities not found anywhere else. With regard to the boundary, when it was fixed in 1878, it was not unreasonable for Queensland to require to get all she could. She could not get New Guinea, but managed to get as near as possible. We followed round as close as we could get between the islands, and the coast of New Guinea, taking in practically everything. At that time all these parts were equally unknown, and unsettled; but later, when New Guinea had what was after a civilised Government, and in some respects a highly organised Government, considering the nature of the people it had to deal with, it became extremely absurd that some of the islands should be governed by Queensland because, as Mr. Douglas had pointed out, Queensland laws were quite inapplicable, whereas New Guinea laws were perfectly applicable. That impressed itself so strongly on his (Sir S. W. Griffith's) mind that in order to remove the anomaly, he took the opportunity of going up there in the steamer Lucinda. Mr. Douglas was with him, and the trip was extremely interesting. It was hardly necessary to go up to see how absurd the arrangement was; but up there it appeared much more absurd. To illustrate this, he mentioned that when Sir William MacGregor defeated an invading tribe some of them escaped to the islands, where, being in Queensland territory, he could not interfere with them. Few concerned in the Government of the Commonwealth, and few in Queensland, knew anything of the matter. The cash value of the whole territory involved was not more than £100 or £200; but it was a serious matter that involved the welfare of a great number of very decent people. The first thing was to get the people to understand the facts; when they did, there would not be two opinions as to the correct thing to do. The next thing was, What was to be done? The Parliament of Queensland must consent to the alteration of the boundaries of the State of Queensland, by giving up these island to New Guinea. In the next place the Parliament of the Commonwealth must consent, and then the electors of Queensland must consent when the matter was submitted to them. He suggested that at the next general elections ballot papers on this question should be submitted to the people, and this could be done at little cost.

Sir Hugh Nelson: About one in 1000 would vote.

Sir S. W. Griffith said if only five voted and three were in favour it would be sufficient. If he had an opportunity of communicating with any one concerned in taking the necessary steps it would give him the greatest pleasure. (Applause.)

Sir A. C. Gregory seconded the motion, and said it was important to include the whole of the islands with Queensland at the time; but the moment New Guinea had a separate Government the conditions changed.

The motion was carried with acclamation.
NEW ZEALAND:

Its Geographical and Meteorological Conditions Considered in their Bearing on Field Industries.*

BY GEORGE WOOLNOUGH, M.A.

Mr. President, Ladies, and Gentlemen.—I must premise that recently I went to New Zealand on holiday. At the same time I resolved to look around for forces at work, producing present real or apparent prosperity in that country. It may assist you in judging the value of my paper, if I indicate on a map the routes over which I passed. On landing at Wellington I went to the Lower Hutt to see the beautiful botanic gardens which are there. Arriving at Port Lyttelton, I entrained for Timaru, crossing the famous Canterbury Plains. From Dunedin, I went by railway, due south, to Balclutha; thence west to Lumsden; then northwards to Kingston. Lake Whakatipu, 20 miles to Queenstown, and 30 more to Glenorchy, is travelled by what is playfully called a pleasure steamer. Returning to Wellington, I took train for New Plymouth, thus crossing the south-west side of the Northern Island. From New Plymouth, by steamer, to Auckland. There I took train for Rotorua, running, for the distance, down almost the centre of the Northern Island. From Auckland I went by steamer along the eastern coast to Gisborne and Napier. At the last-named place I entrained again, for Wellington, running over the south-east part of the island. It thus may be seen that I passed over a great deal of country, and along many miles of coast, and that I had opportunity for seeing what other travellers see, under similar circumstances. Also, during my visit I saw and conversed with all sorts of persons likely to give me information. Specially I visited the Roslyn wool factory at Dunedin, and the Gear meatworks at Wellington. In both cases the proprietors and managers were most obliging, permitting me to see all that there was to be seen, and fully answering all questions. I came to the conclusion that the forces there at work for good are found (a) in the great natural resources of the country; (b) in the character of the people themselves; (c) in some of the conditions of their communal life; and (d) largely in the geographical and meteorological conditions of the country in their bearing on field industries.

Speaking before your Society. I confine myself to the last of these four things; though I should much like to speak on all of the others, especially on the second of them. Indeed, for the purposes

* Read before the Royal Geographical Society of Australasia, Q., May 28, 1904.
of my paper it seems necessary to say that I looked for a New Zealand type; but did not see one anywhere save at Dunedin. There I saw boys and girls, young men and maidens, typical of parentage and climate. The absence of type is a little perplexing, for the population of New Zealand is so largely native born. The percentages are: Native born, 66; Australian, 4; Great Britain and Ireland, 26; divided as follows—England, 14.5; Scotland, 6.20; Ireland, 5.64; and Wales, 0.22. Nevertheless, one was impressed by the fact that he was in a community of workers.

Perhaps, without visiting New Zealand, wholly by studying maps and returns, one might learn all of the main facts now to be dealt with by me; but, from experience. I am able to say that on a visit one is more deeply impressed than otherwise he could be. I first call your attention to the

"GEOGRAPHICAL SITUATION"

of the islands of New Zealand. A visitor, at first, is impressed chiefly by the painful fact that he must make a voyage of about 1,200 miles from the nearest part of the mainland of Australia before he can set foot in New Zealand. Sometimes that voyage makes the traveller wish that New Zealand were either so far off that he would not be tempted to pay a visit there: or so near that his misery at sea would be very brief. But even a visitor has to look at his map to see exactly the outline of New Zealand, and also its many island portions. The group used to be smaller; but in April, 1842, by royal letters patent, and again by the Imperial Act 26 and 27 Vict., c. 23 (1863), the boundaries of the country were altered, and made to extend from 33 degrees to 53 degrees of south latitude; and from 162 degrees of east longitude to 173 degrees of west longitude. By proclamation afterwards, and also quite recently, many islands have been added, so that the entire territory is made up of eleven groups of islands, comprising 104,751 square miles, in which are islands not available for settlement, having an area of 498 square miles. Here at once is a group of objects strong and silent, yet ever at work, aiding to produce those meteorological results called atmospheric pressure, temperature, and humidity, recognised by us as wind or calm, heat or cold, cloud or sunshine. I do not know if I am right but it appears to me that there is not another country in the world so admirably situated for supplying meteorological data from which approximately the most reliable forecasts of weather may be made. Only a thoroughly scientific treatment of the subject would suffice for safety and utility; and I do not pretend to have the skill, certainly I have not the time, for the work. But in passing the following observations may be made. The average of highest temperatures at eight principal stations was 83.32 degrees, the highest of them being 90.5 degrees; the lowest of them being 72 degrees; this was at Chatham Islands.
The average of the lowest temperatures was nearly 30 degrees; the highest of them was 38 degrees—namely, at Auckland; and the lowest was 25.9 degrees nearly 6 degrees of cold; this was at Christchurch. The average number of wet days was 184. The greatest number was 245, at New Plymouth; the smallest number, 120, was at Rotorua. The total rainfall for the year in the eight districts was: Auckland, 38.28 inches; Rotorua, 48.72; New Plymouth, 52.04; Wellington, 38.75; Hokitika, 96.07; Lincoln College, Canterbury, 24.49; Dunedin, 53.54; Chatham Islands, 39.62. The average of all these is nearly 49 inches. This is only a statement of the facts; it is not in any sense an analysis of them; nor does the statistician whose figures I have summarised give any analysis of his own data. He does supply a really remarkable table compiled from information published in the statistical abstract for the colonial possessions of the United Kingdom; but he leaves his readers to do their own analytic work.

In view of all the above, I feel no hesitation when saying that with climatic conditions, such as prevail here, land in New Zealand could not yield such abundant crops as are said to be garnered there. Approximately the following statement will show our rainfall for last year. At nine stations in the north-east the average fall was 75.3 inches. In the north-west the average fall at eight stations was 31.09 inches. In the central district at nine stations the average fall was 18.03 inches. In the south-eastern part of the southern district, at 23 stations, the average fall was 7.06 inches; and in the south-western part of the same district the average fall was 11.16 inches. Those totals give an average fall of 28.6 for the whole of Queensland. And that was in a comparatively wet year. In connection with this, consider our higher temperature and drier atmosphere; and then on comparison it may more fully be seen how favourable are climatic conditions to field industries in New Zealand.

The island character of New Zealand, with its 4,500 miles of coastline, for its three main islands, has much to do with its internal formation and its soil. The North Island, covering about 45,000 square miles, has one volcanic mountain and several high hills, which cover at least one-tenth of the area. It is what we call "unavailable" country. There are large areas of comparatively level country; some small ones, and some valleys, most of them having a light soil; but much of it is heavily timbered; and some of it is swamp. The agricultural area, thus made up, is set down at 13,000,000 acres: the purely pastoral area is set down at 14,200,000 acres. A remarkable feature of this must be pointed out. It is said to be especially suited for English grasses. Everyone who has had experience in English grasses, in a well-watered district in Australia, knows that by their use pastoral areas are made to carry three times as many stock as can
be carried on them if only natural grasses are there. The Middle Island, having an area of about 59,000 square miles, also is mountainous and hilly. The area of level or undulating land in the Middle Island available for agriculture is estimated at about 15,000,000 acres. About 13,000,000 are suitable for pastoral purposes only, or may become so when cleared of forest and sown with grass-seed. The proportions of agricultural and pastoral land, in the two islands, thus are seen to be as 28,000,000 acres to 27,000,000 acres. The traveller is sure to observe, in both islands, very large areas of very poor land—rabbit country, goat country. There are, in all, at least 10,000,000 acres of such land. In the extreme south, climate is not so favourable to farming. Sometimes an unripened crop will remain in the field all winter. Speaking now of

FIELD PRODUCTS.

I point out that objects which give greatest promise are most largely cultivated, climate and soil being duly considered. They are ordinary cereals, tubers, fruits, and cattle. So much has been said in regard to the first of these that I shall give a few very exact details. One day at Timaru, a cabman informed me that once upon a time land in New Zealand yielded 100 bushels of dressed wheat per acre. On my expressing a doubt, he admitted that perhaps he should have said oats. Some time afterwards a clergyman remarked to me that once upon a time land in New Zealand yielded 100 bushels of dressed wheat to the acre. I suggested oats, but the clergyman, as was proper, held his ground. Since my return to Brisbane I have encountered a man who assured me that once upon a time land in New Zealand yielded 100 bushels of dressed wheat per acre. Again I suggested oats, but he lost his temper, and assured me that his statement was correct, for he was living in New Zealand at the time. Both the cabman and the clergyman might have used the same fact in support of the statement. Had they and all other persons similarly situated done likewise, it is hard to see how any man could longer harbour unbelief. But it is a fact, on the authority of the last New Zealand official yearbook, that the average yield of wheat for the past 13 years was 26 bushels per acre. The yield for the year 1902 was the highest for the period given; it gave an average of 33.98 bushels per acre. Taranaki gave the highest average—namely, 40 bushels per acre. The yield of wheat in Queensland last year was, I believe, set down at an average of less than 20 bushels per acre. The yield of other cereals in New Zealand is given in authorised returns: and, as may be expected, they tally fairly well with the wheat returns. A similar remark may be made concerning tubers. A British-born man or woman is delighted on seeing so many sorts of old country fruits. When I saw all these things, the one word that incessantly ran through the mind was "climate." It accounted
for the extra beautiful dahlia blooms, the tall hollyhock, the daisy, and also for the sturdy form of the English dock and the Scotch thistle. Equally the climate accounts for the superb cattle, sheep, and horses of the country. Nowhere in Australia can be seen such horses as the Clydesdales of Dunedin. Scarcely did I anywhere see a poor-conditioned horse. Summer is the best season at which to see them. I know; but there they were, massive, sleek, strong, docile. I did not learn that there were any unions among them; and yet, if anywhere the horse is a happy animal, that place is New Zealand. Some parts of the country are cold enough severely to punish cattle, and occasionally sheep are lost in the snow. In the North Island may be seen the methods used to produce the incomparable crossbred mutton, of which New Zealand has sent so much to British markets. In its commercial aspects this is a very large subject: I mention it now only that I may point out once more the influence of climate. At the Gear meatworks, at Wellington, I saw about 3,000 mutton and lamb carcases. They looked as if the living animals must have been bred and fattened under the most genial circumstances; as if they had not suffered a day's thirst on the road to the works; they were models of form and condition. In the middle of January, the temperature in the cooling-room stood at 50 degrees Fahr. Once more the word "climate" came into mind.

From the above conditions, two remarkable, mutually reciprocal results take place. I first speak of the equable

**DISTRIBUTION OF POPULATION.**

In Victoria 41 per cent. of the people live in Melbourne. In New South Wales. Sydney claims 36 per cent. of the population: whereas Auckland, the metropolis of New Zealand, has only a little more than 8 per cent. of the people: Wellington, the capital, has a little more than 6 per cent.: Christchurch, the Boston of the country, has a little more than 7 per cent.: and Dunedin, the new Edinburgh, has about 6.4 per cent. of the entire white population. It is estimated that not more than 30 per cent. of the people live in towns having a population of more than 10,000 souls. Beside boroughs, there are 35 town districts, portions of counties in which they are situated, in only one of which districts does the population exceed 1,000 inhabitants. Then also there are 683 places in the nature of townships, villages, or centres of population. This important fact arrests the attention of the traveller. He observes that the people are on the land, because that is where are to be carried out so many of the industries by which we live. If we think of it we must feel sure that the simplest if the hardest industries, that of the field, always will attract the strong, comparatively unskilled, and unambitious youth of the community. At the same time they are attracted by the healthy, domestic, and humane character of field and home-
stead life. Manufacturing has not yet set up a very powerful counter attraction; and, as to factory life, if more money is earned, and if workers appear to have more freedom, they certainly have not either the health or the comfort of even yeoman farming life. These facts were noted by Dr. Victor S. Clark, who recently visited New Zealand to report on labour conditions there, by direction of the United States Government. He said "the population is rather evenly distributed in four main groups, around as many urban centres; and in this respect the colony is quite different from its Australian neighbours, each with its preponderating metropolis." The New Zealand people themselves are rather proud of this fact. Officially they say, "While New South Wales and Victoria present what is termed by the statistician of the former State 'the disquieting spectacle of capital towns growing with wonderful rapidity, and embracing in their limits one-third of the population of the territory of which they are the centre' New Zealand is saved from this by the configuration of the country." We need not dispute over the cause here assigned for the aforesaid distribution; but I stand by my statement. The configuration of the country in itself could not account for the whole of the result, for if the interior of the country did not contain fertile land, watered by abundant rains, and warmed by genial sunshine, island formed as the country is, there would not be more persons distributed over it than may be found in a corresponding area of our never-never country.

The other result intended by me is seen in the equable

DISTRIBUTION OF PROSPERITY.

A discussion of this great economic subject would lie outside the line which encloses your Society. But I mention it because in one respect it is germane to my theme. At least it may be brought in under an expression used in the heading of my paper; to wit, "the apparent" prosperity of New Zealand.

Where persons live in a state of nature, camping in the open, living on natural products, uncooked, there all alike are rich and all alike are poor. At the moment when accumulation begins, differences as between rich and poor develop. As accumulation augments, the differences become greater; till we have millionaires, if not paupers The great economic problem of the day is so to work that accumulation shall not be checked; and so to govern that it shall not be too unequally distributed. New Zealand, above any country, ancient or modern, known to us, has attempted, whilst allowing competition, to reduce this proposition to practical form. She boasts that to a large extent she has succeeded; and she has. It is so much in evidence that no observing person can visit that country without seeing it. But whoever has seen it, and also a striking example of
a converse character, must be tempted to consider which, after all, is the better of the two. Again I quote from Dr. Victor S. Clark. In his report to his Government, published in a bulletin of the "Bureau of Labour," he says, after looking at New Zealand as to the distribution of prosperity there, "it is not in a dead level of material comfort that the real prosperity of a nation consists. That was provided by the Incas of Peru. But it is in the constant incentive to individual enterprise, in untrammelled ambition, in the consciousness of the call to labour on the part of every member of the community. The 'strenuous life' is already a well worn term in our country, but it contains the secret of living for the present generation of Americans. We cannot but instinctively recoil from the thought of a State protectorate over our individual activities. The nation is largely composed of people whose ancestors, or who themselves, have devoted energy and sacrifice to getting away from that very thing. Labouring men say that the Arbitration Act in New Zealand has killed the 'fighting spirit' of the unions. That is possibly a social gain; but what American employer even does not feel a secret dislike of the situation it implies? In other words, our habits of thought and temperamental sympathies are not in accord with those dominant in New Zealand. The ways of the latter country may be better; but they are not our ways. We are less law-abiding as a nation than New Zealand, and more rampantly independent as individuals. An American community would soon kick holes all through the Acts of Parliament of the other country. We shall have to solve our social problems in our own way, and perhaps after longer and severer experiences than those of the colony. 'An ideal laboratory' is what a canny Scotch Labour leader called New Zealand. Such it is, indeed; and we must consider her legislation as laboratory experiments for ourselves." I have to add only two statements. One is that during my visit I was met by unfailing courtesy on the part of all persons from which I sought information; especially by Sir Joseph Ward, to whom I am indebted for most of the local statistical information used in this paper. When speaking on the same subject, Dr. Victor S. Clark said, "New Zealand is a country that one delights to visit and he regrets to leave it. Nature has endowed it with an excellent climate, abundant resources, and beautiful scenery. The people are of selected stock and of our nearest kin. Nowhere will a stranger meet with sincerer courtesy or more cordial hospitality. One feels like making a general acknowledgment to the whole colony for kindnesses received, when he leaves its shores." The other statement will be this: I set out with my paper to show—and I think that I have shown—that if the natural resources of New Zealand are an unmeasurable quantity, if the yeoman character of the people touches the highest mark, and if the communal government of the country falls
short only of the miraculous, the climatic conditions of the country
generally are most favourable to field industries, that they very
largely contribute to individual and public prosperity; and that,
therefore, in these respects New Zealand is favoured above all the
other islands and the mainland of Australasia.
ETHNOLOGICAL NOTES ON THE ABORIGINAL TRIBES OF WESTERN AUSTRALIA.

By R. H. MATHEWS, L.S.,

SYNOPSIS.—Prefatory; Origin of Australian Aborigines; Rock Pictures; Organisation; Initiation Ceremonies; Extraction of Teeth; Superstitions, etc.; Description of Plates; Language; Vocabularies.

During several years past I have been endeavouring to obtain reliable details of the rock-pictures and some other customs of the aboriginals of Western Australia. My mode of procedure has been to write to the owners and managers of stations in different parts of that State, to members of the Police Force, and also to others who might be recommended by any of these. Many of the persons who were thus communicated with made no response, but an individual observer here and there took an interest in my work, and did his best to help me.

I supplied to my correspondents categorical lists of the particulars required, and when I received a reply showing that the writer was a capable man, I again wrote to him for further details, or respecting new matters suggested by his letter. From the reliable character of my correspondents, and my own general knowledge of the subject under discussion, I feel sure that the information supplied in this article can be relied upon.

ORIGIN OF THE AUSTRALIAN ABORIGINES.

The probable origin of the Australian aborigines, and the development of some of their customs, are dealt with in my article† on “Les Indigenes d’Australie,” contributed to the twelfth session of the International Congress of Prehistoric Anthropology and Archaeology, held at Paris in 1900, and therefore it has not been thought necessary to say anything on that subject in the present paper.

ROCK PICTURES.

The rock-pictures of Western Australia, like those of New South Wales, must be divided under two heads—Carvings and Paintings. In the former the drawings are cut into the surface of the rock

* Read before the Royal Geographical Society of Australasia, Queensland.
either in outline or in low relief, whilst in the latter the pictures are painted in pipe-clay, red-ochre, or charcoal on the walls or roofs of caves or sheltered places, protected from the weather by overhanging ledges of rock.

Rock Carvings.—The mode of executing these carvings is as follows:—The outline of some object, say a kangaroo, was first sketched or designed on a smooth or even-faced rock, selected on account of its suitability for the purpose. Then the operator got a piece of hard stone, broken or chipped to a point or edge, with which he chopped and battered at the surface of his design until all the space inside the outline had been beaten away to a fairly uniform depth, say from a sixteenth of an inch to a quarter of an inch. The new surface exposed in this way forms a striking contrast to the surrounding weathered exterior of the rock. This fresh surface retains a distinctive colour for a long period, and shows the figures very clearly, giving them, at a distance, the appearance of standing out in relief.

The hammering and beating process is generally continued all over the surface of the design, but in some instances a band or groove is first formed along the outline of the figure, by chopping and hammering the rock surface in the way above described. The artist could then either batter away the internal surface, or leave the drawing in outline only.

It will be observed that the above method of indenting the design upon the rock differs somewhat from that employed in New South Wales, which I have described elsewhere.* In the counties of Cumberland, Hunter, and other places on the coast of New South Wales, where rock-carvings abound, the rocks consist of Hawkesbury sandstone, in which lines and grooves could be cut with comparative ease. In many parts of Western Australia, however, on the Upper Murchison, Gascoyne, Ashburton, Fortescue, Yule, and other rivers, for example, the rocks are mostly granite and basalt, to make marks on which would be very difficult. Repeated blows, as above described, would be the only way to execute the work with such rude tools as those used by the aboriginal artists.

About two miles south-westerly from Mount Stewart Station, on the Ashburton River, there are some hills, abounding in denuded masses of granite projecting many feet above the ground. Under overhanging ledges of these rocks, and in disintegrated hollows in their sides, the natives have apparently taken shelter from the sun and rain. On the walls of the rock-shelters, as well as on neighbouring rocks exposed to the weather, there are figures of men, iguanas, and other animals, all executed by beating away the surface

of the rock within their outline. There is no proportion between the relative sizes of the objects depicted: for example, there are drawings of men from one foot six inches to three feet, while iguanas on the same rock are as large as the men. Pictured rocks of this kind are usually near rock-holes, or other places containing water, which form convenient camping localities for the natives. Similar drawings to those described, incised in the rocks in the same manner, are found in several places throughout the Ashburton district.

On Hillside Station, between the Shaw and De Grey rivers, are some large granite rocks, close to the homestead, on which are drawn several pictures by cutting or beating away the surface of the rock. One of these represents a man about seven feet high.

Rock carvings are very numerous on the Yule and Shaw rivers, and, as one of my informants puts it, "they are in a variety of vulgar attitudes." They are incised on basaltic and granitic rocks by battering constantly within the margin of the object outlined until a slight depression is worn in the rock. Such drawings retain their fresh appearance for a very long time.

Similar carvings to the foregoing are reported by my correspondents as existing on Fortescue, Lyndon, Gascoyne, and Murchison rivers.

By far the most interesting and numerous display of aboriginal rock carvings in Western Australia, are found on Depoech Island, situated opposite Balla Balla, a small town formed, during recent years, on the mainland. The island is about four miles distant from the shore, and about six miles from Balla Balla township. The shores of the mainland in that locality consist of low banks of mud and sand, studded with mangroves. At low water spring-tides these sandbanks are sufficiently dry in some places, to admit of the natives walking out to the island, which is called, in their language, Wommalunna.

The island is a little over three miles long, and upwards of two miles wide. The highest part is at the western end, where it attains an elevation of between 500 and 600 feet. On the eastern end of Wommalunna is a fresh water spring, or natural tank, close to which are the native drawings described in this article. In rainy weather, water also collects in hollows in the rocks at different places. The natives used to cross over to the island, and remain there as long as the water lasted.

The island is one huge mass of igneous rocks, standing on end in thin layers, piled so loosely, block upon block, that in climbing over them, one expects the touch of his feet to start some monolith thundering down into an adjacent gully. Even the hardy spinifex cannot grow excepting in the gullies, where a few stunted white gum-trees and scrubs are also to be found. This scanty vegetation, however, sustains numbers of rock wallabies.
It will give the reader some idea of the great number of these rock pictures if I quote Mr. H. A. Hall's answer to my request to try and count them: "It would take hours to discover and count approximately all the drawings in the one gully I examined, still I think it is safe to say there are about a hundred. But there are many gullies on the island, and I am led to believe there are drawings, more or less, in most of them. In fact, a week or ten days could easily be spent in making up records of the aboriginal work." Mr. Wm. Byron, in one of his letters says, "After some difficulty I am able to send you about forty copies of the rock carvings on Depuch Island, of which there are hundreds."

In May and June, 1840, Captain Wickham, in the surveying ship _Beagle_, was in the vicinity of Depuch Island, the position of which he gives as Lat. 20° 38' S., and Long. 117° 44' E. Both he and Captain Stokes subsequently described the aboriginal drawings discovered there.* Captain Wickham speaks of "the vast number of specimens of art," and Captain Stokes says, "the number of specimens is immense," showing that both these officers were impressed with the great profusion of the drawings. Captain Stokes adds: "There is not in them to be observed the slightest trace of indecency." He either did not see the pictures found by my correspondents, or he mistook them for saurians—a mistake which anyone unacquainted with aboriginal drawings would be likely to make, especially in regard to some of them, where the penis is so much elongated as to resemble a tail; and in others where the length of the body is out of proportion to the rest of the figure. In fig. 6, however, of his plate of drawings, Captain Stokes shows a man with the genital appendage.

All the native pictures on Depuch Island (Wommalunna), are executed in the manner described in earlier pages of this article—that is, they are incised on the rock by repeated blows with a sharp instrument.

_Rock Paintings._—The rock paintings of Western Australia are produced mainly by drawing the required object on the smooth surface of the rock in the required colour. In some cases the objects are shown in outline only; in other instances the space within the outline is painted with a wash of the same tint; whilst not infrequently this space is shaded by lines or dots drawn either all in the same colour, or in two or more different tints. The drawings which appear in red are no doubt done with red oxide of iron, found as a clay, and known as red ochre. The white colour would be either pipeclay or fine ashes from the camp fire; whilst the black drawings are done with charcoal or soot.

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Native paintings consist largely of representations of the human hand. In some instances the extended hand was placed firmly on the surface of a rock sheltered from the weather, and the required colour blown or squirted over it out of the mouth. In other cases the palm of the hand of the artist was either rubbed over with a liquid, or was dipped into it, and while wet was closely pressed against a smooth surface on the cave wall. Upon removing the hand, the coloured impression of it was left clearly defined on the rock. Occasionally the surface of the rock was coloured previous to making the paintings upon it, for the purpose of greater artistic effect.

On the Ord River, Hall's Creek, Margaret River, and Sturt Creek, Mr. J. Wilson informs me there are numerous paintings on the rocks, representing kangaroos, snakes, iguanas, human feet, etc. Mr. J. C. Rose states that paintings of human figures, crocodiles, reptiles, and other animals, as well as native weapons, are common on the Fitzroy, Fraser, and Lenard rivers. I learn also from Mr. E. Smith, Mr. J. Hancock, and others, that aboriginal paintings on the rocks are plentiful on the Upper Murchison, Ashburton, Fortescue, and other rivers, being usually found near water. They consist of men, hands, weapons, snakes, and other devices.

The most famous of Western Australia's paintings, and at the same time amongst those possessing the greatest interest, are those discovered by Capt. Grey, afterwards Sir George Grey, on the Glenelg River, in March, 1838, which were described and illustrated in a work written by him in 1841.* Nothing definite was again heard of similar paintings in that district till 1891, when Mr. Joseph Bradshaw drew attention to the subject in a paper read before the Geographical Society in Melbourne.†

But the matter was not lost sight of by the Government of Western Australia, and when, in 1901, an expedition was sent out, under the command of Mr. F. S. Brockman, to explore the north-west district of Kimberley, the party was supplied with photographic appliances to secure copies of any cave paintings met with in any part of the journey. At different places photographs were taken, showing some very important aboriginal drawings found on the walls of rocks protected from the weather by overhanging masses of sandstone. The photographs thus obtained have recently been published by the Government of Western Australia‡ in official form.

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E—ROYAL GEO. SOCIETY.
Several of the paintings discovered by Mr. F. S. Brockman and his party are similar in character to those reported by Capt. Grey, and in order to give this matter further publicity, I have thought it desirable to copy one of the recent photographs into this article, because the Journal of this Society will go into many channels which will not be reached by the report of Mr. Brockman's discoveries.

The figure I have chosen for reproduction is numbered Plate 17 in Mr. Brockman's report. This painting is one of several discovered in caves on Bachsten Creek, a tributary of the Calder River, which empties into Collier Bay. This figure is all painted in red colour, with the exception of the eye-balls and the pendant-like object on the chest, which are in black, the whole of the rock-surface having been previously coloured white. The outlines of the face were measured, and found to be eighteen inches long and twelve inches broad. The entire painting is about five feet high.

The face is bounded by a double line, which extends downwards to form the shoulders, and is continued across the breast. The countenance consists of very large eyes and nose, but no mouth, unless the lower portion of the nose be intended for that feature. Around the sides and top of the head is a sort of halo, with lines radiating through it from the head outwards. Just beyond the halo is a broad band with a number of spots at tolerably regular intervals along the middle of it; and the ends of this band, which appear to be tasselled, almost touch the shoulders. There are two short arms, with bands around them, and five fingers on each hand. In the centre of the chest is a black object, the vertical dimension of which is about double the horizontal. The entire painting terminates at about the waist or abdomen, and there is nothing by which the sex can be determined. The vertical lines drawn on the body from the thorax downwards are not in my opinion intended to represent clothing, but are only for ornamentation. Towards the right of the picture are some rude outlines, one of which resembles a human foot with four toes, painted in red colour.

Somewhat similar paintings were found by Mr. Brockman's party in different places in the Kimberly district, but space precludes more than this brief mention of them. Plate 16 of Mr. Brockman's report represents a number of hands stencilled on a cave wall, similar to those reported by me to the Anthropological Society at Paris in 1898.*

ORGANISATION.

Western Australia is the largest of all the Australian States, and its native inhabitants have several systems of social organisation, which I will briefly refer to, for the purpose of giving their geographic distribution.

The most primitive of these organisations is the Tuar system which exists among the tribes on the west coast about Dongarra northerly to Onslow. In this system, the elders of the tribe allot the progeny of certain women to be the wives of certain men, but the relationship existing between the parties to the marriage must not be nearer than that of second cousins. As the Tuar is the same in principle as the Nanarri system of New South Wales, described by me in a previous paper in 1900,* it will not be necessary to go into details here.

Proceeding southerly from Dongarra to Perth and Albany, and thence to Eucla, extending inland to Norseman and Lake Barlee, we find the people of each tribe divided into two intermarrying phratries, called Wurtungmat and Munnitchmat, with rules of marriage and descent in accordance with the following table:—

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Munnitchmat</td>
<td>Wurtungmat</td>
<td>Munnitchmat</td>
</tr>
<tr>
<td>B</td>
<td>Wurtungmat</td>
<td>Munnitchmat</td>
<td>Wurtungmat</td>
</tr>
</tbody>
</table>

Mr. Thos. Muir, J.P., of Deeside Station, Western Australia, supplied this information in response to a letter which I wrote him. On my writing again, requesting him to further check the descent of the offspring, his reply was "this table is exactly right."

The families composing the two primary divisions mentioned bear the totem names of different animals, plants, or inanimate objects. Among the totems of the Munnitchmat phratry may be mentioned the following:—White cockatoo, kangaroo, fire, common black and white magpie, dog, pelican, carpet-snake, kangaroo-rat, blow-fly, porcupine, parakeet, and pigeon.

The undermentioned totemic names may be enumerated as embracing some of the people of the Wurtungmat phratry:—Crow, bandicoot, emu, mopoke, ringtail opossum, chuiok (bird), black duck, black cockatoo, iguana, spear, lizard, turkey, and wallaby.

My enquiries respecting the line of descent of the totems has not yet been satisfactory, but I am following up the investigation.

Another form of organisation consists in the bi-section of each phratry, thus making four intermarrying divisions, called Bulcharri, Kurrimurra, Burronga, and Banaka, or dialectical variations of these.

names. This system is in operation over more than half the geographic area of Western Australia, together with a wide zone through the centre of South Australia, reaching as far as the Georgina River, on the frontier of Queensland.

In all the northern part of Western Australia, situated north-easterly of a line drawn approximately from Collier Bay to Lake Macdonald, and continuing eastward into the Northern Territory, each phratry is subdivided into four sections, thus making eight divisions of the community. The names of these divisions are given in Table 16, _infra._

In order to explain this subject, it will be necessary to introduce tables to exhibit the intermarriage of the different divisions, and the sections to which the resulting offspring belong.

On the Murchison, Greenough, Sanford, Roderick, Wooramel, Gascoyne, and Lyons rivers, the several native tribes are divided as in the following table:—

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bulgdyerri</td>
<td>Kaimarra</td>
<td>Bulgyerri</td>
</tr>
<tr>
<td>B</td>
<td>Burung</td>
<td>Bugarlu</td>
<td>Burung</td>
</tr>
</tbody>
</table>

These sectional names, with some modifications, are found among the natives at Weld Spring, Bonython Creek, Lake Throssall, Elder Creek, Glen Cumming, and extend eastward into South Australia, where a similar organisation exists among the Andikariania and Arrinda tribes.

The tribes on the Ashburton, Fortescue, Oakover, and Throssell rivers have similar section names, with the exception that Banaka takes the place of Bugarlu, as under:—

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bulcharri</td>
<td>Kurrinurri</td>
<td>Bulcharri</td>
</tr>
<tr>
<td>B</td>
<td>Buronga</td>
<td>Banaka</td>
<td>Kurrinurri</td>
</tr>
</tbody>
</table>

These sections reach easterly into the Northern Territory of South Australia.

In the Roeburne district, and on the Yule, Maitland, Shaw, and De Grey rivers, the natives have practically the same four names for the divisions, but the sections constituting the phratries are different, as shown in the following table:—
Table 4.

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Paldyarri</td>
<td>Kaiamara</td>
<td>Banaka</td>
</tr>
<tr>
<td></td>
<td>Burungo</td>
<td>Banaka</td>
<td>Kaiamara</td>
</tr>
<tr>
<td>B</td>
<td>Kaiamara</td>
<td>Paldyarri</td>
<td>Burungo</td>
</tr>
<tr>
<td></td>
<td>Banaka</td>
<td>Burungo</td>
<td>Paldyarri</td>
</tr>
</tbody>
</table>

On the Lower Fitzroy and Lennard rivers, Jurrgurra Creek, and thence along the coast to Broome and Condon, are a number of tribes possessing the following four section names, which differ but slightly from those in the other tables:

Table 5.

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Parradyerri</td>
<td>Kaiamba</td>
<td>Panaka</td>
</tr>
<tr>
<td></td>
<td>Parungo</td>
<td>Panaka</td>
<td>Kaiamba</td>
</tr>
<tr>
<td>B</td>
<td>Kaiamba</td>
<td>Parradyerri</td>
<td>Parungo</td>
</tr>
<tr>
<td></td>
<td>Panaka</td>
<td>Parungo</td>
<td>Parradyerri</td>
</tr>
</tbody>
</table>

It will be observed in Tables 4 and 5, that Paldyarri and Burungo constitute Phratry A, whereas in Tables 2 and 3, that phratry consists of Buldyerri and Kaimara. This matter will be again referred to farther on.

Among a number of tribes occupying the country drained by the Ord, Denham, Fitzroy, and Margaret rivers, and on Sturt Creek, the people are classified into eight sections, which intermarry in conformity with fixed laws. A name is given to each of the sections, by means of which the members of the different divisions are readily distinguished; and identification is further facilitated by a masculine and feminine form of each of these eight names. Table 16.

The division into eight sections is also in operation over the greater portion of the Northern Territory, and extends into the north-west corner of Queensland. From information supplied by Mr. J. Cahill, manager of Wave Hill Station, on Victoria River, I reported the names of the eight sections obtaining on that river and its affluents with the laws of intermarriage and descent.

Mr. W. Holze, of Daly Waters, in 1900 gave me full details of the intermarriages of the eight sections of the Chingalee tribe, and likewise of the tribe at Elsey Creek. I contributed the former to the Anthropological Society at Washington, and the latter I reported to

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3 American Anthropologist, ii., N.S., pp. 494-497.
the Royal Society of New South Wales the same year. I also communicated the divisions of the Elsey Creek tribe to the Society of Anthropology at Paris:2

Mr. Holze sent me a comprehensive vocabulary of the Chingalee language, and also a valuable table of totems, showing their inter-marriage and descent, both of which I contributed to the Royal Geographical Society at Brisbane in 1901.13 I am likewise indebted to Mr. Holze for much reliable and important information respecting native customs in the Northern Territory.

The eight sections of the M'Arthur and Calvert rivers tribes were collected for me by Mr. M. Costello, and communicated to the American Philosophical Society at Philadelphia in 1899.4

The Inchalachee and Warkya (or Waggia) tribes have eight divisions, which were tabulated under my direction by Mr. A. H. Glissan, Rockland Station, and reported by me in 1899.5

In the foregoing brief review of the social organisation of the native tribes of Western Australia, it has been shown that in some districts the primitive system of the Tuar is employed to regulate intermarriages. In other localities the community consists of two phratries, as A and B, without any further subdivision. (Table 1). Over the greater part of Western Australia there is a partition of each phratry into two sections, making four divisions of the tribe. (Tables 2, 3, 4, 5). Among the inhabitants of other districts there are four subdivisions of each phratry, giving a total of eight sections. (Table 16).

These different types of organisation have originated so far back in the past that the present natives cannot give any account of their raison d'être, and therefore I shall venture to state a theory by means of which the origin of the different systems could be accounted for. My object in adopting this course is to invite discussion on this highly important subject among ethnologists in various parts of the world reached by the Journal of this Society.


BY R. H. MATHEWS, L.S.

Following a line of reasoning I have before adopted, in dealing with Australian organisations, we will assume that in the remote past there were two tribes called Bulcharri and Banaka, who, either by conquest or as a matter of public policy, amalgamated, and that the Bulcharri men married the Banaka women, and vice versa. This would give us the organisation shown in the following table, the offspring taking the mother's name:

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bulcharri</td>
<td>Banaka</td>
<td>Banaka</td>
</tr>
<tr>
<td>B</td>
<td>Banaka</td>
<td>Bulcharri</td>
<td>Bulcharri</td>
</tr>
</tbody>
</table>

Let us also say that Kaimarra and Burungo united in the same manner, and intermarried one with another, as follows:

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Kaimarra</td>
<td>Burungo</td>
<td>Burungo</td>
</tr>
<tr>
<td>B</td>
<td>Burungo</td>
<td>Kaimarra</td>
<td>Kaimarra</td>
</tr>
</tbody>
</table>

It will be observed that the organisation in each of the Tables 6 and 7 is precisely the same in principle as that existing at the present day among the Parnkalla tribe, the Yowerawarraka tribe, the Barkunjee tribe, and several others. Likewise, the children belonged to the same phratry as their mothers, as in the tribes quoted.

We will now assume that the confederacy represented in Table 6 conquered that in Table 7, or that these two peoples considered it politic to amalgamate for purposes of mutual advantage. Such an alliance could have been accomplished by the interchange of sisters between the members of the opposite confederacies in this way:— Bulcharri could have taken the sister of Burungo, and have given his own sister in exchange; Kaimarra and Banaka could have exchanged sisters in a similar way; but there was no alteration made in the names of a man's offspring in any instance. The united confederacy would then be illustrated by Table 3, ante, which represents the organisation as we find it to-day among the tribes on the Ashburton and other rivers.

On the Murchison River and elsewhere, the section name Bugarlu, as stated in an earlier page, takes the place of Banaka,

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which could be explained by supposing a tribe named Bugarlu, instead of Banaka, to have amalgamated with Bulcharri in past times.

Further, if we take the four names in Tables 4 and 5, we discover that the phratries comprise different sections to those shown in Tables 2 and 3, as already mentioned in an earlier page. It may be postulated that the people in Table 4, for example, consisted in ancient times of the confederacies illustrated in Tables 6 and 7, and that at a later period they became amalgamated. The consolidation of the four sections, however, was effected by the coalition of different pairs of sections. Bulcharri married the sister of Kaimarra, and Kaimarra took the sister of Bulcharri as his spouse; Burungo and Banaka exchanged sisters with each other in the same manner, thus constituting the organisation existing at present on the De Grey River and elsewhere. (Tables 4 and 5).

Instead of exchanging sisters, as above suggested, the coalescence of tribes could be accomplished by the exchange of wives. This arrangement would be only temporary, or it might endure for that generation. But in the rising generation, the men of Phratry A would obtain their wives from among the sisters of the men of Phratry B, and conversely, precisely the same as we find marriages arranged at the present day.

We also discover, in examining Tables 3 and 4, that although the phratries in each table are not composed of the same sections, yet the offspring have the same fathers in both tables. For example, in Table 3, Bulcharrie marries Burronga, and his children are Banaka; but if we take Table 4, it is seen that Bulcharri marries Kaimarra, and his children still retain the name of Banaka. This is, of course, likewise true of the other three sections.

This may, perhaps, bear the construction that at the time of the amalgamation of these four sections, it was considered best to bestow on a man's offspring the same section name which they bore before the consolidation, or, in other words, not to let the mother influence the line of descent, as had been the custom under the ancient organisation represented in Tables 6 and 7.

Referring back to Phratry A of Table 3, it will be observed that Burronga is the regularly appointed wife of Bulcharri, and his children are Banaka. In certain cases, however, where there is no blood relationship, it is sometimes permissible for Bulcharri to marry a Banaka woman belonging to a distant tribe, but in such case the children are called Burronga. This alternative privilege may be a survival of the archaic law, when Bulcharri married Banaka, as in Table 6, and the descent of the progeny was regulated by the mother. Kaimarra can, under like circumstances, take a Burronga woman as his alternative wife, and his children are Banaka. The same rule applies to the men in both sections of Phratry B.
The fact of different pairs of sections being employed to constitute the phratries exhibited in Tables 3 and 4, and the consequent variation in the intermarriage of the four sections, together with the persistency of the names of a man's children in both tables, may help to strengthen the hypothesis of the consolidation of a number of small clans into pairs, as in Tables 6 and 7, or into quartettes, as in Tables 2, 3, 4, and 5.

If we travel easterly from the tribes we have been describing, and proceed into the Northern Territory, we find not only the same organisation, but section names are met with, some of which are almost identical with those in Tables 3 and 4. For example, at Charlotte Waters and Alice Springs, in the Northern Territory, the people are segregated into four sections, which intermarry as in the following synopsis:—

**Table 8.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bultara</td>
<td>Koomara</td>
<td>Panungka</td>
</tr>
<tr>
<td></td>
<td>Parulla</td>
<td>Panungka</td>
<td>Kumara</td>
</tr>
<tr>
<td>B</td>
<td>Kumara</td>
<td>Bultara</td>
<td>Parulla</td>
</tr>
<tr>
<td></td>
<td>Panungka</td>
<td>Parulla</td>
<td>Bultara</td>
</tr>
</tbody>
</table>

The sections Bultara, Kumara, and Panungka very closely resemble the corresponding names in Table 4, but Parulla appears in lieu of Burungo. This intrusive name, if it be not a dialectic variation of Burungo, may be accounted for in the same way as Bugarlu, referred to in an earlier page.

Continuing still farther to the eastward till we reach the boundary between the Northern Territory and Queensland, we encounter tribes having four sections, as under:—

**Table 9.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Belthara</td>
<td>Gubilla</td>
<td>Deringara</td>
</tr>
<tr>
<td></td>
<td>Kumara</td>
<td>Deringara</td>
<td>Kumara</td>
</tr>
<tr>
<td>B</td>
<td>Gubilla</td>
<td>Belthara</td>
<td>Belihara</td>
</tr>
<tr>
<td></td>
<td>Deringara</td>
<td>Kumara</td>
<td>Belihara</td>
</tr>
</tbody>
</table>

The two names in Phratry A of this table are substantially the same as Bulcharri and Kaiamarra in that phratry of Table 3, but the two remaining names, Gubilla and Deringara, take the place of Burronga and Banaka.

It now remains to apply our theory to the explanation of the origin of the present system of dividing a tribe into eight sections, the names of which are given in Table 16, *infra*. In order to simplify the illustrations, the masculine form only of each section name will be used.
Let us assume that in times of yore the Changura and Chabalyi clans became consolidated, by conquest or otherwise. A Changura man espoused a Chabalyi woman, and vice versa, the offspring taking the name of the mother in both cases, as under:—

**Table 10.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Changura</td>
<td>Chabalyi</td>
<td>Chabalyi</td>
</tr>
<tr>
<td>B</td>
<td>Chabalyi</td>
<td>Changura</td>
<td>Changura</td>
</tr>
</tbody>
</table>

A similar incorporation took place between the Chauan and Chauarding tribes:—

**Table 11.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Chauan</td>
<td>Chauarding</td>
<td>Chauarding</td>
</tr>
<tr>
<td>B</td>
<td>Chauarding</td>
<td>Chauan</td>
<td>Chauan</td>
</tr>
</tbody>
</table>

Afterwards these two confederacies amalgamated by an interchange of sisters, as exemplified in the attached table, but leaving the section name of the offspring the same as before:—

**Table 12.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Changura</td>
<td>Chauan</td>
<td>Chabalyi</td>
</tr>
<tr>
<td></td>
<td>Chauarding</td>
<td>Chabalyi</td>
<td>Chauan</td>
</tr>
<tr>
<td>B</td>
<td>Chauan</td>
<td>Chabalyi</td>
<td>Chauarding</td>
</tr>
<tr>
<td></td>
<td>Chauarding</td>
<td>Chabalyi</td>
<td>Chauan</td>
</tr>
</tbody>
</table>

In those days, Changura had, perhaps, the privilege of taking Chabalyi as an alternative wife, being similar to the law now existing among the tribes on the Ashburton River and other parts of Western Australia, possessing a quadruple organisation, already referred to. Chabalyi was Changura's former wife in Table 10.

In illustrating the remaining four sections, we will postulate that in former days the Chungala and Chambin tribes sought incorporation, and intermarried one with the other, as follows:—

**Table 13.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Chungala</td>
<td>Chambin</td>
<td>Chambin</td>
</tr>
<tr>
<td>A</td>
<td>Chambin</td>
<td>Chungala</td>
<td>Chungala</td>
</tr>
</tbody>
</table>

We will also suppose that Chuaru and Chagara were similarly coalesced:—

**Table 14.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Chuaru</td>
<td>Chagara</td>
<td>Chagara</td>
</tr>
<tr>
<td>A</td>
<td>Chagara</td>
<td>Chuaru</td>
<td>Chuaru</td>
</tr>
</tbody>
</table>
Subsequently these two confederacies became amalgamated in the same manner as those represented in Table 12, the section name of each man’s children remaining unchanged:

**TABLE 15.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Chungala</td>
<td>Chuaru</td>
<td>Chambin</td>
</tr>
<tr>
<td></td>
<td>Chagara</td>
<td></td>
<td>Chuaru</td>
</tr>
<tr>
<td>A</td>
<td>Chuaru</td>
<td>Chungala</td>
<td>Chagara</td>
</tr>
<tr>
<td></td>
<td>Chambin</td>
<td>Chagara</td>
<td>Chungala</td>
</tr>
</tbody>
</table>

From eight separate clans or tribes we have now illustrated the development of two communities, one represented by Table 12 and the other by Table 15, each of which has four intermarrying divisions in its social organisation. At a later period these two communities became consolidated into their present form, and the hypothetical course followed in arriving at this result will now be investigated:

A man of the Changura section in Table 12 espoused the sister of Chungala in Table 15; Chauan took the sister of Chuaru; Chagara in Table 15 annexed the sister of Chabalyi; and Chambin took the sister of Chauarding. Again, a Chungala man took the sister of Changura; Chuaru espoused the sister of Chauan; Chauarding took the sister of Chambin; and Chabalyi annexed the sister of Chagar. The intermarrying sections of the new organisation, with the names of their sons and daughters, are as under:

**TABLE 16.**

<table>
<thead>
<tr>
<th>Phratry</th>
<th>Father</th>
<th>Mother</th>
<th>Son.</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Changura</td>
<td>Nungala</td>
<td>Chabalyi</td>
<td>Nauadyerri</td>
</tr>
<tr>
<td></td>
<td>Chuanan</td>
<td>Nuaru</td>
<td>Chauarding</td>
<td>Nabungarti</td>
</tr>
<tr>
<td></td>
<td>Chagara</td>
<td>Nauadyerri</td>
<td>Chuaru</td>
<td>Nuaru</td>
</tr>
<tr>
<td></td>
<td>Chambin</td>
<td>Nabungarti</td>
<td>Chungala</td>
<td>Nungala</td>
</tr>
<tr>
<td>B</td>
<td>Chungala</td>
<td>Nangili</td>
<td>Chambin</td>
<td>Nambin</td>
</tr>
<tr>
<td></td>
<td>Chuaru</td>
<td>Nauana</td>
<td>Chagar</td>
<td>Nagra</td>
</tr>
<tr>
<td></td>
<td>Chauarding</td>
<td>Nambin</td>
<td>Chuan</td>
<td>Nauana</td>
</tr>
<tr>
<td></td>
<td>Chabalyi</td>
<td>Nagra</td>
<td>Changura</td>
<td>Nangili</td>
</tr>
</tbody>
</table>

The rules of marriage in the above table are those mostly followed; thus, Changura marries Nungala, which I have elsewhere called the “direct” or “tabular” law. Changura can, in certain circumstances, marry Nuaru, which I have denominated the “alternative” law. It may be explained that Nuaru is Changura’s father’s sister’s daughter, but the relationship must be collateral and not of the full blood. Moreover, Changura may occasionally espouse the sister of Chauan, who was the ancient wife of the Changura section (Table 12), which is probably commemorative of the intermarrying
code of that period. This may be called the "rare" or "ancient" law. In earlier pages of this article reference has been made to the privilege of marrying the "ancient" wife in the quadruple organisation. Attention is again drawn to the matter, because if it be a survival of the old law, it may add strength to the theory of the consolidation of small tribes into confederacies in the past.

Again, in examining Table 16, it will be seen that Chauan's "tabular" wife is Nuaru, his "alternative" spouse, Nungala, and his "ancient" wife, Nangili. It therefore appears that Changura and Chauan may exercise their choice over the same two sections of women; and they can also make matrimonial exchanges of their sisters with each other. In other words, Changura and Chauan can mutually exchange either their wives or their sisters. These two men were brothers-in-law under the ancient regime (Table 12), and they are indirectly so still. These remarks apply to Chagara and Chambin, and also to the pairs of sections in Phratry B of Table 16.

In Phratry A of Table 16 it is seen that Nungala is the mother of Nauadyerri, Nauadyerri of Nuaru, Nuaru of Nabungarti, and Nabungarti of Nungala, and this series is repeated in the same order forever. A similar result is obtained by taking successive generations of the women in Phratry B.

Again, taking Phratry A of Table 16, we observe that Changura is the uncle (mother's brother) of Chambin; Chambin is related in the same manner to Chauan; Chauan is the uncle of Chagara; and Chagara is the brother of the mother of Changura—the latter being the name with which we commenced. This succession of the uncles and nephews is repeated in the same order from generation to generation. This applies also to the men of Phratry B.

If we wish to place together all the women in each phratry to show their order of descent, and if we also desire to demonstrate the lineal succession of the uncles and nephews, then Table 16 is a convenient arrangement of the sections. But if our object be to illustrate the descent of the offspring through the men, then the following classification is preferable:

<table>
<thead>
<tr>
<th>Moiety</th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Changura</td>
<td>Nungala</td>
<td>Chabalyi</td>
<td>Nauadyerri</td>
</tr>
<tr>
<td></td>
<td>Chabalyi</td>
<td>Nangara</td>
<td>Changura</td>
<td>Nangili</td>
</tr>
<tr>
<td>B</td>
<td>Chauan</td>
<td>Nuaru</td>
<td>Chauarding</td>
<td>Napungarti</td>
</tr>
<tr>
<td></td>
<td>Chauarding</td>
<td>Nambin</td>
<td>Chauan</td>
<td>Nauana</td>
</tr>
<tr>
<td></td>
<td>Chagara</td>
<td>Nauadyerri</td>
<td>Chauar</td>
<td>Nuaru</td>
</tr>
<tr>
<td></td>
<td>Chbaru</td>
<td>Nauana</td>
<td>Chagara</td>
<td>Nagara</td>
</tr>
<tr>
<td></td>
<td>Chambin</td>
<td>Napungarti</td>
<td>Chungala</td>
<td>Nungala</td>
</tr>
<tr>
<td></td>
<td>Chungala</td>
<td>Nangili</td>
<td>Chambin</td>
<td>Nambin</td>
</tr>
</tbody>
</table>
The reader of this table sees that the men of each pair of sections in Moiety A reproduce themselves in alternate generations; that the men in each pair of sections in Moiety B do likewise; and that the children belong to the same moiety as their fathers. Again, the men of Moiety A are the same as those in Table 12, whilst the men of Moiety B coincide with the names in Table 15. It is, moreover, observed that the "direct," the "alternative," and the "rare" wives all belong to the same moiety in each instance.

Full details of the intermarriage and descent of the sections, with particulars of the totems among a number of neighbouring tribes in the Northern Territory, were supplied in an article I contributed to the Geographical Society of Queensland in 1901, to which the reader is referred.

INITIATION CEREMONIES.

In a strip of country commencing at Cape Arid, and thence along the coast to Albany, Fremantle, and Sharks Bay, to Onslow, extending inland all the way for about a hundred miles or more, it is found that the natives neither circumcise nor subincise. But throughout the whole of the remainder of Western Australia both these rites are practised. As I have elsewhere given tolerably full descriptions of the ceremonies connected with the performance of these mutilations, in the adjoining State of South Australia, they will be passed over at present.

EXTRACTION OF TEETH.

Along the West Australian coast from Roebourne or Condon southerly, via Onslow, Carnarvon, Geraldton, and Fremantle, to Albany, and thence easterly to Eucla, on the South Australian boundary, the custom of taking out a front tooth is not practised. From Derby up along the Fitzroy River and its tributaries to Hall’s Creek, thence down the Ord River to Wyndham, and thence round along the coast, via Beagle Bay, to Condon, two front teeth are extracted in some tribes, and in others one tooth. In the central districts of Western Australia the extraction of teeth is also in force.

SUPERSTITIONS, ETC.

The natives of Western Australia, like their confreres in other parts of the continent, have many superstitions. They believe in a number of malevolent spirits, who are always prowling about, more especially at night. They are present in deep waterholes, in whirlwinds, in thunder, in certain scrubby and rocky places, in storms, and elsewhere. They are supposed to have the form of men and animals, and possess purely human traits. There is nothing sacred in their character, although they are said to exercise supernatural

powers. Instead of endeavouring to propitiate these mysterious creatures, the men treat them as they would any human foe, and try to scare them away by open acts of defiance, or to counteract their wicked designs by magic.

Respecting the origin of these mystic spirits, the natives do not trouble themselves to formulate any definite idea. Some are supposed to have had an existence coëval with that of the blacks themselves, whilst others are feared because they are the shades of departed enemies. There is no conception of a good or friendly spirit any farther than that some of the ancestors of the tribe will try to favour them by driving food-producing animals into their country.

Their ceremonies refer largely to the supply of food. Each wizard or shaman has his own special occult functions. Some profess to have the power of giving success in the chase, others in fishing, others in making rain to supply them with water in the rock-holes, and so on. On such occasions they repair to a secluded rock, called tarlo, which is used only at these ceremonies, and the practitioner rubs or beats the rock with a stone held in the hand, muttering incantations the while.

The natives of Sturt Creek and the Fitzroy and Ord rivers believe that a supernatural monster in serpent form made all the rivers, as he travelled inland from the sea, which is his home. In some districts this creature is known as Ranbul, and in others as Wonnaira.

The natives around Weid Spring have a legend that in the desert country beyond the Parker Ranges there are enormous snakes, called Wonnangura, living in the vicinity of rock-holes and other places where there is water. If a blackfellow wishes to go to a rock-hole or spring to get a drink, it is necessary that one or more of his friends should keep watch, or else these venomous monsters would bite him, or perhaps devour him. Whirlwinds are also said to prevail in that country, which would carry a blackfellow off, and deposit him in some rocky mountain or dense scrub far away in an enemy's country. A whirlwind is supposed to be the tail of a maleficent monster in serpent form.

The boundaries of the hunting grounds of the different tribes are defined by patches of scrub, hills, sandy tracts, or any remarkable natural features. If these are trespassed upon by adjoining tribes, the intruders are driven back by armed force.

A man's weapons, utensils and ornaments belong solely to himself, and at his death are buried with him. Each woman also has her own personal property, which is either interred with her or left at her camp. In the Kimberley district the usual mode of burial is to place the body, wrapped in paper-bark, on a platform of sticks in the branches of a tree. Sometimes in rocky country, the body is laid on a shelf of rock, above which there is a projecting ledge.
Among the Lyndon and Minilya river tribes there is a belief that a creature of malignant power, called Yamaji, comes into the camp at night and carries a man away into the mountains, where he changes his language, and brings him back to the camp. Next morning no one can understand the man who has been treated in this way. Sometimes it is a woman who is taken away by Yamaji. Perhaps this superstition has developed to account for a man or woman losing his or her reason after exposure to thirst, sunstroke, or other hardship.

Some of the natives believe they can delay the setting of the sun by lighting a fire on a high rock, or by fastening a burning stick in the fork of a tree. Having done this they travel as fast as they can towards their camp, apparently believing that they will get there before the darkness sets in.

Mr. H. T. Knight, station manager, Lyndon River, writes to me that one day during a thunderstorm he saw a black woman take her little girl and dip her in a pool, for the purpose of inducing the rain to cease, because it was not wanted just then. In an interview with Mr. G. Buchanan, Flora Valley Station, near Hall’s Creek, in the Kimberley district, he told me a similar story. A black woman was stopping in the stable, and during a storm she held her child under the drip from the eaves, to stop the rain, in order that she could get away home to her camp.

In my “Ethnological Notes on the Aboriginal Tribes of the Northern Territory,” I have described their customs in hunting, fishing, and other methods of obtaining food; their camps, vessels, and weapons; some of their superstitions, sorcery, barter, modes of burial, wife stealing, etc. All the particulars given in the work referred to are applicable to the aborigines of the Kimberley district of Western Australia. They are in effect the same race as the natives of the part of the Northern Territory with which I dealt in my former treatise, which can therefore be read in connection with the present article.

In conjunction with the present paper, I would also ask the reader to peruse my treatise on “The Origin, Organisation, and Ceremonies of the Australian Aborigines,” which is accompanied by a map of Australia, showing the geographic distribution of the tribes under each type of social organisation, and exhibiting also the boundaries between those tribes who practise circumcision and subincision, and those tribes among whom neither of these genital rites are in force.

1 Queensland Geographical Journal, xvi, pp. 78-85.
DESCRIPTION OF PLATES.

PLATE I.—Rock Carvings.

In this plate I have illustrated nine carvings upon rocks on Depuch Island, called by the aborigines Wommalunna, all of which have been drawn to scale by myself.

Figs. 3, 4, 6, 8, and 9 have been drawn from photographs furnished by Mr. W. A. Hall, already referred to in this paper. Figs. 1, 2, and 5 I prepared from careful sketches and measurements taken by Mr. Hall under my direction.

Fig. 7 was copied by myself, as stated in the text, infra.

In Figs. 1, 3, 4, 6, 7, 8, and 9, the whole surface within the margin of the object depicted has been chopped or beaten away, this being indicated by solid colour on the plate. Fig. 5 is in outline only, and Fig. 2 partially so.

Fig. 1.—A man three feet seven inches high. It is executed on the perpendicular face of a rock about forty feet up the side of a steep gorge. Mr. W. A. Hall says in his letter to me of September 16th, 1901, "We tried very hard to photograph this figure, but there was too much angle from either side, and only the smallest of ledges in front. The original artist must have suffered some little inconvenience to execute his drawing."

Fig. 2 represents a human foot, with eight toes. It is one foot five inches in length, and seven inches wide. The figure is in outline, with the exception of the toes, where the rock surface has been beaten away.

Fig. 3 shows three birds, cut upon a monolith lying on the side of a hill, and forming an inclination of about forty-five degrees to the horizon. The birds are shown on the plate in their correct relative position to each other, and the line around them represents the margin of the rock on which they are carved. Mr. W. A. Hall says in his letter above mentioned: "The block of stone containing the three birds weighs between two and three hundredweight. I started two of my crew carrying it to the dingey, but the track was so rough, and the tide receding so fast, we had to leave it, but I intend securing it at some convenient time later on."

Fig. 4 is probably an emu or native companion in the attitude of feeding, and measures two feet three inches from the bill to the tail.

Fig. 5.—This carving is in outline only, the incised lines being about half an inch wide and a quarter of an inch deep in the centre. It is probably an unfinished drawing.

Fig. 6.—This is intended for either a wallaby or kangaroo, and is one foot seven inches in length.
Fig. 7 represents a man one foot nine and a-half inches in height, carved on a slab of stone two feet five inches high, by an extreme width of one foot ten inches.

Mr. W. A. Hall brought this rock, which weighs about two hundredweight, with him from Depuch Island to Cossack. On my expressing a wish to see it, he packed it carefully in bags and shipped it to Sydney, whence I had it brought to Parramatta by a drayman. I then copied Fig. 7, which is the only drawing upon this monolith.

Fig. 8.—It is impossible to say what the native artist wished to portray in this drawing, which is on the perpendicular face of a slab of rock.

Fig. 9 is shown in its correct relative position, and represents a man or woman seven and a half inches in length.

It may be stated here that I supplied my correspondents with accurate copies of the carvings published by Capt. Wickham and Capt. Stokes respectively, already referred to, and asked them to endeavour to identify some or all of such drawings. I regret to say that very little success was met with. Fig. 6 of my plate, however, is probably identical with Fig. 11 of Capt. Stokes' plate, or Fig. 67 of Capt. Wickham's plate.

PLATE II.—ROCK PAINTINGS.

The drawings shown on this plate have already been described in the text of this article, from details supplied by Mr. F. S. Brockman, in a personal letter, at my request.

LANGUAGE.

Two short vocabularies are added, for comparison with those compiled by other authors in different parts of Western Australia. The first one contains 155 words noted down by myself from the mouth of a native of the Roebourne district named "Baibung." He belonged to the section Banaka, and totem kangaroo. (See Table 4). The second vocabulary of 125 words is prepared from information supplied to me by Mr. A. E. Clifton, manager of the Yeeda Station, near Derby, and represents the language spoken on the Lower Fitzroy River. In a paper contributed to the Royal Society of New South Wales in 1901, I furnished a vocabulary showing 120 words of the Kishu language, collected under my direction by Mr. W. J. Wilson, police officer at Hall's Creek, in the Kimberley district.1

As far as my information at present extends in regard to the languages of Western Australia, I am led to the following conclusions respecting their grammatical structure:—There are the singular, dual, and plural numbers. Nouns and adjectives are declined by postfixes. Pronouns and other parts of speech subject to inflection

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have an inclusive and exclusive form of the first person in the dual and plural. The verbs are inflected somewhat similarly to those in the languages of the Darling River tribes in New South Wales.

The study of the aboriginal languages of Western Australia has been very much neglected. The following is a summary of the principal pioneers in this direction:—

In 1842, Mr. Charles Symmons, Protector of the Aborigines, with the assistance of F. F. Armstrong, the Native Interpreter, published

PLATE II.

a short article entitled "Grammatical Introduction to the Study of the Aboriginal Language of Western Australia." It appeared in C. Macfauull's "Western Australian Almanac for 1842, with Appendix," pp. 1-28. This work, which is elementary and incomplete, deals with "the language spoken by the Australian aborigines on the banks of the Swan River, and in the country adjacent."
Mr. Symmons is the only author, so far as I am aware, who has attempted to define the grammatical constitution of the Western Australian tongues. But a few of the vocabularies which have appeared at different times are deserving of mention:—

Captain Grey, afterwards Sir George Grey, prepared a vocabulary of the language spoken "from King George's Sound to more than one hundred miles beyond Perth." The title of this work is "Vocabulary of the Dialects of South-western Australia." (Perth, 1839.)

The Rev. J. Brady printed a "Descriptive Vocabulary of the Native Language of Western Australia." (Rome, 1845.) He explains that "the words contained in this vocabulary are used in the vicinity of Perth and adjacent districts." He also states, "Nothing is said here about the grammar of the language, because it is not sufficiently known."

In 1866, Mr. E. M. Curr published vocabularies of several tribes on the western and southern coasts of Western Australia. "The Australian Race," vol. i, pp. 292-406.

A short vocabulary of native words in use among the Gualluma tribe, located between the Yule and Fortescue rivers, was collected by Mr. E. Clement in 1899, and published in the Journal of the Anthropological Institute (London), vol. ii, n.s., pp. 192-196.

CONCLUSION.

It is hoped that the information supplied in the foregoing pages may be found useful to ethnologists, geographers and linguists in dealing with the customs, boundaries, and classification of Australian tribes.

The attention of the reader is also invited to the following papers contributed by me during past years to other learned societies on the subject of the aborigines of Western Australia.


"Western Australian Divisions." Journ. Roy. Soc. N. S. Wales (Sydney, 1898), vol. xxxii., pp. 84-86.

"The Origin, Organisation, and Ceremonies of the Australian Aborigines," Proc. Amer. Philos. Soc. (Philadelphia, 1900), vol. xxxix., pp. 556-578, with map of Australia, on which is shown the distribution of the tribes of Western Australia.
**VOCABULARY—ROEBOURNE DISTRICT.**

**Family Terms, Etc.**

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A man, Nga'ada or Mulba</td>
<td>Old woman, Munga</td>
</tr>
<tr>
<td>Husband, Ngurra</td>
<td>Young woman, Kuri</td>
</tr>
<tr>
<td>Father, Mamana</td>
<td>Wife, Mirrawai</td>
</tr>
<tr>
<td>Boy, Kobbodia</td>
<td>Sister, Konnarung</td>
</tr>
<tr>
<td>Elder brother, Gurannha</td>
<td>Child, neuter, Munggula</td>
</tr>
<tr>
<td>Woman, Dhurramba</td>
<td></td>
</tr>
</tbody>
</table>

**Natural Objects.**

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun, Yunda</td>
<td>Camp, Nyirrang</td>
</tr>
<tr>
<td>Moon, Willara</td>
<td>Bough hut, Maja</td>
</tr>
<tr>
<td>Stars, Binderi</td>
<td>Stone, Munda</td>
</tr>
<tr>
<td>Pleiades, Kuriguri</td>
<td>Sand, Yundaga</td>
</tr>
<tr>
<td>Wind, Thura</td>
<td>Egg, Dyimbu</td>
</tr>
<tr>
<td>Whirlwind, Wunnangurra</td>
<td>Charcoal, Dyinda</td>
</tr>
<tr>
<td>Thunder, Yindarra</td>
<td>An enemy, Dyuna</td>
</tr>
<tr>
<td>Lightning, Wulliwuddi</td>
<td>Evil spirit, Warungga</td>
</tr>
<tr>
<td>Clouds, Kandera</td>
<td>Any tree, Barku</td>
</tr>
<tr>
<td>Rain, Yungo</td>
<td>Firewood, Thamara</td>
</tr>
<tr>
<td>Water, Baba</td>
<td>Flesh, food, Mundu</td>
</tr>
<tr>
<td>Fire, Kulla</td>
<td>Yams, Mudumuri</td>
</tr>
</tbody>
</table>

**Parts of the Body.**

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head, Thuru</td>
<td>Ribs, Thambi</td>
</tr>
<tr>
<td>Beard, Nganga</td>
<td>Heart, Kurrunggulla</td>
</tr>
<tr>
<td>Hair, Kulkara</td>
<td>Breasts, female, Bebi</td>
</tr>
<tr>
<td>Neck, Ngulye</td>
<td>Backbone, Muru</td>
</tr>
<tr>
<td>Eye, Thula</td>
<td>Thigh or leg, Wuli'ugali</td>
</tr>
<tr>
<td>Nose, Mula</td>
<td>Foot, Dyinna</td>
</tr>
<tr>
<td>Teeth, Era</td>
<td>Penis, Wandi</td>
</tr>
<tr>
<td>Tongue, Yaluru</td>
<td>Serotaun, Karru</td>
</tr>
<tr>
<td>Ear, Gulga</td>
<td>Vulva, Minni</td>
</tr>
<tr>
<td>Arm, Thilli</td>
<td>Bone, Kudyi</td>
</tr>
<tr>
<td>Elbow, Wungulla</td>
<td>Skin, Kunnu</td>
</tr>
<tr>
<td>Hand, Murra</td>
<td>Blood, Mudda</td>
</tr>
<tr>
<td>Navel, Nilu</td>
<td>Excrement, Gunu</td>
</tr>
<tr>
<td>Stomach, Ngalu</td>
<td>Urine, Kumbo</td>
</tr>
</tbody>
</table>

**Animals.**

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dog, Yugurra</td>
<td>Black duck, Kundarri</td>
</tr>
<tr>
<td>Wild dog, Wundya</td>
<td>Corella, Bilyago</td>
</tr>
<tr>
<td>Kangaroo, Mungurru</td>
<td>Fish, collectively, ta-wu-ru</td>
</tr>
<tr>
<td>Padamelon, Burtkarri</td>
<td>Snakes, collectively, Wallu</td>
</tr>
<tr>
<td>White cockatoo, Metameta</td>
<td>Common lizard, Babangurra</td>
</tr>
</tbody>
</table>
Animals—Continued.
Claw of dog, etc., Birrigal.
Claw of bird, Mungulla.
Common ants, Waruma.
Butterfly, Kunullawulli.
Feathers, Wullaguru.

Flies, Wurri.
Mosquito, Kuniin.
Louse, Kulo.
Centipede, Minnawanggo.

Weapons, Etc.
Hair belt, Barawuru.

Verbs.
Come, Kugai.
Bite, Mindhalgo.
Pierce, Kuddhalgo.
Cry, weep, Nguddinyinba.
Sleep, Gunumba.
Eat, Ngannumba.
Drink, Bundyalga.
Jump, Mungangurri.
Arise, Karri.
Fight, Kurramanba.
Dance, Banigo.
Look, Wialgo.
Kill, Nyiddigalma.
Fly, as a bird, Kungurra.

Adjectives.
Quick, Wulli.
Slow, Thuragu.
Strong, Nunggo.
Sick, Wirago.
Wicked, Wulkva.
Distant, Kuddvaguda.
Stinking, Buka.
One, Igawuda.
Two, Kudhara.
Several, Murru.

Miscellaneous.
Yes, kugu. No, mita. Here, numno. There, nyinna. I go, nguddha yannamba. We two go, ugalli yannamballi. We all go, nyealu yannambulu. How far, ngani muna.

Since the occupation of the country by European stock, the following names have been invented:—Cattle, billamanba. Horses, yau-a-da. Sheep, kukundyai.
VOCABULARY—LOWER FITZROY RIVER.

FAMILY TERMS, ETC.

Man, Wamba.  Woman, Dyandu.
Old man, Wadal.  Wife, Wangu.
Father, Ibilla.  Mother, Kuya.
Elder brother, Bubbala.  Elder sister, Warnu.
Younger brother, Murridyudda.  Younger sister, Nemmera.
Husband, Yargu.  Little girl, Kanyarri.
Youth, circumcised, Balalli.  Child, either sex, bubba.
Man, incised, Wongalong.

PARTS OF THE BODY.

Head, Xalma.  Teeth, Cherink.
Hair, Labindyenna.  Chin, Temgu.
Eye, Nemilgera.  Cheek, Maila-maila.
Ear, Nillabubba.  Forehead, Cherribil.
Nose, Wanabubna.  Beard, Ngulgu.
Smell, Ibbandvun.  Breasts, female, Xumiba.
Mouth, Xillira.  Finger, Wirril.

NATURAL OBJECTS.

Sun, Walga.  Smoke, Dui.
Moon, Kerrading.  Thunder, Chidama.
Stars, Larn.  Lightning, Pinmuk.
Rain, Whella.  Canoe, Kulbia.
Rainbow, Miding.  East, Bauna.
Light, Chanera.  West, Kula.
Darkness, Yingadi.  North, Yo-wan.
Morning, Neimbi.  South, Yanbun.
Day, Dyumbel.  Subincision, Worral.
Night, Baian.  Watercourse, Ximmila.
Heat, Barra.  Grass, Worra.
Cold, Amini.  Tree or wood, Barlo.
Fire, Dyungu.  Bark, Kuding.
Milk, Numina.  Hut, Maiarra.
Evil spirit, Bullingun.  Hole, Dabbu.
Shadow, Nimmeradya.  Lump, Durrug.
Wind, Wongal.  Path, Kurdi.
Mist, Dyaboera.  Footmark, Neinbel.
Native-dog, Kurrida.  
Kangaroo, Baldyering.  
Fish generally, Bi.  
Opossum, Langura.  
Emu, Yulgi.  
Iguana, Banne.  
Eaglehawk, Kalbedyug.  
Crow, Wungina.  
Black duck, Warrabaluin.

Wood spear, Minigwal.  
Reed spear, Dyennil.  
Shield, Karribina.

Alive, Marbu.  
Dead, Kud.  
Large, Wida.  
Small, Wuba.  
Long, Idan.  
Short, Wongoela.  
Good, Marbu.  
Bad, Melu-marbu.  
Hungry, Marrinyang.  
Thirsty, Barra.  
Red, Bul.  
White, Dup.  
Black, Rauga.  
Full, Mera.  
Empty, Marrinyang.

Animals.  
Plain-turkey, Mongaiera.  
Pelican, Maiada.  
Laughing jackass, Dyarradyurra.  
Native companion, Kargurn.  
White cockatoo, Ngulagu.  
Black cockatoo, Darreal.  
Fly, Dumbara.  
Mosquito, Nilagul.  
Snake, Churra.

Weapons.  
Boomerang, Chibba.  
Club, Marballing.

Adjectives.  
Quick, Bulla-bulla.  
Slow, Bunga.  
Blind, Mulgun.  
Deaf, Bubbadarra.  
Strong, Cherril.  
Weak, Wogala.  
Heavy, Duan.  
Light, Ngorla.  
Afraid, Waddyi.  
Sweet, Yarrawan.  
Right, Munmeragun.  
Wrong, Chuda.  
Straight, Charar.  
Crooked, Chulga.

Correction.  
In Vol. xvi. of this Journal, in my "Ethnological Notes on the Aboriginal Tribes of the Northern Territory." p. 70, fourth line from the bottom, after the word "Nambijana," add "or Chapota and Nemira, or Changary and Xhermana." These words were inadvertently omitted.
THE ANTARCTIC:

BEING THE ANNIVERSARY ADDRESS TO THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.*

By the Right Hon Sir HUGH M. NELSON, K.C.M.G., D.C.L., F.R.G.S., etc., President.

LADIES AND GENTLEMEN,

On the occasion of our last annual meeting, I directed your attention to the exploring expeditions that were then at work in the Antarctic regions, and gave you a short résumé of the previous history of Antarctica. One of the most pleasing features connected with this subject in recent times is the combined international action of the various countries that have taken part in the work. This modern exploration may be said to have taken its rise from our Geographical Congress held in London about the year 1894; and three of the most important European nations have co-operated in the search for the secrets of that vast ice-bound region. The Germans and the Swedes each sent out exploring parties supplied with the most approved models of ships specially designed for the purpose; and the British, as I pointed out to you, sent out a most fully equipped expedition under the command of Captain Scott, assisted by a party of scientists, most of whom were lent by the Lords of the Admiralty, who have rendered the Geographical and Royal Societies every assistance in their power. Commander Scott obtained from them almost everything he wanted as regards both officers and men, so that the "Discovery," when locked up in the ice, had on board, out of 38 all told, 30 naval officers and men. And here it is fitting that I should mention the loyal co-operation of the Government of the Argentine Republic, for, when requested by the Geographical Society to establish another magnetic station, the request met with a most cordial assent, and one was immediately equipped on a small island off Staten Island, near Cape Horn; so that simultaneous magnetic observations were able to be taken there; and at Bombay, Mauritius, Christchurch, Melbourne, Falmouth, and Kew, as well as on board all the exploring ships. And I may mention another proof of the cordiality of the Argentine Government and people, for, when it appeared that the Swedish

* Delivered at the Annual General Meeting, September 19, 1904.
expedition was in trouble, on account of the leader, Dr. Norden-
skiöld, failing to return at the time appointed, they sent out one
of their most capable naval officers for the relief of the expedition,
providing a gunboat for the purpose, and were successful in rescuing
the party and bringing them all safe back with their collections of
fossils, etc., to Buenos Ayres. I also mentioned that an expedition
was equipped and sent from Scotland under the command of Mr.
W. S. Bruce.

Now, I dare say, it would be interesting for you to learn some-
thing of the fate of these various expeditions so far as our present
information extends. It will be remembered that the "Scotia"
left the Clyde in the early days of November, 1902. She wintered
in the South Orkneys, and returned at the end of the following
November, leaving a small party to carry on meteorological work,
the vessel returning to Buenos Ayres for coal, etc. In February of
the present year the "Scotia" returned to the South Orkneys, and
continued her explorations in the Weddell Sea. They reached
74 deg. 1 min. S., and 22 deg. N., where they were ice-bound. After
getting free, they coasted 100 miles along what the expedition
believes to be the Antarctic Continent, which would thus lie some
600 miles north of the position in which it has been supposed to be.
It is believed that the collections made will prove of great scientific
importance. The "Scotia" returned via the Cape with a very
successful record for her two seasons' work.

Then, with regard to the Swedish expedition, Dr. Norden-
skiöld's experiences were probably of a more sensational character than
those of any of the others. The "Antarctic," in which he sailed
became a total wreck, and the crew under Captain Larsen
experienced great hardships. The doctor was not himself on board
at the time the wreck occurred, as he had established himself at a
station in Admiralty Inlet which he named "Snow Hill," whilst
the ship proceeded exploring southward. On January 10th she
experienced a violent gale from the south, which so compressed the
ice that the ice-blocks were piled higher and higher all around the
long-suffering vessel, and the stern was forced upwards more than
four feet. Then there came a huge block of ice loftier than the
others with a long projecting ice-foot under the surface of the
water. The monster struck the ship from beneath, broke the keel,
tore up the bottom planking, bent the propeller shaft, and so
completely squeezed the after-part of the ship that its timbers gave
way and let in floods of water. By great exertions they managed
to keep her afloat for about a month, until at last all hope was gone,
and after transferring to the ice-floe everything that might come in
useful, the moorings were let go, the Swedish flag was hoisted, and
they all stood silently watching how the gallant ship that had braved
so many hard tussles with hustling ice and boisterous waves in Polar seas, both north and south, slowly and solemnly sank into her watery grave. It was not, however, until November, living mostly upon penguins that they were able to find their way to the station at Snow Hill, and by a fortunate circumstance reached there just as the Argentine relief ship under Lieutenant Irizar arrived. The work of the expedition does them great credit, and the leader has been congratulated on having made an eventful discovery, namely, the finding of land plants on the Antarctic continent, which give a clear intimation that there was once a warm tropical climate in these latitudes; and he has further, probably, established another fact, namely, the connexion of the Antarctic lands with South America.

The German expedition leaving Kerguelen Island as I previously mentioned, in the end of January, steered eastward of south until they arrived at shoal water before crossing the Antarctic Circle. Here they discovered land by slogging expeditions about 50 miles south from their winter station, where the ship was beset in the ice. This land consists of a volcanic hill which they named "Gaussberg," and some ice-cliffs, the whole being called "Kaiser Wilhelm Land." Their position was on a comparatively shallow bank; and it is considered that this was a specially favourable position for making biological observations. No land observatory. The meteorological series of observations will be valuable, and the magnetic observations taken in co-operation with the other stations have special value. When the ice broke up in the summer, 30th January, Dr. Erick v Drygalski sailed several hundred miles westerly; the "Gauss" returned by way of the Cape.

Let us now devote a little attention to the expedition with which we are more immediately connected, and see how Commander Scott and his party spent their second winter, and how they were able at last to escape from the ice and return to their native land. In conveying to you such information as I have, I think I cannot do better than give you a few extracts from Captain Scott's first report, written on arrival at Auckland Islands. . . . In my last we left the "Discovery" ice-bound near the huge volcanic mountains named by Ross, the Erebus and Terror, having just received from the relief ship "Morning" a supply of coal and provisions.

Writing from Auckland Island Commander Scott reports:—

"The winter closed in very rapidly after the departure of the 'Morning' on March 2nd. 1903: temperatures fell and the weather became gloomy, but there was little snow. Some ice broke away, but the open water never came nearer than within four or five miles of the ship. The month of March was occupied principally in laying in a store of seal meat and flesh of skua gulls for winter consum-
tion. Fish traps were also set, but though at first these were very successful they soon ceased to provide any substantial addition to our fare. The articles supplied us by the "Morning" consisted principally of tinned vegetables, soups, sauces, herbs, pickles, and bottled fruits. They were not absolutely essential, but they greatly added to our comfort. Of such necessaries as biscuits, oatmeal, flour, and sugar, we had an ample supply, and from this time we ceased altogether to use tinned meats.

"When April came without change in the ice conditions, we were forced to abandon all hope that the ship would be free. The "Discovery" had been prepared for sea, but she was now again dismantled. The winter awning was spread and snow was placed on the decks. We soon came to understand that our second winter was likely to be far pleasanter than our first. Experience suggested numerous ways in which the material comfort of the living quarters could be improved. The men were in excellent spirits, much exercise was taken, and games of hockey, etc., continued until the fight failed. But the greatest advances were made in respect to the food and light. It was only after his departure that I fully appreciated how far our wretched cock had gone in spoiling the food. Under new arrangements the food was always appetizing, and though seal meat was the principal fare, all hands partook of it and continued to enjoy it thoroughly.

"The light provided throughout the second winter was acetylene gas. A stock of calcium carbide had been obtained for the hut, and this was now brought into use with a single burner in each compartment of the living space. The light was brilliant and had a most happy effect on the comfort of the community. This beautiful illuminant is in every respect excellently adapted for use in a Polar winter. Generally speaking, we had less wind in the early winter of 1903 than in the corresponding season of 1902, but in the latter months of 1903 the wind increased considerably, so that the averages for the two seasons differ but little. The temperatures during the latter season have been far lower. I have already remarked that the 'Discovery' lay in a most sheltered spot. The difference in temperature between a thermometer in the screen and one placed 1½ mile to the south was rarely less than 10 deg. It was in this outer position, in the month of May, that we read the low temperature of 67.7 deg. From this time the temperature rose until it again fell in the spring. We had no heavy gale or snowfall until the second week in June, when a heavy southerly blizzard again buried the ship in drift.

"Ample employment for the men was found in preparing for the spring sledging. This involved much repairing and renewing and some change in design of the equipment. In drawing out plans-
for the coming sledging season. I thought it wise to fix its conclusion at a comparatively early date, in order that all hands might be available to assist in releasing the ship should the opportunity occur. The date fixed was December 15, as at this time, in 1902, the open water was within nine or ten miles of the ship. In arranging the extended journey, I was confident that without dogs it would be useless to attempt to penetrate further to the south. My experience of the barrier surface and some arithmetic convinced me that a party of men could not hope to reach beyond the farthest point of the previous year, however amply supported. The actual performance of the southern parties completely justified this view. Our course of the previous year had taken us well clear of the land to the south-west; but there remained many points of interest in connection with the junction between the barrier and the land, and especially in connection with some apparent straits which intersected the coastal mountains, and which we had only viewed at a great distance. In the second place, we did not know what lay to the south-eastward. We imagined the barrier to extend almost indefinitely in that direction, but we had no proof. Finally, I thought it possible, with the help of experience, to penetrate considerably further to the westward over the ice-cap of Victoria Land. Our small complement only admitted of two properly-supported journeys and one unsupported journey. I decided that the supported journeys should be to the south-west and west, the unsupported to the south-east. The latter was entrusted to Lieut. Royds, the south-west journey to Lieut. Barne, and I arranged to lead the western party myself.

"The winter passed away with extraordinary rapidity, and without a single case of sickness. With the spring, the whole ship became very busy with immediate preparations for the sledging.

"Lieut. Barne left the ship on Sept. 12, placed a depôt to the south, and returned on Sept. 20. His party included Lieut. Mułock, Quartly, Smythe, Green, and Joyce. They experienced the lowest temperature for a sledging party on record, the thermometer remaining almost continuously below 60 deg., and registering as low as 68 deg. Under these very severe conditions there was only one very severe frost-bite. This was one of Joyce's feet, which on two occasions had to be nursed back to life for more than an hour.

"The western party of last year spent considerable time in crossing a range of foothills 4,000 feet in height. I thought it possible to avoid this, and started on September 9 to find a new route and establish a depôt. The party included Mr. Skelton, Mr. Dailey, Evans, Lashly, and Handsley. We found an easy road up a glacier, and placed the depôt at a height of 2,000 feet, 60 miles from the ship. Returning from this point in three and a-half days,
we regained the ship on September 20. We were to some extent sheltered from the extreme cold encountered by the other parties, but the temperature was frequently below 50 deg., and at lowest 59.5 deg. I have mentioned these temperatures, because I believe they are almost, if not quite, without precedent in Polar travel, and they therefore afford the best possible proof of the excellent state of health of the ship's company.

"The extended south-western journey was started on October 6. One of the most important facts discovered on this journey was the movement of Dépôt A. The fact admits of no doubt, as the dépôt was established on the line of transit of two well-defined peaks. It was found to have moved a distance of 608 yards across the line. This is the only definite measurement of a barrier movement we have obtained. It may be difficult to understand how vast all these ice-problems are to a sledge party endeavouring to solve them. Once amongst the disturbed ice, it may take days to reach a point but a few miles distant. Meanwhile, the party is repeatedly plunged into hollows, where they can see nothing, and the greatest care has to be exercised to avoid dangerous crevasses.

"The western party left the ship on October 12. The main party consisted of myself, Mr. Skelton, Mr. Feather, Evans, Lashley, and Handsley; the supporting party of Mr. Ferrar, Kennar, Weller, Mr. Dailey, Wilkinson, and Plumley. The ascent, which led over the icy surface of a glacier, was in places extremely rough, and we soon had considerable trouble in keeping the sledges in repair. By October 18 we had arrived at a point about 5,000 feet above sea-level, and 80 miles from the ship; but here, discovering that the runners of three out of four sledges were practically disabled, we had no choice but to return to the ship. With a final march of 31 miles, the ship was reached on the night of October 21. I decided to make a fresh start to the west with the main party only, and arranged for Mr. Ferrar to proceed independently with two men. Kennar and Weller. He elected to accompany my party to the summit, and to make his geological examination when returning, at his leisure. Accordingly, I again left the ship on Oct. 26, with repaired sledges and a party of nine. We had further difficulty with the sledges, and were delayed by thick weather and heavy winds, but on November 4 reached a height of 7,200 feet. Here we were forced to remain in camp for six and a-half days, during the whole of which time the wind blew furiously from the summit; the air was thick with driving snow, and the temperature was continuously low. Two attempts were made to start, but frost-bites came so rapidly that we were quickly driven back to our sleeping-bags. Towards the end the very close confinement began to tell on the party, and I had decided to get away at all hazards, when the wind fortunately
lulled. We managed to get away, and over the summit, whilst Mr. Ferrar started to descend. We were now at a height of 8,900 feet, at which altitude we continued as we advanced to the west.

"Dr. Koettlitz spent the greater part of the summer in bacteriological work. Mr. Hodgson took advantage of the fine weather to augment his collections. Mr. Ford remained on board as cook and steward. And Dell, who, on account of a wound in his arm, was prevented from sledging, was employed in training the dog-team. The team, which consisted of six young dogs, born in 1902, soon became highly efficient; at first, in supplying the sawing camp, and later, in communicating with the relief ships, they proved of the greatest use. Before leaving the ship, I had seen a large tent made in preparation for the summer work. I directed that this tent, together with the necessary stores and a boat, should be taken to the northward before December 15, that the tent should be erected in a safe spot to leeward of some islets about nine miles from the ship, and that sawing should be commenced near this camp as soon as the officers and men returned from sledging. I have already mentioned that in December, 1902, the open water was close to the islets. My intention to be back by December 15, 1903, was frustrated, and Lieut. Armitage took charge of the operations, but under considerable difficulties, for the open water was not now within 17 miles of the ship or eight of the camp. Under these circumstances, he decided to start sawing near the camp, thinking that the saw-cuts might remain open, although the floes could not be detached till the outer ice had broken away.

"The sawing was commenced on December 18. But shortly after officers and men were divided into three watches of nine, which, by relieving one another, kept one saw continuously at work. The ice was from 7 feet to 8 feet thick, and the greatest length of cut accomplished in a four hours' watch was 40 feet, where as to clear a channel it is necessary to saw approximately four times its length. It was soon discovered, that the saw-cuts, being filled with slush, were rapidly refreezing. The prospect was not inspiring, yet the work was cheerfully continued.

"I reached the camp on New Year's Eve, and, seeing the futility of the work, which had now been in full swing for more than ten days, arranged to break up the camp and return to the ship. With the exception of Dr. Koettlitz, Mr. Ford, and my own sledge party, all hands were employed on the saw. The work was hard, and its hopeless nature must have been obvious to everyone, yet it was carried on vigorously, in the evident determination that no effort should be spared in the cause of freeing the ship.

"It was most gratifying to see the splendid state of the health of the party. Sledging and sawing had combined to bring all into
the fittest condition—appétites were enormous, spirits never flagged, and it would have been difficult to find a more contented community.

"The men returned to the ship on January 2. On the following day Dr. Wilson and I proceeded to the ice-edge, and camped on the westernmost headland of Erebus Island, which I have called Cape Royds. We found here a new rookery of Adelie penguins, and a number of erratic granite boulders, and decided to remain some days. At this time the ice showed no sign of breaking up; a loose patch lay off its edge, coming and going with wind and tide, but effectually damping the swell.

"On January 5 were were looking to seaward from our tent, when the 'Morning' hove in sight, shortly followed by another ship, for which we were wholly unable to account. After signalling through to the 'Discovery,' and arranging for the transmission of mails, we went aboard the 'Morning,' and soon learnt all the news. I need not say how concerned I was to learn the extensive preparations that had been made for our relief; the letters made it quite clear how this had come about, but it was impossible not to feel the keenest regret that our position should not have been better known and such a large outlay avoided.

"The instructions to abandon the 'Discovery' cast a gloom over the whole ship; the spirit in which they had been issued was understood, but on the spot, face to face with the situation, the ultimate release of the ship appeared a certainty to everyone. There was not one who would not have been prepared to back his opinion by remaining by her, or who did not shrink from the thought of leaving her. Up to this time we had all held optimistic views of our chances of release in the present season. Captain Colbeck's report of a clear sea to the north was also cheering, but towards the last week in January, when there was little change in the ice conditions, all began to grow despondent; it seemed as though the ice were determined to exact its tribute.

"The 'Terra Nova' attempted to butt the ice with a full head of steam, but the result was insignificant; some explosives were tried, but more with the idea of ascertaining the best method of using them than from hope of an effective result. The distance was altogether too great for such attempts.

"To be prepared for all contingencies, I thought it wise to commence the transport of our most valuable effects to the relief ships on January 15. It was arranged that one large tent should be placed and kept half-way between them and the 'Discovery.' The loads were taken to this tent by our own people, and from thence carried on by the sledge teams to the relief ships. The service became so extremely heavy that the parties were obliged to spend each alternate night in the tent, and it was, therefore, only
on alternate days that loads were dispatched from the ship. By
the end of the month, all collections, registers, instruments, and
valuable books had been transported.

"The first general break-up of the ice commenced towards the
end of January. A heavy swell entered the strait, and was felt very
distinctly on board the 'Discovery.' The ice went out very rapidly,
and in large floes, which streamed away into the north-west. The
result of our ten days' labour on the saws went out in one large floe.
By the end of the month both ships were inside the glacier, eight
miles to the north. On February 3, the open water was within
six or seven miles of the 'Discovery, but by this time the swell had
almost vanished, and the ice was quiescent. If the explosives were
to be used, I now thought the distance warranted their trial, and
went myself to the relief ships for that purpose. The ice edge now
extended in a straight line, approximately east and west, for a
distance of six or seven miles, and this broad front was more or less
equi-distant from the 'Discovery' at every point. The slight swell
that remained formed long cracks from 100 yards to 200 yards apart,
parallel to the ice-edge, and extending its whole length. In course
of time a lateral track would suddenly spread from the edge to the
outer crack, then in a very short time all the ice beyond the outer
crack would strip away along the whole edge. These lateral cracks
formed the lines of weakness, and it was in making them artificially
that I hoped for good results from the explosives. A few trials
proved so effective, that on February 6 an explosive party was sent
from the 'Discovery,' and all available hands from the 'Morning'
and 'Terra Nova' were employed in digging holes for the explosion.
The holes were made from the eastern extremity of the ice on a
line towards the 'Discovery,' and at intervals varied according to
circumstances. The thickness, and in places the sodden condition
of the ice, made this work most laborious, and I cannot speak too
highly of the manner in which the crews of both relief ships stuck
to their work. On more than one occasion, when the results war-
ranted, they volunteered to continue throughout the night. Although
at times the effects of the explosions were most inspiring and great
advance was made, there were several days when little or no good
results appeared to be achieved, and as the season advanced each
day became of great importance. On February 10 our prospects did
not look bright; but on February 11 another big break-up of the
ice occurred, and on February 12 the relief ships were within three
miles of the 'Discovery.' Explosions were resumed, and on the
morning of February 14 this distance had been reduced to one and
a-half mile. At 5 p.m. on the same day another break-up com-
menced, and the men working on the ice could barely be picked up
fast enough. The news quickly spread on board the 'Discovery,'

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and all hands were soon assembled on Hut Point. The floes appeared to break away about as fast as the relief ships could steam through them. As usual, the broken ice streamed away to the north-west. A large pool of broken water had been gradually forming throughout the season off Hut Point, and at 11 p.m. the last strip of fast ice between this pool and the sea broke away, and, amid much enthusiasm, the relief ships steamed round the point and secured abreast of the 'Discovery.' Although the ice continued to break away to the south, it held fast in the small bay in which the 'Discovery' lay, and here it was from 12 feet to 17 feet thick. On February 15 we were busily engaged in filling the boilers. In the night I exploded a charge, which cracked the ice in all directions.

"Early on February 16, a final explosion practically cleared our small bay of ice, and the 'Discovery' swung slowly round to her anchors, one of which was immediately weighed. In the evening the 'Terra Nova' came alongside to give us coal, but later it blew hard from the south-west, and she again put to sea. A strong wind from this quarter was a most rare occurrence, and I expected that, as usual, the wind would quickly shift to the east; but, though it lulled in the night, in the morning it increased to a full gale without change of direction and with a rising sea. The 'Discovery' has heavy anchor gear, but I knew the holding-ground to be bad, and that we were too close to the ice-foot to allow of cable being veered. Steam was raised with all despatch, but before the engines were ready the ship began to drag, until her stern was bumping against the ice-foot, and the moment that the engines were reported ready, I had no option but to weigh anchor. It was an unfortunate moment for a first trial of the engines, but all would have been well had we been able to hold our own till clear of the small shoal off Hut Point, barely a quarter of a mile from the ship. At first we did so, but later the strong current running to the northward round this point caught our bows and swept us on to the shoal, and she took the ground at 11 a.m., with wind, sea, and current all tending to place her farther ashore. In the afternoon it blew very hard, the ship bumped very heavily, and the seas broke over her. Knowing the shoals to be small, and finding a deeper sounding at the bowsprit end, I tried with steam and sail to force her over the bank, but this only seemed to make matters worse. There was nothing to be done till the weather moderated. It was a very trying time, but everyone behaved admirably, and arrangements for lightening the ship were discussed. At 6 p.m. the wind commenced to lull, and shortly after seven the ship was reported to be forging astern; in a few minutes there was no doubt of the fact. The engines were put full steam astern, and the ship rolled, until at 7.30 she slid off into deep water. Whilst ashore a good deal of the false keel was ripped
off. Beyond this, I do not think the ship sustained any damage whatever. There was no increase in the leaks."

Continuing his narrative, he says: "On March 4, a fairly good haul was made with the trawl. On this day I was much tempted to continue in a south-westerly direction, but had again to deplore the insufficiency of our coal supply. We had now little more than fifty tons left, and this, I knew, would be barely enough to carry us to the rendezvous. The 'Discovery' is a wretched sailer, and in her present trim, with the small spare rudder, is almost unmanageable under sail alone, however the yards may be trimmed. When close hauled she carries almost full weather helm, and makes from three to four points to leeway. To economise coal we had to remain under sail on more than one occasion when amongst bergs, and the situation was rendered more unpleasant by the fact that there were only four hands in the deck watch. Under steam and sail she behaves exceptionally well for a ship of her class; she is very stiff and weatherly, and we have never yet found it necessary to heave to.

"On March 5 we re-crossed the Antarctic Circle, after an interval of two years and two months. From this time we had almost continuous north-westerly and westerly gales until we arrived at Auckland Island. The three days were spent under sail alone, but we made so much lee-way that we were obliged to get up steam again. We sighted these islands on March 14, having been close hauled throughout. Early on March 15 we anchored in Laurie Cove, with ten tons of coal remaining in the bunker. The 'Terra Nova' arrived on March 19, and the 'Morning' on March 23. Both ships had experienced very severe weather; they had been driven far to the eastward, and had been repeatedly hove-to. We have here re-filled our boilers, and received thirty-three tons of coal from the "Terra Nova." The 'Morning' is taking in ballast, after which we shall leave for Lattelton in company.

"I would only at present notice in general terms the conduct of the officers and men of this ship throughout the expedition. I have given my reason for touching lightly on the scientific work accomplished, believing that each officer will receive full credit for his departmental labours, especially under the arrangements which have been made with regard to the scientific publications. But in Polar expedition there must always be times when all must work for the common good regardless of department; at such times there has been no need to ask for volunteers in the "Discovery. On the sledges or on the saws, in coaling or watering the ship, or at any task that needed to be done hurriedly, officers and men have worked alike, and grudged no labour till the work was finished. The conduct of the men has been beyond praise. By them the monotony of the second winter was met with unfailing cheerfulness. Most arduous
sledge journeys and the most severe weather were encountered in the same spirit, and with an intelligence that freed the officers from all anxiety as to their welfare. But the qualities of the ship's company have never been more evident than since our release from the ice. The difficulties I have mentioned, and many others which might naturally be expected after such a long captivity in the ice, were overcome only by incessant labour. It was, in the sailor's expression, "Watch, and stop on"; and though many were almost worn out with fatigue, there was neither complaint nor demur when a fresh task was imposed. I shall hope to make their services better known to you on the return of the expedition. Although, as was shown, our small company were so thoroughly able to take care of themselves, and naturally felt some embarrassment at the extent of the relief expedition, I would not have it appear that we undervalue the services of the relief ships. Everything that could possibly be done for us they were only too willing to do. Captain Colbeck's arrangements with regard to stores, etc., appear to have been excellent, and this year, as last, he has shown himself ever ready to sacrifice his own interests to ours. His conduct of the relief expedition deserves the thanks of his former as well as his present employers. His services were ably seconded by those of Captain McKay, of the 'Terra Nova.' Of the officers and crews of both ships, I can only add that I believe they were almost as anxious as ourselves to see the 'Discovery' released, and almost as pleased when that event was happily accomplished."

Says Sir Clements Markham:

"I believe that the great success of the expedition is due to the command being entrusted to a young naval officer in the regular line, supported by thirty naval officers and men zealously devoted to duty, and resolved to uphold the credit of our noble profession in the far south. The Navy, assuredly, has cause to be proud of their exploring detachment, the names of the officers and men composing which will be handed down to future fame. You are aware that the Society is presenting Captain Scott with a special gold medal, and also that our Gracious Sovereign has ordered a medal to be struck in commemoration of the great work which has been achieved. The results of their observations will not be available probably for some years, as it will require a special band of scientists to work up the data thus provided. A committee of the Royal Society has undertaken the magnetic work; the Royal Geographical Society has undertaken the expenses connected with the meteorological observations; and the trustees of the British Museum have undertaken to organise and publish the biological and geological results. You are all aware that the 'Discovery' has reached England, and that Captain Scott is receiving the thanks and praises which he deserves at the hands of his countrymen."
OCTOBER 19th, 1903


Messrs. R. E. O'Hara (proposed by Mr. S. Hannaford), David Benjamin (proposed by the Hon. Secretary), G. H. Buzacott (proposed by the President), were elected ordinary members, and Mr. A. A. Lewis (proposed by the Hon. Secretary) was elected a life member of the Society.

The Hon. F. T. Brentnall, M.L.C., read a paper on "The Mystery of Ancient Ophir," with lantern slide illustrations. (See Page 1.)

The vote of thanks to the author of the paper was proposed by the President, and carried by acclamation.

OCTOBER 30th, 1903.

This was a provincial meeting, held at the Town Hall, Toowoomba, on the invitation of the Municipality and of the Austral Association.


Messrs. R. Billington (proposed by Mr. A. Muir), Alexander Mayes (proposed by the Hon. Secretary, Dr. J. P. Thomson), Hon. E. D. Miles, M.L.C. (proposed by the President, Right Hon. Sir Hugh M. Nelson), Messrs. John H. Munro (proposed by Mr. James Tolmie, M.L.A.), R. H. Munro (proposed by Mr. E. A. Gaden), and Rev. James Stewart (proposed by Mr. James Tolmie) were elected ordinary members of the Society.

Mr. James Tolmie, M.L.A., read a paper on the "Early History of Toowoomba," illustrated by maps. (See Page 18.)

The vote of thanks to the author of the paper was moved by the Hon. F. T. Brentnall, M.L.C., seconded by Mr. A. Muir, and carried unanimously. The meeting stood adjourned till the following day, at the same place. In the meantime, the members of the Society were entertained at a conversazione in the Masonic Hall by the Austral Association, and on the following morning they were shown round the district and town by the Mayor, Alderman A. Mayes, and Messrs. J. Tolmie and J. H. Munro, who were extremely kind and hospitable. In the afternoon the President and Lady Nelson entertained the
members of the Society and their friends at an "at home" at "Gabbinbar," which was greatly enjoyed. At the reassembling of the Society in the evening the President re-delivered his address on "Antarctic Exploration and Discovery," with beautiful lantern-slide pictures.

The vote of thanks to the President was moved by Mr. Tilmie, seconded by Mr. R. B. Taylor, and carried by acclamation.

The cordial thanks of the Society was conveyed to His Worship the Mayor and to the Austral Association for hospitality received.

DECEMBER 22nd, 1903.


On behalf of the Society, the President, congratulated the Hon. Sir A. C. Gregory, K.C.M.G., on the honour of Knighthood recently conferred upon him by the King.

In the name of the Council, Fellows, and Members of the Society, the Vice-President, Hon. Arthur Morgan, M.L.A., congratulated the President on his election as a Fellow of the Royal Geographical Society, London.

The Hon. John Douglas, C.M.G., F.R.G.S., read a paper on "The Maritime Boundary of Queensland," illustrated by a map. (See Page 32.)

The vote of thanks to the author of the paper was moved by the Right Hon. Sir S. W. Griffith, seconded by Sir A. C. Gregory, and carried unanimously.

APRIL 28th, 1904.


Mr. W. H. Garden was elected an ordinary member of the Society, on the nomination of the President and Mr. John Cameron, M.L.A.

An improved Mountain Aneroid Barometer, made in London to the order of the President, was handed round the room for inspection.

Mr. George Woolnough, M.A., read a paper on "New Zealand: Its Geographical and Meteorological Conditions considered in their bearing on Field Industries." The paper was illustrated by two wall maps. (See Page 37.)

The vote of thanks to the author of the paper was moved by Mr. John Cameron, M.L.A., seconded by Mr. R. M. Collins, supported by Mr. E. E. Edwards, B.A., and carried.

JUNE 23rd, 1904.


Messrs. P. W. Crowe and C. F. Buderus were elected ordinary members of the Society, on the nomination of Messrs. Alex. Muir and R. Fraser.

Dr. W. E. Roth, B.A., delivered an address, with numerous lantern-slide illustrations, on "The Every-day Life of the North Queensland Blacks."

The Hon. J. F. G. Foxton, M.L.A., made some interesting remarks on the subject of the address, after which the meeting accorded the lecturer a vote of thanks by acclamation.
ANNUAL GENERAL MEETING.

SEPTEMBER 19th, 1904.


Miss Alice J. Alison-Green was elected an ordinary member of the Society, on the nomination of the Hon. F. T. Brentnall, M.L.C.

The Hon. Secretary, Dr. J. P. Thomson, read the Council's Report, and the Hon. Treasurer, Mr. D. S. Thistlethwayte, submitted the Financial Statement, both of which were adopted, on the motion of the Hon. F. T. Brentnall, seconded by Mr. John Cameron, M.L.A.

The President then delivered the anniversary address, on the subject of the work of the British National Expedition to the Antarctic regions and the return of Captain Scott. (See Page 73.)

The vote of thanks to the President for his interesting and instructive address was moved by the Hon. J. T. Bell, M.L.A. (Minister for Lands), and seconded by Mr. J. G. McDonald, F.R.G.S.

The Officers and Council were re-elected for the session 1904-05, as follows:—

Vice-President: Hon. Arthur Morgan, M.L.A.
Hon. Treasurer: D. S. Thistlethwayte, C.E.
Hon. Secretary: J. P. Thomson, LL.D., Hon. F.R.G.S., etc.


The meeting afterwards adjourned for light refreshments.

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
QUEENSLAND.

REPORT OF COUNCIL.
Nineteenth Session, 1903-1904.

In submitting the Nineteenth Annual Report on the operations of the Society during the preceding session, the Council notes with pleasure the satisfactory nature of the work performed, and the continued interest evinced by the Members and public in the meetings held from time to time.

Fifteen candidates have been elected to the ordinary membership during the session, the total number of Members on the roll being 260, of whom eighteen are of the Honorary and Corresponding class.

The Council has to record with very deep regret the death of the Hon. John Douglas, who was one of the first Honorary Members, being a highly-valued contributor to the Society's literature, a warm exponent of the Society's objects, and one of the pioneer statesmen of Queensland. There has also occurred the death of Major J. W. Powell, Director of the Bureau of American Ethnology, a valued Corres-
ponding Member; and of Mr. F. W. Hardecastle, of Wyndham, Western Australia, one of the oldest Life Members of the Society. These losses are much deplored.

The Hon. Treasurer’s statement of accounts, submitted herewith, discloses the current financial affairs of the Society.

Whilst acknowledging with cordial thanks the many valuable additions to the Library from kindred institutions the world over, the Council desires to especially mention an acceptable gift of thirty books of geography and travel from the President, Right Hon. Sir Hugh M. Nelson, K.C.M.G., to whom the Society is greatly indebted.

Volume eighteen of the “Journal” was sent out to Members and “Exchanges” in the usual way, and was generally acknowledged to be one of the most interesting numbers ever issued by the Society. In this connection, it is very satisfactory to note the increasing demand for our publications, as affording evidence of the development of the geographical work of the State.

The papers read during the session are printed in this issue of the “Journal,” and although not very numerous are of wide interest in the variety of subjects with which they deal.

The Council considers that the papers received in competition for the Society’s Thomson Foundation Gold Medal do not sufficiently comply with the conditions laid down by the Society, and there will in consequence be no award of the Medal this session.

The Council again recommends:—(1) The suspension of so much of the Rules as provides for the payment of an entrance fee; (2) the re-appointment of Sir A. C. Gregory and Messrs. Alex. Muir and C. W. de Vis as Hon. Councillors and Referees.

The Hon. Secretary, Dr. J. P. Thomson, has resumed his duties after an interesting and useful tour round the world, an account of which in book form has been published under the auspices of the President and Council of this Society.
### BALANCE SHEET, 1903-1904.

**THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND.**

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Examined with Bank Pass Book, Vouchers, &c., and found correct.


Adopted—HUGH M. NELSON, 19/9/04.

Brisbane, July 15th, 1904.
The following gentlemen have been awarded the Diploma of Fellowship under Section IV. of Clause 3, Constitution and Rules (See page 2 of cover): —

Honorary:
His Excellency Sir William MacGregor, K.C.M.G., C.B., M.D., D.Sc., Hon. F.R.S.G.S., etc.
The Right Hon. Lord Lamington, G.C.M.G., B.A., F.R.G.S., Hon. F.R.S.G.S., etc

Under subsections (a and b): —
J. A. Baxendell, Esq.
William Jones, Esq., J.P.
Charles Battersby, Esq., J.P.
Robert Fraser, Esq., J.P.
Rev. W. M. Walsh, P.P.
E. M. Waraker, Esq.
R. M. Collins, Esq., J.P.
Alexander Muir, Esq., J.P.
C. B. Lethem, Esq., C.E.
D. S. Thistlethwayte, Esq., C.E.
LIST OF MEMBERS.

(P) Members who have contributed papers which are published in the Society's "Proceedings and Transactions." The numerals indicate the number of such contributions.

(PP) Past President.

A dagger (†) prefixed to a name indicates a member of the Council.

Life members are distinguished thus (L).

Should any error or omission be found in this list, it is requested that notice thereof be given to the Hon. Secretary.

Foundation Members:


Daniell, E. N.,

Gailey, R., J.P., Courier Building, Brisbane.


Marks, Hon. C. F., M.D., M.L.C., Wickham Terrace, Brisbane.

Moor, T. B., F.R.G.S., F.R.S. Tas., Strahan, West Coast, Tasmania.

Thomson, J. P., LL.D., Hon. F.R.S.G.S., etc., Hon. Secretary, Wood Street, South Brisbane.

Members:


Abern, John, L.S., Charters Towers, Queensland.


Alison-Greene, Miss Alice J., Moreton Bay Girls' High School, Wynnum.

Alton, Ralph, Nelson Street, South Brisbane.


Armstrong, L., J.P., Normanton, Queensland.

Ashmole, Arthur, "Iford House," Redcliffe, Queensland.


Barton, E. J. T., "Courier" Office, Brisbane.


Benjamin, D., Breakfast Creek Road, Brisbane.


Bell, John, Merchant, Elizabeth Street, Brisbane.

Bell; Hon. J. T., M.L.A., Minister for Public Lands, Brisbane.

B. I. and Q. A. Coy. (The Manager), Mary Street, Brisbane.

Bonar, W. M., J.P., Herberton, Queensland.

Borton, Mark W., Lands Office, Barcaldine, Queensland.

Brentnall, Hon. F. T., M.L.C., Corparoo, Brisbane.

Brier, James F., "Roysten," Albion.

Bright, Allan B., J.P., Charters Towers, Queensland.

Bright, C. E., Inspector Post and Telegraph Dept., Brisbane, Queensland.
LIST OF MEMBERS.

Broadbent, Kendall, Museum, Brisbane.
Buzacott, G. H., Deputy P.M.G., Post Office, Brisbane.
† Cameron, John, M.L.A., Courier Building, Brisbane.
Cameron, W., Geological Survey Office, Brisbane.
Cameron, Charles Christopher, "Coolabah," Ipswich.
* Campbell, A., J.P., Glengyle Station, Birdsville, Queensland.
Carter, Hon. A. J., M.L.C., Royal Swedish and Norwegian Consulate, 35 Eagle Street, Brisbane.
P1 Charlton, F. J., Staff Surveyor, Survey Office, Brisbane.
Chernside, His Excellency Major-General Sir Herbert, G.C.M.G., C.B. (Patron).
Christensen, J.,         ———
Clark, James, J.P., "Wybenia," New Farm, Brisbane.
Clerk, E. G., junr., Malboona, Corfield, Queensland.
Costin, C. W., Parliament House, Brisbane.
Craig, Robert, J.P., Cairns, Queensland.
Cullen, Mrs. M. L., "Ardendeachar," Warwick, Queensland.
* Crockan, T., J.P., ———
Crowe, P. W., Darragh's Buildings, 170a Queen Street, Brisbane.
Cunningham, J. S., Mundingburra, Townsville, Queensland.
Cunningham, M. W., J.P., Rannes, River Dee, via Rockhampton, Queensland.
Davies, Alderman John, J.P., West End Pharmacy, S. Brisbane, Queensland.
De Vaux, W. R., Birdsville, Queensland.
P1 † De Vis, C. W., M.A., Museum, Brisbane.
Dorph, W. F., M.R.A.S., Hon. Sec. for N.S W. Palestine Exploration Fund,
Moore Theological College, Newtown, Sydney, N.S.W.
Earle, Horace, Johnsonian Club, Brisbane, Queensland.
Eggar, G. W., Survey Office, Brisbane.
Finlay, Miss Laura Lucie, 17 Craven Hill Gardens, Hyde Park, London.
Ferguson, Hon. John, M.L.C., Senator, Rockhampton, Queensland.
Fish, Alderman George South Brisbane.
Fisher, Surgeon Walter, J.F., Q.M.D.F., "Shanakeel," Main Street,
South Brisbane.
Fleming, Peter, Jnr., Brighton Road, South Brisbane.
Fletcher, Victor O., J.P., ———, Queensland.
Forrest, J. H., J.P., ———, Sydney, N.S.W.
LIST OF MEMBERS.


Forster, C. E., J.P., Goondi, Johnstone River, Queensland.


Frackelton, Rev. W. S., Ph.D., etc., Presbyterian Manse, Ann Street, Brisbane.

† Fraser, Robert, F.R.G.S.A.Q., J.P., Charlotte Street, Brisbane.

Fullerton, Alex. Young, B.A., L.R.C.P., M.R.C.S., ———


Gilligan, John, Parliament House, Brisbane.

Gregory, Edmund, J.P., Petrie Terrace, Brisbane.

Griffith, Rt. Hon. Sir S. W., G.C.M.G., M.A., etc., Brisbane.

Grimani-Smith, H. W., J.P., Canmaroo Station, Dalby, Queensland.

Gross, Capt. G., Boys’ Grammar School, Brisbane.

Hamley, Henry Hubert, Sandgate, Queensland.

Hannaford, S., J.P., Marble Hills, Glenlyon, Stanthorpe, Queensland.

Harbord, H. H., J.P., Maytown, Queensland.

Heindorff, H., Messrs. Heindorff Bros., Queen Street, Brisbane.

Heindorff, W., Messrs. Heindorff Bros., Queen Street, Brisbane.


Hilpoint, Reginald E. R., J.P., Boomerar Station, via Donaldson, Q’land.

Hirschfeld, Eugen, M.D., etc., Wickham Terrace, Brisbane.

* Hodel, F. C., J.P., Thursday Island, Torres Strait, Queensland.

Hogarth, Mrs. William. Balgownie, Cambooya, Q.

Holberton, Hon. F. H., M.L.C., Toowoomba, Queensland.


Huet, F. A., Queen Street, Brisbane.


Hughes, E. F., Dental Rooms, Treasury Chambers, George Street, Bris.

Hutchinson, L. H., Post Office, Albion.

Hutton, G. S., J.P., Eagle Street, Brisbane.

Innes, S. N., L.S., Cresswell Downs, Camooweal, Queensland.


Jones, E. R. ———

Kellaway, Edwin B., Commission Agent, etc., Queen Street, Brisbane.

Kemp, John, City Engineer, Town Hall, Brisbane.

Kenealy, P., Albion, Brisbane.

† Kennedy, A. S., Hon. Librarian, Kingsholme, Fortitude Valley, Brisbane.

Kennedy, Thomas, J.P., Allora, Queensland.

Kelly-Cusack, William George, P.M., etc., Ravenswood, Queensland.


Lamington, The Right Hon. Lord, G.C.M.G., etc., Government House, Bombay, India.

Lang, Alderman John, Cordelia Street, South Brisbane.


Lee-Bryce, R., J.P., Elizabeth Street, Brisbane.

Lees, Wm., City Printing Works, Queen Street, Brisbane.


MacDonald, J. G., P.M., F.R.G.S., South Brisbane.

Macdonald-Paterson, Hon. T., Brisbane.

MacGillivray, A. S., J.P.,

MacGinley, J. J., Bacteriological Institute, Brisbane.

Macintosh, H., Survey Office, Brisbane.

Macaush, Thos. W., Wantley Street, Warwick, Queensland.

Mackie, J. R., Cliffe, River View Terrace, Hamilton.


May, T. H., M.D., L.S A., Bundaberg, Queensland.

Mayes, Alderman Alexander, Toowoomba, Q.

* Mathieson, John, Midland Railway, Derby, England.

Matthews, G. S., Imperial Insurance Co., Queen Street, Brisbane.

* McConnel, J. H., J.P., Cressbrook, Queensland.

McDonald-Terry, A. J., J.P., Kirknie Station, Clare, via Townsville.

McGraarty, D. C., Jane Street, West End, South Brisbane.


Midson, Arthur, Edmondstone Street, South Brisbane.

Miles, Hon. E. D., M.L.C., New Farm, Brisbane.

Miller, Ernest H., Solicitor, School of Arts, Ipswich, Queensland.

Minto, A. T., Royal Insurance Co., Queen Street, Brisbane.


Moran, R. W.,———

Morris, R., Parliament House, Brisbane.

Mueller, Edmund, 113 Elizabeth Street, Brisbane.

Munro, Jas., J.P., Webster and Co., Mary Street, Brisbane


Murray, C. W., J.P., Hughenden, Queensland.


Myne, Thomas, Glenelg Street, South Brisbane.

Myles, G. T., Palmerin Street, Warwick, Queensland.


Needham, F. H., Canning Downs, Warwick, Queensland.

Neilson, R. D., Indooroopilly.


Nicholas, C. E., Mine Office, North Lyell, Tasmania.

Noble, John James, M.A.,———

Outridge, P. P., Redland Bay, Queensland.

O'Donohue, M., C.P.S., Bowen, Queensland.

O'Hara, R. E., Glenelg, Warwick, Q.

O'Reilly, Charles, Dornoch Terrace, South Brisbane.

O'Shea, Miss E., "Middenbury," Toowoong, Brisbane.


* Parker, Francis, J.P., St. Albans, via Monkira, Queensland.

Parr, Mrs. B. C., "Mai Gunyah," Warwick, Queensland.

Pasco, M. G. C., Bank of Australasia, Toowoomba, Queensland.

LIST OF MEMBERS.

95

Pennefather, C. E. de F., Prisons Department, Brisbane.
Petrie, Andrew Lang, M.L.A., Toowong, near Brisbane, Queensland.
† Phillips, George, C.E., Telegraph Chambers, Queen Street, Brisbane.
Potts, John, J.P., Sandgate, Q.
Quaid, J. D., J.P., 101 Queen Street, Brisbane, Queensland.
Queale, Robert, J.P., Dornoch Terrace, South Brisbane, Queensland.
Radcliffe, C., Inspector of Schools, Maryborough, Queensland.
Raff, Alex. C., C.E., Railway Offices, Roma Street, Brisbane.
Ralston, W. V., J.P., Queensland National Bank, Brisbane.
Rutlidge, Charles Schaefer, c/o Wm. Schaefer, Esq., 12 Wallace Road, London, N.
† Schoenheimer, L. F., J.P., "Val-Myr," Gray Road, South Brisbane.
Scott, W. J., Under Secretary, Lands Department, Brisbane.
Sinclair, J. M., Stephens Street, South Brisbane.
Slade, W. B., Glengallan, Warwick, Queensland.
Sorell, John Arnold, ___
St. Ledger, A. J., Celtic Chambers, Brisbane.
Spiers, James, Toowoomba, Queensland.
Starcke, A., Land Commissioner, Rockhampton.
Steuart, A., Queensland National Bank, Brisbane.
* Stevens, Hon. E. J., M.L.C., Southport, Queensland.
Stewart, Rev. James, Murphy's Creek, Queensland.
Stodart, James, M.L.A., Market Street, Brisbane.
Stopford, W. E. ___
Strathdee, Robert, "Maudsleigh," Bundaberg, Queensland.
Sword, T. S., J.P., Land Board, Brisbane.

* Thomas, J. S., "Eblana," Penkivil Street, Bondi, Sydney, N.S.W.
Thomson, A. A., c/o Tattersall's Club, Sydney.

P4 Thomson, Capt. W. C., Swan Hill, Brisbane.
Trouton, W. J., J.P., Queen Street, Brisbane.
Uhr, John Frederick, J.P., Queensland.
Waddell, W. A., Koorboona, via Cairns, Queensland.
Walsh, A. D., Dalgety and Co., Elizabeth Street, Brisbane.
* Walsh, Rev. W. M., P.P., St. Joseph's, Townsville, Queensland.
Walsh, Nugent, c/o Robertson, Tait and Co., Adelaide St., Brisbane.
* Weedon, W., General Post Office, Brisbane.
* Weedon, S. H., C.E., L.S., Box 44, G.P.O., Sydney, N.S.W.
Welsby, Thomas, Darragh's Buildings, Queen Street, Brisbane.

P1 Williams, Capt. J., c/o Burns, Philp and Co., Sydney, N.S.W.
LIST OF MEMBERS.

Williams, Sidney, J.P., Rockhampton, Queensland.
Wilson, Hon. A. Heron, M.L.C., Maryborough, Queensland.

PI  Winter, Sir F. P., Kt.——
Wyatt, W. H., J.P.——

Honorary Members:
Lady Norman, Royal Hospital, Chelsea, London, S.W., England.

Honorary Corresponding Members
John Tebbut, Esq., F.R.A.S., etc., etc., Private Observatory, “Peninsula,” Windsor, N.S.W.


Sir Sandford Fleming, K.C.M.G., LL.D., C.E., Ottawa, Canada.
Hon. W. T. Harris, Ph.D., LL.D., Commissioner of Education, Washington, D.C., U.S.A.

Mrs. J. P. Thomson, Wood Street, South Brisbane.
Dr. Gerard Trower, D.D., Bishop of Likoma, British Central Africa.
His Excellency the Hon. W. L. Allardyce, C.M.G., Government House, Stanley, Falkland Islands.
EIGHTH INTERNATIONAL GEOGRAPHIC CONGRESS.

Washington, D.C., October 26th, 1904.

Secretary of Royal Geographical Society, Brisbane, Queensland, Australia.

Dear Sir.—The enclosed resolutions were adopted by the Eighth International Geographic Congress, and to them the Geographical Societies of the world are urged to give wide publicity. I beg, therefore, if practicable, you will find place for them in your journal, and thus aid in the advancement of the wishes of the Congress.

Very respectfully,
HENRY GANNETT.
General Secretary.

RESOLUTIONS ADOPTED BY THE EIGHTH INTERNATIONAL GEOGRAPHIC CONGRESS. SEPTEMBER 13TH, 1904.

RULES FOR GEOGRAPHIC NAMES.

Local names are as far as possible to be preserved, not only in those regions where already established, but also in wild regions. They should on this account be determined with all the accuracy possible.

Where local names do not exist or cannot be discovered, the names applied by the first discoverer should be used until further investigation. The arbitrary altering of historical, long-existent names, well known not only in common use, but also in science, is to be regarded as extremely undivisible, and every means should be employed to resist such alterations. Inappropriate and fantastical names are to be replaced, as far as possible, by local and more appropriate names.

The above rules are not to be rigorously construed, yet they should be followed to a greater extent than heretofore by travellers and in scientific works. Their publication in periodicals, as the opinion of Congress, will probably prove of great weight. Although in recent years many official systems of determination of geographic names have been enunciated, we have still evidence of the very slight influence which the wishes of the International Geographic Congresses exert over the decision of the official authorities. To this Geographical Societies are urged to give wide publicity.

INTRODUCTION OF THE FRACTIONAL SCALES OF MAPS.

The Seventh International Geographic Congress expressed the urgent wish that upon all charts, including those published by those lands still employing the English and Russian systems of measurement, along with the scale of geographic co-ordinance, that the scale of reduction should be expressed in the usual fractional form, 1/20, and that the latter be added to all lists of charts covering land and sea, and requests the Executive Committee of the Congress to bring this decision to the attention of all Governments, Geographical Societies, and establishments engaged in the publication of charts.

The advantage to be derived from the support of this resolution, which has its origin with the editor of Peterman's Mittheilungen and the extensive dissemination of the resolution, is at once evident. In English publications a custom has arisen of adding a statement of the ratio 1/20 to the usually employed x-miles to one inch. In America the custom has arisen of going even a step beyond this, namely, the addition of the ratio of reduction has led to the direct application of the decimal system in the units of measure adopted upon the charts. To this Geographical Societies are urged to give wide publicity.

H—ROYAL GEO. SOCIETY.
THE DECIMAL SYSTEM.

The Seventh National Geographic Congress expresses itself in favour of a uniform system in all geographical researches and discussions, and it recommends for this purpose the employment of the metric system of weights and measures, as also the employment of the Centigrade thermometric scale.

It is, moreover, highly desirable that there should always be added to statements of the Fahrenheit, and the Reaumur scales, their equivalent upon the scale of celsias.

Similar is this question of the metric system, which reaches even more deeply than the former into the well-established customs of daily life, and has proved, not without value, in promoting international uniformity and simplicity. Although the metric system of weights and measures has made slow progress, and this alone through the portals of scientific work, its application to geophysics and geography has already made a fair beginning. In England a special organisation, entitled the Decimal Association, has taken charge of the matter. The Commonwealth of Australia has entrusted the subject to a commission. We are without knowledge of the efforts in this direction thus far made in Russia. To this Geographical Societies are urged to give wide publicity.

STANDARD TIME.

Resolved, in view of the fact that a large majority of the nations of the world have already adopted systems of standard time, based upon the Meridian of Greenwich, as prime meridian, that this Congress is in favour of the universal adoption of the Meridian of Greenwich as the basis of all systems of standard time.

PUBLICATION OF PHOTOGRAPHS

It is suggested by the lantern slides shown by Mr. Siebers and by the photographs by Mr. Willis, that it is desirable that in these and the cases of other exploring travellers, photographs of geographical significance might be published, and accompanied by short explanatory notes, so that they may form collections of representative physical features of different parts of the world.