INTERSTATE COMMERCE COMMISSION

CONSOLIDATION OF RAILROADS

TENTATIVE PLAN

AUGUST 3, 1921

H. T. NEWCOMB

INTERSTATE COMMERCE COMMISSION.

No. 12964.

CONSOLIDATION OF RAILROADS.

IN THE MATTER OF CONSOLIDATION OF THE RAILWAY PROPERTIES OF THE UNITED STATES INTO A LIMITED NUMBER OF SYSTEMS.

August 5, 1921.

TENTATIVE PLAN OF THE COMMISSION.

BY THE COMMISSION:

This tentative plan is prepared and served under paragraphs (4) and (5) of section 5 of the interstate commerce act, which read as follows:

(4) The Commission shall as soon as practicable prepare and adopt a plan for the consolidation of the railway properties of the continental United States into a limited number of systems. In the division of such railways into such systems under such plan, competition shall be preserved as fully as possible and wherever practicable the existing routes and channels of trade and commerce shall be maintained. Subject to the foregoing requirements, the several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the values of the properties through which the service is rendered shall be the same, so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of their respective railway properties.

(5) When the Commission has agreed upon a tentative plan, it shall give the same due publicity and upon reasonable notice, including notice to the Governor of each state, shall hear all persons who may file or present objections thereto. The Commission is authorized to prescribe a procedure for such hearings and to fix a time for bringing them to a close. After the hearings are at an end, the Commission shall adopt a plan for such consolidation and publish the same; but it may at any time thereafter, upon its own motion or upon application, reopen the subject for such changes or modifications as in its judgment will promote the public interest. The consolidations herein provided for shall be in harmony with such plan.

Under our direction Prof. William Z. Ripley, of Harvard University, has prepared a report to us, which is the appendix. In some respects our tentative plan does not follow his recommendations, but presents alternatives thereto for like consideration. We indicate the main differences. We have sought to minimize dismemberment of existing lines or systems. This tentative plan is put forward in order to elicit a full record upon which the plan to be ultimately adopted can rest, and without prejudgment of any matters which may be presented upon that record. Whenever we refer to a property, the properties controlled thereby under lease, stock ownership, or otherwise should be understood as included unless otherwise indicated.

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We find for the purposes of this tentative plan that the railway properties of the continental United States may be consolidated under the statute into the following systems:

SYSTEM NO. 1.—NEW YORK CENTRAL.

New York Central.
Pittsburgh & Lake Erie.
Rutland.
Michigan Central.
Chicago, Kalamazoo & Saginaw.
Cleveland, Cincinnati, Chicago & St. Louis.
Cincinnati Northern.
Western Maryland.
Fonda, Johnstown & Gloversville.
Lake Erie & Pittsburgh.
Central Indiana.
Pittsburgh, Chartiers & Youghiogheny.
Monongahela.
Boston & Maine.
Maine Central.
Bangor & Aroostook.
And all railway properties controlled by the above carriers through lease, stock ownership, or otherwise, except:

Lake Erie & Western and Toledo & Ohio Central. } Both now controlled by New York Central.

Zanesville & Western and Kanawha & Michigan. } Both now controlled by Toledo & Ohio Central.

Indiana Harbor Belt, now controlled by New York Central, 30 per cent; Michigan Central, 30 per cent; Chicago & North Western, 20 per cent; Chicago, Milwaukee & St. Paul, 20 per cent.

NOTE.—Prof. Ripley recommends the inclusion of the Western Maryland in system No. 5, Nickel Plate-Lehigh Valley.

Prof. Ripley makes no specific assignment of the Fonda, Johnstown & Gloversville.

The Lake Erie & Pittsburgh; Central Indiana; Pittsburgh, Chartiers & Youghiogheny; and Monongahela may be incorporated in either system No. 1 or No. 2. Prof. Ripley makes no specific assignment of these four roads, which are controlled jointly in the interest of the New York Central and the Pennsylvania.

The Boston & Maine, Maine Central, and Bangor & Aroostook may be included in system No. 7, New England, or system No. 7a, New England-Great Lakes. Prof. Ripley rejects the trunk line treatment of the New England roads, but we present this alternative with a view to developing the situation upon hearing.

The Lake Erie & Western may be included in system No. 5, Nickel Plate-Lehigh Valley.

The Toledo & Ohio Central, Zanesville & Western, and Kanawha & Michigan may be included in system No. 9, Norfolk & Western.

The Indiana Harbor Belt is reserved for consideration in connection with terminal situations.

SYSTEM NO. 2.—PENNSYLVANIA.

Pennsylvania.
West Jersey & Seashore.
Long Island.
Baltimore, Chesapeake & Atlantic.
Cumberland Valley.
Maryland, Delaware & Virginia.
New York, Philadelphia & Norfolk.
Pittsburgh, Cincinnati, Chicago & St. Louis.
Waynesburg & Washington.
Grand Rapids & Indiana.
Cincinnati, Lebanon & Northern.
Ohio River & Western.
Louisville Bridge & Terminal.
Wheeling Terminal.
Toledo, Peoria & Western.
Lorain, Ashland & Southern.
Lake Erie & Pittsburgh.
Central Indiana.
Pittsburgh, Chartiers & Youghiogheny.
Monongahela.
And all other railway properties controlled by any of the above carriers under lease, stock ownership, or otherwise, except the Norfolk & Western and railway properties controlled by it, which may be included in system No. 9, Norfolk & Western.

NOTES.—The Lorain, Ashland & Southern may be included in system No. 4, Erie, which owns one-half the stock, the Pennsylvania owning the other half.

The Lake Erie & Pittsburgh; Central Indiana; Pittsburgh, Chartiers & Youghiogheny; and Monongahela may be included in system No. 1, New York Central, which controls one-half the stock, the Pennsylvania controlling the other half.

SYSTEM NO. 3.—BALTIMORE & OHIO.

Baltimore & Ohio.
Sandy Valley & Elkhorn.
Staten Island Rapid Transit.
Reading system, comprising the Philadelphia & Reading, Central Railroad of New Jersey, and various others.
Cincinnati, Indianapolis & Western.
Chicago, Indianapolis & Louisville.
New York, New Haven & Hartford.
Central New England.
Lehigh & New England.
Lehigh & Hudson.

NOTES.—The Baltimore & Ohio Chicago Terminal is reserved for consideration in connection with terminal situations.

The New York, New Haven & Hartford; Central New England; Lehigh & New England; and Lehigh & Hudson may be included in system No. 7, New England, or system No. 7a, New England-Great Lakes.

SYSTEM NO. 4.—ERIE.

Erie.
- Chicago & Erie.
- New Jersey & New York.
- New York, Susquehanna & Western.

Delaware & Hudson.
Delaware, Lackawanna & Western.
Ulster & Delaware.
Bessemer & Lake Erie.
Buffalo & Susquehanna.
Pittsburg & Shawmut.
Pittsburg, Shawmut & Northern.
Lorain, Ashland & Southern.
Wabash lines east of the Missouri River.

NOTES.—Prof. Ripley recommends including the Lehigh Valley in this system; but in this tentative plan that carrier is proposed as a main stem for system No. 5, Nickel Plate-Lehigh Valley.

The Delaware & Hudson, Delaware, Lackawanna & Western, Ulster & Delaware, Pittsburg & Shawmut, and Pittsburg, Shawmut & Northern may be included in system No. 7a, New England-Great Lakes.

The Bessemer & Lake Erie may be included in system No. 5, Nickel Plate-Lehigh Valley.

The Lorain, Ashland & Southern may be included in system No. 2, Pennsylvania.

SYSTEM NO. 5.—NICKEL PLATE-LEHIGH VALLEY.

Lehigh Valley.
New York, Chicago & St. Louis.
Toledo, St. Louis & Western.
Detroit & Toledo Shore Line.
Lake Erie & Western.
Wheeling & Lake Erie.
Pittsburgh & West Virginia.
Bessemer & Lake Erie.

NOTES.—Prof. Ripley recommends the Lackawanna as main stem in this system. In this tentative plan it is replaced for that purpose by the Lehigh Valley, and made available for either system No. 7a, New England-Great Lakes, or system No. 4, Erie. He also includes the Buffalo, Rochester & Pittsburgh and Wheeling & Lake Erie in this system.

The Bessemer & Lake Erie may be included in system No. 4, Erie.

SYSTEM NO. 6.—PERE MARQUETTE.

Pere Marquette.
Detroit & Mackinac.
Ann Arbor.
Detroit, Toledo & Ironton.
Boyne City, Gaylord & Alpena.

NOTE.—The last-named road is a class-II road not specifically covered by Prof. Ripley's report.

SYSTEM NO. 7.—NEW ENGLAND.

New York, New Haven & Hartford.
New York, Ontario & Western.
Central New England.
Boston & Maine.
Maine Central.
Bangor & Aroostook.
Lehigh & Hudson River.
Lehigh & New England.

NOTES.—Prof. Ripley recommends inclusion of the New York, Ontario & Western in system No. 4, Erie.

The Lehigh & Hudson River is not included in any system under Prof. Ripley's report, but is left as a "bridge line."

SYSTEM NO. 7A.—NEW ENGLAND-GREAT LAKES.

Same as system No. 7 with addition of the following, which otherwise with the exception of the Buffalo, Rochester & Pittsburgh may be included in system No. 4, Erie. That carrier may be included in system No. 5, Nickel Plate-Lehigh Valley.
Delaware & Hudson.
Ulster & Delaware.
Delaware, Lackawanna & Western.
Buffalo, Rochester & Pittsburgh.
Pittsburg & Shawmut.
Pittsburg, Shawmut & Northern.

NOTE.—The addition of these lines has not been recommended by Prof. Ripley.

SYSTEM NO. 8.—CHESAPEAKE & OHIO.

Chesapeake & Ohio.
Hocking Valley.
Virginian.

NOTE.—Prof. Ripley recommends consolidation of the Virginian with the Norfolk & Western, Toledo & Ohio Central, and Kanawha & Michigan, in order to afford a western outlet for coal originating on the Virginian. This apparently would involve

upgrade eastbound haul of westbound coal to the vicinity of Roanoke, unless there be new construction near Gauley Bridge, W. Va. The Virginian's present outlet to the west is via Deepwater, W. Va., and the Chesapeake & Ohio.

SYSTEM NO. 9.—NORFOLK & WESTERN.

Norfolk & Western.
Toledo & Ohio Central.
Zanesville & Western.
Kanawha & Michigan.
Kanawha & West Virginia.

NOTE.—From the Norfolk & Western is excepted the branch from Roanoke to Winston-Salem, which may be included in system No. 11, Atlantic Coast Line-Louisville & Nashville and the branch from Lynchburg to Durham which may be included in system No. 12, Illinois Central-Seaboard.

SYSTEM NO. 10.—SOUTHERN.

Southern.
Alabama Great Southern.
Georgia, Southern & Florida.
Mobile & Ohio.
Southern Railway in Mississippi.
Northern Alabama.
Cincinnati, New Orleans & Texas Pacific.
New Orleans Great Northern.
Alabama & Vicksburg.

NOTE.—Prof. Ripley recommends inclusion of the Georgia Southern & Florida branch from Valdosta, Ga., to Palatka, Fla., in the Seaboard system.

SYSTEM NO. 11.—ATLANTIC COAST LINE-LOUISVILLE & NASHVILLE.

Atlantic Coast Line.
Atlanta & West Point.
Charleston & Western Carolina.
Louisville & Nashville.
Nashville, Chattanooga & St. Louis.
Louisville, Henderson & St. Louis.
Western Railway of Alabama.
Richmond, Fredericksburg & Potomac.
Norfolk Southern.
Atlanta, Birmingham & Atlantic.
Winston-Salem Southbound.
Roanoke to Winston-Salem branch of Norfolk & Western.
Florida East Coast.
Carolina, Clinchfield & Ohio.
Georgia & Florida.

Gulf, Mobile & Northern.
Mississippi Central.

NOTES.—Prof. Ripley recommends that the Richmond, Fredericksburg & Potomac and Florida East Coast retain their present status without inclusion in any system.

The Carolina, Clinchfield & Ohio may be included in system No. 12, Illinois Central-Seaboard. Prof. Ripley recommends inclusion in system No. 10, Southern.

The Gulf, Mobile & Northern and Mississippi Central are not specifically included in any system under Prof. Ripley's report.

SYSTEM NO. 12—ILLINOIS CENTRAL-SEABOARD.

Illinois Central.
    Yazoo & Mississippi Valley.
    Central of Georgia.
Seaboard Air Line.
Lynchburg, Va., to Durham, N. C., branch of Norfolk & Western.
Gulf & Ship Island.
Tennessee Central.
Carolina, Clinchfield & Ohio.

NOTES.—Prof. Ripley recommends that a separate system be built around the Seaboard Air Line.

The Gulf & Ship Island is not included in any system by Prof. Ripley.

The Carolina, Clinchfield & Ohio may be included in system No. 11, Atlantic Coast Line-Louisville & Nashville.

SYSTEM NO. 13.—UNION PACIFIC-NORTH WESTERN.

Union Pacific.
    St. Joseph & Grand Island.
    Oregon Short Line.
    Oregon-Washington Railroad & Navigation Company.
    Los Angeles & Salt Lake.
Chicago & North Western.
    Chicago, St. Paul, Minneapolis & Omaha.
Lake Superior & Ishpeming.
Wabash lines west of the Missouri River.

NOTES.—Prof. Ripley recommends inclusion of the Central Pacific in this system.

The Lake Superior & Ishpeming is not specifically included in any system by Prof. Ripley.

SYSTEM NO. 14.—BURLINGTON-NORTHERN PACIFIC.

Chicago, Burlington & Quincy.
Northern Pacific.
Chicago Great Western.
Minneapolis & St. Louis.
Spokane, Portland & Seattle.

NOTES.—From the Chicago, Burlington & Quincy are excepted the Colorado & Southern and Fort Worth & Denver City, which may be included in system No. 16, Santa Fe. Prof. Ripley recommends that they be included in system No. 19, Chicago-Missouri Pacific.

Prof. Ripley recommends extension of this system to the Pacific coast by including the Denver & Rio Grande and the Western Pacific. He also recommends redistribution of portions of the Minneapolis & St. Louis and Chicago Great Western.

The Spokane, Portland & Seattle may be included in system No. 15, Milwaukee-Great Northern.

SYSTEM NO. 15.—MILWAUKEE-GREAT NORTHERN.

Chicago, Milwaukee & St. Paul.
Great Northern.
Chicago, Terre Haute & Southeastern.
Duluth & Iron Range.
Duluth, Missabe & Northern.
Green Bay & Western.
Spokane, Portland & Seattle.
Butte, Anaconda & Pacific.

NOTES.—The Green Bay & Western and Butte, Anaconda & Pacific are not included in any system under Prof. Ripley's report.

The Spokane, Portland & Seattle may be included in system No. 14, Burlington-Northern Pacific.

Prof. Ripley recommends that the eastern half of the Chicago & Eastern Illinois be included in this system.

SYSTEM NO. 16.—SANTA FE.

Atchison, Topeka & Santa Fe.
    Gulf, Colorado & Santa Fe.
Colorado & Southern.
    Fort Worth & Denver City.
Denver & Rio Grande.
Western Pacific.
Utah Railway.
Northwestern Pacific.
Nevada Northern.

NOTES.—Prof. Ripley recommends inclusion of the Colorado & Southern and the Fort Worth & Denver City in the Missouri Pacific system. He also recommends inclusion of a part of the Gulf Coast Lines in the above system.

Prof. Ripley recommends that the Northwestern Pacific retain its present status.

The Nevada Northern is not specifically included in any system by Prof. Ripley. It may be included in system No. 17, Southern Pacific-Rock Island.

SYSTEM NO. 17.—SOUTHERN PACIFIC-ROCK ISLAND.

Southern Pacific Company.
Nevada Northern.
Chicago, Rock Island & Pacific.
    Chicago, Rock Island & Gulf.

Arizona & New Mexico.
El Paso & Southwestern.
San Antonio & Aransas Pass.
Trinity & Brazos Valley.
Midland Valley.
Vicksburg, Shreveport & Pacific.
Chicago, Peoria & St. Louis.

NOTES.—The Nevada Northern may be included in system No. 16, Santa Fe.

The Arizona & New Mexico and Chicago, Peoria & St. Louis are not epecifically included in any system by Prof. Ripley.

The Trinity & Brazos Valley may be included in system No. 18, Frisco-Katy-Cotton Belt. So recommended by Prof. Ripley.

Prof. Ripley recommends redistribution of portions of the carriers included by us in this system.

SYSTEM NO. 18.—FRISCO-KATY COTTON BELT.

St. Louis-San Francisco.
St. Louis Southwestern.
Louisiana Railway & Navigation Company.
Chicago & Alton.
Missouri, Kansas & Texas.
Trinity & Brazos Valley.
San Antonio, Uvalde & Gulf.

NOTES.—The Trinity & Brazos Valley may be included in system No. 17, Southern Pacific-Rock Island.

Prof. Ripley recommends inclusion of the San Antonio, Uvalde & Gulf in either system No. 17, Southern Pacific-Rock Island, or in a Southwestern-Gulf system.

Prof. Ripley recommends redistribution of portions of the carriers included by us in this system.

SYSTEM NO. 19.—CHICAGO-MISSOURI PACIFIC.

Chicago & Eastern Illinois.
Missouri Pacific.
Kansas City Southern.
Kansas City, Mexico & Orient.
Kansas, Oklahoma & Gulf.
Texas & Pacific.
Fort Smith & Western.
Louisiana & Arkansas.
Gulf Coast Lines.
International & Great Northern.

NOTE.—Prof. Ripley recommends redistribution of portions of the carriers included by us in this system.

Certain lines such as the Minneapolis, St. Paul & Sault Ste. Marie and the Central Vermont, which are controlled by Canadian carriers, have not been specifically included in this tentative plan because these lines form parts of through transcontinental Canadian systems in active competition with systems above set forth.

The carriers included in this tentative plan comprise most of the class-I steam railroads but very few of those in class II and class III. Those not so included, whether industrial common carriers, terminal carriers, interurban electric railways operated as a part of general steam railroad systems of transportation or engaged in the general transportation of freight, "short lines," or others, will be considered at the hearings to be hereafter assigned so that in the plan to be ultimately adopted provision can be made for their inclusion in the systems.

We have not specifically mentioned water carriers. Where these carriers are now controlled by carriers by rail they will be considered as being included tentatively in the systems in which the controlling rail carrier has been included.

ORDER.

At a General Session of the INTERSTATE COMMERCE COMMISSION, held at its office in Washington, D. C., on the 3d day of August, A. D. 1921.

No. 12964.

Consolidation of Railroads.

In the Matter of Consolidation of the Railway Properties of the United States into a Limited Number of Systems.

It appearing, That the Commission having on the date hereof agreed upon a tentative plan for the consolidation of the railway properties of the continental United States into a limited number of systems, which tentative plan is hereby referred to and made a part hereof:

It is ordered, That said tentative plan be served upon the respondents to this proceeding; that notice to each state shall be given by sending copies of this order, and of said tentative plan, by registered mail, addressed to the governor of each state at the capitol of each state, and that notice be given to the public by depositing a copy of this order and of said tentative plan in the office of the secretary of the Commission, at Washington, D. C.

It is further ordered, That this proceeding be assigned for hearing at such times and places as the Commission may hereafter direct.

By the Commission.

[SEAL.]

GEORGE B. MCGINTY,
Secretary.

APPENDIX

REPORT

TO THE

INTERSTATE COMMERCE COMMISSION

ON

CONSOLIDATION OF RAILWAYS

UNDER SECTION 5, PARAGRAPH (4), OF THE
INTERSTATE COMMERCE ACT

BY

WILLIAM Z. RIPLEY

1921

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PROPOSED RAILROAD CONSOLIDATION PLAN.

UNDER SECTION 5, PARAGRAPH (4), OF THE INTERSTATE COMMERCE ACT.

TRUNK LINE REGION:

1. Pennsylvania system.
2. New York Central system (less Toledo & Ohio Central, Kanawha & Michigan, and Lake Erie & Western).
3. Baltimore & Ohio—Reading system (including Central of New Jersey and Monon).
4. Erie—Lehigh Valley—Wabash system (Delaware & Hudson, Wabash lines east, Bessemer & Lake Erie, etc.).
5. Lackawanna—Nickel Plate—Clover Leaf system (also includes Wheeling & Lake Erie—Western Maryland—Lake Erie & Western—Buffalo, Rochester & Pittsburgh, etc.).

CHESAPEAKE BAY LAKE-TO-TIDE SOFT-COAL REGION:

6. Chesapeake & Ohio system.
7. Norfolk & Western—Sandusky system (extended to Lake Erie).
8. Virginian—Kanawha—Toledo system (including Toledo & Ohio Central and Kanawha & Michigan).

(Or 7 and 8 combined.)

SOUTHEASTERN REGION:

9. Southern Railway system (with certain minor changes).
10. Louisville & Nashville—Atlantic Coast Line system (plus Atlanta, Birmingham & Atlantic, etc.).
11. Illinois Central—Central of Georgia system (certain details modified).
12. Seaboard Air Line system.

WESTERN TRANSCONTINENTAL REGION:

13. Union Pacific—Chicago & North Western system (plus Central Pacific; also western Wabash lines, etc.).
14. Burlington—Northern Pacific—Denver & Rio Grande—Western Pacific system (Chicago Great Western; Minneapolis & St. Louis [parts], etc.).
15. Chicago, Milwaukee & St. Paul—Great Northern system (east part of Chicago & Eastern Illinois and iron-ore roads).
16. Atchison, Topeka & Santa Fe system (with line into St. Louis; Gulf Coast, etc.).
17. Southern Pacific—Rock Island system (part of St. Louis Southwestern, etc.).

GULF REGION (west of Mississippi, south of St. Louis and Kansas City):

18. St. Louis & San Francisco system (with Katy [part]; St. Louis Southwestern [part], etc.; Alton).
19. Missouri Pacific—Iron Mountain system (including Kansas City Southern, etc.; Chicago & Eastern Illinois, western half).

INDEPENDENT REGIONAL GROUPS:

20. New England system (except Boston & Albany and Grand Trunk lines).
21. Michigan peninsula system (Pere Marquette; Ann Arbor, and Ironton).
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The transportation act of 1920 deals with the consolidation of railways into systems by the amendment of section 5, paragraph (4) of the act to regulate commerce, of 1887, making it read as follows:

The Commission shall as soon as practicable prepare and adopt a plan for the consolidation of the railway properties of the continental United States into a limited number of systems. In the division of such railways into such systems under such plan competition shall be preserved as fully as possible and wherever practicable the existing routes and channels of trade and commerce shall be maintained. Subject to the foregoing requirements, the several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the values of the properties through which the service is rendered shall be the same, so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of their respective railway properties.

The act to regulate commerce, of 1887, is further amended as to procedure in effecting consolidation by the following paragraphs of section 5:

When the Commission has agreed upon a tentative plan it shall give the same due publicity and upon reasonable notice, including notice to the Governor of each State, shall hear all persons who may file or present objections thereto. The Commission is authorized to prescribe a procedure for such hearings and to fix a time for bringing them to a close. After the hearings are at an end the Commission shall adopt a plan for such consolidation and publish the same; but it may at any time thereafter, upon its own motion or upon application, reopen the subject for such changes or modifications as in its judgment will promote the public interest. The consolidations herein provided for shall be in harmony with such plan.

It shall be lawful for two or more carriers by railroad, subject to this Act, to consolidate their properties or any part thereof, into one corporation for the ownership, management, and operation of the properties theretofore in separate ownership, management, and operation, under the following conditions:

(a) The proposed consolidation must be in harmony with and in furtherance of the complete plan of consolidation mentioned in paragraph (5) and must be approved by the Commission.

(b) The bonds at par of the corporation which is to become the owner of the consolidated properties, together with the outstanding capital stock at par of such corporation, shall not exceed the value of the consolidated properties as determined by the Commission. The value of the properties sought to be consolidated shall be ascertained by the Commission under section 19a of this Act, and it shall be the duty of the Commission to proceed immediately to the ascertainment of such value for the properties involved in a proposed consolidation upon the filing of the application for such consolidation.

(c) Whenever two or more carriers propose a consolidation under this section they shall present their application therefor to the Commission, and thereupon the Commission shall notify the Governor of each State in which any part of the properties sought to be consolidated is situated and the carriers involved in

the proposed consolidation of the time and place for a public hearing. If after such hearing the Commission finds that the public interest will be promoted by the consolidation and that the conditions of this section have been and will be fulfilled, it may enter an order approving and authorizing such consolidation, with such modifications and upon such terms and conditions as it may prescribe, and thereupon such consolidation may be effected, in accordance with such order, if all the carriers involved assent thereto, the law of any State or the decision or order of any State authority to the contrary notwithstanding.

The spirit and intent of this legislation, as well as the manner in which it was anticipated that its ends would be attained, are significant. The sections above cited do not stand alone. They are integrally related to section 15a, paragraph (2), of the act to regulate commerce, as amended, which prescribes a new statutory rule of rate-making. The statute reads as follows:

In the exercise of its power to prescribe just and reasonable rates the Commission shall initiate, modify, establish, or adjust such rates so that carriers *as a whole* (*or as a whole in each of such rate groups or territories as the Commission may from time to time designate*) will, under honest, efficient, and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation. [Italics mine.]

This new rule seeks to fix rates, not for any single carrier, but for the carriers by natural groups. By far the larger proportion of the traffic of the United States is carried by so-called strong or prosperous roads. But it is equally true that a large amount of mileage is in the hands of corporations which, in a financial sense, may be denominated chronically weak. The causes for such weakness are various, including disadvantageous location, unwise investment or administration, an unwieldy financial structure, or even downright impairment of capital by waste or fraud. But, regardless of the sources of this disability, these weak lines are as essential to the welfare of the communities which they serve as are the strong lines to their patrons. It is the theory of this legislation that the railways must be considered as a whole, group by group, fixing by means of the new statutory rule of rate making, a general level of return adequate to maintain them all at a proper pitch of efficiency. The difficulty in the past, as stated by Senator Cummins on December 2, 1919, in Congress, is that "It has been utterly impossible for any body of men to make a system of rates that will sustain the weaker railroads of the country without giving to the stronger railroads an income excessive and intolerable in its extent; and there lies the great fundamental obstacle in our system of rate making. * * * It was obvious, I think, to the students of the subject, long before the government took possession, that we must adopt some plan that would remove this inherent fundamental difficulty." The section of the act dealing with consolidation into systems, above cited, was intended to supplement the new sections dealing with statutory definition of reasonable rates, in coping with this difficulty.

To this end, the Senate bill sought to reduce the carrier corporations to a common denominator of earning power in terms of valuation by compulsory consolidation. It was intended to compel the stronger roads to merge their identity with the weaker ones for the common good of the country as a whole. But the measure ultimately emerged from conference committee with the procedure as above described, in place of compulsion. It was evidently expected that the new statutory rule of rate making would afford an incentive sufficiently powerful to induce the strong companies to merge with weaker ones, rather than to be compelled to pay over their surplus earnings above the rate of return fixed as reasonable, into a revolving fund for the general benefit of their respective groups. An incentive to the weaker roads might also conceivably obtain. The aid extended by the act from the surplus earnings of the strong roads consists merely of advances or loans, except in so far as a better balanced opportunity yields larger earnings. Or else possibly a fairer administration of the division of through rates may help. But the weaker roads are encouraged to seek shelter through affiliation. They are not taken care of by any definite guaranty of earnings.

But the motive for consolidation, it was held, should not be permitted to bring about indiscriminate mergers, regardless of natural relationships of the carriers either to one another, or to the needs of their respective territories. It was in order that there might be consonance between such mergers as took place and the public welfare, rather than that mere immediate profit to those concerned might result, that the formal procedure as above described was enacted into law. Not otherwise, thus, than in its direct relationship to the fundamental principle of the new act can the significance of the particular consolidation provisions be understood. And it is because of this causal relationship that the act further prescribes that no mergers which are not in accordance with this plan, as thus adopted, may lawfully take place.

As to procedure in undertaking this investigation, the leading paragraph of the statute, dealing with consolidation, above quoted, contains three requirements which must be observed. The first is that competition, presumably in service, shall be preserved; the second is that existing routes and channels of commerce shall not be disturbed; and the third, subject it will be noted, to the foregoing requirements, is that the financial aspects of such mergers shall be kept in view. Without having regard to the fundamental principle involved, both in consolidation and the new statutory rule of rate making, it might appear that these several requirements were stated in the order of their importance; in other words, that the element of financial strength was less significant than the preservation of competition and of the existing traffic routes. But having due regard to the matter in its larger practical aspects, it is evident that any plan adopted will not only be a mere paper plan, ineffectual and futile, but that it will fail to conform to the spirit of the act, unless the financial requirements be given equal weight with those of operation and traffic. For the plan will never be put into effect unless a financial motive for consolidation be afforded; and unless it is put into effect, a positive bar to the attainment of uniform reasonable rates, under which all the carriers alike may thrive, will continue to exist, if the underlying principle of the legislation is in reality sound.

Assuming the three requirements for consolidation to be of equal importance, two quite distinct methods of approach might be adopted according as one began at the operating and traffic end, or, on the other hand, began with the financial aspects of the matter. Under normal conditions these two methods seemingly promise results of equal value. One might, presumably, first ascertain the relative financial standing of the corporations; and thereafter check up the alliances thus indicated, by applying the test of operating efficiency and satisfaction of the traffic needs of the territories concerned. Or, contrariwise, one might first seek the natural alignment of these properties as operating and traffic units, before inquiry as to whether such alignment contained an effective invitation to merger, based upon considerations of earning power and financial stability. The former method appeals particularly to financial students of the subject. It has resulted in the formulation of several significant proposals. The latter calls for a somewhat wider range of information, dealing not alone, as it does, with the operating and traffic characteristics of the carrier companies, but also looking to the broader considerations of the traffic needs of the entire communities served. For it is held that the maintenance of the "existing routes and channels of trade and commerce" implies not the preservation of merely artificial currents and conditions, but that the statute contains an invitation to consider these carrier corporations in their basic relationship to the welfare, present and prospective, of the country. Viewed in this larger sense the act is at once an invitation and an opportunity. It calls for an analysis of the commercial geography of the United States, in its relation to the layout of its railway net. For, unless the location of its railways conforms to the commercial requirements of the country, there can be no permanent prosperity for either. The further requirement in the act for a certificate of public exigency for proposed new construction of railways is but another expression of this intent in the law.

As to procedure, also, it has been represented stoutly that this plan should confine itself strictly to broad outlines; and even, perhaps, merely propose but a statement of principles. It is contended that useless complications and prejudice to future negotiations, as well as a dangerous effect upon market values, may result from descent into detail. Fully conceding the force of this reasoning, experience demonstrates that general principles and broad outlines may only be tested, as to their feasibility, by tentative elaboration of the finer points. Only thus are the thousand and one complications rendered appreciable to the naked eye. In brief, general principles and broad treatment require the test of practicability. If, therefore, it appears at times that these proposals descend unduly into the intricacies of corporate relationship, it should be borne in mind that the purpose is not so much to reach a final judgment, as it is to reveal the various considerations upon the basis of which such final decision may at some time perhaps have to be rendered.

Certain statistical data have been compiled and are incorporated in this text, as well as appended as exhibits, in order to check up the plan, as proposed, by territories and by systems, respectively. The calendar year 1917 has been chosen for the purpose, largely because the results for that period most closely approximate the standard requirement established by the statute of an operating income amounting to 5.5 per cent of the investment in road and equipment. For 1917, the actual rate of return was in fact 5.45 per cent. The tables and exhibits, as prepared by the bureau of statistics of the Interstate Commerce Commission, are necessarily confined to a few pertinent items. Among these are investment in road and equipment, total and per mile of line; revenue ton-miles; revenue per ton-mile; and railway operating revenue, total and per mile of line; net operating income, total and per mile of line; mileage operated; and percentage of net operating income on investment in road and equipment. It should be noted that the net operating income, however, is not that of the calendar year 1917, but is based upon the standard return—that is to say, the average annual net railway operating income for the three years ended June 30, 1917. The reason for using the average income (standard return) for the three years for purposes of comparison with the property investment as of December 31, 1917, is that this figure was provided by Congress as the fair rental (subject to correction) for the property actually taken over at the close of 1917. This standard return for some roads in process of rapid development is considerably less than the actual income of the calendar year 1917. But for other roads the standard return will be found to exceed the 1917 income. The net result is that for class-I roads as a whole, the 1917 income exceeds the standard return by about 7.5 per cent. Thus it appears that for a few roads, perhaps undergoing rapid development, the standard return understates the case; but for all of the rest, the three-year average affords a safer basis than the results of any single year.

The foregoing data for class-I roads, including their subsidiaries, as segregated by systems set up under this plan, afford a rough indication of the competitive strength, geographical scope, and inherent financial stability of the relationships proposed. But it is evident that such data constitute merely a rough check upon the plan. The figures are no more to be trusted implicitly than are seductive maps nicely fashioned to produce the effect of symmetry upon paper. Such symmetry, until it be checked up and tested in detail for all manner of traffic and operating conditions, may be grossly misleading. Statistics, as well as maps, under these given circumstances must be regarded and treated as imperfect criteria. The realignment of properties, with the consequent disturbance of all traffic, is bound to be instantly reflected in earning power. The putting together or dismemberment of individual properties may bring about results which are quite unpredictable by the arbitrary means of statistical investigation. Elaborate calculations by experts concerning the development of business under the new conditions are really necessary in order to afford a

reliable forecast. Not published statistics, but rather an intimate acquaintance with local traffic conditions afford the only entirely reliable data. Yet inasmuch as these data are the best we have, they are analyzed and published for what they are worth.

This consolidation plan, it should be noted, has thus far been concerned only with class-I roads; that is to say, roads having an operating revenue in excess of $1,000,000. The aggregate mileage of these class-I roads herein consolidated in 1917 was 220,000 miles. There thus remains the not inconsiderable aggregate of 39,000 miles of line, consisting of the so-called short lines, the remaining class-I roads, and those within classes II and III. That the number of these is quite large is evident from inspection of section C of the Annual Report on the Statistics of Railways for 1917, pages 469 et seq. No attempt has been made to trace the natural relationships of these minor properties, and probably it is not necessary at this time. But the fact of their existence and of, in many cases, their grave necessities may not be ignored. A comprehensive plan of railroad consolidation would include their allocation in due course; but the data are not at present available. The case of the Illinois Traction Company, with its widespread interstate ramifications is typical of a number of other electric public utilities. No attempt is made to assign them in this tentative plan, which confines its attention solely to the larger steam roads.

As for the troublesome problem of allocation or abandonment of certain properties not serviceable to their respective communities, the matter is discussed in chapter VI. For it is in the southwestern states that the question presents itself in the most acute form.

What test shall be applied in order to ascertain competitive ability; that is to say, ability to prosper reasonably along with other railroads in the same group under a uniform set of rates? Do the requirements of the statute call for the creation of systems of substantially equal mileage or enjoying much the same volume of gross earnings or net income from operation? Shall one seek to construct comprehensive groups conforming to one or several of these standards, or may one assume that size, as thus indicated, is merely of secondary importance? It has been urged with some cogency that this plan does not call for wide-spread disturbance of existing relationships except to take care of the properties that are either well above par or substantially below it. In other words, it has been urged on behalf of several properties of moderate size that they are already doing fairly well under the statute, conforming to the requirements and enjoying the reasonable return fixed by the Commission without further alliance with other companies. One has to decide as to such claims, and particularly must one decide where to draw the line in the search for uniformity in magnitude. Deciding roughly, as one must under existing conditions, it is held to be more important to create self-sustaining systems as to earnings derived from as large a proportion as possible of the area of the several great subdivisions of the country, rather than to attempt to put these properties together in such an exact way that they shall all have approximately equal mileage or equal gross or net earnings within each group. Neither mileage nor volume of business is the real test of ability to exist under the statute. In brief, as illustrated by trunk line territory, it is held that a Baltimore & Ohio system adequate to satisfy the requirements of the statute may be created by giving it a mileage or a gross volume of traffic by no means commensurate with either the New York Central or the Pennsylvania. Its ability to serve may perhaps be dependent upon quite other considerations than those of size. If quality can be conferred by means of better developed traffic relationships, and if natural alignment and relationship can be adhered to, it is believed that the situation so far as the act is concerned will be satisfactorily met.

The dynamic aspect of consolidation must also be kept in mind. The purpose being to promote a more evenly balanced competition, especially by means of equalization of opportunity in originating traffic as well as in its interchange and delivery,

it is conceivable that congestion may be in a measure relieved by this plan. The growth of business in future years must accrue largely to the existing stems. Sound public policy demands that this growth should be so distributed as to avoid blockades and embargoes on the strong roads, while the weak ones are coincidently drifting toward starvation. To insure a larger proportion of the increment to the weaker roads, by rendering them more capable of efficient service, is the idea. The purpose of the legislation being not to guarantee an income but to afford an equality of opportunity to earn it, was intended to be promoted by this means.

Fundamental differences between various plans proposed for consolidation arise concerning the size and scope of the mergers. Shall they be continental in range, reaching, that is to say, clear across the country, from east to west, and from Canada to the Gulf; or shall they conform to territorial divisions of the country? Considerations of operating efficiency and of conformity to the traffic needs of the country, as well as preservation of competition and of the established channels of trade and commerce, are not sufficient. It is essential also that administrative organization both within the company and in its relations to the government should be likewise comprehended. Particularly is it important that correspondence be maintained between the scope of these railroad systems and the long-standing rate-making areas and statistical divisions which have commended themselves upon the basis of long experience to the parties concerned. All of these considerations join in commending a division of the country for purposes of consolidation primarily into the great subdivisions of trunk line territory; southeastern territory, that is to say, south of the Potomac and Ohio rivers and east of the Mississippi; and western territory, lying beyond the Mississippi. Furthermore, local peculiarities and the marked individuality of certain areas seem to make it desirable to set off certain subdistricts within these great primary divisions. Thus New England and Chesapeake Bay or Hampton Roads territory, and a sector between St. Louis-Kansas City and the Gulf are set off by themselves and separately discussed. Such a general division of the territory of the United States conforms practically to the widest range thus far covered by any existing railroads or systems. Ambitious plans, notably that of the Gould system after 1901, and of the Farquhar syndicate, somewhat later, have sought in vain to constitute tenuous systems covering a wider territory than these historic areas. But their weakness from every point of view has been amply demonstrated. Any substantial system must have breadth as well as length, an amplitude of feeders as well as main stems; and there seems withal to be a pretty clearly defined upper limit of the aggregate mileage which may be efficiently operated. This limit of mileage will, of course, vary widely with the density of traffic and the details of operation. But, viewing the matter broadly, it seems not unlikely that any system ranging far and wide beyond the natural territorial divisions above described will either be lacking in breadth and stability of location, or will exceed the ability of a single management efficiently to handle. The experience of the federal Railroad Administration in dividing up the area of the country seems to confirm this view, that for operating and traffic purposes each system should be comprehended within the certain great territories above named.

The new statutory rule of rate making and the first decision rendered thereunder by the Interstate Commerce Commission—Ex Parte 74—also render it imperative in planning for comprehensive consolidation not to transgress the boundaries of these traditional territorial subdivisions. The purpose of the law being to fix reasonable rates, not for individual railroads but for entire groups, renders it essential that the grouping adopted for this purpose conform to that which is adopted in effecting the consolidations. Otherwise confusion in the administration of the new law would be bound to result.

Having adopted a subdivision of the country into certain great territorial districts for purposes of consolidation, how important is it that each system shall be rigidly confined within its own particular territory? In other words, are these boundaries to be strictly or loosely applied to the consolidations which are proposed? The desirability is obvious of disturbing or disrupting existing corporations and relationships as little as possible; and yet consideration of the map indicates not infrequently that so-called trunk lines extend west of the Mississippi; that western railroads and southern companies penetrate one another's areas in order to reach strategic points; or that the southern lines have in the past found it desirable to extend northward across trunk line territory to Chicago. What shall be done with these odd bits and loose ends? Shall the Kansas City, Memphis & Birmingham, for example, be treated as an integral part of the southeastern systems, because it lies east of the Mississippi, although it is really a western railroad? Or shall the Illinois Central continue to reach the Missouri River at Omaha? The most difficult problem in this connection, fortunately confined to a single system, is to decide what to do with the Wabash. This property alone bridges two great and entirely distinct traffic areas, east and west of the Mississippi. Standing alone as a system in this regard, it may more fittingly be discussed elsewhere. But as to the loose ends of other systems which lie beyond their own appropriate territories, an attempt has been made to find for them, so far as may be, a natural alignment with the other properties within each of the great territorial subdivisions. It is believed that by such treatment a greater ease of administration of the law will be in the future provided. But precision must at all times be tempered by practicability; and, as in the limitation of rate areas or classification territory, an occasional lapse from system is deemed preferable to corporate or traffic dismemberment.

The preparation of a comprehensive consolidation plan necessarily upon occasion involves a disruption as well as a putting together of relationships for other purposes also than the one above mentioned. Obviously, such dismemberment should be rigidly minimized; and no proposal for so doing is made unless the evidence in its favor is most convincing. Were the plan in effect a final one involving large financial considerations, one might hesitate even under these circumstances. But having in mind that these proposals are purely tentative, that they are the preparation of a sketch or an ideal layout, the plan assumes the right to tear apart as well as to consolidate; in other words, to effect where necessary a comprehensive readjustment. The financial means to be adopted under these circumstances lie beyond the scope of this plan; but occasionally, as in chapter V concerning the dissolution agreement between the Central Pacific and the Southern Pacific Company, a concrete illustration of the entire feasibility of unmerger, even in the face of an extreme financial and corporate entanglement, is afforded.

This tentative plan for consolidation proceeds upon the assumption that the distinction between so-called weak and strong roads, financially, is at present highly uncertain; and that it will require a period of experience under the new rates and under the new division of through rates as well as under the slowly readjusted commercial and industrial conditions after the war, in order to establish the relative earning power and credit of each. A period of trial is often necessary, both to reveal elements of strength and of weakness. Substantial equilibrium seems unlikely to be attained for a considerable period of time. Yet in the meanwhile, tentative plans must be set up, in preparation for the application of the final test of relative financial strength as soon as the available data make this possible. Not infrequently it will be found that in these plans it has been necessary to put together what appears to be a disproportionate number of weak roads, or at all events, of roads which have yet to establish their claim to entire stability. Particularly has this been the case in the so-called Gulf region, where practically all of the properties seem to be below par. No strong roads exist with which these may be consolidated, without extension of the scope of

consolidation far beyond the bounds which are apparently laid down by traffic and operating experience. The same condition would obtain under the so-called New England plan for that particular territory, as well as for the peninsula of Michigan. The assumption is thus made that the purpose of this act being to rehabilitate the carriers through a new definition of reasonable rates, these entire groups of roads may be expected to prosper, to a degree as yet not ascertained, but none the less to a substantial amount. Whether this rehabilitation will ultimately warrant the grouping herein tentatively proposed, the future alone can decide. But necessarily the first step must be to provide for proper grouping in order to promote the best operating and traffic results. The responsibility for the subsequent financial success of the undertakings must then rest upon the exercise of the new rate-making powers, conferred upon the Interstate Commerce Commission by the act.

A peculiar difficulty in effecting consolidation of strong with weak roads and of reconciling such merger with existing operating and traffic relationships, arises from the tendency of the weak roads to link up in series and to form thereby through routes extending sometimes clear across the country. For example, at Peoria a number of such roads meet: The Lake Erie & Western from the east, the Minneapolis & St. Louis from the north, and the Chicago, Peoria & St. Louis from the south. These various properties, together with the Wabash, the Chicago Great Western, the Clover Leaf, and the Nickel Plate, tend to exchange more freely with one another than with the standard or strong lines. From these strong lines, which have their own routes from end to end of each territory, they are naturally excluded, so that they are more or less compelled to associate with one another in the formation of what may be called substandard routes. Such routes were peculiarly the offenders in the old days of rate cutting. Their present-day bid for traffic is not infrequently based upon peculiar attention to dispatch or certainty of prompt delivery. This competition in service is naturally expensive and tends still further to attenuate their net earnings. Furthermore, these smaller subnormal properties oftentimes serve as the natural arms or extensions of the larger companies, which by reason of a paucity of feeders, are forced to rely upon such association. Thus the Erie, itself in precarious case financially, will be found more often to have united with these lesser substandard properties to form "existing routes and channels of trade." Under such conditions, the mandate of the statute, to preserve "as fully as possible and wherever practicable" such traffic associations, impels one of necessity toward consolidation of a number of equally substandard roads. Conformity with the other mandate of the statute by seeking to ally strong and weak properties to a like degree, thus threatens to overset the traffic relationships which have become customarily established by very force of circumstances. It is because of the clash between these at times discordant requirements, that the emergent result is so often a piebald compromise.

Several assumptions akin to the foregoing one are made in the following plan. The first is that for a number of roads a substantial readjustment of capitalization must occur as a prerequisite for consolidation. It is clear that this must be so by virtue of the authority vested in the Commission under section 5, paragraph 6b, already quoted (page 475, *supra*). The purpose, obviously, is to bring about the reestablishment of a due relationship between the total volume of securities outstanding and the valuation assignable to the property for rate-making purposes, as well as the assurance of a sound relationship between indebtedness and capital stock. The experience of a number of recently reorganized properties is significant as indicating the recuperative effect of a drastic reorganization of capitalization. Roads once weak have become strong, not only capable of supporting themselves but of projecting their vigor into other properties with which they may be associated. Such notably seems to have been the case of late with the Pere Marquette and also the

Pittsburgh & West Virginia. And it may well be that the Erie Railroad as well as others may upon such financial readjustment disclose an actual earning power which has in the past been concealed through a distorted relationship between capitalization and investment.

It is likewise presupposed throughout this report that all of the new powers conferred upon the Interstate Commerce Commission by the transportation act, 1920, will be upheld constitutionally. An entire transformation in the relation between this administrative branch of the government and the judicial arm has been brought about. Sporadic control by the courts, as evidenced in the pending dissolution proceedings concerning the Central Pacific and Southern Pacific companies and the Philadelphia & Reading and Central of New Jersey, it is assumed now yield place to a continuing supervision and control by the Interstate Commerce Commission, acting as a branch of the executive authority. Such a complete reversal of public policy must lead to protracted litigation; but regardless of the final outcome no course in connection with this report is possible save to hold that the will of Congress as expressed in the transportation act is governing and supreme. Not even judicial decisions under the Sherman act or the commodity clause of the act to regulate commerce are held to constitute a bar to the free allocation of these properties to the new systems provided by this plan. All of the roads concerned in such proceedings are therefore treated with entire freedom, assuming that the final decision as to the propriety of such placement will rest in future not with the courts but with the Interstate Commerce Commission.

Another far-reaching assumption is vital to the success of this plan. This has to do with the operation of terminals at great centers. Historically, there has been the greatest diversity of experience in this regard between the carriers of the country. Some roads are peculiarly fortified as to terminals, while possessing weak lines from an operating standpoint across the open country. For others, the reverse is true. Some companies, entering the field late, enjoy good locations as to line, but have always worked under a handicap at the terminals. Such lines are strong in the open but weak at the ends. Others—the Atlanta, Birmingham & Atlantic, for example—were really constructed across country rather to utilize an existent terminal than because of a demonstrated need for the new cross-country line. But whatever the cause for the existing situation, a practically universal demand of shippers is that they be able freely to exercise their routing rights by the provision of open terminals, both at the point of shipment and at destination. The right of route across country is impaired if the only possible delivery is at an inconvenient point. To put together railway lines on the map without having a constant regard to the possibility of free delivery or receipt at either end would indeed be futile. As to the particular means for accomplishment of this object—free and untrammeled utilization of terminals—there may well be difference of opinion. Conceivably, joint ownership and operation, as at St. Louis, may succeed in that environment, while reciprocal switching may satisfactorily answer the purpose as at Chicago. But, whatever the means adopted to this end, it is submitted that a proper adjustment of the various terminal situations, always of course for due compensation, is an important adjunct to any comprehensive consolidation plan. No recommendation, therefore, as to particular terminal remedies is offered in this report. The subject technically is so involved, that it might well be made matter for a special investigation. Its bearing upon and relation to the subject of the division of through rates is as obvious as is its intimate connection with consolidation. The pending New York Central application to acquire the Chicago Junction Railway raises in itself almost all the possible aspects of terminal problems. Consolidation can never be effectively brought about without the adoption of a comprehensive policy as to terminal ownership, operation, or both. It is herein assumed that free access will be

somehow provided, either under the present emergency powers as contained in section 1, paragraph 15c, or by the adoption under a consolidation plan of permanent arrangements in all of the important centers. Possibly the assignment of terminal properties might take place by means of leases based upon valuation by the Commission and at a rate fixed by the Commission as reasonable. This would permit the terminal companies to remain under the joint control of the several participating railroads, rather than that entirely independent terminal companies, actually owing these facilities, should be set up. The important point, whatever the means adopted to this end, is that there should be unified operation and entirely free access to all participants alike.

Another general principle constantly kept in mind in connection with consolidation and having substantial effect upon it is the encouragement of alternate routes and gateways, in order to relieve present or prospective congestion at the great railway meeting points. A tendency has been strikingly manifest for many years for all the great systems to expend funds unstintingly upon their main stems, and all of these main stems tend to run together at certain nodal points, notably New York, St. Louis, and Chicago. Such concentration upon great cities is a natural response to the commercial forces which tend with increasing power to attract traffic, even although it may not be destined for that place but may be passing through en route to points beyond. The shippers' routing often dictates such shipments in order to take advantage of a change in market conditions. The result has been an undue congestion in times of emergency, which paralyzes the commerce of the country. There is always a certain proportion of business, however, which by careful attention to the matter might be consolidated and shipped by an alternate route which should avoid the great center. Thus the Michigan ferry routes or certain of the gateways south of Chicago have in the past afforded relief. But the latter especially, it is submitted, have not in the past received the attention which they deserve, and an attempt has been made wherever possible to cultivate such direct relationships between the different systems proposed by the establishment of definite and common gateways of this sort.

The preparation of such a plan of consolidation thus affords a unique opportunity for the evolution of a comprehensive plan for the development of national resources. Too often in the past purely temporary or personal considerations of advantage or profit have determined the location of our American railways. The administrative control of the terms on which the carrier companies may be allowed further to ally themselves in the future may, if wisely administered, contribute to diminish economic waste and to promote commercial development. But such wise administration demands a comprehensive plan adopted in advance, and it is evidently the purpose of the act to draw up this plan, not alone for the attainment of the immediate rate-making end but also with a view to the larger purpose of a right direction of our economic resources as a nation in the years to come.

CHAPTER I.—TRUNK LINE TERRITORY.

The creation of independent self-sufficient systems in trunk line territory which shall compete with one another on more nearly equal terms than at present is simplified by the fact that the traffic is predominantly east and west along parallel lines. But it is complicated by the disparity in size and competing strength of the various properties, as well as by the fact that a considerable number of the railroads consist of disjointed links lying east or west of the Niagara frontier or else divided at the head of Lake Erie. Furthermore, some of the strongest systems enjoy a superfluity of

approaches to strategic points, acquired perhaps for their "nuisance value" at some time in the past; while other competing roads are denied access to those strategic points. And the rugged Allegheny territory, with its north-and-south valleys and ridges, in any event leaves but a few available east-and-west passageways which are capable of utilization.

The elements of the trunk line situation, it is believed, are set forth in the first large map in the series hereto appended. This sketch embodies an attempt to produce all of the existent through routes from Chicago and St. Louis to the seaboard. All cross lines north and south and all feeders are eliminated. The map purports to show, therefore, only the available stems; that is to say, available in the light, first, of existing corporate relationships, and, secondly, of geographic barriers. If one were to cast all of these lines into a melting pot, other routes might conceivably be developed, notably those which run directly east across northern Pennsylvania. But the physical obstacles are so considerable that these are ignored. The stems shown upon this map are, however, compounded of different corporate entities in some cases. The details of their allocation are subsequently worked out, one by one.

Consideration of map 1, then, discloses five east-and-west trunk line stems. First is the historic New York Central route by way of the Hudson and the Mohawk Valley, thence north and south of Lake Erie. This is shown by the heavy black line. The second, shown by a string of beads is the Pennsylvania system, splitting in Ohio into stems to Chicago and St. Louis respectively. The third, likewise historic, is the Erie, in a broken line with crosses which follows the northern boundary of Pennsylvania up the Delaware River and passes south of Lake Erie on to Chicago. Its natural extension to St. Louis is by way of the Wabash Railroad as indicated. The fourth route, historically considered, under unified corporate control, both to Chicago and St. Louis, is the Baltimore & Ohio, which splits into two branches in Western Maryland. This is shown by the heavy broken line. The fifth rail route depicted on the map is composite, consisting of a combination of lines east and west of Buffalo. It is designated by a broken line with circles. West of Buffalo the Nickel Plate merely duplicates the Lake Shore & Michigan Southern. East of Buffalo, access to the seaboard may be had either over the Lehigh Valley or the Delaware, Lackawanna & Western. The most direct line to New York—almost as the crow flies—consists of the Lackawanna from New York to Scranton, then up the valley of the Susquehanna, along the line of the Lehigh Valley Railroad and from Elmira along the Lackawanna again. But in order to take advantage of the superb physical equipment of the Lackawanna, its line is followed, even somewhat indirectly, as it makes an elbow at Binghamton. The combination then of the Lackawanna east of Buffalo, and the Nickel Plate from Buffalo to Chicago, completes the array of the five standard trunk lines, all within the territory of the United States.

To complete the picture presented by this array of through routes east and west, the following table of distances and of elevation to be overcome at the highest point, is significant.

Route.	New York to Chicago.	New York to St. Louis.	Highest point above sea level.
	Miles.	*Miles.*	*Feet.*
Pennsylvania	908.9	1,052.9	2,192
Lackawanna-Nickel Plate	919.0	1,115.4	1,115
New York Central	978.72	1,157.62	920
Erie-Wabash	998.5	1,174.3	1,773
Baltimore & Ohio	1,013.8	1,117.8	2,374

There can be little doubt as to the justification for systems as separate combinations, based upon the first three of the five lines above enumerated, namely, the New York Central, the Pennsylvania, and the Baltimore & Ohio. Nor can there be any doubt of the existence of the two other primary through routes. But a most difficult question to decide is as to whether these remaining two routes, the Erie and the Lackawanna-Nickel Plate, can each alone be provided with sufficient entrances, appurtenances, and feeders to enable them to engage successfully in a well-balanced competition with the first three relatively powerful ones. These three have so far preempted the best lines and facilities that the supply remaining is rather inadequate. For it is obvious that mere stems are insufficient. There must be access to important lake and Ohio River gateways. There must be access to direct connection with western trunk lines through gateways other than Chicago, along the Illinois River or the Mississippi. There should be free participation in Michigan ferry routes, avoiding Chicago by going northwest through Michigan. And, of especial importance, there must be access to the great soft-coal deposits and to the centers of production of iron and steel. Without a fair proportion of business of these various sorts no trunk line can persist in successful competition.

The prime decision then as to trunk line consolidation has to do with the fate of the Erie stem and that of the Lackawanna-Nickel Plate. They ought to constitute the trunks of independent self-sufficient systems. It would contribute to stability were they to do so. But if there are not enough available extensions and feeders, the only thing to do, in pursuance of the mandate of the statute, is to consolidate the two possible systems, and to utilize the existing approaches and feeders for their joint benefit. To this procedure there are two objections, of decisive importance. The first is that the Erie and the Nickel Plate-Lackawanna, with their extensions to St. Louis, as above described, parallel each other almost completely from end to end without at the same time being near enough together to produce the possible advantage of joint operation. Did they lie still closer together, especially where they are single-track lines, the two systems might constitute together a double-track railroad, each specializing in one direction. But they are too far apart for this, and yet not unique enough in location as to one another as to fully warrant independent existence. It has been urged by competent authority that the Nickel Plate and the Erie might be worked as a double-track line because of the peculiar character of much of their business. They are both relatively light passenger lines and transport large amounts of fruit, vegetables, beef, and other tonnage which moves in carload or trainload lots, little of it being local. It is urged that one of these lines could be utilized for the prompt return of the foreign empties, which tend to pile up in trunk line territory. The continual surplus of cars in the east, due to the heavy influx of bulky raw materials, renders it a matter of common importance to all lines that these empty cars should be handled westbound in big units. Another reason urged for throwing all of these lines, except the Pennsylvania, New York Central, and Baltimore & Ohio, into a single system, is that their aggregate tonnage would then just about equal that of the Pennsylvania system. This will appear from examination of the operating statistics in exhibit 1. But, on the other hand, such a system would have an aggregate mileage operated of 12,500 miles as compared with 10,700 miles for the Pennsylvania. Its aggregate volume of traffic in revenue ton-miles, would far and away exceed that of the present New York Central system. Considering the detached character of many of these properties, a heterogeneous aggregation altogether surpassing the possibility of efficient management would certainly be produced. It is believed, therefore, that five systems rather than four will best satisfy the needs of the territory in the years to come.

Another objection to constituting one system out of the Erie and the Lackawanna-Nickel Plate stems is that it would enforce corporate relationships which are unnat-

ural or strained. Each of the two end-to-end alliances, as herein indicated, is so self-evident and advantageous that the matter of consolidation has in the past already been given private and self-interested consideration. To put these properties together in each group might be practicable; but to attempt a combination of the two parallel groups would compel roads which have been bitter competitors for many years to become partners. All things considered, especially having in view the fact that most of the trunk line business of future years is likely to accrue to these existing companies, it is believed that sound national policy should indorse the independence of all five. Feeders, entrances, and approaches may be built in future years, but new main stems are unlikely. If perchance these two stems of the Erie and the Lackawanna-Nickel Plate are not yet adequately supported in this regard, the deficiencies may be supplied. But if the two stems were once merged and in years to come there proved to be business enough for both, it would be difficult if not impossible to dismember the alliance. This plan proceeds, therefore, to construct, as well as may be out of the existing material, five independent trunk lines. There will also be, of course, a sixth pseudo trunk line, the Chesapeake & Ohio, which is, however, considered in the separate Chesapeake Bay group of properties, based upon Hampton Roads and preeminently engaged in soft-coal business.

It is next in order to consider the constitution of these five proposed groups in detail, having in mind size, financial strength, and comprehensive possession of the trunk line territory. By all three of these tests, the New York Central and the Pennsylvania have substantially fulfilled their destiny within the confines of this region. In other words, they reach all of the important centers and gateways, and enjoy a sufficiency of direct lines criss-cross from point to point all over their own rails. Their problems for the future are of intensive rather than extensive development; and it will be found that certain lines may be abstracted, or, at all events, given joint usage by the other groups, without injury to them commensurate with the advantage which would accrue to the trunk line territory as a whole from equalization of competitive strength.

The present New York Central system (map 3) has a somewhat greater mileage than the Pennsylvania, but the Pennsylvania, by reason of its density of traffic, has a much greater railway operating revenue and volume of tonnage. By either test these two great systems so far exceed all of the others in trunk line territory that the problem is, in the main, one of withdrawal of subsidiary lines rather than of additions thereto. Thus, the Lake Erie & Western, which is controlled by stock investment, but has long been operated separately as a competing road, is transferred. It is believed that a better use may be found for it in connection with the other components of the Lackawanna system, giving it access to the Peoria gateway as a means of avoiding congestion at Chicago. The New York Central now concentrates upon the so-called Kankakee division as a Chicago belt line, affording a western gateway susceptible of still further development. As for the southeastern gateway at Williamsport, it is proposed elsewhere in connection with the Baltimore & Ohio (page 493, *infra*) to protect this by trackage into Jersey City. The withdrawal of the Lake Erie & Western, thus recommended, would not appear to be prejudicial. The New York Central would still be in possession of contacts and routes adequate for all through business, although, of course, it might lose the local traffic originating along this line. But not quite all of the Lake Erie & Western is taken. The line from Connersville and Rushville to Fort Wayne affords a natural connection for the New York Central from Louisville and Cincinnati to Fort Wayne and Jackson for connection with the Michigan Central. But, with this exception, the Lake Erie & Western, which has been controlled by the Lake Shore since 1899, is taken away. The Kanawha & Michigan and parts of the Toledo & Ohio Central Railroad are also, as it will appear in treatment of the Chesapeake soft-coal roads, assigned to the Chesapeake railways, in order to create

an independent outlet to the lakes. And a portion of the Toledo & Ohio Central is also utilized to complete certain necessary routes in the Nickel Plate group.

On the other hand, the New York Central lines are extended by definite inclusion of the Rutland Railroad, thereby giving more complete control of a route to the Canadian maritime provinces. The relations between the New York Central and the Rutland are quite intimate. In 1917 it delivered two and five-tenths times as many loads to the Rutland Railroad as did its nearest neighbor, the Delaware & Hudson; and received back from the Rutland five times as many loads as did the Delaware & Hudson. Whether the New York Central shall be extended into Portland, Me., by transfer to the Boston & Albany of the old Worcester, Nashua & Portland, running from Worcester northeast, is problematical. If New England is to remain split up into a number of dissociated properties, this strong trunk line ought to penetrate to Portland in order to give that center the benefit of direct interchange. If New England be treated as a single group, or even if the northern half be consolidated, there would obviously be no advantage in this extension.

The Pennsylvania system (map 2) is at present richly represented by mileage throughout trunk line territory. But it is in volume of traffic handled that it stands forth preeminent among its neighbors, not excepting the New York Central. By exhibit 1 it appears that in 1917 its revenue ton-miles exceeded those of this, its sole great rival, by approximately 20 per cent. Both in size and in influence, therefore, it so far exceeds the lesser systems that the burden of proof necessarily rests upon any proposal to add still further to its extent. The possibility of merger with the New York, New Haven & Hartford is discussed in connection with New England; and the proposal is rejected among other reasons upon the ground that the Pennsylvania has already attained a predominance among the trunk lines which renders further accessions undesirable. This, again, is a serious objection to permanent incorporation within the Pennsylvania group of the Norfolk & Western Railway. This property has been controlled and largely developed under a substantial stock ownership by the credit of the Pennsylvania. Its immense coal traffic undoubtedly constitutes a reserve upon which the Pennsylvania might draw after depletion of its own coal measures in Pennsylvania. The Norfolk & Western is a connection and not a competitor. The Pennsylvania transports most of its coal from Columbus and Cincinnati west and northwest, and also carries its coal to the east and northeast. But despite this long-standing connection and the substantial investment, wise direction, and highly efficient management it is believed that sound public policy, viewing the railroad situation as a whole, warrants treatment of the Norfolk & Western as independent rather than as a subsidiary part of one of the great trunk lines. This matter is discussed elsewhere in connection with the Hampton Roads properties. (See page 533, *infra*.)

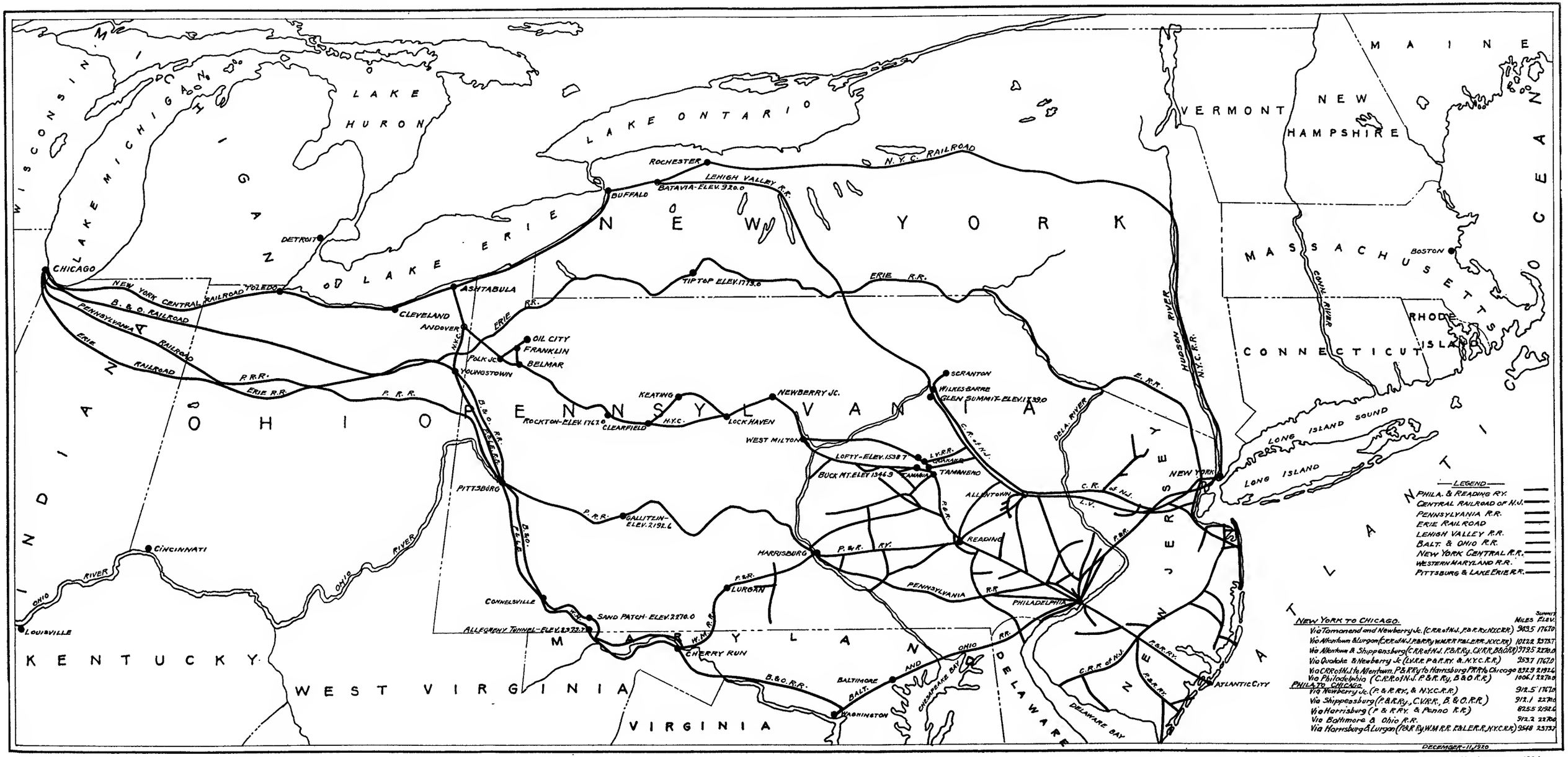
But whether the Norfolk & Western be separated entirely as to stock ownership from the Pennsylvania or not, it is proposed that the line of the Norfolk & Western be extended independently from Columbus to Lake Erie. This, as will appear in connection with the treatment of the Chesapeake group, is part of a definite policy to create a group of independent lake-to-tide properties, cutting in their courses all of the five trunk lines and thereby contributing to a greater freedom of movement. Several proposals for the accomplishment of this end are offered in due time for consideration, but the only one which directly affects the Pennsylvania is the suggestion either of a grant of trackage rights or actual lease of the former Columbus, Sandusky & Hocking, now a division of the Pennsylvania system. The other method, and the one recommended for adoption, of utilization of the Toledo & Ohio Central lines would obviate this necessity for the disturbance of the Pennsylvania. But regardless of means, there can be no question as to the national advantage of provision by one way or another of a western outlet to the Norfolk & Western independent of the Pennsylvania system.

Next in order of importance in trunk line territory is the Baltimore & Ohio system. Its location appears on map 4. This property has less than one-half of the mileage of the Pennsylvania. Its revenue ton-mileage in 1917 was scarcely more than one-third as great. It has a considerable extent, reaching Chicago and St. Louis and the neighborhood of Philadelphia upon its own rails, but it has no access of its own into New York, being dependent upon the favor of the Reading and the Central of New Jersey. It is a powerful trunk line, but with an extensive development only in the middle field of Ohio, West Virginia, and western Pennsylvania. It is attenuated both east and west. And in order to strengthen it financially and as a competitive factor throughout trunk line territory it needs upbuilding at each of its extremities. The problem with the Baltimore & Ohio, therefore, is to incorporate it with other properties which shall let it into New York and into good traffic-originating eastern territory and which shall also extend its mileage to the Michigan peninsula and ferries and out across Indiana and Illinois to connections other than through Chicago with trans-Mississippi systems. The last of these objects is accomplished by reassignment to the Baltimore & Ohio of the Cincinnati, Indianapolis & Western Railroad. This property was formerly a part of the Cincinnati, Hamilton & Dayton but was set off from it under reorganization. Its reinclusion in the system, if this road were physically improved to standard, might also lead on, by means of trackage over the Chicago & Alton or the Illinois Central, for example, as shown by map 4, into the common gateway set up as a meeting point for all systems east and west at Peoria.

The Baltimore & Ohio is also strengthened at its western end by inclusion of the Chicago, Indianapolis & Louisville, otherwise known as the Monon. This road is now jointly controlled through stock ownership by the Southern Railway and the Louisville & Nashville; but, as elsewhere set forth in chapter IV, it seems to be of little use to the Louisville & Nashville, which exchanges Chicago business primarily at Evansville. And, furthermore, the policy is definitely adopted in this plan of confining the southeastern systems closely within their own territory; stopping them, that is to say, at the Ohio River gateways. This policy releases the Monon and permits it to be built into the Baltimore & Ohio, giving it direct connection between Louisville, Indianapolis, and Chicago. An identity of interest, manifested in the past by the joint maintenance of passenger and freight service by the Baltimore & Ohio and the Monon between Cincinnati and Chicago, is thus revived.

The outstanding problem as respects upbuilding the Baltimore & Ohio system has to do with the status of the Philadelphia & Reading Railroad. Shall it be incorporated therein or treated as an independent terminal not unlike New England? Its location is such that close relationship through ownership and interchange of traffic with the Baltimore & Ohio has subsisted for many years, and it is now proposed that it be completely merged in the Baltimore & Ohio system. But the relationship of the Reading to the other trunk lines and its strategic location in the heart of one of the greatest industrial districts in the United States render this a difficult matter to decide. On the one hand its essential relation to the Baltimore & Ohio must be conceded, but on the other it is of the utmost importance that the general interest of the other trunk lines in this territory should not be placed in jeopardy.

Independent entrance into New York over its own rails is essential to a Baltimore & Ohio group if it is to continue to compete effectively with the other systems. At present it is dependent upon the Philadelphia & Reading and the Central of New Jersey, not even having trackage rights, but turning over its trains beyond Philadelphia to those roads for operation. It is necessary for improvement of the service, and the public would be correspondingly benefited, if the Baltimore & Ohio were enabled to operate its own trains with its own crews and engines into New York. It already owns substantial freight terminals on Staten Island, with a warehouse and



NEW YORK TO CHICAGO.	Miles	Summit Elev.
Via Tamanend and Newberry Jc. (C.R.R. of N.J., P.R.R., N.Y.C.R.R.)	983.5	1767.0
Via Allentown & Lurgan (C.R.R. of N.J., P.R.R., W.M.R.R., P.L.E.R.R., N.Y.C.R.R.)	1012.2	2392.7
Via Allentown & Shippensburg (C.R.R. of N.J., P.R.R., C.V.R.R., B.&O.R.R.)	979.5	2276.0
Via Quakake & Newberry Jc. (L.V.R.R., P.R.R., & N.Y.C.R.R.)	983.7	1767.0
Via C.R.R. of N.J. to Allentown, P.&R.Ry. to Harrisburg, P.R.R. to Chicago	837.2	2191.6
Via Philadelphia (C.R.R. of N.J., P. & R. Ry., B. & O. R.R.)	1006.1	2276.0
PHILA. TO CHICAGO.		
Via Newberry Jc. (P. & R. Ry., & N.Y.C.R.R.)	912.5	1767.0
Via Shippensburg (P.&R.Ry., C.V.R.R., B. & O.R.R.)	912.1	2276.0
Via Harrisburg (P. & R. Ry. & Penna R.R.)	825.5	2392.7
Via Baltimore & Ohio R.R.	912.2	2276.0
Via Harrisburg & Lurgan (P.&R.Ry., W.M.R.R., P.&L.E.R.R., N.Y.C.R.R.)	954.8	2392.7

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delivery yard on Manhattan Island. But these properties, operated with Baltimore & Ohio forces, are obliged to use other roads as an approach. The satisfaction of this need is imperative. Either full trackage rights from Philadelphia to New York must be given, or the Reading and the Central of New Jersey should be incorporated in the Baltimore & Ohio system. Decision upon this important point compels a somewhat detailed examination of the relation of the Reading and of the Central of New Jersey to the other trunk lines. Choice must be made apparently between the alternatives: first, of treating the Philadelphia & Reading and the Central of New Jersey as a part of the Baltimore & Ohio system; and, secondly, of conceding the joint interest of the other trunk lines in this great industrial section by assignment of an independent neutral status to these properties, treating them primarily as open terminals.

As to corporate relationships, the Baltimore & Ohio seems to have sought, first among the trunk lines, to protect its interest by a purchase in 1901 of 43.3 per cent of the stock of the Reading Company.[1] Then through partial control by the Pennsylvania system of the Baltimore & Ohio Railroad, and because of powerful banking interests in New York, a so-called gentlemen's agreement for the preservation of the *status quo* in trunk line territory was entered into. The outcome was the assurance of a balance of power through division of the Baltimore & Ohio investment in the Reading in equal measure with the Lake Shore. The New York Central, owning 90.6 per cent of stock of the Lake Shore, thus got 21.66 per cent of the stock of the Reading, an amount precisely equal to the investment of the Baltimore & Ohio therein. The Pennsylvania, under pressure of public opinion, after 1906, withdrew from this Baltimore & Ohio investment. But the New York Central has remained an equal participant in ownership. The combined holdings, in equal shares, of the Baltimore & Ohio and New York Central in the Reading are as follows:

	Stock owned.	Percentage of whole.
First preferred	242,600 shares	43.32
Second preferred	570,600 shares	67.93
Common	400,100 shares	28.58
Total	1,213,300 shares	43.33

This intercorporate relationship, it is believed, is not in the public interest in the long run. It savors too much of a deadlock. Responsibility for efficient management should be focused upon one prime owner. The complete merger of the Reading railroad properties in the Baltimore & Ohio should, however, if it be recommended, recognize the traffic interest of the New York Central, which should be afforded every measure of protection short of actual ownership.

The geographic location of the various properties, and especially the part played by the Reading in the formation of through routes to the west, is set forth in the accompanying (folded) map. This shows that the Baltimore & Ohio, which terminates at Philadelphia, is absolutely dependent upon the Reading, and through it upon the Central Railroad of New Jersey, for an entrance into New York. But the same map shows that the New York Central Railroad is also dependent for a direct route from the west from Newberry Junction (Williamsport) both into New York and into Philadelphia and the surrounding industrial territory. This dependence of the New York Central is even more clearly indicated upon the large map (3). Large quantities of coal and other freight from the lines west of Williamsport reach tidewater at New York in competition with both the Pennsylvania and the Baltimore & Ohio. Furthermore, the New York Central owns 80,000 acres of coal lands in Pennsylvania which deserve protection. A similar relationship on the part of the Pennsylvania obtains at Harrisburg. The Reading from this point, and especially in connection with the Central Railroad of New Jersey through Allentown, affords a line

[1] Details in Special Report, Interstate Commerce Commission, on Intercorporate Relations of Railways 1908.

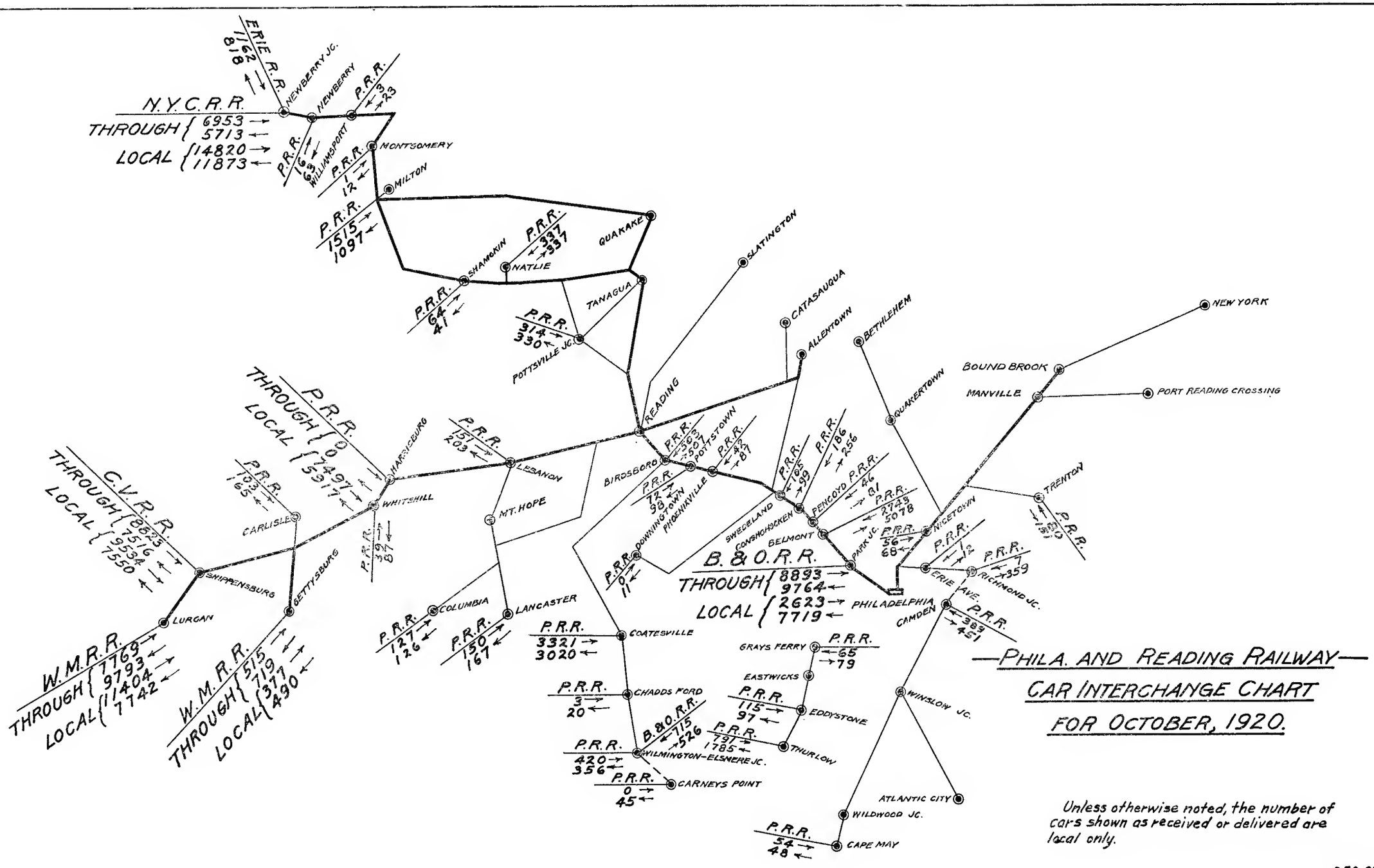
which cuts straight across to New York, avoiding the congestion about Philadelphia entirely. But it is also true that in even greater degree the Baltimore & Ohio is dependent upon the Reading, not alone for its entrance into New York north of Philadelphia, as above stated, but also because of its dependence upon a cross-country interior route for its immense coal tonnage destined for the Reading industrial territory and for all of New England, which lies beyond. This interior route is best shown upon the large map (4) of the Baltimore & Ohio system. For a generation an enormous coal tonnage has customarily left the line of the Baltimore & Ohio west of Hagerstown, Md., and has passed north from that point up the Cumberland Valley (Pennsylvania Railroad) to Shippensburg on the Reading, and so on to the northeast over the connecting link of the Lehigh & Hudson to Maybrook, N. Y., and the entire New Haven system. Another connecting link is the Western Maryland, which parallels the Cumberland Valley and admits the Baltimore & Ohio to the Reading rails at Lurgan. This is the historic interior short route, avoiding Philadelphia and New York, parallel with the seaboard, up to the northeast. The interest of the Baltimore & Ohio in the full utilization of this route must be conceded. The detail may, for a moment, be neglected of the dependence for a connection between the two systems upon either the Cumberland Valley (Pennsylvania Railroad) or the Western Maryland over the short stretch of intervening country. The dotted lines of the Western Maryland on the large map (6) indicate this relationship. And it will in due time call for consideration of the status of the Western Maryland itself. But for the moment attention must be concentrated upon the Reading alone.

Such being the geographic conditions, what is the relative participation of these surrounding trunk lines in the Reading car movement? If it be established that the great trunk lines all participate in fairly equal measure, then the claim of the Baltimore & Ohio to inclusion of the Reading reduces itself solely to consideration of the terminal situation at New York. But if, on the other hand, a heavy predominance of Baltimore & Ohio interchange be established, its claim to control assumes a dual basis rather than one which is sole.

The facts as to car interchange for the typical month of October, 1920, are set forth in the accompanying diagram. This shows the number of cars received by the Reading from each of its connections and in turn delivered over to them. The heavy New York Central interchange through Newberry Junction is at once apparent. It is sufficiently heavy to merit protection of this route, which is a direct freight line of importance to the country. It is, moreover, in effect a double-track road with one low-grade track. But, of course, the major interest of the New York Central in through business lies elsewhere. The suggestion has been made that the Central of New Jersey might be separately allocated to the New York Central to complete this route and also to give that system terminals on the West Shore. This will be considered in another connection. As to car interchange, the Baltimore & Ohio traffic enters not alone directly at Philadelphia, but, as above described, practically all of the Cumberland Valley and much of the Western Maryland business from the southwest originates on the Baltimore & Ohio. The net result is indicated for a typical month, October, 1920, in the following table of car interchange with the Reading.

	Received.	Delivered.
Baltimore & Ohio (all points)	30,588	33,075
New York Central (all points)	21,773	17,586
Pennsylvania	19,313	21,285

This establishes the substantial interest of the three great trunk lines. But it also makes plain the predominant interest of the Baltimore & Ohio. The Reading received almost 40 per cent more cars from the Baltimore & Ohio than from the New York Central, and its deliveries were almost double. Baltimore & Ohio records indicate a total interchange of from 1,400 to 1,600 cars per day, which appears to be more than



—PHILA. AND READING RAILWAY—

CAR INTERCHANGE CHART FOR OCTOBER, 1920.

Unless otherwise noted, the number of cars shown as received or delivered are local only.

DEC. 27, 1920.

three times as much as the interchange with the other trunk lines. And this business, be it observed, is more largely through business; whereas for the New York Central the preponderance is local to Reading territory, although New York takes a good deal. Furthermore, many of the large steel interests, at Bethlehem, for example, are entirely dependent upon Baltimore & Ohio coal. All of the facts, after duly weighing them, substantiate the claim of the Baltimore & Ohio on this ground alone to merger of the Reading. But it is equally true that the public interest will be subserved only by assurance of free utilization of the Reading and Central of New Jersey rails by the other surrounding railroads, especially the New York Central. This might be afforded in either one of two ways: The first would be as above mentioned, the consolidation of the Central of New Jersey with the Reading, reserving, however, to the New York Central trackage from the Williamsport gateway (Newberry Junction) through, by way of Tamaqua and Allentown, to Bound Brook and Jersey City. The alternative would be to give the main line of the Central Railroad of New Jersey (map 4) from Tamaqua to Jersey City to the New York Central, together with trackage on the Reading from Tamaqua on to Williamsport (Newberry Junction). Possibly, also, the line up to Scranton might go with this main line. In this event there should be reserved to the Baltimore & Ohio, the Reading trackage rights from Allentown north and east. This would protect the Baltimore & Ohio through line via Harrisburg and Reading to New England and New York. The significant point is that both the New York Central and the Baltimore & Ohio have an interest in this Central of New Jersey property; and, whichever one takes it, protection for the through route of the other should be afforded. Incidentally, of course, provision would have to be made for some joint use of the valuable terminals of the Central Railroad of New Jersey at Jersey City, although the New York Central's West Shore yards certainly give it already more elbow room than the other roads enjoy.

The terminal situation at New York constitutes the other claim of the Baltimore & Ohio to the Reading and the Central Railroad of New Jersey. The Baltimore & Ohio has a substantial investment in terminals on Staten Island and a large and constantly growing volume of traffic into New York. It ought not to be dependent upon mere running rights north of Philadelphia; but it ought to be in position to operate its own trains with its own crews and engines clear into the terminals. The coal and merchandise docks on Staten Island and the warehouses and delivery yards on Manhattan Island are operated with Baltimore & Ohio forces; but from Cranford Junction to Philadelphia the Reading and the Central are merely used as a bridge. Some train crews run through to Cranford, and, contrariwise, some Reading crews run south to Wilmington. But much more efficient and satisfactory operating conditions would certainly result from single ownership and unified operation. The advantages were so manifest that under federal control the Director General placed the Reading, the Jersey Central, the Baltimore & Ohio, and the Western Maryland under one regional director.

Shall the Western Maryland be included in the Baltimore & Ohio trunk line group? Consideration of the large map (4) and the preceding text has indicated its importance as a connecting link from Cherry Run on the Baltimore & Ohio for an interior northeast route to New England and New York. In some respects the Western Maryland would thus build in satisfactorily; but, on the other hand, it is apparent that the two lines practically parallel one another from the seaboard to western Pennsylvania. The Western Maryland would appear more satisfactorily to serve the public interest as a western outlet for a through route from Lake Erie via Pittsburgh. One such route by a short piece of intermediate construction could be formed with the Wheeling & Lake Erie. This is developed on map 6 by construction to Wheeling for the Nickel Plate-Lackawanna group. Such was the relationship set up in the ill-fated Gould

system many years ago. The project was actively revived before the war by Western Maryland interests. A natural through route is indicated, especially in connection with the now reorganized Pittsburgh & West Virginia terminals in Pittsburgh. This plan apparently succeeded the arrangements effected by the New York Central about 10 years ago under which the Western Maryland was built through from Cumberland, Md., to a connection at Connellsville with the Pittsburgh & Lake Erie (New York Central). But the elaborate traffic arrangements yielded little fruit. The Western Maryland is primarily a soft-coal road, with an eye to a trunk line future. And the New York Central with its heavy Pennsylvania coal investments is a direct competitor in the one respect as well as the other. Moreover, the New York Central is already overwhelmingly predominant in the trunk line territory, while, as will appear, the minor systems are in need of upbuilding. These 750 miles of trunk line, therefore, ought to go elsewhere, as this experimental relationship has amply demonstrated.

The real question in case of the Western Maryland, then, reduces itself to choice in its disposition between the Baltimore & Ohio and the Nickel Plate system. For it fails entirely to fit in with the Erie. From a traffic point of view it would strengthen either one. But then, again, there is a legal consideration which is significant. The ordinance of 1902, providing for the sale of the interest and claims of the city of Baltimore in the Western Maryland "as mortgagee, guarantor, stockholder, creditor, and lessor," contained the following proviso in section 1, paragraph 9:

> That no title shall vest in the purchaser or purchasers of the stock of the Western Maryland Railroad, if sold to a railroad company now controlling, owning, or operating any line or system of lines centering, terminating, or operating in the cities of Baltimore or Philadelphia, * * *

This legal obstacle, aiming to preserve competition at this port with the Baltimore & Ohio, taken in connection with the foregoing traffic considerations, leads to the conclusion that the Western Maryland must be treated otherwise than as a convenient supplement to the Reading and the Baltimore & Ohio. Nevertheless it is important that the Western Maryland be not pocketed at Baltimore against free movement to the northeast. Before 1906 the Baltimore & Ohio delivered all of its traffic to this company at Cherry Run. But when the Western Maryland became a competitor by westward extension to Connellsville, the Baltimore & Ohio opened up a new connection at the Cumbo yard, dividing its business through the interior Reading route between the Cumberland Valley (Pennsylvania system) and the Western Maryland. Adequate protection through trackage or, possibly, with the development of business, through the construction of a new connecting link to supplement the existing lines, constitutes a detail not necessary to work out in this plan. But the recommendation to exclude the Western Maryland from Baltimore & Ohio control is final.

A natural extension of the Baltimore & Ohio, based upon corporate and traffic relationships, would be the inclusion of the Pere Marquette. It is lightly dotted on map 4. This property now drastically reorganized, would be an element of strength. Its inclusion would reestablish relationships disrupted by bankruptcy. The two roads have direct connection at Toledo, and operate a joint passenger service from Detroit to Cincinnati. The Pere Marquette makes use at Chicago of the Baltimore & Ohio terminals, and there, also, engages in certain joint operations. This would give the Baltimore & Ohio access freely to a Michigan ferry route, and an outlet to the northwest for its soft coal. But, after due consideration, as elsewhere discussed, it has appeared best to constitute an independent group of all of these Michigan properties, rather than to tie them up one by one to the five trunk line systems, permitting each one a line to the northwest by itself. The Baltimore & Ohio has no need of the Pere Marquette, if such action be taken. It does not seek preferred treatment in the peninsula, but should be protected against a closure of these ferry routes if the available lines are parceled out to others.

The Erie is the fourth stem upon which it is attempted to construct a reasonably comprehensive trunk line system. It is depicted on map 5. As an instrument for transportation it now possesses many admirable qualities. Large sums have been expended in the reduction of its grades and in straightening its main line until it is competent to handle a large volume of business. In 1917 its revenue ton-miles amounted to 10,489,516,000 as compared with 17,391,149,000 for the Baltimore & Ohio. Its business, thus measured, was considerably more than one-third of that of the New York Central system, and more than one-quarter of that of the entire Pennsylvania system in 1917. This record was made despite entire inadequacy of branches and feeders, and the fact that it enjoyed no access to profitable traffic along the lake front or in the interior coal fields. It has stood alone, dependent largely upon through business. Its location almost seems to avoid the great cities or interior ports. The outstanding financial defect of the Erie is its enormous capitalization and book investment in road and equipment. This investment on its books for 1917 was $209,718 per mile of line, as against only $170,000 for the New York Central and $153,000 for the Pennsylvania lines west. But, on the other hand, its railway operating revenue per mile of line in 1917 was $35,319, as against a corresponding figure for the New York Central of $39,285, and for the Pennsylvania lines west of $41,175. Evidently the business is there. The main-line machine is prepared to function. The problem for the Erie is twofold: First, to readjust its capital to its physical investment; and, secondly, to develop feeders and necessary entrances to new territory. To extend and round it out, and, particularly, to let it into steel and coal territory, is the important need. But no such additions conceivably could offset the need of a thoroughgoing modern financial reorganization, which shall bring the total of outstanding securities into consonance with the actual investment, and which shall also reduce the proportion of bonded indebtedness, bringing the fixed charges down to a point well within normal earnings. This would permit also financing in future by the issuance of stock rather than through continual reliance upon borrowing.

To round out and strengthen the Erie, the following additions are proposed. Each one is shown on map 5 by distinctive lines. On the east, the Delaware & Hudson is a valuable adjunct to the Erie group, in its line between Albany and Binghamton. This affords an outlet to northern New England, independent of the Poughkeepsie bridge route. (Map 6.) The Delaware & Hudson lines north of the Mohawk Valley probably add no strength, and might be more serviceable to the New York Central in place of the Rutland, in case the Rutland were included in the New England group. But from Albany south the Delaware & Hudson surely adds strength. The line south of Binghamton into the coal region is intimately associated with the Erie physically. It fits in well, but, on the other hand, would develop no new traffic.

The New York, Ontario & Western is controlled by the New York, New Haven & Hartford Railroad Company through ownership of a majority of its common stock. This property was acquired in 1904, rather by indirection than otherwise, ostensibly in order to afford access to the anthracite coal fields. It was also important to establish contact with many trunk lines and the great lakes, in order, as it was hoped, to favorably affect the division of through rates by the New Haven road. Apparently the Lehigh & Hudson was first sought for these purposes; but financial opposition in New York rendered its purchase impossible; so that the Ontario & Western was taken as a second choice.[2] The location in its relation to the New Haven is shown on map 8. It has never been serviceable or profitable in any substantial way to its purchaser, and various attempts have been made to dispose of it. Its coal properties are ap-

[2] Cf. I. C. C. evidence on New Haven affairs, reprinted as U. S. Senate document 543, vol. 1, July 13, 1914.

proaching exhaustion, probably having a life not exceeding 20 years.[3] Its principal asset remaining is a long-time and very favorable contract for the use of the Weehawken terminals of the West Shore Railroad. Possibly in connection with this situation the New York Central in 1911 applied for permission to acquire the New Haven holdings; but the application was refused on the ground that the transfer of a bare majority of the stock might jeopardize minority holders. (3 N. Y. P. S. Com. 2d D. 261.) The following year the New Haven applied for permission to acquire the minority stock but in 1913 withdrew its application. These proceedings indicate a present or prospective interest of the New York Central in this little property; but, as repeatedly stated, it is believed that the New York Central is already large enough. A more satisfactory use of the Ontario & Western would seem to be its consolidation with the Erie-Delaware & Hudson system, for such merger would considerably amplify the Erie terminals at New York, under the contract, above mentioned, for the use of the West Shore yards at Weehawken. Furthermore, the Ontario cuts at right angles across the main line of the Delaware & Hudson, and would bring its traffic directly down to New York, thereby relieving the main stem of the Erie. This transfer from the New Haven might also afford funds with which the New Haven might engage in the Lehigh & New England extension, elsewhere described.

The Erie is also fundamentally strengthened by consolidation with the Lehigh Valley Railroad. This adds an important coal traffic; and the many ramifications through New York and Pennsylvania would materially contribute to a strong trunk line. This road, furthermore, being geographically based upon Philadelphia, through Reading trackage, rather than upon New York, would both give and take traffic from a rich industrial field. Extension to St. Louis is afforded through merger with the eastern half of the Wabash. This gives access to western connections, the western half of the Wabash going to afford an entrance to the Union Pacific into St. Louis (chapter V). The trend of the Wabash lines being all southwest-northeast, some connection from Toledo eastward to the main line of the Erie would have to be found through trackage. The nearest lake port is at Lorain, according to map 5. And no specific recommendation in this regard is possible at this time. The desirability of such connection from Toledo southeast to the main line is, however, obvious. Whether the Wabash trackage contract with the Grand Trunk north of Lake Erie from Detroit to Buffalo is worth retention is perhaps an open question. The main line of the Erie lies so far south that it would conceivably not rely upon this route. It might, if not renounced, be more serviceable, perhaps, in the hands of the Lackawanna-Nickel Plate system. But, having in mind the far-distant future, the desirability of perpetuation of this foreign line as part of an Erie system is open to question.

As to Erie participation in Pittsburgh business, it now has a trackage contract with the Pittsburgh & Lake Erie (New York Central) which permits it to solicit business. It also operates passenger trains. And it prorates under this contract on the same basis as the New York Central. But the arrangement is unsatisfactory, especially in times of congestion, when the New York Central naturally favors its own property, and, of course, it is at best only a westward outlet. At present the Erie has a leased line only as far as New Castle. It is proposed to strengthen the Erie financially and to give it first-class access to Pittsburgh by assignment of the Pittsburg, Bessemer & Lake Erie to this system. This railroad is shown on map 5. It is entirely owned and operated at present by the United States Steel Corporation. And a most important point to determine at the outset is as to whether this industrial railroad shall

[3] Report Massachusetts Public Service Commission relative to New York, New Haven & Hartford Railroad, etc., 1916; House Reports No. 1900, page 28. "The Commission finds itself unable to discover that the New York, Ontario & Western has at the present time any important relation to the New Haven system or that the severance of the control would be of disadvantage to the public."

be treated as a common carrier, like all the rest, or whether it is in effect a plant facility or appurtenance of the steel corporation. In the latter case the Bessemer road should be left out of consideration in this general consolidation plan.

The business of the Bessemer & Lake Erie consists almost exclusively of the carriage of ore in solid trainloads from the Lake Erie water front to the plants of the steel corporation and, in the return direction, of the carriage of coal, almost entirely of local origin, northbound. The tonnage for 1920, December tonnage approximated, is classified in the following table:

Classification.	Tonnage.
	Tons.
Local delivery	12,932,000
To connections	5,339,000
United States Steel Corporation tonnage	7,739,000
Other tonnage	10,532,000
Local origin (north of North Bessemer)	4,842,000
All other sources	13,429,000
Total tonnage	18,271,000

According to this evidence about 43 per cent of the tonnage is for the steel corporation, but the remaining 60 per cent consists of coal tonnage northbound and such ore carried south as is transported for the account of the general public. The Bessemer & Lake Erie has developed a remarkable balance of traffic in either direction, enabling it to operate efficiently, only by the admittance of outsiders to the use of its property. It is far from being the sole reliance of the steel corporation, as it transports only about one-half of the total requirements for ore of this corporation. And, of course, most of the finished products of the steel corporation move out over other lines. In other words, about 85 per cent of the Bessemer traffic is coal or ore. The Bessemer is undoubtedly a common carrier. It has been repeatedly so held by decisions of the Interstate Commerce Commission; 55 I. C. C., 353; and 57 idem, 513. As such it ought to be included in this plan.

The contention of the steel corporation that the Bessemer is a plant facility alone, is not as convincing as the reasons which are put forward to show that the Bessemer would be of less value in any outside railroad system than it now is to its present owners. This latter allegation has much force. So large a share of the business is low-grade and is shuttled back and forth from the lake to Pittsburgh that it is almost exclusively local. Such traffic would hardly benefit a trunk line at all. Furthermore, it is alleged that this business, now so lucrative, of the carriage of ore for the steel corporation, would cease to be concentrated upon this line were its ownership by the steel corporation to be lost. Thus its phenomenal success financially would disappear, and the high price which must be paid for it, based upon present earnings, would not be supported by the returns. Furthermore, it is alleged by the steel corporation that the Bessemer does not actually afford an entrance to Pittsburgh. Its southern terminal is North Bessemer, 15 miles outside the city. It could not be extended into the city for manufacturing districts independently, on account of topographical conditions. Its present access is all over the rails of the Union Railroad, which also is a common carrier,[4] but which, while serving all the steel corporation mills, is impossible of connection topographically with most of the other large plants. This, again, the steel corporation contends, is an element of weakness under any other ownership, inasmuch as business lost to the steel corporation could not be recouped from Jones & Laughlin or any of the other great mills, on either of the other terminal railroads, the Montour or the Monongahela Connecting Railroad.

[4] As such, authorized by the Commission in 1919 to make joint through rates.

On the other hand, decisive evidence in favor of railroad rather than industrial control of this important common carrier is adduced. There is, first, the outstanding fact that 60 per cent of its total traffic is for common public account. The road was built by the Carnegie Company originally as a "pacemaker" for rates. The Bessemer tariffs, it is alleged universally by the best railroad executive authority, have tended to maintain coal and ore rates below a fair standard of remuneration. The extraordinary efficiency of this property in operation, particularly its enormous trainloads and evenly balanced traffic, can hardly be matched by its competitors. The continued possession of this road gives the steel corporation an undoubted advantage in cost of production over all of its competitors, inducing them to attempt with their several carriers, all of which are public, to give rates which are hardly remunerative. The days of rebating, in which the Carnegie and other steel corporations were notorious, are, it is hoped, over; but the pressure of great corporations for rates which are not fairly remunerative is unquestionably much strengthened by the continued possession of this property by the steel corporation. If the commodities clause excludes railroads from the conduct of industry, the Congress ought logically and fairly to exclude manufacturing industry from participation in conducting railroads. If legislation be necessary to bring about this result, it should be had in the interest of stability and rehabilitation of the American railway net.

The contention that the Bessemer might speedily starve if transferred from its present ownership, may be met by the consideration that diversion of the steel corporation's tonnage would affect at the outset only 40 per cent of its business, and that this might be in part made up by traffic from other sources. Much depends upon the development of more nearly unified terminal operation around Pittsburgh. The present condition of complete separation, physically, between the several belt railroads ought to be taken in hand by the city of Pittsburgh, and the development of a belt line by joining the Union Railroad with the Montour Railroad would contribute substantially to this end. The abandonment of the Bessemer by the steel corporation for its ore carriage is a threat which would be costly to put into effect. There is already congestion by other routes, and it is hardly conceivable that they would stand the overloading which this shift would bring about.

All told, it appears not only that the other common carriers strongly desire inclusion of the Bessemer under railroad ownership and management, but also that great competitive steel operators would welcome the same change. It would tend to balance up transportation conditions and to put an end to a peculiar competitive advantage which the steel corporation enjoys. In case of such transfer to railroad ownership, it is equally clear that the natural affiliation is with the Erie rather than any other property. The two roads now have a short mileage in common. They exchange some business. And there is important community of interest through the banking house of J. P. Morgan & Co. This common control, otherwise possibly threatening an extension of industrial influence to cover an entire trunk line system, is, however, happily now subject to administrative supervision and regulation by law.

The Erie system, obviously, should be admitted by means of trackage to the great railroad centers of Indianapolis and Columbus. No choice is made, however, as to the particular lines to be employed for this purpose. But it is believed that the device of trackage, where lines are not otherwise congested, and especially where they are already double tracked, will afford compliance with many such requirements.

It is important that the Erie have more soft-coal tonnage. The two small properties, Pittsburg, Shawmut & Northern, and the Pittsburg & Shawmut, connect with difficulty, to be sure, by heavy grades and even switchbacks. But the same is true of any connection yet free for allocation north and east out of the Clearfield region. The Buffalo, Rochester & Pittsburgh has already, it will be recalled, been assigned to the Nickel Plate system; and all of the other three trunk lines are already

richly provisioned with soft coal. The Erie's crying need for company fuel commends this disposition, despite the physical obstacles to be overcome, as well as the necessitous condition of these little properties. They contribute coal even if they fail to add revenue.

Finally, the main stem of a fifth trunk line is found in the New York, Chicago & St. Louis—commonly known as the Nickel Plate—which closely parallels the Lake Shore from Buffalo all the way to Chicago. This location is shown in detail on map 6. The Nickel Plate in itself is not a great railroad. In 1917 it operated only 523 miles and owned less than 500 miles of line. Most of this is single track. Its investment in road and equipment in 1917 stood at $67,470,000, and its railway operating revenue for that year was $16,901,000. Its gross business amounted to 2,615,524,000 revenue ton-miles. Originally built in order to blackjack the Lake Shore into its purchase, this little property has only recently been sold by the New York Central system. Its complete independence is perhaps not as yet fully assured; but there can be no question that it possesses in its strategic location an importance which entitles it to development as a competitive stem with the other trunk lines.

The Nickel Plate at the present time has neither a line of its own to St. Louis nor extension to the Atlantic seaboard. At Buffalo it is dependent for such share of trunk line traffic as it can win in competition from a number of independent companies entering Buffalo from the east. Among these independent companies, based upon New York, the Delaware, Lackawanna & Western stands preeminent. It affords absolutely a first-class trunk line, constructed at enormous cost, with every possible facility for safety and dispatch. And the Lackawanna, furthermore, is one of the strongest companies financially in the United States. Apparently the natural interrelationship between these two properties has induced consideration not infrequently of absorption of the Nickel Plate by the Lackawanna. The obstacle has been the evident necessity of very great expenditure upon the Nickel Plate line in order to bring it up to Lackawanna standard. The Nickel Plate has no feeders, and but little access to important cities, even just off its main line. At Cleveland, however, it possesses fine terminals. The expense alone for the abolition of grade crossings to the Lake Shore standard would be enormous. But there can be little question that with the growth of future years this low-grade direct line through the heart of the trunk line territory will be needed in the public interest. The preeminent financial strength of the Lackawanna would appear naturally to be most serviceably employed in the creation of a new system, just where it is most likely to be of advantage in the course of time.

The natural extension to St. Louis of the Nickel Plate stem, based upon existing traffic relationships as well as geography, is the Toledo, St. Louis & Western, otherwise known as the Clover Leaf (map 6). This road crosses the Nickel Plate at Continental, a little southwest of Toledo, and runs directly to St. Louis. It also is nothing but a stem, with no branches or feeders; but it also runs up to Detroit (Detroit & Toledo Shore Line Railroad, one-half owned by the Grand Trunk Western), and its strength arises in part from the fact that it cuts across every east-and-west line of importance in central freight association territory. Adequate feeders at the western end are also provided by adding the Lake Erie & Western lines. These are withdrawn from the New York Central system, as already described, the Lake Shore having in 1899 acquired a controlling interest in its stock. But the Lake Erie & Western for the most part appears to be superfluous to the New York Central; that is to say, except for the north-and-south branches between Cincinnati and Jackson. The other lines all parallel existing New York Central routes. And it seems to be generally understood that the purpose of acquiring this line in 1899 was to put it out of harm's way. In the New York Central system it has never functioned successfully. Thus transferred and made part of a new group, it might perform valuable service. The Lake Erie & Western, also

shown on map 6, lets this Lackawanna system into Peoria for a connection with the west around Chicago. It gives entrance into Indianapolis and to the great lakes at Michigan City.

Columbus, according to this plan, is reached over the Marysville division of the Toledo & Ohio Central; and east of Columbus the line passes on by continued trackage on the same road to the Zanesville & Western. Through this property physical connection is had with the Wheeling & Lake Erie, as shown on map 6. The Northern Ohio Railway and the Akron, Canton & Youngstown, until recently part of the Lake Erie & Western, are two little properties now in independent hands, formerly leased to the Lake Erie & Western. They connect Delphos, on the Clover Leaf line, with Mogadore, Ohio, on the Wheeling & Lake Erie. Thus tied in at both ends to the proposed Nickel Plate-Lackawanna system, it appears that their inclusion therein is open to little objection. No great traffic centers, except Akron, are served; but a convenient tie between otherwise separated parts of this system would be thereby afforded.

The Lackawanna-Nickel Plate, in order to compete successfully, must have access to soft-coal territory and to the great iron and steel district around Pittsburgh. This need is satisfied by inclusion in the system of the Wheeling & Lake Erie, the Pittsburgh & West Virginia, and the Western Maryland (map 6). The first of these gives access to northeastern Ohio from Cleveland, where but a short piece of construction would be necessary to reach Pittsburgh. And then from Pittsburgh to Connellsville, another short piece of construction through not difficult territory, as it appears, would complete a direct route to the third greatest port in the United States. Plans for its complete development formed a part of the ambitious scheme of the old Gould transcontinental combination. But on a more businesslike footing, and apparently with ample financial sponsorship, they were revived in 1916. The best technical experts declare this relationship to be natural and necessary. It relieves the Western Maryland, at present hemmed in on all sides by powerful systems, and it would afford it an opportunity to utilize a good and direct stem through the mountains, paralleling and affording competition, of course, with the Baltimore & Ohio. As elsewhere developed, free passage to the northeast across the Reading system, along the dotted line through Harrisburg, affords an important interior route to New York and New England. (Cf. page 491, *supra*.)

The importance to the port of Baltimore of the constitution of a new through route by the union of these properties in the Lackawanna-Nickel Plate system, is obvious. Great development of that port, especially for the export of grain, has occurred during the last 15 years. Low-grade products have been crowded out of the two greater ports of New York and Philadelphia, to the north. During the war, especially, was the importance of the export grain traffic indicated. Baltimore, it is alleged, exported 60 per cent of all the grain which went abroad through north Atlantic ports during this time. Addition of the Buffalo, Rochester & Pittsburgh to this system would still further stimulate this traffic. The soft-coal export of Baltimore is now next to that of Newport News. The coal piers of the Baltimore & Ohio are the largest in the world. Great lumber interests and the Standard Oil Company are recognizing the development of Baltimore. Keen competition between its historic line to the west and this new system should still further forward the upbuilding of the port. The construction of the necessary links in this chain, southeast and west of Pittsburgh, was so obviously in the public interest that it was the only bit of new construction recommended by the federal Railroad Administration. Possibly the 75 miles of new line from Wheeling to Connellsville should be joint, in the interest of the Pennsylvania, the Western Maryland, and the Baltimore & Ohio. This would open up the new area of Greene county, Pa., for coal development; and the problem of relieving congestion about Pittsburgh might also be aided by the grant of trackage rights over the Pittsburgh & Lake Erie to the Western Maryland directly from Connellsville in supplementation of the 99-year traffic contract entered into in 1910.

It has been urgently recommended by competent authority that the proposed Lackawanna-Nickel Plate system be still further strengthened by inclusion of the Washington & Old Dominion Railroad, which parallels the Potomac River from the neighborhood of Winchester, Va., to Potomac Yards at Alexandria. New construction of 50 miles in length, parallel to the Potomac, would afford access for both the Baltimore & Ohio and the Western Maryland directly to Potomac Yards, thus avoiding congestion at Washington, D. C. The concentration of northbound and southbound traffic at Washington by the meeting of all the lines from the north as well as the south, renders it imperative that the tunnels, both at Washington and Baltimore, be relieved of all possible overhead business. The desirability of some such relief made itself felt during federal administration, and was not satisfactorily provided by diversion of traffic to the Norfolk & Western at the Hagerstown gateway. Decision is however, reserved as to whether the line should remain in this group, be assigned to the Baltimore & Ohio, or be treated as a joint proposal.

The Buffalo, Rochester & Pittsburgh from the north by trackage rights over the Baltimore & Ohio into Pittsburgh, as shown on map 6, would also materially contribute to strengthen the Lackawanna system. It is a sound property, of not inconsiderable size, with an investment in road and equipment in 1917 of $62,000,000, and railway operating revenue of $14,975,000. It traverses the entire Clearfield coal territory, as shown in detail on map 8. It would also contribute a large volume of ex-lake grain, destined to Baltimore for export. This traffic should pass to the Western Maryland east of Pittsburgh, avoiding congestion in that neighborhood by trackage, as indicated upon map 6, from Vintondale to Rockwood Junction over the lines of the Pennsylvania and the Baltimore & Ohio. At the north end, also, the Buffalo, Rochester & Pittsburgh fits rather well into the Lackawanna—the matter of its acquisition having been considered at various times. The advantage to the Lackawanna would be to assure a locomotive-fuel supply, and also to provide its industries with a better quality of soft coal. The interchange with the Lackawanna is now chiefly bituminous coal. Thus it appears that the addition of this road would contribute strength both north and south. The only other disposition herein contemplated is its possible use as part of a fuel line for the New England railroads (page 520, *infra*).

The following statistics based on returns for September, October, and November, 1920, for the so-called Lackawanna-Nickel Plate system, affording a comparison with three of the other groups, are not without significance. (Compare also official data for 1917, in the final recapitulation; and the appended exhibit 1.)

Estimated gross revenue, mileage, etc., for year based on data available since September 1, 1920.

System.	Mileage operated.	Gross revenue.	Gross revenue per mile.	Average revenue per ton-mile.	Average haul per revenue ton-mile.
	Miles.			*Mills.*	*Miles.*
Delaware, Lackawanna & Western Railroad	956.54	$102,170,298	$106,812	13.044	186.9
New York, Chicago & St. Louis Railroad	575.13	33,153,648	57,645	9.506	248.8
Western Maryland Railway	797.86	26,088,528	32,698	8.476	135.12
Wheeling & Lake Erie Railroad	511.6	24,717,524	48,314	11.979	108
Toledo, St. Louis & Western Railroad	454.17	13,364,148	29,425	9.046	266.27
Buffalo, Rochester & Pittsburgh Railway	589.72	29,251,338	49,602	9.361	167.94
Pittsburgh & West Virginia Railway	63.23	3,660,780	57,896	23,309	25.31
Total above group	3,948.25	232,406,264	558,863	10.797	165.31
Pennsylvania system	11,340.37	917,125,848	80,873	12.36	190.13
New York Central system	12,644.81	778,596,498	61,574	10.95	165.66
Baltimore & Ohio system	5,153.59	297,514,764	57,730	10.132	208.12
Total class-I roads in United States	235,793.65	7,550,016,648	32,019	.....	.....

NOTE.—The above statistics are obtained from reports filed with the Interstate Commerce Commission at Washington for months of September, October, and November, 1920.

With approximately 4,000 miles of line, it is of course much smaller than the first three groups in this territory; but its gross revenue per mile of line is higher than that of the present Baltimore & Ohio and not far from double the gross revenue per mile of line of all class-I roads in the United States. The average revenue per ton-mile also compares favorably with the other existing large systems. All such figures as these, as already stated, assume no disturbance of operating cost or volume of business attendant upon consolidation, a forced assumption but, nevertheless, the only basis upon which statistics can be compiled.

Finally as to the Lackawanna-Nickel Plate group, it appears as if, after appropriate reorganization in certain cases, that lines of sufficient strength to compete successfully with the larger groups had been brought together. Some of the roads in the proposed system are at present short-hauled by their large trunk line competitors. To this extent the increase in the length of the average haul on each line is an element of advantage. The upbuilding of the port of Baltimore is of peculiar national advantage. The Western Maryland Railway, it is said, has the lowest grade line eastbound over the Allegheny Mountains of any trunk line in this territory. Its 0.8 per cent grade line compares with about 1.25 per cent for the Pennsylvania and the Baltimore & Ohio. This is a fundamental advantage in handling large volumes of raw material, such as grain and steel products, which naturally seek the seaboard by this route.

The large map (6) of the Lackawanna-Nickel Plate also brings out the relationship of this group to the southern New England railroads, in case a trunk line plan for that district be seriously considered. The connection at present is by way of the Lehigh & Hudson or the Lehigh & New England, thence over the Central New England and the Poughkeepsie bridge. Or else, for freight business and other connection from up the Hudson River, the New York, Ontario & Western, wholly or in part, might be fitted in. It is now in New Haven possession and affords a convenient link. But the indirectness of any of these connections, up river, is amply manifest and affords adequate ground for rejection of any alliance of the Lackawanna-Nickel Plate group with the New Haven property. This matter is more fully discussed in the chapter on New England.

A difficult problem is that of the proper apportionment of the existing railways in the lower Michigan peninsula among the five trunk line groups. The significance of these railways is twofold. A rich traffic moves in and out of the southern half of this peninsula, especially in connection with the recent phenomenal rise of the automobile industry, and it is also extremely important that free and direct access be had to the so-called Michigan ferries. These boat lines across Lake Michigan afford a convenient means of avoiding the congestion about Chicago, besides, of course, being far more direct for traffic which comes through Canada from the east. A great and growing coal tonnage to the northwest is handled by this means. It is evident that each of the great trunk lines ought to have representation in this territory, if it is to be divided up—canalized, so to speak. So long as the field is free and open, every cross route is open to all comers; but when once apportionment begins, it must be carried through logically to the end.

The available lines in the lower Michigan peninsula are not numerous. Both the New York Central and the Pennsylvania systems have provided for their own needs, as the large maps for these systems indicate. The following railroads remain, as shown on map 7 and more in detail on map 7-a. The most important is the Pere Marquette, also shown on the large Baltimore & Ohio map (4), because of its historic and natural relationship with that road. It has connection at Toledo. Its uses Baltimore & Ohio terminals at Chicago and joint passenger service is maintained to Cincinnati. It is by far the most desirable property still free, having been reorganized and put upon its feet substantially. Next to the Pere Marquette, the most important railroad is

constituted of the Grand Trunk lines west of the Detroit River., The location of these is shown also on map 7. But it is open to question whether this property may be appropriated for consolidation, at least without diplomatic procedure, inasmuch as it now forms part of a government-owned Canadian system. Were it free and available, some of its lines might be utilized to good effect, but most of them trend in the wrong direction. The principal ones lead from Chicago to the northeastern connections with the lines in Ontario north of Lake Erie. What the American systems in trunk line territory need are connections along another diagonal toward the northwest for ferry connection across Lake Michigan. And then, finally, there remains in the peninsula the Ann Arbor Railroad, which runs like a string straight northwest from Toledo to Frankfort. This property is capable of supplementing the others under consolidation. The only other property in Michigan is the Detroit & Mackinac, which closely parallels the west shore of Lake Huron clear to the straits.

There are two possible methods of treatment of these Michigan peninsula railways. One is to divide them up among the different trunk lines, giving each one independently access to this territory and also passage to the lake ferry routes to the northwest to each system. The other plan is to treat these lines as a unit, as in New England, putting them all together into a regional group, which shall offer its facilities freely on equal terms of neutrality to all comers and which shall specialize its services within itself. As between these two, the latter alternative is chosen, for the reasons hereafter set forth.

A valid objection to parceling out these Michigan lines among the five trunk line groups is that there are not enough good railroads to go round. The New York Central and the Pennsylvania, as their maps show, already have their own lines across this territory. The former is richly represented by the Michigan Central and the latter by the Grand Rapids & Indiana. Only three serviceable roads remain, therefore, for satisfaction of the Michigan needs of the Baltimore & Ohio, the Nickel Plate, and the Erie systems. And obviously no one of these three may fairly be left without representation. The difficulty of dividing up, giving the Pere Marquette to one, the Grand Trunk lines to another, and the Ann Arbor to the third, is very great. Quite possibly the Grand Trunk, as a foreign government-owned road, might not be available in any event. That would have to be determined diplomatically. Then, again, many of its lines run in the wrong direction to serve the trunk lines. Those forming part of the routes north of Lake Erie trend generally northeast. What is wanted for the Lake Michigan ferry routes are lines trending northwest from Detroit or Toledo. These Michigan properties are also of widely different extent and financial strength. The Pere Marquette would, as now reorganized, be a real addition to any system, but the Ann Arbor or the Detroit & Mackinac would be a liability rather than an asset. Could the three roads, with possibly the Grand Trunk, be put into a melting pot and entirely new divisions be created, with a view to the needs of the trunk lines, this partitioning plan might be worked out. But in order to avoid dismemberment of existing corporations, it seems preferable to adopt the second choice and to set off the Michigan lines as a regional unit.

There are many similarities between the Michigan peninsula and the New England situation. Each has a long water frontage. Each has a rich industrial district in the south with many junction points, but in each case the population becomes more sparse and the traffic thinner as one proceeds northward. Each region is absolutely dependent for coal and many supplies on outside connections. And the ferry routes across Lake Michigan to the northwest bear certain resemblances, potentially, to the differential Canadian routes from New England. Each is operated at a disadvantage against standard all-rail lines, and yet each is important, especially in times of congestion, and each exercises a certain check upon the rate situation as determined by

the standard routes. For the same reasons, therefore, which apply in New England, it is recommended that all of these roads be consolidated in a single group under the leadership of the Pere Marquette. These lines, with the Grand Trunk possibly included as a foreign government-owned road, will be available, it is anticipated, through gateways at the south for all connections. The provision of the statute as to competition will be satisfied nominally by leaving the Pennsylvania line—the Grand Rapids & Indiana—and the Michigan Central, as part of the New York Central system, as at present. The operating advantage of such consolidation is clear. The Ann Arbor road, a single-track bridge line, would give the Pere Marquette, also largely a single-track road, practically a double-track system for the business from Ludington to the various connections at Toledo, the line of heavy through business. The two roads have a common terminal at Toledo and adjacent yards capable of joint operation. Both roads use the same track out of Toledo Yard to Alexis. The Saginaw locomotive shops would do for both. And the Ann Arbor boat line under consolidation with the Pere Marquette could be much more effectively operated. The following table gives the carloads interchanged by the Chicago & North Western at Manitowoc, Wis., for four months preceding February, 1921:

	Ann Arbor.	Pere Marquette.
Received by North Western	2,136 carloads.	4,425 carloads.
Delivered by North Western	2,807 carloads.	5,598 carloads.

It is certain that joint operation of this goodly volume of business would be advantageous. The tonnage of the North Western at Ludington, the other ferry, is so heavy that a double-track road is desired to handle it in Wisconsin. Two tracks in Michigan would be afforded by this merger.

As to the Detroit & Mackinac, it is a natural supplement to the Pere Marquette, in mileage, as well as in terminals, both freight and passenger. Whether the Detroit & Toledo Shore Line, half owned respectively by the Grand Trunk and the Clover Leaf, and solely devoted to freight business, could be spared by its present owners, or developed for the benefit of all the neighboring roads, is as yet uncertain. In many ways it builds in very well with this proposed Michigan system.

Another advantage which renders the regional group treatment attractive to certain shippers is the fact that it contributes somewhat to a greater independence from the trunk lines. A manufacturer in this territory desiring to export to South America, let us say, finds himself exposed to a strong tendency to have his traffic worked by way of the Atlantic seaboard, were the Michigan lines partitioned out among the trunk lines. But organizations like the Mississippi Valley Association, or the Southeastern States Association, desirous of upbuilding the south Atlantic and Gulf ports, would welcome encouragement to turn the traffic in these directions, provided bottoms at attractive rates could be had. This group treatment, with access of its own to Chicago for connection with all of the through lines serving these ports, will, it is submitted, contribute to a greater flexibility in movement. On the other hand, the question must be faced as to the effect of such grouping upon rate construction. Unless through rates were given, the sum of locals might add to the expense; and it would be particularly unfortunate if the trunk lines were to treat either this group or the New England region as a justification for charging extra terminal expenses, so to speak. Shippers object to such additional terminal charges, fully as much on the ground of inconvenience and annoyance as on account of the money involved. They regard them also as a surtax. If the regional treatment is going to impose such a system of rates, the recommendation for this treatment might be modified. But assuming that this matter were satisfactorily arranged, it is believed that such a group would be feasible. Suggestion has been made that it might be "fattened up" by inclusion of the Michigan Central line and the Grand Rapids & Indiana. There is, perhaps, force in this contention, as contributing to entire equality competitively

between the trunk lines; but it involves a rather serious invasion of the existing systems of the Pennsylvania and the New York Central, which ought to be avoided, if possible. The Michigan Central, particularly, despite the appearance of duplication of lines between Detroit and Chicago, is a necessary and integral part of the New York Central system. Without it the latter would be prejudiced seriously for Detroit business east, as map 7 plainly shows. The two roads have grown cooperatively. Each is dependent upon the other for terminals, and Michigan Central sponsorship for the Detroit tunnel is conditioned upon a continued alliance. It would be unfair and economically unwise to disturb the existing relationship.

The need of an independent railroad for a soft-coal fuel line of its own is as obvious and imperative for the Michigan peninsula as it is for New England. The bituminous fields of West Virginia, as described in chapter III, should be rendered more directly accessible to this great and rapidly growing industrial district. To this end, it is recommended that the Detroit, Toledo & Ironton road, shown on map 7, be incorporated with the Pere Marquette and its fellows. This little property, after a long, shady, and vicissitudinous past, has recently been purchased by Mr. Henry Ford, for the identical purpose above outlined.[5] Despite its present broken-down condition it is admirably adapted to serve as a connecting link and fuel-supply road. It cuts the main stem of every trunk line. At the south, it connects with the Chesapeake & Ohio, practically at the mouth of the Big Sandy River; and so forms a direct route over the Clinchfield road to the southeast (page 550, *infra*, and map 9). It has access immediately to Ohio coal fields and leads naturally to the best Kentucky and West Virginia measures. The Ironton would build into the Pere Marquette system well at the upper end. At present excluded from Detroit, its line could be brought into the Fort street union depot, controlled by the Pere Marquette; and the present heavy switching interchange with the Pere Marquette for River Rouge Ford plant traffic could be more effectively operated. The necessity for heavy capital expenditures in relocating the main line could be in part avoided by taking trackage up the Scioto Valley from the Norfolk & Western, here double-tracked; and from the Cincinnati, Hamilton & Dayton as well. The public advantage of this merger appears to be unalloyed.

Closely allied with the Michigan peninsula roads are the American lines through southern Canada between Buffalo and Detroit. These are drawn on map 7–a. Beside the Michigan Central, there are two of these lines available for distribution among the trunk line groups which could profitably make use of this short cut. There is the Wabash, consisting solely of trackage rights over the Grand Trunk; and then, in the second place, there is the Pere Marquette, which owns a line to St. Thomas, but which depends upon the Michigan Central for trackage from that point east into Buffalo. What treatment shall be accorded these two extraterritorial lines? It is obvious that they are needed as supplementary routes for the two trunk line systems which enter Buffalo from the east, namely, the Erie and the Lackawanna-Nickel Plate. Each of these could use such a Canadian line as the New York Central utilizes its Michigan Central route. The Baltimore & Ohio and the Pennsylvania both lie too remotely south to have need for such a short cut. Neither of them have an easterly entrance into Buffalo. As to the choice in distribution for the two Canadian lines above mentioned, the Wabash, seemingly, would go to the Erie system; as that property, east of the Mississippi, is built into this group for a St. Louis connection. Then the Pere Marquette Canadian line might either go to the Lackawanna-Nickel Plate to round out its facilities; or else, if it seems preferable, it might remain as a feeder attached to the independent Michigan group, as above outlined. The Canadian lines, it is believed, ought somehow thus be treated as a part of the trunk lines rather

[5] Full history in Railway Age, July 23, 1920, page 143.

than as affiliated with the Michigan peninsula group. For, if included in the peninsula group, they would add to the temptation to work this Michigan traffic east rather than, when ships were available, southward to the Gulf ports, or south Atlantic cities.

Statistical exhibit 2 manifests the possible financial results of a regional Michigan treatment. Bearing in mind that the normal return on capital investment for the year 1917 for the country at large was approximately 5 per cent, it is apparent that the group herein proposed is somewhat subnormal in this regard. But an advantage of the regional treatment is of course the possibility of enhancing the local revenue by an increase of the divisions of through rates. It is hardly conceivable that substantial increases can be effected in the through rates themselves without driving traffic away from the ferry routes. But nevertheless some local rates might conceivably be increased. The inclusion of the Michigan Central, as will be observed from the figures in exhibit 1, would produce the ideal result. Its addition would much more than double the net operating income while much less than doubling the investment account. The recommendation has been indorsed by a leading trunk line president that the Michigan Central should be made the bellwether of this flock, and the desirability of withdrawing it from the New York Central, in view of the predominance of that road over its trunk line neighbors and also of taking out the Grand Rapids & Indiana from the Pennsylvania is self-evident. But, as already observed, this proposition must be rejected as impracticable and unfair. The Michigan group, if it stand alone, must take its chances of survival. It is believed to be self-sufficient.

Two little properties, the Lehigh & New England and the Lehigh & Hudson are mere bridges to connect New England with all of the trunk lines by an up-river cross-country route. These properties are shown by double lines upon all the large trunk line maps. They extend from Campbell Hall and Maybrook, respectively, over into the Delaware Valley and into the heart of the anthracite coal territory. At present the Lehigh & Hudson is controlled jointly by five railroads and a coal company, the number of shares being indicated by the accompanying table:

Central Railroad of New Jersey	2,095 shares.
Delaware, Lackawanna & Western Railroad	2,159 shares.
Erie Railroad	2,093 shares.
Lehigh Coal and Navigation Company	6,519 shares.
Lehigh Valley Railroad	2,093 shares.
Pennsylvania Railroad	2,094 shares.
Sundry persons	147 shares.
Total	17,200 shares.

The Lehigh & New England is at present controlled by the Lehigh Coal & Navigation Company, and is used by that company for the carriage of its anthracite coal. Its coal traffic is competitive with that which is mined along the Reading, Erie, Lackawanna, Lehigh Valley, Central of New Jersey, and other anthracite systems. It does not reach the Pennsylvania system at present, a small gap intervening. And the Pennsylvania might profitably use it as a back entrance to New England, unless it were to be merged with the New England roads as a group for a fuel line to Harrisburg. Such, indeed, is my recommendation (page 521, *infra*). And as for the Lehigh & Hudson it is believed that it may safely remain as at present, as a joint bridge line for common use by all the trunk lines. It might perhaps be owned by some one of them, but its rails should be open to all alike on equal terms.

The statistical test of conformity to the statute of this plan for five trunk line systems divides itself naturally into two parts. The first concerns the relative size of these five systems. The second has to do with their earning capacity as compared with one another. The relative size of the five is depicted in exhibit 1, which sets forth the component parts of each system and thereafter aggregates them into five totals

which may be compared. These statistics, it should be observed, are to be interpreted with all the reservations already made. The figures for the calendar year 1917 are therefore presented merely as a rough verification of the soundness of the plan. Concerning size, as it appears, the results are as follows:

System.	Average mileage operated.	Revenue ton-miles.	Revenue ton-miles per mile operated.
Pennsylvania system	11,276	47,871,000,000	4,245,000
New York Central system	11,414	38,477,000,000	3,370,000
Baltimore & Ohio-Reading system	8,253	29,118,000,000	3,528,000
Erie-Lehigh Valley-Wabash system	7,613	27,769,000,000	3,648,000
Lackawanna-Nickel Plate system	4,879	16,986,000,000	3,481,000

These data bring out the predominance of the Pennsylvania system, but they also manifest the degree to which the three smaller systems have been magnified in importance to a size more nearly commensurable with the Pennsylvania. Actually the New York Central, Baltimore & Ohio-Reading, and Erie systems are brought quite closely together as respects the volume of traffic handled, in revenue ton-miles. The Lackawanna-Nickel Plate is still relatively about as much smaller than this middle group of three systems as the Pennsylvania system exceeds it, measured that is to say, by the revenue ton-miles. But the soundest test, of course, of the capacity of the roads as operating units is afforded by the third column, indicating density of tonnage.

The relative financial magnitudes are depicted by figures of the calendar year 191' for operating revenue and income. They are as follows:

System.	Railway operating revenue.		Net operating income (standard return).	
	Total.	Per mile of line.	Total.	Per mile of line.
Pennsylvania system	$482,220,000	$42,762	$83,316,000	$7,38
New York Central system	382,121,000	33,477	84,453,000	7,39
Baltimore & Ohio-Reading system	259,492,000	31,442	56,412,000	6,83
Erie-Lehigh Valley-Wabash system	218,539,000	28,707	46,902,000	6,16
Lackawanna-Nickel Plate system	130,941,000	26,835	28,833,000	5,90

This test of size shows, again, the rather overwhelming predominance of the Pennsylvania system, peculiarly marked by the density of its traffic. This density when applied to its large mileage produces an aggregate which it is impossible to match. The closest correspondence again is between the three middle systems in the table, the New York Central, the Baltimore & Ohio-Reading, and the Erie. Still, as respects railway operating revenue and net operating income, the Lackawanna is about as far below the middle group of three as the Pennsylvania is above it. The consideration of the figures, not in total, but per mile of line, somewhat corrects this apparent disability and brings the five systems much more closely together. And of course it is the net operating income in terms of investment which constitutes the final test.

The relative magnitudes of these systems are also indicated by the amount of their property as carried on the books for the calendar year 1917.

System.	Investment in road and equipment, Dec. 31, 1917.		Percentage relation; net operating income to investment.
	Total.	Per mile of line.	
Pennsylvania system	$1, 852, 499, 000	$169, 465	4. 50
New York Central system	1, 383, 012, 000	138, 787	6. 11
Baltimore & Ohio-Reading system	1, 098, 579, 000	133, 215	5. 14
Erie-Lehigh Valley-Wabash system	1, 095, 165, 000	162, 995	4. 28
Lackawanna-Nickel Plate system	656, 222, 000	143, 118	4. 39

By this showing the Pennsylvania is still about three times as big as the Lackawanna-Nickel Plate system, but the correspondence between the middle group of three systems is believed this time to be rendered misleading by the enormous investment figures for the Erie Railroad Company. This swollen investment account, amounting for the Erie Railroad to $210,000 per mile of line, distorts the results for that system appreciably. Making due allowance for this factor, the five companies range themselves in order from top to bottom of the table. But the gap between them is substantially lessened when the results are compared per mile of line rather than for the total. And, be it observed, as repeatedly stated, it is not total size but relative earning capacity which constitutes the final test.

Coming finally then to the percentage of net operating income on investment, the figures draw nearer to equality. These data correct, or rather eliminate, the element of size; and are only distorted by defects, that is to say, overstatement of investment. This overstatement is probably most marked for the Erie system. Consideration of the right-hand column of the above table shows that the order of precedence among the five companies is substantially changed in terms of this relationship of earning capacity to investment. The New York Central system heads the list with a percentage of 6.11. The Baltimore & Ohio follows with 5.14 per cent, exceeding the Pennsylvania with its percentage of 4.50. The Erie percentage of 4.28 is obviously too low, supposing the investment to be overstated. But the surprising feature of this final test, and one which it is believed stamps the plan as conforming to the statute, is the tendency of the operating income in percentage on investment to approximate the corresponding rate for the country as a whole. This figure for 1917, it will be remembered, was 5.45; and the year 1917 was chosen as typical because this figure was what might be regarded as a normal standard under the statute. The ideal for which one strives is a rate of return, of course, for each system throughout the country which shall be equal, first, to the rate for that region, and, secondly, for all the regions combined. A truly balanced competitive condition, permitting of the successful application of percentage rate increases or decreases to the country as a whole or by groups, would alone obtain under such circumstances. It is futile to expect more than an approximation statistically, but it is believed that the approximation herein is as close as the limitations of the data warrant.

CHAPTER II.—THE NEW ENGLAND REGION.

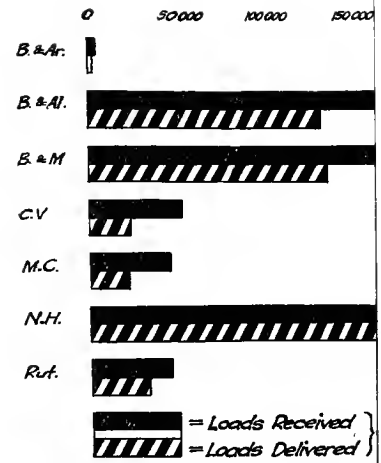
The transportation problem of New England as respects consolidation is unique. (See map 8.) It is an economic unit on the outskirts of the central commercial territory of the United States. Although intensively developed industrially and densely populated all along the seaboard, its principal asset is its ample supply of high-grade labor. Its transportation problem, broadly viewed, is to foster its manufactures in three ways; first, by provision for the cheapest possible inbound carriage of raw materials, coal, cotton, iron, and steel; secondly, by insuring cheap transportation for foodstuffs and other necessities of common life from the remote centers of their production; and, thirdly, to make certain that the freight rates on its finished products, outbound, shall keep them in the various markets throughout the heart of the United States, in the face of constantly rising local competition thereabouts. Its density of traffic, particularly in passenger service, is noteworthy. The intricate and retail character of much of its trade and its highly specialized manufactures demand a convenient and efficient articulation of its railway net at numerous junction points. Its problem is so peculiar that it must be considered in somewhat minute detail as respects consolidation.

The geographical relationships of rail routings now available may best be considered, first with reference to the gateways and rail connections. These may be listed as follows, the location being indicated upon the accompanying map:

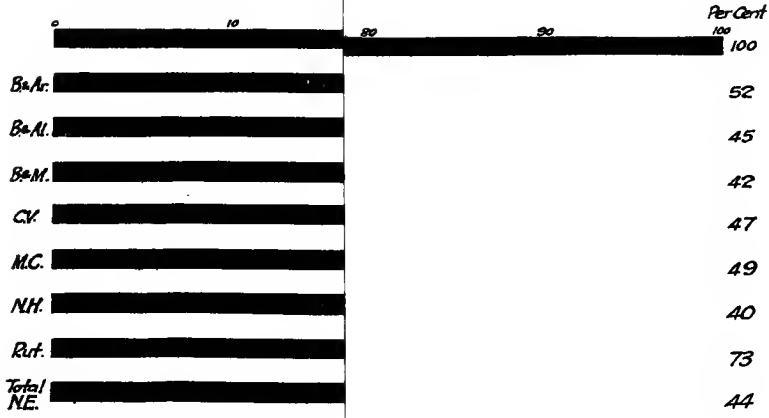
Gateway.	Carrier.	Rail connections.
Harlem River, N. Y. (all rail).	N. Y., N. H. & H.	Pennsylvania. Lehigh Valley. Central of New Jersey. Philadelphia & Reading. Baltimore & Ohio. Delaware, Lackawanna & Western. Coastwise steamship lines to the south.
New York, N. Y.	New England Steamship Company, sound lines.	Pennsylvania. Lehigh Valley. Central of New Jersey. Philadelphia & Reading. Baltimore & Ohio. Delaware, Lackawanna & Western. Erie. New York, Ontario & Western.

Gateway.	Carrier.	Rail connections.
Maybrook, N. Y.	N. Y., N. H. & H.	Lehigh Valley. Central of New Jersey. Philadelphia & Reading. Baltimore & Ohio. Delaware, Lackawanna & Western. Erie. New York, Ontario & Western.
West Albany, N. Y.	Boston & Albany	New York Central.
Mechanicville, N. Y.	Boston & Maine	Delaware & Hudson and Erie. Delaware & Hudson and Delaware, Lackawanna & Western. Delaware & Hudson and Lehigh Valley
Rotterdam Junction, N. Y.	Boston & Maine	New York Central.
White River Junction, Vt.		Grand Trunk (Central Vermont).
Ogdensburg, N. Y.		New York Central.
Newport, Vt.		Canadian Pacific.

The best evidence regarding the relative volumes of traffic, inbound and out, through the various gateways into New England, is afforded by the accompanying charts and statistics as to car interchange. These figures, it should be observed, are applicable only to New England as a group of railroads. They do not indicate the loads received or delivered by the different railways for their own individual account. Thus loads received by the New Haven may include cars for points in New England beyond its system, and loads delivered by the New Haven may include cars originating on the Boston & Maine, but passing through the New Haven system to this particular gateway. But considering the New England railroads as a group, this data affords a picture of the relative volumes of tonnage for the common account of the region as a whole through the different gateways. Disregarding details, this record discloses that the overwhelming preponderance of traffic received and delivered passes through five gateways across the Harlem or Hudson River. The most important single railroad as to receipts at one gateway alone is the Boston & Albany, which in 1919 received 277,236 loaded cars; but the New Haven at its two gateways of the Harlem River and Maybrook considerably surpasses it, with total receipts of 420,121 loads during 1919. In the same calendar year the Boston & Maine, through its two gateways at Rotterdam Junction and Mechanicville, was in receipt of 261,546 loaded cars. In other words, as to receipts, the Boston & Maine was not far behind the Albany, and both alike were greatly exceeded as to inbound loaded-car movement by the New Haven. But, as above stated, we have no way of ascertaining how large a proportion of this New Haven movement inbound from the west and south, was in fact destined to the different individual roads.



B. & Ar.	4 827	
	2 516	
B. & Al.	294 357	
	133 080	
B. & M.	326 652	
	136 883	
C.V.	52 888	
	24 776	
M.C.	45 698	
	22 594	
N.H.	474 306	
	189 336	
Rut.	46 127	
	33 579	
Total Received	1244	855
Total Delivered	542	764



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Oct. — 1920.

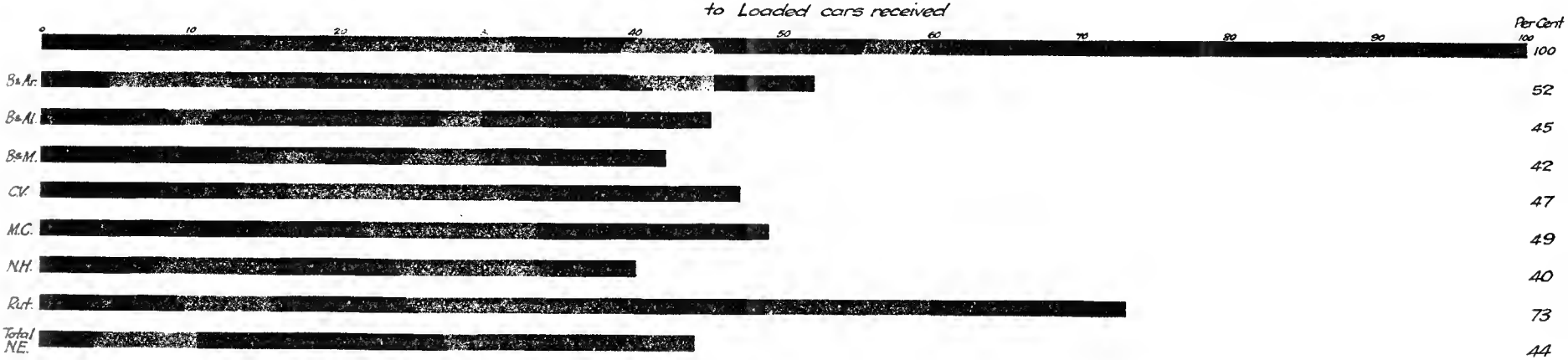
63763—21. (To face page 510.) No. 1.

LOADED FREIGHT CARS

Coming into and going out of New England during Calendar year - 1919
Showing Total Receipts and Total Deliveries through all gateways with other than New England Lines.

B & Ar.	4 827	
	2 516	
B & Al.	294 357	
	133 080	
B & M	326 652	
	136 883	
C.V	52 888	
	24 776	
M.C	45 698	
	22 594	
N.H.	474 306	
	189 336	
Rut.	46 127	
	33 579	
Total Received	1244	855
Total Delivered	542	764

Above Figures expressed in
Percentage of Loaded cars delivered
to Loaded cars received



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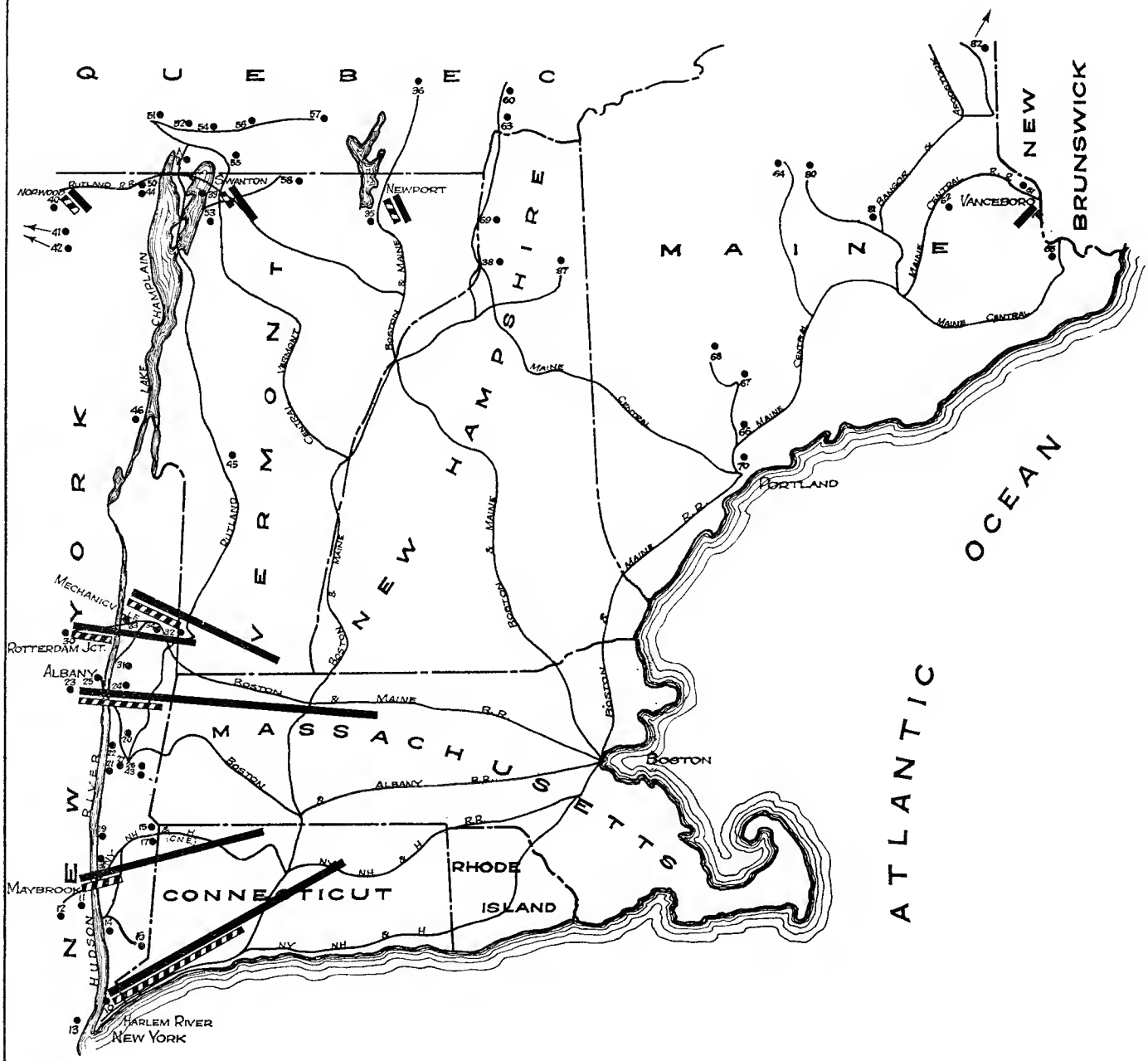

Loaded freight cars coming into and going out of New England, Calendar Year 1919
Shown graphically for gateways where more than 20,000 loaded cars were received or delivered. (Figures contained in attached statement.)

Loads Received.
Loads Delivered.

Numerals refer to gateways listed on accompanying statement.

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OCT. 1920

Detail of loaded and empty cars interchanged during the calendar year 1919 at gateways where the loaded movement is in excess of 20,000 cars.

Gateway.	New England line.	Connecting line.	Cars received.				Cars delivered.			Percentage relation; loads delivered to loads received.
			Loaded.	Per cent of grand total.	Empty.	Total.	Loaded.	Empty.	Total.	
Harlem River	N. H.	C. N. J.	40,213		1,329	41,542	26,322	12,420	38,742	65
Do	do.	L. V.	44,923		364	45,287	8,380	37,677	46,057	19
Do	do.	L. I.	9,279		10,717	19,996	22,741	671	23,412	245
Do	do.	Penn.	155,508		2,012	157,520	77,662	75,772	153,434	50
Total Harlem River			249,923	20	14,422	264,345	135,105	126,540	261,645	54
Maybrook	N. H.	Erie	54,868		670	55,538	11,253	58,332	69,585	21
Do	do.	L. & N. E.	23,163		80	23,243	496	32,781	33,277	2
Do	do.	L. & H. R.	92,167		772	92,939	22,005	67,154	89,159	24
Total Maybrook			170,198	14	1,522	171,720	33,754	158,267	192,021	20
Albany (including West Albany & Rensselaer)	B. & A.	D. & H.	14,715		385	15,100	7,655	4,266	11,921	52
Do	do.	N. Y. C.	262,521		2,760	265,281	94,601	161,134	255,735	36
Total Albany			277,236	22	3,145	280,381	102,256	165,400	267,656	37
Rotterdam Junction	B. & M.	N. Y. C.	106,792	9	3,991	110,783	35,516	57,243	92,759	33
Mechanicville	do.	D. & H.	154,754	12	6,900	161,654	53,112	122,155	175,267	34
Norwood	Rut.	N. Y. C.	22,300		2,627	24,927	15,832	8,014	23,846	71
Do	do.	N. & S. L.	770		369	1,139	1,584	191	1,775	206
Total Norwood			23,070	2	2,996	26,066	17,416	8,205	25,621	75
Swanton	B. & M.	G. T.	179		1	180	365	83	448	204
Do	C. V.	do.	38,647		1,075	39,722	14,309	18,149	32,458	37
Total Swanton			38,826	3	1,076	39,902	14,674	18,232	32,906	38
Newport	B. & M.	C. P.	27,371	2	2,474	29,845	25,545	8,479	34,024	93
Vanceboro	M. C.	do.	25,507	2	1,982	27,489	3,680	12,755	16,435	14
Total gateways above			1,073,677	86	38,508	1,112,185	421,058	677,276	1,098,334	39
Grand total of New England lines			1,244,855	100	70,750	1,315,605	542,764	751,693	1,294,457	44

Loaded and empty cars interchanged by New England carriers with connecting lines during the calendar year 1919.

New England railroads.	Cars received.			Cars delivered.			Percentage relation; loads delivered to loads received.
	Loaded.	Empty.	Total.	Loaded.	Empty.	Total.	
Bangor & Aroostook	4,827	1,236	6,063	2,516	2,619	5,135	52
Boston & Albany	294,357	13,911	308,268	133,080	168,491	301,571	45
Boston & Maine	326,652	19,719	346,371	136,883	201,055	337,938	42
Central Vermont	52,888	2,978	55,866	24,776	24,261	49,037	47
Maine Central	45,698	8,156	53,854	22,594	29,863	52,457	49
New Haven (including Central New England)	474,306	19,564	493,870	189,336	306,178	495,514	40
Rutland	46,127	5,186	51,313	33,579	19,226	52,805	73
Total New England	1,244,855	70,750	1,315,605	542,764	751,693	1,294,457	44

There is a striking disproportion between inbound and outbound tonnage; the loads outbound, in fact, for the calendar year 1919 amounting to only 44 per cent of the loads inbound. The nearest approach to equality at these five most important gateways is at the Harlem River, with 54 per cent of loads delivered to loads received. The other gateways, presumptively by a larger proportion of inbound coal tonnage, manifest a far greater disparity. For the coal tonnage of course moves entirely in one direction and is very large in volume, aggregating approximately 22,400,000 tons bituminous tide and rail in 1920, and somewhat less than half that amount of anthracite coal. Somewhat over half the soft coal, 12,200,000 tons, moved all rail. It is probably for this reason that at Maybrook there is delivered to the New England roads about five times as much tonnage as is moved outbound toward the west. The Boston & Maine at its two connections with the west receives about three times as many loads as it delivers westbound. On the Boston & Albany the disparity is slightly less. Financially, of course, the results obtained from inbound and outbound tonnage are not as widely different, owing to the fact that most of the traffic into New England consists of bulky low-grade business, mostly raw materials. Whereas the traffic delivered is constituted mainly of high-grade merchandise or manufactures, on which a relatively high freight is paid. It is this return current of high-grade tonnage upon which the entire power of New England to trade with its western connections depends. It is a valuable business, much coveted in exchange; and the prime element in constituting a New England group of railroads, independent of trunk line affiliation, is the maintenance of its ability as a distinctive group of carriers to distribute this tonnage among all western connections, in such a manner as to assure both preferred service and a fair proportion of the through rate.

A significant feature as to car interchange is the relatively small amount of tonnage which moves in or out through Canadian connections or by the northern gateways. Thus, of 1,244,855 loaded cars received by New England as a group in 1919, only 38,828 came via the Grand Trunk, and only 52,878 loads were received by the Canadian Pacific. It is apparent that the Canadian routes are important not as a main resource but rather by reason of their potential usefulness, either in time of congestion or as a check upon undue rate advances by the standard routes.

The relative association with foreign connections of the different New England railroads is also disclosed by the accompanying exhibits of car interchange. Thus it appears that the Pennsylvania road delivered 164,787 loaded cars to the New Haven at Harlem River in 1919, as against only 85,136 loads delivered by other railroads at that same gateway. And the delivery by the New Haven at Harlem River to the

Pennsylvania and the Long Island Railroad was 100,403 loads as against only 34,702 loads delivered to other connections. In other words, the Pennsylvania had overwhelming preponderance at this gateway. The data for Maybrook, which is the New Haven's up-river gateway, are entirely inconclusive as to its relative affiliation with the other trunk lines. In 1919, it received at Maybrook from the Erie 54,868 loads and delivered only 11,253. But for all the other trunk lines it delivered and received, not directly, but through the Lehigh & New England and the Lehigh & Hudson River, which merely serve as bridges to connect with these other routes. The natural affiliation of the Boston & Maine, based upon car interchange, is manifestly with the Delaware & Hudson at the Mechanicville gateway. Thus it received at Mechanicville in 1919 from the Delaware & Hudson about 50 per cent more loaded cars than it received from the New York Central at Rotterdam Junction during the same period. And it delivered to the Delaware & Hudson just about an equal preponderance of tonnage as compared with the New York Central connection at Rotterdam Junction. The natural relationship of the Boston & Maine to the Delaware & Hudson among all the other trunk lines west of the Hudson River is quite evident. Such an affiliation in case of the adoption of a trunk line plan for New England is self-evident. But, other than through emphasis of the New Haven's heavy interchange with the Pennsylvania at the Harlem River gateway, the evidence as to New Haven relationship with other trunk lines is inconclusive, based upon this data.

Loaded and empty cars interchanged by the Boston & Maine Railroad with connecting lines other than New England lines during the calendar year 1919.

Map No.	Gateway.	Connecting line.	Cars received.			Cars delivered.			Percentage relation; loads delivered to loads received.
			Loaded.	Empty.	Total.	Loaded.	Empty.	Total.	
30	Rotterdam	N. Y. C.	106,792	3,991	110,783	35,516	57,243	92,759	33
31	Troy	do.	14,276	1,511	15,787	15,269	2,127	17,396	107
	Total		121,068	5,502	126,570	50,785	59,370	110,155	42
32	Eagle Bridge	D. & H.	2,513	16	2,529	1,434	124	1,558	57
33	Mechanicville	do.	154,754	6,900	161,654	53,112	122,155	175,267	34
31	Troy	do.	2,455	101	2,556	572	1,978	2,550	23
	Total		159,722	7,017	166,739	55,118	124,257	179,375	35
34	Johnsonville	G. & J.	1,305	90	1,395	1,340	472	1,812	103
35	Newport	C. P.	27,371	2,474	29,845	25,545	8,479	34,024	93
36	Sherbrooke	do.	4,293	711	5,004	897	55	952	21
	Total		31,664	3,185	34,849	26,442	8,534	34,976	84
37	Berlin	G. T.	2	1,547	1,549	167	860	1,027	8,350
38	Groveton	do.	624	1,128	1,752	1,562	261	1,823	250
36	Sherbrooke	do.	7,612	1,032	8,644	882	1,824	2,706	12
39	Swanton	do.	179	1	180	365	83	448	204
	Total		8,417	3,708	12,125	2,976	3,028	6,004	35
36	Sherbrooke	Q. C.	4,476	217	4,693	222	5,394	5,616	5
	Grand total		326,652	19,719	346,371	136,883	201,055	337,938	42

Loaded and empty cars interchanged by the New York, New Haven & Hartford Railroad, including Central New England, with connecting lines, other than New England lines, during the calendar year 1919.

Map No.	Gateway.	Connecting line.	Cars received.			Cars delivered.			Percentage relation; loads delivered to loads received.
			Loaded.	Empty.	Total.	Loaded.	Empty.	Total.	
10	Harlem River	Penn.	155,508	2,012	157,520	77,662	75,772	153,434	50
		L. V.	44,923	364	45,287	8,380	37,677	46,057	19
		C. N. J.	40,213	1,329	41,542	26,322	12,420	38,742	65
		L. I.	9,279	10,717	19,996	22,741	671	23,412	245
11	Maybrook	Erie	54,868	670	55,538	11,253	58,332	69,585	21
		L. & N. E.	23,163	80	23,243	496	32,781	33,277	2
12	Campbell Hall	L. & H. R.	92,167	772	92,939	22,005	67,154	89,159	24
		N. Y. O. & W.	14,576	381	14,957	2,223	8,329	10,552	15
13	Port Morris	N. Y. C.	17,718	1,135	18,853	3,502	8,479	11,981	20
14	Beacon	do	8,933	1,626	10,559	5,222	1,762	6,984	58
15	Boston Corners	do	151	3	154	254	20	274	168
16	Brewsters	do	154	72	226	210	45	255	136
12	Campbell Hall	do	2,611	76	2,687	1,568	1,720	3,288	60
17	Millerton	do	19		19	6	6	12	32
18	Poughkeepsie	do	1,973	20	1,993	427	458	885	22
19	Rhinecliff	do	532	2	534	139	3	142	26
	Total	do	32,091	2,934	35,025	11,328	12,493	23,821	35
	New York term'ls		7,518	305	7,823	6,926	549	7,475	92
	Grand total		474,306	19,564	493,870	189,336	306,178	495,514	40

Two entirely distinct plans for consolidation of the New England railroads deserve consideration. They differ radically in principle. The first, which may be designated the trunk line plan, would seek to ally the New England carriers, individually or by subgroups, with important and financially strong trunk line systems. And such plans customarily divide this territory north and south of the Boston & Albany, leaving that line undisturbed in the possession of the New York Central. (Map 8.) Trunk line plans, for example, propose to attach the New Haven, south of this dividing line, either to the Pennsylvania, the Baltimore & Ohio, or the Lackawanna-Nickle Plate systems. And such trunk line plans coincidently attach the Boston & Maine, alone or in some connection with the other roads north of it, either to the New York Central system or to the one built upon the Erie. The argument, theoretically, in behalf of the trunk line plan, is primarily that the New England roads require the support and encouragement of the stronger trunk lines in order to maintain themselves and their patrons in this out-of-the-way corner of the United States. It is alleged that only by the financial support of these trunk lines, by the traffic which they have to offer, and by the rate adjustment which the trunk lines would tend to set up, in order to support their investments, may the New England carriers be protected from insolvency. The soundness of this argument in the abstract may be illustrated in many ways. Thus, in the matter of equipment, such trunk lines as the Pennsylvania possess a surplus of cars which might well be drawn upon to supply the deficiencies of New England. The Pennsylvania with one twenty-fifth of the railroad mileage of the country owns one-tenth of the equipment. Some New England lines are peculiarly short of such equipment, except perhaps the New Haven and the Bangor & Aroostook. Again, New England suffers by being chronically a per diem debit region. The resources of its roads are drained by constant and heavy balances due to the holding of equipment on its terminal rail lines. These debit balances would surely be reduced were the ample supply of equipment of the stronger trunk

lines to be drawn upon. It is alleged, furthermore, that a more efficient operation in train loading and movement might be had were the New England rails to be physically united for operation with those of the trunk line stems. General overhead expenses for administration might perhaps be more appropriately distributed, a better balance of traffic in and out might obtain, and particularly might the supply of company fuel be brought directly from the coal fields at cost were the New England roads to be attached to one or another of the great eastern systems. Assuredly validity attaches to many of these arguments, as they are subsequently discussed in connection with the alternative plans. The essential difficulty in the trunk line plans, however, is not their soundness in the abstract but their concrete application; that is to say, the particular choice to be made for such affiliation among the five possible trunk line systems set up under this plan. Nor may the choice among these five be made indiscriminately. The trunk lines pair off, so to speak, as respects financial and operating strength. It would upset all balance to ally the New Haven with one of the strongest trunk lines, and to deny to the Boston & Maine affiliation with another trunk line equally dominant. It is at all times essential to keep in mind a certain balance of power; that is to say, of competitive strength.

The most frequently suggested trunk line plan proposes to incorporate the New Haven road in the Pennsylvania system. The reasons are obvious, consisting of the preponderance of traffic interchanged already mentioned, the close working arrangements, the enormous joint investment in connecting railways at New York, and the interlocking stock ownership. But there are a number of substantial objections to such consolidation. The foremost one is the already preponderating size of the Pennsylvania system as a whole, an objection almost equally applicable to the addition of any other railways to the New York Central group. A prime object in effecting consolidation is to equalize competitive conditions, so that to ally a New England road with systems already so large as to betray evidence of unwieldiness would be entirely contrary to the spirit of the statute. A second objection to the Pennsylvania-New Haven alliance is that the Pennsylvania has no surplus earning power at present with which to upbuild a broken-down New England property—broken by impairment of its assets through unwise investments in outside properties. But of even greater weight is the undesirability of further congesting transportation conditions in and about New York city. The entire contact of the Pennsylvania is through the Harlem River or metropolitan gateways and these are routes periodically subject to embargo by reason of overloading. Such congestion might of course be remedied by amplification of facilities; but the expense of such improvements through the heart of the metropolitan district becomes more appalling with the passage of time. To set up a prime connection which would throw the traffic of New England inevitably more and more through this gateway seems unwise. And then on top of it all, the absence or any present disposition to consolidate, the Pennsylvania having abundant problems of its own, leads one inevitably to reject this possibility.

What shall be said about an alliance of the New Haven with the Lackawanna-Nickel Plate system. The physical connection between the two, as depicted on map 6, is immediate and direct through the Poughkeepsie bridge gateway. This choice would emphasize the utilization of the natural all-rail up-river gateway. By means of the two bridge lines of the Lehigh & Hudson and the Lehigh & New England the New Haven could assuredly be brought to a close connection either with the Lackawanna or the Lehigh Valley, and thus be made part of a comprehensive trunk line system. Such an alliance has the added advantage of avoiding congestion through the metropolitan district of New York. Fifty years from now it is believed the truth of this observation will be far more apparent than at the present time. But consideration of map 6, viewed in the light of the topography, the grades and curvature, indicates that an enormous investment would have to be made in upbuilding the connect-

ing links; and even then the route to the west is markedly indirect as compared with the Boston & Albany and New York Central line up the Mohawk Valley. The Nickel Plate-Lackawanna system exists as yet only on paper in a tentative plan. It is not even in embryo. Its financial stability, if ever created, must of necessity for a long time be uncertain. One hesitates, therefore, to commit the fortunes of the southern half of New England served almost exclusively by the New Haven system to such an alliance.

Consolidation of the New Haven with the Baltimore & Ohio amplified system as proposed in this report deserves the most serious consideration. This is the third possible choice. The relationships are set forth on map 4, whence it is evident that an extraordinary advantage might accrue to New England from such a merger. The Philadelphia & Reading and Jersey Central overwhelmingly predominate as anthracite coal roads, and the soft-coal tonnage of the Baltimore & Ohio is drawn from some of the richest reserves in the United States. The bridge lines as depicted on map 4 admirably connect the two. Such an alliance would carry out in effect the plan under which a number of years ago the Philadelphia & Reading undertook an entrance into New England by acquiring control of the Boston & Maine Railroad. The project then fell through largely because of banking opposition. But the operating and traffic advantages then obvious obtain at the present time. The arrangement is far from being ideal, however. Many objections immediately suggest themselves. The first is that the Baltimore & Ohio is from New England the longest of all the trunk line routes to Chicago. As indicated on page 486, the distance over the rails of the Baltimore & Ohio from New York to Chicago is 105 miles greater than by way of the Pennsylvania. The summit to be surpassed is appreciably higher than by any other route and is actually 1,500 feet higher than the highest elevation of the New York Central line. Chicago is a long way farther from Boston by this circuitous route than by any other. But, on the other hand, the Baltimore & Ohio leads as directly as any other trunk line to St. Louis and the southwest. And the connection at Harlem River is for freight purposes, owing to the abundant floating equipment owned by this system, almost as good as the Pennsylvania. Another serious objection has to do with the future of New England seaports. And the Baltimore & Ohio trunk line plan unquestionably violates New England interest in this regard. It is inconceivable that such a trunk line should bring export traffic through to Boston, passing in series every one of the other great Atlantic seaports. This serious disadvantage, along with the greater distance, must be set off against the benefits which might flow from the cheapened fuel supply. On the whole, following out the principle of trunk line consolidation, the Baltimore & Ohio choice is the most attractive one, assuming of course that this system has the financial stamina to undertake the task.

Possible trunk line affiliation for the northern half of New England must now be sought. What shall be done with the Boston & Maine, the Maine Central, and the Bangor & Aroostook? The baldest proposal is a consolidation of all of these properties with the New York Central. The financial advantage is obvious. But a serious objection is the size and preponderance already in trunk line territory of this great road. To add to its great mileage and enormous volume of traffic a network of over 4,000 miles of line transporting almost 5,000,000,000 revenue ton-miles of freight is a serious proposal. The burden of proof rests upon its advocates. A second serious objection is that this alliance would in nowise foster competition at most of the important New England centers. Rather would it tend to cut it down. For the Boston & Albany, as a subsidiary of the New York Central, already cuts through the heart of New England. And along its entire length there is now competition between the New York Central system and the Boston & Maine, the latter operating to the west through the gateways at Mechanicville and Rotterdam Junction. Merger of the Boston & Maine in the New York Central system would put an end to all this competi-

tion and limit it only to those points touched by the New Haven. Massachusetts from end to end, instead of having as at present three railroads in competition with the west, would have but two. And then, in the third place, the statistics of car interchange, already discussed, show that the Boston & Maine is substantially closer to-day to the Delaware & Hudson than to the New York Central, there being a preponderance in interchange of at least 50 per cent with this smaller company during the calendar year 1918. Considerations, therefore, of equal weight to those which led to the rejection of the Pennsylvania Railroad for the New Haven, impel one to reject this trunk line plan for the Boston & Maine.

Why not, then, ally the Boston & Maine with the proposed trunk line system built upon the Erie stem. The result of such an alliance is sketched on map 5. The connection is direct by way of the Delaware & Hudson and much is to be said in favor of the arrangement. But here again the plan falls short financially. Is there a sufficient surplus of financial resource for the rehabilitation of 4,000 miles of indigent railroad? Or again, is there sufficient direct contact with New York and Philadelphia and the territory to the southeast. One demurs at a canalization of New England traffic through the routes alone depicted on the map of the Erie system.

The most appealing choice under a trunk line plan for the northern half of New England is somewhat complicated. It proposes to draw upon the superabundant resources of the New York Central, and yet at the same time to prevent extinction of the existing competition all along the line of the Boston & Albany. The proposal is this: That the Boston & Maine Railroad be consolidated with the proposed Erie system (map 5), and that the Maine Central and the Bangor & Aroostook should be consolidated with the New York Central, connection therewith being obtained over the rails of the Worcester, Nashua & Portland division of the Boston & Maine. This latter bridge line parallels the sea coast from Worcester to Portland, still leaving the Boston & Maine undisturbed in possession of its two main stems between Boston and Portland. The Worcester, Nashua & Portland for many years retained its corporate identity. It would afford a convenient link to bind the New York Central with the second great seaport of New England. The railroads of Maine would thereby be enabled to draw upon the financial resources and the surplus equipment of a wealthy trunk line, and the development of Portland as a seaport, in the enjoyment of competition from three independent railroad systems, might well be promoted. The chain of cities along this route and the line of the Boston & Albany would enjoy a degree of competition which has not been witnessed for the last generation. Many objections to this arrangement suggest themselves, but they must be accounted part and parcel of the disadvantage of any trunk line plan. Balancing advantages and defects, the arrangement seems to be not impracticable and to comply substantially with the purpose of the federal statute. It is my own choice for northern New England if a trunk line plan is to be adopted at all.

The alternative consolidation plan for New England proposes to create a single comprehensive system out of its existing carriers, preserving only such domestic competition among them as shall satisfy the demands of the statute. This plan proceeds upon the theory that the New England railroads, as distinct from those in trunk line territory, possessing a distinct individuality, are confronted with peculiar problems native to the district, and that in this regard they have an entire mutuality of interest. The underlying theory is that the New England carriers are closely interlocked with one another by historical, financial, and commercial considerations, based upon geography; and that their joint rehabilitation may be best brought about by concerted action, not only as respects relations with trunk line or foreign railroad connections, but also as respects their relationship with the New England public. The local conditions peculiar to New England have already been set forth; notably their remoteness from raw material and the great central consuming mar-

kets; their high proportion of passenger business and density of traffic; their manifold junction points, and the expensiveness of terminal operation; their coastwise location and propinquity to Canada; to say nothing of the peculiar financial and political situation. This plan proposes, then, the creation of a New England railroad corporation which shall take over the New Haven, the Boston & Maine, the Maine Central, and the Bangor & Aroostook. It is all plotted on map 8. But in order to satisfy the statute as to competition, and also, of course, because it is believed to create a more healthy competitive condition as a whole, the territory of this transportation group is to remain criss-crossed, as at present, by independent lines. The Boston & Albany would be left as an east-and-west competitor (with possibly, as hereinbefore discussed, an extension to Portland by abstraction of the old Worcester, Nashua & Portland line from the Boston & Maine). The Grand Trunk, in the person of the Central Vermont, would still penetrate clear across this territory from the northwestern corner of Vermont down to New London on Long Island Sound. And the Grand Trunk would also continue to operate into Portland as at present. And in addition, of course, all of the coastwise connections by sea would remain in full force and effect. In brief, the group plan for New England revives the policy once pursued under the Morgan-Mellen administration of the New Haven for an almost complete New England railroad system. The advantages from the standpoint of traffic and operation as then contemplated obtain in full force to-day; but the disadvantages which attended and brought about its colossal failure would be stripped away. This plan contemplates no monopoly of trolleys or water power; no exclusive control of steamship lines or of the water front appurtenant thereto; no detouring of freight in order to overweigh the proportion of through joint rates; no prodigal or deceptive financing; and no attempt at corruption of public opinion.

Certain advantages of a group treatment of New England are manifest. They may best be considered, first, as concerns foreign relations, that is to say, dealings with carriers outside of New England; and, secondly, as to problems of domestic concern. As to the former, relationship with outside carriers, the outstanding advantage is the preservation of the existing freedom of interchange with connections from every part of the country. New England has prospered in the past because each and every trunk line has had access equally with all other trunk lines to the New England gateways. They have all enjoyed an equal opportunity, almost as free as by competition of water carriers, to benefit not only from the immense consuming but from the gathering and distributing systems of these New England roads. By eight gateways, no less than 30 railways west and south, have had free access; and New England merchants and manufacturers have in consequence enjoyed the rivalry of these different carriers in the disposal of their products. The peculiar need of the trunk lines for westbound loadings, renders them particularly susceptible to the offerings of thousands of cars daily all along the line of the Hudson River. This entire freedom of routing is a great boon, and the competition in service which attends upon it is of prime importance. There is also as to rates a responsiveness in the granting of commodity carload ratings, not to be overlooked. What would be the effect upon this existing freedom of routing of an alliance of the two halves of New England with any two trunk lines, let alone the fact, as already set forth, that this choice might fall upon the relatively weaker ones? What other motive could such foreign connections have for assuming the heavy financial obligation of upholding these New England properties, other than the expectation that they would be able to direct the major part of the traffic over their own rails? Assuredly that would be the motive, and necessarily the effect of any New Haven-Pennsylvania alliance. Despite the legal right of the shipper to prescribe his route, it seems inevitable that the traffic would tend to be more and more canalized. Every possible influence would make for that result, and such influence would be as powerful in any alliance

with the Erie or the Lackawanna-Nickel Plate combinations as it would with the Pennsylvania. This objection is decisive by itself alone as commending an endorsement of a plan of group independence from any trunk line affiliation whatsoever.

Another advantage of the New England plan is that it affords a consolidated power in dealing with all trunk line connections as to divisions of through rates. The pending problem as to such prorating in connection with the recent increases of rates, illustrates the difficulty of effecting these divisions by administrative decree of the Interstate Commerce Commission. The preservation of an open market for trading with connections emphasizes the desirability of mass tactics by all of these terminal carriers, which are subjected to peculiar conditions as to expense. Nothing would contribute more to bringing about a division of through rates on an equitable basis than a wholesome respect among the trunk lines for the consolidated power of a New England group, free to divert its immense and lucrative traffic through any of its numerous gateways. With a well-balanced trunk line competition among the five systems set up by this plan, the advantage attendant upon consolidation is obvious.

In the field of foreign relations, the group plan promises also to keep open not only the coastwise routes but the differential lines from Canada. As to Canada, the experience under the Railroad Administration is conclusive. It was only by constant watchfulness and zeal that the trunk lines were prevented from altogether closing these outlets to the west through which, of course, a diversion of traffic from their own rails persistently occurs. But of far greater importance, not potentially but actually, is the preservation of entirely open connections by sea. Much has been made of the rivalry of Atlantic seaports, and it is perhaps true that the port of Boston would be less apt to prosper were several of its carriers to be brought under closer control by great railroad systems having a major interest in the development of New York. But the coastwise situation is of equal significance. More than half of the population of New England is located within 25 miles of tidewater, and three-quarters of its population is resident within 50 miles of the seacoast. For all New England, but particularly for this belt of territory, such a relationship between rates—all-rail rates to the west or south, and rates by rail east out to tide, then on by water—must be maintained as shall keep open the coastwise routes. A recent example is afforded by the output of canners of corn and other vegetables in Maine. Their season's pack in 1919 might go to the Pacific coast either all rail or by a short local haul by rail to Portland and thence by sea. Is there any question that if the New England roads were part of a trunk line system, the rate adjustment would be such as to discourage the short haul to the New England seaport as against the long haul to Chicago? But, on the other hand, given a local New England railroad, with the choice only as between the short local haul to the seaport and the scarcely longer haul to the Hudson River on a prorate basis, is it not likely that a freer adjustment would obtain whereby the coastwise route would enjoy at least equal encouragement with the all-rail haul? Such considerations apply with peculiar force to the maintenance of coal supply. With approximately 35,000,000 tons of fuel annually required, it is of vital importance, not only as respects cost of carriage, but also the chance of congestion, that the sea routes be kept fully alive. This, it is submitted, is far more likely to happen under a New England group plan than under a trunk line affiliation.

Another possible advantage of a regional New England consolidation has to do with the fuel conditions territorially. An outstanding disability of these railroads is their remoteness from a soft-coal fuel supply for company use. The industries of this out-of-the-way region are also utterly dependent upon the carriers for their industrial supplies; and an immense volume of anthracite is required for domestic consumption. The aggregate tonnage for this purpose alone is huge. Of 326,652 cars received at Boston & Maine gateways in 1919, about 123,000 were loaded with coal. All-rail

rates to the western gateways of southern New England rose above $3 a ton after the war. Rail rates from the southern mines to tide are nearly as high, and to this figure the ocean rate had to be added. These ocean rates before the war, about 60 to 75 cents from Hampton Roads to Boston, rose to $3 a ton and are now about $1.80. Under such unusual circumstances and even at all times normally, southern and western New England is almost entirely dependent for its company fuel upon all-rail carriers. Water rates are highly fluctuating and the higher the water rate the greater the encouragement to all-rail carriage. Long-haul through carriage in solid trainloads, and particularly service at cost without the necessity of publishing rates, the coal being treated as company fuel, might result in substantial economies. Yet it should be understood that such a fuel line would be serviceable only for southern and western New England, inasmuch as the normal course for fuel in Maine and the vicinity of Boston is by rail and tide. A larger proportion of company fuel is thus all rail for the New Haven than for the Boston & Maine. The exact line of demarkation between all-rail and tide territory varies both as to location and according to the movement of charter rates. The Boston & Maine for a part of its all-rail coal, however, draws from the northern Pennsylvania field by way of the New York Central. But the New Haven generally arranges better deliveries over the Pennsylvania via the New York gateway or by the Baltimore & Ohio through Maybrook. Thus it appears that no single fuel line at present serves all New England; and not infrequently the roads have found it desirable to scatter their risks by spreading their contracts, in order to insure against change of market conditions or interruptions from strikes. In general there appears to be, even underlying the abnormal tendencies effected by the war, a normal and economic tendency to substitute all-rail for a broken rail-and-water service. The decline of Atlantic coastwise traffic is a case in point. New England perhaps may safely anticipate important developments in this direction, and the zone throughout which all-rail coal may successfully compete with tidewater coal will correspondingly broaden out as the years go by. For 1919, 80 per cent of the bituminous commercial fuel handled by the New Haven moved all rail. For anthracite 95 per cent so moved. Nor does this include tidewater movement for port consumption, a considerable proportion of which moved all rail. Substantial reassertion of prewar conditions will doubtless occur, but it is also likely that the pendulum will never swing as far back as before. All of which emphasizes the desirability of planning for a company and a commercial fuel line for this district.

The two most accessible sources of soft coal are the Clearfield region lying north and northeast of Pittsburgh, and the Fairmount and Connellsville district lying mainly due south of Pittsburgh. The location of these coal measures is indicated roughly on map 8. As for the Clearfield region, it is tapped either by the Pennsylvania or New York Central systems or by the Buffalo, Rochester & Pittsburgh line (see map 6), which latter road traverses it almost from end to end. Coal from this Clearfield region necessarily reaches the western New England gateways by nearly all of the trunk lines, but perhaps the largest amount is now brought from the Buffalo, Rochester & Pittsburgh and over the rails of the New York Central, principally to northern New England. The other soft-coal region, lying in southwestern Pennsylvania or northern West Virginia, is reached principally over the rails of the Baltimore & Ohio and the Western Maryland. These roads, as already described in connection with these properties, deliver the coal either to the Pennsylvania or the Philadelphia & Reading system for carriage by way of Harrisburg and Reading. The route is shown on both maps 4 and 6. This coal is then transported to the New Haven rails by way of the bridge lines of the Lehigh & Hudson or the Lehigh & New England. The former has already been described (page 506, *supra*). It serves a number of trunk lines interested in this business in common. As for the Lehigh & New England, the northerly of the two bridge lines shown on map 8, it cuts across the northwestern corner of New Jersey

to a connection at Campbell Hall with the Central of New England and the Poughkeepsie bridge gateway. This road at present is controlled by the Lehigh Coal & Navigation Company, closely affiliated with the Central Railroad of New Jersey and more or less interlocked with it. But it is also an independent originating coal road as well as a bridge line. Its tonnage is highly competitive with that which moves over the parallel bridge line of the Lehigh & Hudson. The competition between these two bridge properties should by all means be perpetuated. The Lehigh & Hudson, however, is at present interlocked in ownership with the Lehigh & New England by reason of the fact, as indicated on page 506, that the Lehigh Coal & Navigation Company, controlling the Lehigh & New England, together with the Central Railroad of New Jersey, actually owns a majority of its shares. This interlocking relationship should be broken up if true competition is to be promoted. The Lehigh & Hudson might well continue to be a bridge controlled by all the trunk lines; that is to say, controlled from the western end. But in that event the Lehigh & New England ought to be owned from the eastern end; that is to say, it ought to be incorporated either with the New Haven road or with the New Haven as part of a consolidated New England system. The needed competition of all-rail coal routes would by this means be promoted and perpetuated.

An even more ambitious project for providing New England with an independent fuel line would be not only the taking over of the Lehigh & New England but its extension, at least as far as Harrisburg, Pa. Thus, the very heart of both the anthracite and bituminous coal territory would be reached; or rather, a great junction about equidistant from the anthracite fields to the northeast, the Clearfield region to the northwest, and the Fairmount coal measures to the southwest. The dominant position of Harrisburg in this regard, midway on the important interior fuel line of the Baltimore & Ohio, has already been discussed in connection with Philadelphia & Reading affairs. Harrisburg would be reached as indicated on map 8, by means of trackage taken by the Lehigh & New England over the Reading system to Dauphin, Pa. Only a short bit of construction, already projected before the war, would be necessary for the connection at Auburn. Trackage from Dauphin into Harrisburg could be had over the rails of the Pennsylvania. It is not recommended in this plan that this alternative fuel route should be extended beyond Harrisburg, although it might be practicable to carry it on to a physical connection with the Baltimore & Ohio or the Western Maryland by taking one of the two lines now devoted to this traffic. It is believed that such a fuel line would materially contribute to the effective and economic operation of a New England territorial system. But it could be developed and effectively utilized only in connection with a regional group plan, comprising alike the natural all-rail coal territory of the several railroads, at present independent of one another. It could not be worked out under any trunk line plan.

One other possibility, partaking of the nature of a trunk line plan, is consolidation of a part or all of the New England roads with either the Lehigh Valley or the Delaware, Lackawanna & Western, together with the Buffalo, Rochester & Pittsburgh Railroad. It will be recalled that the Lackawanna under this plan has been utilized as a part of the main stem of a trunk line system; whereas the Lehigh Valley has been incorporated in a competing system built upon the Erie. These perhaps are easily interchangeable in these two relationships. The Lehigh Valley is equally serviceable for a Nickel Plate stem; and the Lackawanna might go to support the Erie system. But whichever one is not used as part of the stem of the Nickel Plate system might go into a New England alliance, it is alleged, in order that the Buffalo, Rochester & Pittsburgh, added to it, should give access to the Clearfield coal measures (depicted on map 8). Several important objections to this proposal suggest themselves. One is that such alliance would distinctly prejudice the competing West Virginia coal

measures tributary to the Baltimore & Ohio. Another is that the route by way of the Buffalo, Rochester & Pittsburgh is extremely indirect as compared with the straight line by way of the Lehigh & New England. And a third is the fact that the withdrawal of the Buffalo, Rochester & Pittsburgh and either one of the other two trunk lines from the Nickel Plate system, as already proposed, would practically put it out of the running in competition with the other trunk line systems. For all these reasons this plan is rejected in favor of the proposal of the Lehigh & New England line to Harrisburg. This, as already explained, reaches a point so nearly equidistant from all of the different competing coal fields as to preserve the present equilibrium in the matter of supply. It is held to be of paramount importance in any official government plan to preserve this existing commercial parity.

The foregoing advantages of the group plan have been concerned with outside or foreign relationships. Domestic operation and traffic also merit consideration. It is important that there be a consistent administration of the different gateways. Congestion locally has been all too frequent. At one time the Harlem River might be embargoed, and at another trouble might develop at Mechanicville. Between April and October, 1920, congestion on the Boston & Maine embargoed traffic on the Delaware & Hudson no less than 57 days in the carriage of coke. Some of the old difficulties due to rigid car-service rules, requiring the return of empties from New England by the same gateways through which they entered—an impossible condition at times, like trying to float chips upstream against the current—have been obviated. But it is submitted that the location of New England in a transportation pocket with few outlets, requires a greater degree of unified administration than is possible under existing conditions. And then, too, there is the desirability of free local interchange of freight through the many junction points which thickly dot New England territory. The Boston & Maine is said to have a junction for every 13 miles of trackage, and, within 30 miles of Boston, a junction for every 8 miles of track. A recent report of the New England Traffic League on motor transport emphasizes the loss of tonnage from station to station because the local rates have reached a point higher than that charged for pick-up and delivery by truck. Moreover, rail delays are eliminated by trucking. A closer correlation between the railroads and all other forms of local transportation is desirable. A consistent development of means for local interchange would seem to be favored by regarding all New England as, in a sense, a great terminal. Even in the matter of rates all the railroads together might charge less and live. At present between northern Maine and a point on Long Island a quoted rate has to be divided between five railroads. Obviously the share of each per 100 pounds approaches the vanishing point under such subdivision. Think also of the clerical expense of keeping track of such matters. It is the opinion of competent traffic experts that a lower rate might be offered for such shipments if it were not necessary to split up the proceeds in the present manner.

A final advantage of the group plan is that it would promote a higher sense of local interest and of responsibility, financial as well as commercial. The evils of absentee management, free from or at times positively defiant of public opinion, were never more clearly illustrated than in the old New Haven railroad. The problem of rehabilitating the New England carriers is of no mean magnitude. It will demand the husbanding of every resource, public and private, as well as financial and political. All needless duplication must be avoided. There must be a consistent development of highways and of light railways which serve as feeders. Every investment must be made to count to the full. And all the zeal and enthusiasm in the raising of new funds and the development of resources can best be brought about only by a management representative of the best intelligence of the immediate community. Who shall say, indeed, that public aid may not be required, given a guar-

anty of absolute uprightness and public spirit? The board of directors of such a New England corporation should contain at least one representative appointed by the governor of each of the New England states. And the services of these representatives should not be merely perfunctory. The post should be salaried and a public accountancy should be rendered, by means of which public support for the joint enterprise shall be assured of continuance. Not one of these advantages could conceivably attend administration of these New England properties in divided units, which constituted mere attachments or extensions of great trunk line systems, necessarily directed from New York. This last consideration, political, or even, if you please, spiritual, in absence of all the rest, would, it is believed, be almost conclusive.

Many objections to the New England group plan must be met. The first of these is that it runs counter to the express terms of the statute, that "competition shall be preserved as fully as possible." It is contended that this is virtually a plan for regional monopoly, a plan which was expressly rejected by Congress in favor of the creation of a scheme of balanced competition. This contention of illegality may be readily met. The distinction must be drawn between competition within New England and competition of New England with points beyond its confines. It has already been established that any plan other than the group arrangement will substantially lessen competition in service between all the connections west and south outside the New England gateways. Only by the group plan can this existing outside competition be preserved. The legal objection applies, if at all, only to intra-New England competition; and of this there is substantially as much under a group plan as there is at present. For it should be noted that New England is now so parceled out as to railroads that the only competitive areas are along either the line of the Boston & Albany or of the Grand Trunk. At about a dozen places, such as Worcester, Springfield, Holyoke, Lowell, and Nashua—in other words, along the boundary between the Boston & Maine and the New Haven—there are three roads in competition with one another. But the group plan proposes no severance of the Boston & Albany from the New York Central. This road will still compete, at almost every point, just as effectively with the Boston & Maine and New Haven united as it does with the two of them separately as at present. And the competition of two roads as fully answers the purpose of the statute as of three. It is submitted as essential that the existing Boston & Albany and Grank Trunk lines should continue to cut east-and-west and north-and-south, clear across the territory; and, of course, all the coastwise points have free competition by water in any event. If, perchance, it be expedient to still further assure satisfaction of the statute, the Boston & Albany can be extended to Portland by the Worcester, Nashua & Portland line, as elsewhere suggested; the Rutland Railroad, allocated to the New York Central, might also be extended down to Worcester by trackage rights over the old Cheshire Railroad; and the Delaware & Hudson might be extended from Rutland into White River Junction. But it is confidently believed that the necessity of group treatment in order to preserve competition between the carriers outside of New England affords a sufficient answer to this objection, which is alone applicable in very slight measure to competition within New England borders. If, however, it were necessary, an amendment of the transportation act to permit this regional consolidation for New England might well be considered.

The second objection to the group plan is far more important and much more difficult to meet. It is that the prostration of the New England lines is universal; and that the group plan permits of no such alliance of weak and strong properties, in order to balance transportation costs and property valuation, as is contemplated under the law. Only by reaching beyond the confines of New England, it is alleged, can sufficiently strong companies be found to lend their support for the rehabilitation of the New England

lines. It is obvious that great expenditures are called for in the immediate future in order to relieve congestion, provide adequate terminal facilities and equipments, expedite loading and unloading, and afford such improvements and betterments as shall keep pace with the growth of population and the demands of industry. It is not alone a problem of supporting these properties, now scarcely earning operating expenses, and of keeping them alive, but it is a question of their proper development. Such development requires credit and the assurance of adequate traffic to support the new output of securities. The present plight is avowedly critical. But, on the other hand, the foregoing analysis of possible mergers with outside roads has, it is believed, established the fact that these alliances may, under the statute, not take place with the already overdominant systems of the New York Central and the Pennsylvania. They must, if at all, take place through association with the Delaware & Hudson, Erie, and Lackawanna-Nickel Plate groups. Each of these is in itself confronted with the problem of meeting the competition of the two greater systems. All of their strength must be conserved for the satisfaction of their own proper trunk line needs. Little help could be had from that source.

No statistical verification of the stability of a New England regional system, as thus proposed, may be confidently presented because all the data are drawn from a period before the war when normal conditions prevailed; but exhibit 3 demonstrates the extraordinary collapse which has occurred. Under the conditions prevalent in 1917 a percentage of net operating income to investment in road and equipment of 5.33 per cent was enjoyed. This seems almost unbelievable in the light of the utter disturbance of operating conditions by the war together with the effects of the current business depression, but surely some matters will right themselves in due time. Coal prices are already substantially lower and wages are beginning to come down. In the division of through rates a tardy relief of some sort is bound to come. The most acute phase of the current industrial depression has passed. Is it not just conceivable that with an adequate and independent fuel line of its own, and with the elimination of all these other abnormal factors, the feasibility of a self-sustaining thoroughly reorganized New England system may demonstrate itself?

The standing of Boston as a great seaport may not be overlooked as an element in the group plan of consolidation for New England. The growth of the port, in face of competition with New York, Philadelphia, and Baltimore has been disappointingly slow. There has been an absolute decline in foreign business. In 1910 Boston exported 582,000 barrels of flour. The exports in 1920 were 273,000 barrels. In 1913 Boston and Baltimore were on a parity in the clearances of American and foreign vessels engaged in foreign trade. In 1919 clearances from Baltimore exceeded those from Boston by 400. In the decade to 1920, exports of grain from Boston fell from 9,322,000 bushels to 6,059,000. The exports from Galveston increased coincidently from 1,195,000 to 46,034,000, and from New Orleans from 7,486,000 to 58,182,000. Galveston actually shipped out 86,645,000 bushels during the year ending June 30, 1920. Boston can scarcely hope to compete on even terms with the seaports which are nearer either to the great population and industrial centers of the middle states or the grain territory farther west. Conceivably, the future for Boston as a seaport and perhaps a great one, lies in its geographical relation to Canada and the great northwest. Boston offers unparalleled advantages as an all-the-year-round point of export for the Canadian Pacific and the Grand Trunk lines. Attention, it is believed, should be directed to stimulation of this business, utilizing Boston as a port of transit, just as Rotterdam has grown as a port of entry for the countries lying behind Holland. It will always be a disadvantage that the rail routes cross national boundaries; but the geographical layout and the disability of the Canadian ports indicate clearly a possibility of growth for the port of Boston. Such stimulation of transit trade with Canada can be undertaken advantageously only by the prestige and power of all of the New

England railroads combined. A task of such magnitude could not be successfully attempted by any one railroad alone, and any trunk line affiliation, bound to be involved with New York or other rival Atlantic ports, would tend to discourage rather than to develop such a program.

One is forced to the conclusion, then, that the rehabilitation of the New England railroads must take place through a mustering of all of the financial resources of the region, public as well as private, if necessary. The industrial preservation of New England demands it. Some of the existing difficulties—fuel costs, material expenses, and, it is to be hoped, some of the labor cost, may prove to be temporary rather than permanent conditions. One suggestion by a most astute banking expert is that the New England railroads should be taken over by a joint ownership of all the trunk lines, once they are aggregated into a limited number of systems. But this, it is believed, is too remote a remedy, if ever, indeed, practicable. Another suggestion is that the great American industries, as a measure of self-protection, should unite in investment in these New England roads. And then there is the possibility of state funds, as once, quite wastefully to be sure, the construction of the Hoosac tunnel was brought about. But in any event, it is submitted, no such rehabilitation may take place until the New Haven particularly has been subjected to such a thoroughgoing financial reorganization as has taken place on the Boston & Maine. It seems useless to discuss further general increases of New England rates, either freight or passenger, except perhaps sporadically. The disastrous effect of overloading transportation costs for a remote region dependent upon the long haul both for fuel and raw material inbound, and all of its products outbound, is too obvious to need reiteration. No other course seems open except the adoption of vigorous measures for setting the New England house in order, recognizing past mistakes and pocketing the losses, and then proceeding with confidence to set up a new organization which shall have such assurance from public reputation of straightforwardness and honesty that the invincible power of New England's associated capital and industry shall loyally support the enterprise.[1]

[1] Admirably stated by Philip Cabot in Atlantic Monthly, August, 1921, p. 258 *et seq.*

CHAPTER III.—CHESAPEAKE REGION (LAKE-TO-TIDE, SOFT COAL).

Three railroads based on Chesapeake Bay, described, 526.—Specialization in coal traffic, 526.—The geographic location (map), 527.—Technique of coal road operation, 528.—Two varieties of coal, 528.—Eastern and western markets described, 529.

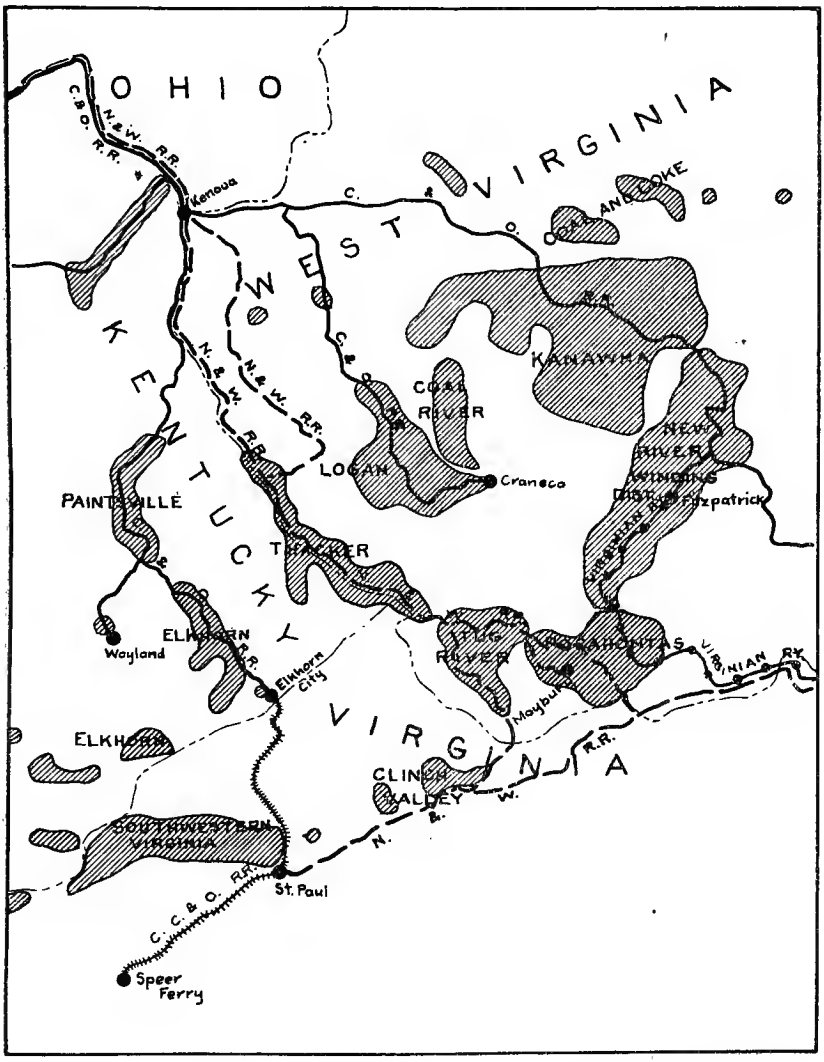
Need of flexibility in carriage east and west, 529.—Plans for Virginian Railway extension to Toledo (map), 530.—Involved history of Toledo & Ohio Central and Kanawha & Michigan, 530.—Norfolk & Western extension to Lake Erie, 530.—Pennsylvania Railroad claims for continued control, 532.—Consolidation of Virginian and Norfolk & Western feasible, 533.—Possible joint use of two Toledo & Ohio Central lines, 533.

Statistical verification, 534.

Three railroads, based upon Hampton Roads in the lower Chesapeake Bay, although lying in part in trunk line territory and to some degree participating competitively in trunk line business, merit consideration by themselves. The federal Railroad Administration created a regional group of them by virtue of their peculiar situation and characteristics. The three roads comprehended are the Chesapeake & Ohio, the Norfolk & Western, and the Virginian. They are shown distinctively on map 9. The Chesapeake & Ohio alone is at present a trunk line, as depicted by the solid black lines. Its route from Cincinnati to Chicago, the Chesapeake & Ohio of Indiana, is a weak road, avoiding important sources of traffic and not in good condition for heavy usage, but the Hocking Valley affords the system direct access through Columbus to the great lakes at Toledo. The Norfolk & Western is the next in extent. It reaches Cincinnati and Columbus. Twenty years ago, it, like the Chesapeake & Ohio, evidently contemplated extension to the head of each of the great lakes. But as it threatened to disturb the harmony which was being set up by a community of interests among the trunk lines it was at first offered to the Southern Railway—a Morgan property—and was finally picked up by the Pennsylvania, which has built it most effectively into its system. The geographical relationship between two railroads has already been depicted on map 2. This shows that it constitutes a very roundabout detour line for the Pennsylvania whenever, in an emergency, a blockade of the main stem occurs. But it is nevertheless a very present help in time of trouble. Since the acquisition of a controlling interest in the Norfolk & Western by the Pennsylvania, most of the through business of the former at the northeastern extremity at Hagerstown, Md., and on the west at Columbus and Cincinnati, is taken care of by the Pennsylvania. Although only about 38 per cent of the total common and preferred stocks of the Norfolk & Western is held by the Pennsylvania, the road is to all intent and purposes a Pennsylvania property. The Virginian Railway, the third in this group, shown by the line of round dots, is more highly localized on the map even than the Norfolk & Western. It barely extends from the West Virginia coal fields at Surveyor to tidewater at Hampton Roads. It has no western connections whatsoever and is exclusively confined therefore to tide traffic. Thus it appears that as to comprehensiveness the three properties in this group differ from one another in degree. The Chesapeake & Ohio has succeeded independently in constituting itself a lake-to-tide soft-coal property. The Norfolk & Western has not progressed more than two-thirds of the way to the Lake Erie water front, and the Virginian is still entirely a tidewater affair.

The peculiarity of these Hampton Roads properties is their specialization in the carriage of bituminous coal and coke. For 1919 these products constituted approxi-

mately 70 per cent of the traffic of the Chesapeake & Ohio lines. The same ratio, approximately, would doubtless hold for the other two systems. This coal is produced from numerous mines in a limited area in West Virginia and Kentucky. This region, together with northeastern Tennessee, affords perhaps the greatest reserve of fuel



supply in the United States. From this territory the energy for the future industrial development of the entire valley of the great lakes must be derived. Railroads radiate from it in every direction. The location of the carriers in relation to the coal fields is disclosed by the accompanying map.[1] This shows that the Chesapeake & Ohio traverses the entire New River and Kanawha fields, with branches to the

[1] A more comprehensive map, showing rate adjustments, is published by the Interstate Commerce Commission in *Bituminous Coal to C. F. A. Territory*, 46 I. C. C., 66, 158.

Elk Horn and Logan regions. The Norfolk & Western serves the Pocahontas, Tug River, and Thacker fields. The Virginian serves the Pocahontas field and the southern end of the New River field. The map also indicates the entrance from the south of the Carolina, Clinchfield & Ohio, ending at Elkhorn City, and from the west, as a very important recent development, the Louisville & Nashville penetrating to the Elk Horn measures. The coal going out in every direction by these various lines, they all possess certain features in common. But the basic differences between trunk line and southern conditions, as already set forth, commend a separate treatment of the Pocahontas group from the Louisville & Nashville and the Clinchfield roads.

The technique of coal-road operation especially sets off these properties from those of the trunk lines. The coal is produced from numerous mines in these limited areas and is gradually collected by an elaborate system of trunk lines into through trains which move either to tidewater, to the great lakes at Toledo, or to central distributing points, like Cincinnati, Chicago, or Columbus. From these centers this coal is transported to numerous destinations in the middle west and the northwest. The gathering of this fuel from the mines, its transportation in solid trains to the central distributing points, and its subsequent delivery at these points—either to vessels for water transportation or, in relatively small quantities, to various connections—constitutes a complete transportation operation. It requires highly specialized equipment and methods of operation, which are essentially different from those of other railroads. These processes of coal transportation have been perfected through many years. Main lines of the highest standard, exceptional equipment as to capacity, networks of feeders, extensive yards and terminals, and highly specialized machinery for rapid and economic unloading, have been provided. The demands for this specialized investment have prevented encouragement of or participation in either passenger or other freight business than the carriage of bituminous coal. Such general traffic is bound to be secondary. It should not interfere with the efficient and economical operation of these roads as coal properties. To add a great volume of general traffic would confuse the situation. No attempt should be made to create general trunk lines out of these roads; but they should be treated, nevertheless, as national assets, having in view their general usefulness to the entire country and to all of the other railroads. Occasionally, perhaps, a road, like the Norfolk & Western, may be used to relieve congestion on the more direct lines from the Atlantic seaboard to Chicago, but that is not its main function. Nor may the Chesapeake & Ohio be regarded primarily as other than a highly specialized coal property.

The coal in this territory is distinguishable into two varieties. One of these, known as fuel or smokeless coal, is derived entirely from the New River and Pocahontas fields. Having been subjected to greater geological pressure and heat, it more nearly approximates anthracite. It retains its form in blocks, and does not give out gas or smoke to the same degree as ordinary soft coal Thus it is eminently fitted for bunker coal for vessels and is suited to consumption industrially in densely populated territory where the smoke nuisance has become a matter of public concern. This coal heretofore has moved predominantly to the seaboard by all three of the Hampton Roads lines. The second variety of coal is known as by-product or gas coal. It is also denominated as low-volatile coal to distinguish it from the high-volatile smokeless sort. This coal is found in all the other fields except the two above mentioned. It has primarily been consumed in central freight association territory and, by way of the great lakes, in the northwest. The phenomenal growth of this low-volatile westbound coal traffic, in competition with the coal from the other western fields, is brought out in *Bituminous Coal to C. F. A. Territory*, 46 I. C. C., 66, 123. Westbound commercial coal shipments on the Norfolk & Western in 1901 were 687,535 tons, as compared with 4,049,817 tons of all coal eastbound on the same road. This eastbound tonnage was almost seven times as

great as westbound in 1901. But the westbound movement steadily grew proportionately, despite the rapid expansion of eastbound business. In 1912, for the first time, westbound tonnage of 8,766,102 tons actually exceeded eastbound coal, amounting to 8,606,270 tons. Since that time conditions have varied, especially as a result of the war. The normal tendency of coal movement westward was at first reversed. The zoning program tended to give the higher-priced steam-coal fields near Chicago a regional monopoly. The tide turned east also with demand from Europe and for naval uses. And now again, in 1920, with industrial depression in the United States and falling prices, conditions have become more uncertain as to exports. Apparently an overdevelopment of mining has occurred in the United States, far beyond the present or immediate future needs of our domestic and foreign trade.[2] But the significant point is the fluctuation of the surplus demand as between the markets east and west.

The growth of eastbound and westbound business on the Norfolk & Western is shown by the following statement of commercial coal and coke shipments:

Period.	Eastbound.	Westbound.	Total.
	Net tons.	*Net tons.*	*Net tons.*
Year ended December 31, 1916	17,707,774	14,923,207	32,630,981
Year ended December 31, 1917	16,484,291	14,880,111	31,364,402
Year ended December 31, 1918	18,410,546	11,470,666	29,881,211
Year ended December 31, 1919	13,222,400	12,285,071	25,507,471
Year ended December 31, 1920	16,480,516	10,465,197	26,945,713
Total five-year period	82,305,527	64,024,251	146,329,778
Yearly average	16,461,105	12,804,850	29,265,955

The significance of the foregoing general statement as to the soft-coal trade lies apparently in the need of a greater flexibility as between transportation east and west. The surplus coal production above the needs for consumption east and west—for export, or for the central west—should be free to find its way more readily in every direction. This need is accentuated by the difference in quality and usage above mentioned. Sometimes the slack in smokeless coal for export may be taken up by westbound movement. Sometimes the opposite may occur. And the same fluctuation may occur independently for the gas coals. But in either event, a greater ease of movement in both directions, and a freer flow of coal to all possible markets seems desirable. Entire freedom of flow will be produced only by the utmost efficiency of the instruments of transportation. This efficiency calls for close coordination between barge or vessel movement and car movement. It presupposes the free movement in unbroken train units from the mine to tide or lake as the case may be. The docks should be owned and operated by the originating railroad. Movement is interrupted by any shift of operating control en route; and particularly is it important that every railroad serving these coal fields should have outlets over its own rails east and west to lake or tide. The prime purpose of the accompanying recommendations is to accomplish this end, although the acuteness of need varies as between the several properties.

The Virginian Railway, serving only the smokeless fields, with a market exclusively at tide, most urgently needs extension to the great lakes. The phenomenal growth of its tonnage is disclosed by the following table covering transportation of bituminous coal since 1910. This movement, unlike that of the Norfolk & Western, is exclusively eastbound.

[2] Official statement, Railway Age Gazette, December 31, 1920, page 1149.

Year ended—	Tons.	Year ended—	Tons.
June 30, 1910	929,752	June 30, 1916	4,726,169
June 30, 1911	2,141,009	December 31, 1916	5,509,798
June 30, 1912	3,103,309	December 31, 1917	6,398,836
June 30, 1913	3,775,423	December 31, 1918	6,279,289
June 30, 1914	4,122,987	December 31, 1919	5,463,321
June 30, 1915	3,603,390	December 31, 1920 (est.)	7,080,553

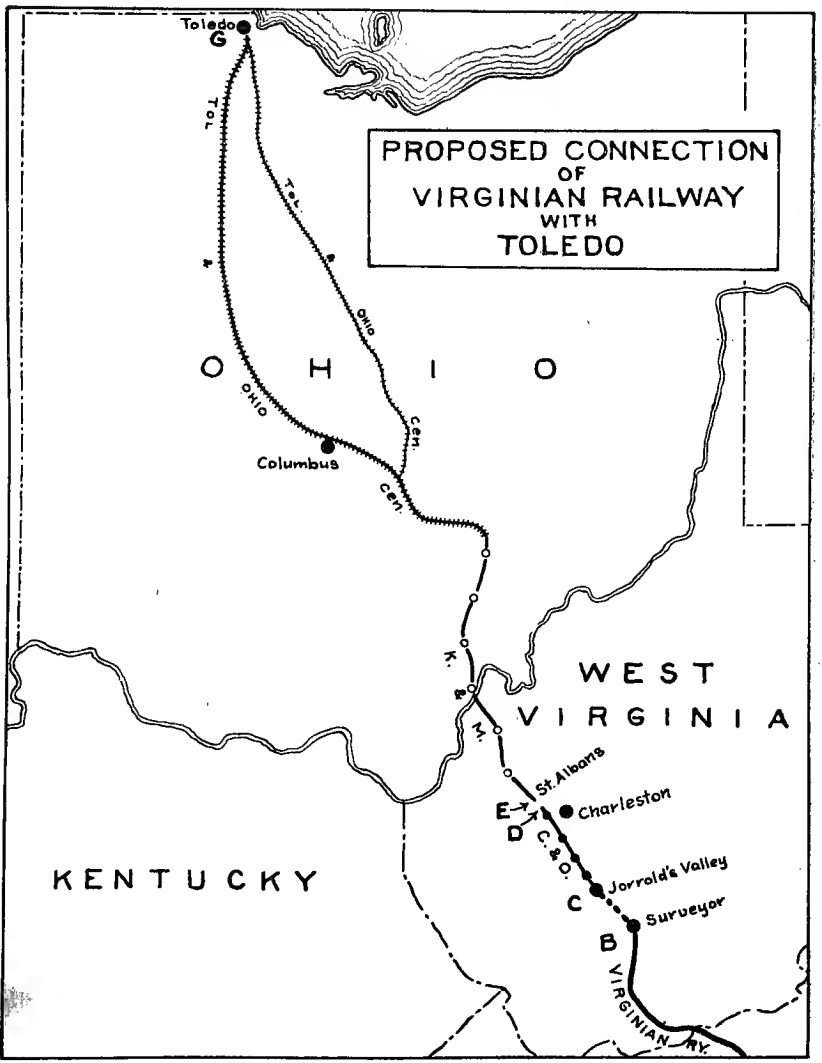
The need of a western outlet for the Virginian has been apparent for some years and, at various times negotiations have been undertaken for the acquisition of a line to Lake Erie. The plan most seriously considered, and herewith recommended, is of consolidation with the Toledo & Ohio Central and the Kanawha & Michigan. The location of these properties is shown upon the large map 9. Their present relation to the New York Central system, of which they now form a part, is also indicated on map 3 of that system. Negotiations with reference to a lease were undertaken before the war and a price was actually set by the New York Central. This leads to the belief that, however important these lines are for western New York Central fuel supply, they are not indispensable to their present owners

These little properties have an involved history, interwoven with trunk line relationships. Between 1890 and 1899 the Toledo & Ohio Central, through stock ownership, controlled and operated the Kanawha & Michigan. During this period the Toledo & Ohio Central and the Hocking Valley were competing roads in both intrastate and interstate business. The Kanawha & Michigan was dependent on either the Toledo & Ohio Central or the Hocking Valley for traffic north of Corning; and, if used by either the Toledo & Ohio Central or the Hocking Valley, would be a competitor with the other. By reorganization of the Hocking Valley in 1899, control of the Toledo & Ohio Central, the Zanesville & Western, and the Kanawha & Michigan was acquired, and was retained until about 1910. Later there were *quo warranto* proceedings in the Ohio courts, resulting in the ouster of the Hocking Valley from the control of the Toledo & Ohio Central, Zanesville & Western, and Kanawha & Michigan. In complying with this decree, an agreement between the Lake Shore & Michigan Southern and the Chesapeake & Ohio was made, by which the Lake Shore & Michigan Southern acquired all the stock both of the Kanawha & Michigan and the Zanesville & Western; and the Chesapeake & Ohio acquired the holdings of six trunk lines in the Hocking Valley. But it is alleged that the Lake Shore sought to sell the Kanawha & Michigan to the Chesapeake & Ohio in connection with these proceedings. This, again, confirms the impression that these properties are not indispensable to the New York Central system.

The completion of the Virginian line through to Toledo over the rails of the above-named corporations is physically a simple matter. The Kanawha & Michigan at Gauley Bridge on the east bank of the Kanawha River, does not connect with the Virginian property. An easier mode of connection seeks to avoid the construction of a bridge by utilizing a portion of the Chesapeake & Ohio trackage. The local situation is mapped herewith. By a short bit of construction through the so-called Coal River field, a connection is afforded; and at the same time, a territory much in need of development is opened up. The net result of such construction and trackage would be to render the Virginian Railway a lake-to-tide property, capable thereafter of offering its surplus smokeless coal as freely in western markets as in the east.

The need of extension of the Norfolk & Western to the Lake Erie water front is somewhat less apparent than that of the Virginian. For the Pennsylvania control has been productive of extraordinary development. But the growing volume of the westbound coal business and the desirability of independent operation from dock to dock by one management, lead to the recommendation that this railroad also should

be given an outlet to the lakes independent of the Pennsylvania lines. There are two ways of accomplishing this result. One is by means of withdrawal from the Pennsylvania system of the line from Columbus to Sandusky, separately designated on map 2. This division was formerly the Columbus, Sandusky & Hocking Railroad and was acquired by the Pennsylvania about 1898. The Norfolk & Western, at that time into Columbus, did not even bid for it in competition; but at various times, there



has been consideration given to its possible lease to the Norfolk & Western. This is the best line to the lakes; and at Sandusky large investments have been made in docks and appliances. But it is a serious matter to recommend the withdrawal of this important division from so consolidated a system as the Pennsylvania. Fortunately there is an alternative by which an outlet to Lake Erie may be had without interference with the vested rights of the Pennsylvania system in the line to Sandusky.

already mentioned. The Toledo & Ohio Central, referring again both to map 9 and the last map in detail heretofore, has two lines across Ohio. These operate southeast of Columbus, and it has already been recommended that the eastern division be assigned to the Virginian Railway. The western division, which passes through Columbus, offers an alternative for a lake line to the Norfolk & Western. It is said not to be as advantageous as to grades. At present the through coal movement avoids congestion about Columbus and is moved in very heavy trainloads over the eastern division. But the western line conceivably could be used. Whether or not it would afford as good an outlet as the line to Sandusky, which now belongs to the Pennsylvania, is a matter of detail, upon which decision is reserved. But there is no doubt as to the desirability of an independent line for the Norfolk & Western, one way or the other. The larger national interests of the country require the change. It would tend to relieve congestion at Columbus. It would promote operating efficiency and it would concentrate responsibility. It would unquestionably enable the Norfolk & Western better to cope with the immense coal requirements of the northwest in future years.

A clear distinction should be made between continuing control of the Norfolk & Western through stock ownership by the Pennsylvania, and the extension of the Norfolk & Western Railroad lines for their own management from Columbus to the lake front. As to the claim of the Pennsylvania for continuing control, it is based upon a number of considerations. The first is that of possession for the last 20 years. The Pennsylvania owns about 38 per cent of the common and preferred stock. Since 1900 the Pennsylvania has dominated the board of directors and determined the policy. The traffic relations with the Pennsylvania have been becoming more and more intimate with the passage of time. During 20 years, Norfolk & Western coal tonnage has grown from 6,000,000 tons to 30,000,000 tons; so that the Pennsylvania and the Norfolk & Western together originate roughly 80,000,000 a year. The Norfolk & Western is intimately built into the Pennsylvania, in Ohio, at Hagerstown, Md., and at Norfolk. The interchange with western lines is predominantly with the Pennsylvania. Freight traffic delivered to the Pennsylvania during 1917 was 13,781,129 tons; and the receipts from the Pennsylvania were 2,095,665 tons. This is a total of 39.5 per cent of all the Norfolk & Western freight interchange with all railroads, as well as 33 per cent of its total freight traffic. The Pennsylvania uses the Norfolk & Western also to relieve congestion at Pittsburgh, thus utilizing the Norfolk & Western as a detour through route. It may also be used for Pennsylvania traffic for Norfolk, Va. Yet another claim of the Pennsylvania is that the West Virginia fields constitute a reserve to be drawn upon after the exhaustion of its own Pennsylvania measures. The Pennsylvania, it is contended, must protect the enormous volume of industry located in this district. It is asserted that the coal measures in its home territory have but a limited life and that without these reserves proper provision for the future will not be made. Careful inquiry at the Geological Survey, however, indicates that the reserves strictly tributary to the Pennsylvania Railroad appear likely to last for 400 years. The life of the Norfolk & Western field in the light of its reserves and the rate of exhaustion is reported to be about 550 years. These conclusions, however, are based upon the assumption that the rate of increase in consumption will remain as at present in the two fields. Inasmuch as the demands on the Pennsylvania field owing to its proximity to Pittsburgh will be continuously greater than in West Virginia, it seems more likely to expect that the ratio of life of the Pennsylvania and the West Virginia district will be more nearly as 1 to 2. It is evident, however, that the need of the Pennsylvania is at all events not immediate and pressing. Nor is the urgency sufficiently great to support the recommendation that the Norfolk & Western shall be consolidated with the Pennsylvania system. In fact, the recommendation of an independent Norfolk & Western-Virginian system, projected to the

lake front at Toledo, expressly calls for corporate independence from all trunk line systems. It is doubtful whether the statute respecting consolidation contemplates the severance of these stock relationships which have subsisted for many years. This particular Norfolk & Western one is analogous to the stock ownership of the Union Pacific in the Illinois Central. Is the Commission justified in opposing a continuance of that relationship? Or must it content itself with acceptance of the established ownership as a limitation upon its regulatory powers? Apparently a large matter of policy and interpretation is involved, upon which the Commission must make decision.

The grand strategy of the Hampton Roads properties, as above outlined, might still be attained by one modification as to detail. Were the Virginian and the Norfolk & Western to be consolidated, not only might a single outlet to Lake Erie be developed for both, but also a number of operating economies might be effected. The terminals of the two roads are adjacent at Norfolk, Va. The Virginian, as the map shows, also closely parallels the Norfolk & Western practically from the coal fields to tidewater. The two lines could be operated jointly to facilitate the movement of tonnage. The district director under the federal Railroad Administration turned the eastbound tidewater coal of the Norfolk & Western onto the Virginian at Roanoke and moved it over that line to escape the Blue Ridge summit and grade; and ran the Virginian westbound movement over the Norfolk & Western. The lines were thus used in common for about 100 miles, and in any event, either could be used as a detour line in cases of obstruction upon the other. Both roads tap the same coal measures, low volatile and high volatile. Their output, therefore, is interchangeable in an emergency at their junction 6 miles west of Norfolk. None of these advantages of unified operation are applicable to the Chesapeake & Ohio and either of the other roads. To combine the Chesapeake & Ohio and the Norfolk & Western would put an end to keen competition. It would permit of no economies in operation. Any proposal, therefore, to group the Hampton Roads properties more closely should take the form of alliance of the Virginian and the Norfolk & Western.

One other possibility merits consideration. Combination of the Virginian and Norfolk & Western, in order to perpetuate the operating economies at the tidewater end which were utilized under federal control, has already been suggested. Were these two to be combined, the two lines of the Toledo & Ohio Central, already described, might be worked for the joint benefit of them both as thus consolidated. These lines were all formerly operated in a pool with the Hocking Valley in somewhat the manner suggested. The agreement under which the Lake Shore acquired the Toledo & Ohio Central provided for an equal division between this road and the Hocking Valley of the coal traffic derived from the Kanawha & Michigan. And, certainly, trackage rights were given to the Hocking Valley over the Kanawha & Michigan. But proceedings in the Ohio courts about 1907, and subsequently in the federal courts about 1914, tended to break up the pooling operation. The federal decree, and now the agreement between the Lake Shore and the Chesapeake & Ohio, have required that the latter road should sell its stock in the Kanawha & Michigan to the Lake Shore. Incidentally, the joint use of the Hocking Valley and Toledo & Ohio Central was discontinued for through traffic except by ordinary interchange. The significance of this history is that it seems to indicate a possibly advantageous cooperative activity, and the reversal of federal policy concerning railroad pooling by the transportation act of 1920, apparently opens the way to a renewal either of joint operation under control of the Interstate Commerce Commission or of actual merger. Thus, in brief, choice may be made between three possibilities. The first is to take the Sandusky line for the Norfolk & Western from the Pennsylvania system. The second is to choose instead the western division of the Toledo & Ohio Central, still keeping the Norfolk & Western independent. And the third is to combine the Virginian and the Norfolk

& Western and use the Toledo & Ohio Central and the Kanawha & Michigan interchangeably for both.

The part played in modern industry and in our domestic and foreign trade by bituminous coal makes it imperative that all fetters to freedom of movement be released. The enormous and rapidly growing product of this region, indispensable to the entire country both in peace and war, is by this plan made accessible on more nearly equal terms than at present to all five of the trunk line groups. By producing the two lines, which now fall short of completion, through to Lake Erie, every trunk line is afforded a direct connection and an opportunity to participate on more nearly equal terms than at present in any movement east and west from these particular lines. To afford such direct connection with the main stem of every trunk line is the underlying principle of these recommendations.

A word further in another connection as to the Chesapeake & Ohio. Map 9 indicates how conveniently this property may be extended to St. Louis by assignment to it of the Louisville-St. Louis division of the Southern Railway. This would make the Chesapeake & Ohio really a trunk line, commensurate as to scope with the five trunk lines farther north. In other words, it would tap both Chicago and St. Louis. But, on the other hand, choice has to be made as against the conflicting interest of St. Louis in the Southern Railway. This point is discussed subsequently in chapter IV. On the whole, it seems more desirable that no positive recommendation for divorce of this line from the Southern Railway should be made. But the desirability of a future trunk line to St. Louis from Hampton Roads, by independent construction can not be doubted.

The statistical results, so far as they may be predicated, for the several Chesapeake Bay systems are disclosed by statistical exhibit 4. These figures indicate that the Virginian is only about a third the size of either of the other two. In mileage the Chesapeake & Ohio leads, but in terms of revenue ton-miles and operating revenue the Norfolk & Western stands at the head. The significant figure is afforded by the percentage of net operating income to investment. Here it appears that the Chesapeake & Ohio approximates the normal at 5.46 per cent. But the Norfolk & Western including the Columbus division of the Toledo & Ohio Central, earned 7.18 per cent on its investment in 1917. Coincidently, the Virginian with the Kanawha & Michigan and the eastern part of the Toledo & Ohio Central were substantially below normal, with net operating income in 1917 of only 3.91 per cent on investment. In other words, the Virginian system, as herein proposed independently, is just about as far below normal earning capacity as the Norfolk & Western, as herein constituted, is above it. Were these two systems to be combined, there would be an ideal conformity to the financial requirements of the transportation act. A weak and a strong road, lying in the same territory and naturally interrelated would, if put together, only slightly exceed in earning power percentually, the rival system of the Chesapeake & Ohio. The rates of return respectively, are 5.46 and 6.18 per cent. In view of this fact and of the economy demonstrated as feasible under federal administration, as hereinbefore described, it is finally recommended that these two systems, the Virginian and the Norfolk & Western, should be consolidated under this plan. This proposal was heretofore made only as a possible alternative. But these statistical returns, since received, confirm the belief that this is the proper procedure under the act. The joint utilization of the two lines of the Toledo & Ohio Central and of the Kanawha & Michigan might also at the same time, greatly promote efficiency and the satisfaction of public needs. The companies should be protected also in pooling operations under federal supervision, and afforded protection against interference by the authorities of the state of Ohio, in case its law is not amended to conform to a broad-gauge federal policy.

Chapter IV.—The Southeastern Region.

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Southeastern territory, south of the Ohio and Potomac rivers and east of the Mississippi, contrasts sharply as respects transportation conditions both with the trunk lines and with the west. Population is sparse, and traffic is both light and, to a considerable degree, seasonal in character. There is relatively little local business. Much of the traffic is for a long haul, either of raw products—cotton, lumber, or garden truck—northbound; or foodstuffs and manufactures in the opposite direction. Formerly there was widespread water competition; but, except for the extended coastwise service, this has now become relatively insignificant. The numerous rivers and the encircling seaboard have, however, profoundly affected the historical development of its transportation system, from which there has resulted many of the existing corporate relationships. Most of the railways have been constructed not so much in, as into the interior of this region. Such lines have penetrated either from the seaports Charleston, Savannah, and New Orleans, or else the existing systems have penetrated

by extension from the Virginia or the Ohio River gateways. Such at least, if not the process of original construction, has been the trend of consolidation. And with the improvement of rail transportation and the gradual supersession of carriage by water, emphasis has been laid upon the stems penetrating the south from the north rather than upon some of the rail lines, equally significant historically, which were built upon the surrounding seaports like Savannah or Charleston as bases.

A bird's eye view of southeastern territory shows that it is divided geographically down the middle from northeast to southwest, parallel with the coast, by the Alleghenies mountain range. From Atlanta south, there is no discernible separation into east and west; but from Atlanta north, the railways of this territory have first gradually extended themselves more or less parallel with this mountain barrier. On the east, within a quarter century, there resulted three distinct systems; namely, that of the Southern Railway, of the Atlantic Coast Line, and of the Seaboard Air Line. In the western section, transportation was provided primarily by the Illinois Central and the Louisville & Nashville railroads. The predominant direction of traffic on the one side of the Alleghenies differs radically from that on the other. On the Mississippi side the preponderance is southbound, consisting of bulky foodstuffs; but along the eastern continental shelf both bulk and value of tonnage are greater toward the north. The recent phenomenal growth of traffic in citrus fruits and of fresh vegetables, northbound, tends to balance up conditions in the western half and still further to overthrow the balance east of the Alleghenies. Each slope of the Alleghenies was originally more or less distinct in its transportation problems, and there was very little interrelation between the two. Twenty-five years ago one might consistently have divided the south into two subdistricts for purposes of railroad consolidation. But the events of the succeeding decades have profoundly modified these conditions.

Since 1900, for transportation purposes, the south has developed a far greater territorial unity than it possessed before that time. The growth of population and the development of traffic in lumber and products of the soil in the great coastal plain between Atlanta and the Gulf, together with the intensive development of Florida, have tended to overcome the separateness of interest which formerly obtained between the eastern and the western groups of roads within this region. Each half has become more dependent upon the other, and particularly has the large volume of traffic from south of Savannah and Macon tended to move impartially either east or west of the great wedge of mountains which penetrates down through the middle almost to Atlanta. Instead therefore of, as formerly, more or less parallel and competing routes into and out of the south through the Virginia and Ohio River gateways respectively, there has now come about a large movement of business which cuts diagonally in either direction clear across this area. The through routes depicted on map 27 bring this out clearly. Through routes from New Orleans to the Potomac gateways trend northeasterly; and similar through routes, especially for the carriage of Florida products and lumber, trend northwesterly from Jacksonville toward St. Louis. Each half of the south, east and west, is therefore to-day much more closely bound to the other by the ties of trade than a generation ago. And the great railway companies have followed these lines of commerce, extending their systems from either direction to cover the entire region with a single railway net. Thus, conformably to the trade relationships above described, the Southern Railway was the first to emerge as a group, ramifying throughout the entire extent of the southeast. Beginning in the nineties, its lines were steadily extended until at this time it reaches every important section, with the sole exception of parts of Florida. Its system is in nowise separable in interest into an eastern or a western half; but its important through lines connect all of the extremities of this vast territory.

A complete identity of interest between the eastern and the western halves of the south is not quite so apparent with the next great existing combination, that of the Louisville & Nashville and the Atlantic Coast Line. Historically these two halves remained entirely distinct until 1902; when, as a result of a speculative coup, the Louisville & Nashville was acquired through stock ownership by the Atlantic Coast Line. Since this time these two properties have evolved, not so much as allies, as integral parts of one and the same great system. The first appearance of rank artificiality in this relationship has to a considerable degree yielded place to an identity of interest, particularly arising from the intensive development in southern Georgia and Florida. For all this region there is the same need of free movement for the long haul, either east or west of Atlanta, that is manifested in the great diagonal currents of traffic in the Southern Railway system. To resolve this existing combination into its original constituent parts before 1902, namely, once more to divide the united system into an eastern and a western subdivision, would not contribute to the free movement of traffic, nor would it preserve existing routes and channels of trade, as the statute contemplates. It is clear that for this second great existing combination, as well as for the Southern Railway, it must be regarded as having established its right to unity as it stands.

The remaining large systems in the southeast are those of the Illinois Central and the Seaboard Air Line Railway, respectively. Is there any identity of interest between these widely separated properties, and is a like disposition manifested by either to extend across and bind the two halves of the south more closely together? That is an important matter to decide. For upon it will depend the choice between four, or three, independent systems in the southeastern territory. To unite these two, would provide only three great consolidations. To leave them separate would require the constitution of four.

The location of the backbones or stems of the principal southern systems is shown by map 27. This brings out rather strikingly the manner in which the eastern and the western halves of this region are indissolubly bound together by the diagonal route, which meet and cross one another at Atlanta. A great parallelogram is depicted with Richmond, St. Louis, New Orleans, and Jacksonville at the four corners—Cincinnati and Louisville being midway of the northern side. Three at least of the four southern systems pretty completely cross this territory competitively, either from Richmond toward New Orleans, or from Jacksonville to the northwest through Atlanta. Thus there are the two main Southern Railway stems as diagonals of this territory; and against them there are the competitive lines of the Louisville & Nashville, although the Atlantic Coast Line division makes a somewhat wider sweep toward the sea, leaving the Southern Railway as distinctly an interior system. Such, indeed, the Southern Railway was planned to be. And in thus refraining from development of branches and feeders in Florida, there is evidence of a division of the field with the Louisville & Nashville-Atlantic Coast Line, so richly represented in the Florida peninsula. The Southern system and that of the Louisville & Nashville-Atlantic Coast Line are the most comprehensively developed, and the remaining two systems, under this plan are substantially more localized. The Illinois Central is unsurpassed in its possession of a great north-and-south direct trunk line, but it is yet somewhat handicapped in its approach to the seaboard at Savannah over the controlled lines of the Central of Georgia Railway. The Seaboard Air Line (map 13) on its part gives the appearance of overextension, being relatively so thin in feeders. But its main stem from Richmond through Savannah to Tampa is a fair parallel and competitor for the eastern stem of the Atlantic Coast Line. Summarily therefore this layout discloses a fairly comprehensive competitive situation except in one regard. Between almost all of the strategic points there are two fairly evenly balanced systems except as against the Illinois Central main line from Chicago to New

Orleans. That is unparalleled to New Orleans. The nearest direct competitor is the line of the Mobile & Ohio (in the Southern system) to the rival port of Mobile, and, as will hereafter appear, this property is hardly integral in the Southern Railway as an interior system. Its final disposition is one of the knotty problems presented by the south.

The comparative financial status of the six leading southeastern railways, as separately reported to the Interstate Commerce Commission, for 1917, is as follows:

Carrier.	Investment in road and equipment per mile of line.	Railway operating revenue per mile of line.	Net operating income per mile of line.	Percentage relation: net operating income to investment.
Atlantic Coast Line	$38,884	$9,151	$2,131	5.51
Illinois Central	71,115	18,127	3,417	5.17
Louisville & Nashville	63,297	15,160	3,412	5.85
Seaboard Air Line	55,602	8,766	1,877	3.44
Southern Railway	77,202	12,991	2,671	3.87
Carolina, Clinchfield & Ohio	189,627	13,411	5,073	2.75

A matter of fundamental importance, concerning not alone the southeastern states, but the entire middle west, is the future development of the seaports on the south Atlantic and in the Gulf of Mexico. An added significance accrues from the probable future of the Panama Canal and the entry of the United States into the field of international competition through the creation of a great merchant marine. The trend of both export and import traffic has always been much stronger through the north Atlantic ports than elsewhere; and the power and influence of the trunk lines has tended in the past to work all traffic east rather than south. But a great and growing interest among manufacturers in the Mississippi Valley is manifested in the possible movement of their products southward rather than due east to the sea. Manufacturers in Ohio or Michigan have in the past found themselves limited to export by way of New York or other north Atlantic ports; but they are now clamoring through various associations for the right to make use of the ships which have come in to New Orleans or other southern ports laden perhaps with potash, guano, nitrates, coffee, or what not, for the return carriage of these American goods abroad. It is not abnormal for such manufactures to move out of Michigan by way of New York; but there ought to be substantial equality of opportunity to ship the product through New Orleans; and this is particularly the case from points further south, like Chattanooga, Tenn. It is surely anomalous that Chattanooga should alone reach South America via New York when a great volume of superfluous empty cars is continually moving south to the Gulf. The predominant loaded-car movement, as has already been pointed out, is northward. Every encouragement should be offered to fill these return southbound empties with exports, thereby encouraging the development of the new routes and seaports in this entire southeastern territory.

Obviously the movement of such export or import traffic depends upon a number of factors. One is the rate; another the facilities—through service, billing, tracing—the terminals, shops, etc.; and the third is the peculiar incentive which comes from a large investment by a particular carrier, which alone can be made productive by the development of new business. Several occurrences latterly betoken an appreciation by the railroads of the importance of this import and export business through the south. One was the equalization of export and import rates by the federal Railroad Administration through its orders of December 1 and 31, 1919. This granted an equality of opportunity from central freight association territory by either route, south or east, to the seaboard. No such equalization of rates for domestic carriage has however occurred. Evidently a perpetuation of this policy of equalizing export

and import rates will work for the development of the southern seaports. Another very recent occurrence is the announcement on behalf of northern and southern lines in January, 1921, that for the first time joint through rates would be granted which should be on a differential basis, substantially lower than the combination of local rates based on the Ohio River. All class and commodity rates for export are ultimately, it is understood, to be adjusted on this basis. This action, as an evidence of complete accord between the trunk line and southern carriers, meeting at the Ohio River gateways, appears to lessen the necessity for an extension of the southern lines, which now stop at the Ohio River gateways, into Chicago. But it must be conceded that the tug of the trunk lines for certain products, especially grain, is still greatly enhanced by the existence of water competition on the great lakes. As long as the superior trunk line facilities and the lake competition obtain the southern ports are bound to operate under a handicap. But the growing importance of the Panama Canal will doubtless lessen this in future. It is elsewhere recommended that the railroads from the Gulf, west of the Mississippi, should be extended into Chicago for reasons therein stated. But for the southeastern territory it is not believed that so doing would greatly conduce to the furtherance of this southern seaboard movement. That must depend largely upon other factors than those arising from consolidation.

The Southern Railway system as at present constituted has so admirably restrained itself against overexpansion, so thoroughly consolidated its hold upon the field within which it is best fitted to serve, and has so far contributed to the upbuilding of the south, incidentally increasing its own revenues thereby, that it will be little disturbed by this general plan for railway consolidation. In one respect only is it perhaps overextended, that is to say, in having entered into a field foreign to its primary interests. This was the acquisition, through purchase of $5,670,200 of the entire capital stock amounting to $6,016,800, of the control of the Mobile & Ohio Railroad. The relation geographically between the two properties is shown on map 10. The Mobile & Ohio stock was originally purchased in 1901, at a time when the community of interest principle was being actively pressed by powerful banking interests. It seems to have been thought that rate cutting in this territory might be stopped through its absorption by some powerful system. It could not be allocated to the Louisville & Nashville or to the Illinois Central on account of local opposition in the Mississippi Valley to the merger of competitive lines, and the only property which it did not seem to parallel directly was the Southern Railway. But it seems to have served its present owners but little. It has never yielded a return upon the investment. All the earnings have been absorbed in necessary improvements The Southern Railway, in pursuance of its policy of developing itself as to interior property, would apparently welcome its transfer and utilization through other connections. But until positive advantages may be discovered, not as yet revealed by investigation, there seems no course open other than to recommend its continuance as at present. Several suggestions have been made for disposition of the Mobile & Ohio, some of which are elsewhere discussed in this chapter. The most notable is the proposal to combine it with the Atlanta, Birmingham & Atlantic, connecting the two by trackage between Tuscaloosa and Birmingham (map 10). Then it is proposed to turn the two over to the Burlington-Northern Pacific system in order to give that western combination a line to a south Atlantic seaport, which would match the existing facilities enjoyed by the Union Pacific through its control of the Illinois Central and the Central of Georgia (map 12). This arrangement would afford the two great middle-western transcontinental systems through lines to Brunswick and Savannah, Ga., respectively. But this proposal is too far-reaching for acceptance without further consideration of the effect upon the southeastern situation as a whole.

The proposal to utilize the St. Louis-Louisville division of the Southern Railway for extension of the Chesapeake & Ohio to a western strategic base at St. Louis has been already considered (page 533, *supra*). Subsequent to the decision already reached, not to disturb existing arrangements, considerable further evidence upon the point has been assembled. The advantage to the Chesapeake & Ohio is apparent. This would constitute it a trunk line to both of the great western gateways. Judging by the map, no more direct connection to St. Louis could be had. It is almost an air line, and financially it seems to be of little value to the Southern system. Furthermore, it conforms to the policy of the Southern Railway, already exemplified in the recommended transfer of the Monon to the Baltimore & Ohio, of restricting itself to its own native territory south of the Ohio River. The proposition is not vigorously opposed by the present holders of the line, and a certain advantage to the Chesapeake & Ohio is recognized by its management. But there are substantial objections which, as stated, are believed to be sufficient to commend a continuation of the present relationship rather than a change.

Among the objections to transfer of the Louisville division from the Southern Railway is the character of the Chesapeake & Ohio line in Kentucky from Ashland on the Ohio River across by way of Lexington and entering Louisville from the east. This is a mountain line, with heavy grades and curvatures, little suited to the carriage of the heavy traffic of a coal railroad. If the Chesapeake & Ohio ever is extended to St. Louis, it should do so under conditions permitting of heavy trainloads. There are, moreover, several important traffic objections to the change. St. Louis shippers, through their organization, evidently prize highly the through car and billing arrangements by means of which the great mileage of the Southern Railway is directly reached. Much of the traffic on this division, except local business, is of origin or to destination not served at all by the Chesapeake & Ohio, but served by the Southern Railway or its connections. And it is alleged that the connection of St. Louis with the east rather than the south is already so thoroughly provided by the other existing trunk lines that there is no great need of this added route. Railway men themselves anticipate no more economical management of the line than under the present arrangement. The revenues of the Chesapeake & Ohio might in effect actually suffer, because of its inability to command an interchange with western roads as favorably as the Southern Railway. Possibly also this change might accentuate the movement of traffic into the south by the Virginia gateways, a roundabout route, rather than as at present, directly southeast. The interest of the Chesapeake & Ohio is naturally in the long haul, that is to say, in seaboard traffic or traffic southward by the Virginian gateways. Conceivably, as elsewhere discussed in connection with the Carolina, Clinchfield & Ohio, some traffic might be moved by the short cut over that line. But, as already mentioned, the heavy grades on the line between Louisville and Ashland would discourage this movement on any considerable scale. Finally, the Southern Railway, east of St. Louis, and the Missouri Pacific, west, have been very useful at times in relieving congestion at St. Louis when under blockade, by rerouting and making up solid trains each for the other. These trains were run on their own power between the two respective yards without entry at all upon the Terminal Railroad Association rails, except to cross the Mississippi River. This is a factor of moment, although possibly such diversion of southbound traffic to the remaining southern systems might still take place at St. Louis. But, on the whole, the evidence for change is not sufficiently conclusive; and no recommendation is ventured to that effect.

The composition of the important Cincinnati-New Orleans line within the Southern Railway system (map 10) is of peculiar interest as illustrating the present intricacy of corporate structure in the southern states. It also bears upon the problem of federal incorporation. At the same time it distinctly emphasizes the integral

relationship within a system between the thin long-haul lines and the gathering branches and feeders. For these reasons a brief review of the structure of the so-called Queen & Crescent route is pertinent. This is so succinctly stated by President Harrison of the Southern Railway that his communication is incorporated herewith:

The railroad from New Orleans to Meridian is owned by the New Orleans and Northeastern Railroad Company, a Louisiana corporation. The voting securities of that Company consist of 60,000 shares of common stock, of which the Southern Railway Company owns 59,693 shares, or 99.5 per cent of the total issue.

The railroad from Meridian to Chattanooga is owned by the Alabama Great Southern Railroad Company, an Alabama corporation. The voting securities of that company consist of 224,207 shares of stock, ordinary and preferred, of which the Southern Railway Company owns 126,611 shares, or 56.5 per cent of the total issue, this holding being pledged by Southern Railway Company under its First Consolidated Mortgage securing bonds due in 1994.

The railroad from Chattanooga to Cincinnati is owned by the City of Cincinnati, and is leased for a term to expire in 1965, to the Cincinnati, New Orleans & Texas Pacific Railway Company, an Ohio corporation. The voting securities of that company consist of 29,900 shares of common stock, of which 20,493 shares, or 68.5 per cent of the total issue are owned by Southwestern Construction Company, a New Jersey corporation. Southwestern Construction Company is merely a holding company, with an outstanding stock issue of one share for each share of CNO&TP stock owned by it. Of the 20,493 outstanding shares of Southwestern Construction Company, 12,986 shares, or 63.4 per cent of the total issue, are owned by Southern Railway Company and The Alabama Great Southern Railroad Company, the former owning 3,235 of such shares and the latter 9,751 shares.

For thirty years, or since 1890, these three roads have been parts of the system known since 1894 as the Southern. They have been linked up under the trade name of "Queen & Crescent" to form a through line from Cincinnati to New Orleans by an English syndicate headed by Baron Erlanger. This syndicate, failed to make a living, and, in 1890, sold out most of its holdings to the E. T. V. & G.

In their present relation these three roads are necessary to the complete service the Southern gives to the South in respect to traffic moving between the South and the Ohio River, and in that relation also they are the direct and only effective competitors with the L. & N. and I. C. The traffic they handle has origin or destination largely upon the lines of the Southern proper, east of the Alleghanies and they owe their recent success to their affiliation with the Southern. Financially, they have shown better results than the Southern proper because the Southern is carrying the burden of unprofitable branch lines and terminals, of which they are free. As these branch lines and terminals develop much of the traffic handled on the Cincinnati-New Orleans mainline, the companies owning that mainline get the benefit of what is a disability to the Southern proper. So true is this that if the Southern traffic should be withdrawn, e. g. from the C., N. O. & T. P., that line would again dry up as it did under the Erlangers unless some equally fertilizing relation was substituted. No other such relation is possible upon the present railroad map if competition is to continue. On the other hand, while they complement, these lines do not compete with any of the lines of the Southern proper.

The C., N. O. & T. P. is a traffic bridge through a mountainous country, producing little tonnage itself. It has been largely double tracked to enable it to handle the traffic the Southern produces and delivers to it. The same is true of the N. O. & N. E., which depends upon the independent investment of the Southern of $15,000,000 in the New Orleans Terminal. This statement is true also, but in less degree, of the A. G. S., which produces relatively more traffic itself.

It is probable that the greatest public interest in respect to these three railroads would be accomplished by a financial consolidation of them with the Southern proper—thus to butter more evenly the earnings and the burdens.

The possible interest of the Southern Railway in the Carolina, Clinchfield & Ohio is discussed in connection with that property (page 550) and the conclusion is reached that it properly belongs in that system although a sufficient general interest of all the roads alike has been therein demonstrated to warrant the reservation of certain running rights over the Carolina, Clinchfield & Ohio as a joint bridge for common entry to Carolina territory. The dependence of the Seaboard Air Line Railway, in other words, serving this territory, is so considerable that no exclusive policy by the Southern or any other single railroad appears permissible.

Certain recent changes in the status of the Southern Railway lines in southeastern Georgia call for slight modification of the railway map. The main line of the Georgia Southern & Florida from Macon to Jacksonville (map 10) has been so improved physically that the policy has been pursued by the Southern Railway of gradually diverting

all of its traffic to and from Jacksonville to this line. The policy also is pursued of making this the only entrance into Jacksonville, and the only connection with the large terminal investment in the St. John's River Terminal Company. This accession of interest in the Georgia Southern & Florida route is slowly tending toward probable abandonment of the existing traffic arrangement, indicated by the dotted line on the map, between Savannah and Jacksonville. The northern half above Jesup has already been relinquished, and it is proposed shortly to give up also the remaining trackage, which is over the Atlantic Coast Line rails from Jesup into Jacksonville.

The New Orleans Great Northern Railway operates an independent property, almost 300 miles in length, extending up to Jackson, Miss. By trackage it is admitted to New Orleans. Seemingly it links up with the Alabama & Vicksburg, which cuts across the state of Mississippi from Meridian west. To allocate these little properties to the Illinois Central would apparently put an end to north-and-south competition; and in the Illinois Central system there would be no connection afforded on the east. Similarly there is no physical connection with the Louisville & Nashville. Thus by a process of elimination, these little properties seem foreordained for inclusion in the Southern Railway; and it is therefore recommended that they be thus merged.

The Louisville & Nashville and Atlantic Coast Line railways, as united in 1902, under the conditions already set forth, constitute a second system throughout the south which admirably matches the Southern Railway. It differs from the Southern principally through its ramifications in Kentucky and Tennessee and through its network of lines in southern Georgia and Florida. It also, like the Southern Railway, is well fitted to stand largely unchanged under this plan for federal consolidation. At one point, however, it is markedly weak, due probably to the independent evolution of its two great wings, eastern and western. This defect is the lack of connection affording through routes between north and south across the whole of middle Georgia, between Atlanta and Waycross. The first point concerning its recreation is the bridging of this gap.

The Atlanta, Birmingham & Atlantic Railway, depicted on map 11, is the largest single property in the southern states which is still independent of the great systems. Its 638 miles of line were completed in 1910, extending from Brunswick, Ga., northwest to Atlanta and Birmingham, Ala. The physical plant has never been utilized to capacity, and it has always suffered from the fact of its independence and lack of interchange. Its history is highly significant, inasmuch as it explains why so considerable an enterprise was projected in a territory already so abundantly supplied with railroads in every direction. The railroad was an outgrowth of a terminal enterprise. Fine properties, well located strategically, were acquired in anticipation of the entry of the Seaboard and Louisville & Nashville into Atlanta. Subsequently, after the options had been taken, it appeared that these railroads had already made other plans. This left the promoters heavily obligated to northern investors for the purchase of admirable terminals for which there was no railroad. The only way to save the situation, therefore, was to construct a railroad to serve the terminal. Such was the beginning of the enterprise. The construction, however, once determined upon, was carried through most completely. The road is well built, modern in every respect, with excellent terminals, comparatively heavy rails (80 pounds for the most part), and with modern steel bridges, capable of carrying heavy loads. It is difficult to justify the enterprise originally; and its subsequent bankruptcy and reorganization were the inevitable consequences of the construction of so high-grade a line through a rather thin territory, gridironed in every direction with competing lines. A source of weakness also was the failure to extend the line to Jacksonville, although it was expected to undertake this construction from Waycross south just before the war.

Despite its history, a very considerable value attaches to the Atlanta, Birmingham & Atlantic Railway. This arises from its relation to the larger systems round about, particularly the Atlantic Coast Line and the Louisville & Nashville. A comparison of maps 10, 11, and 12 evidences an apparent division of the territory of Georgia, Alabama, and Florida, historically. The Southern Railway is very inadequately represented in southern Georgia, and does not extend south of Palatka. The Central of Georgia system (map 12) gridirons the field south of Atlanta with a thin line of communication across the pine barrens to Savannah. Map 11 shows that the activities of the Atlantic Coast Line are restricted mainly to Florida. And both this railroad and the Louisville & Nashville have refrained from any attempt to build lines through middle Georgia. This was, historically, the result of an agreement between President Spencer of the Southern Railway and the owners of the Central of Georgia.[1]

The second great freeze of 1896 pointed to a great future for citrus and vegetable culture south of Jacksonville; and it was agreed that the Atlantic Coast Line should be left free to develop that territory without competition from the Central of Georgia. But whatever plans the Southern Railway might have entertained for the Central of Georgia, ultimately were brought to an end by the action of the state authorities; and the road was finally, in 1909, as a result of official pressure sold to the Illinois Central Railroad as a noncompeting system.

In the meantime while these events were transpiring, the Louisville & Nashville-Atlantic Coast Line merger having occurred in 1902, the combined system was left with a considerable gap, as shown by map 11, across middle Georgia. There was no north-and-south line between Montgomery on the west and Savannah on the east; and this great system remains to-day dependent upon interchange with connecting lines for the maintenance of direct through service between Jacksonville, Atlanta, and Cincinnati. The detour to the west by Montgomery is all right for St. Louis and Chicago, but not for movement by a short line from Jacksonville to Atlanta. It is the location of the Atlanta, Birmingham & Atlantic as a direct line and bridge for the Louisville & Nashville-Atlantic Coast Line system across this gap, which constitutes the principal source of its value, viewed in a large way. The federal Railroad Administration recognized this fact. All of the fruits and vegetables from nine roads in Florida, destined for western points through the Atlanta gateway,

[1] The following letter from the president of the Louisville & Nashville Railroad forms part of an illuminating correspondence reproduced in Senate Interstate Commerce Committee Hearings on Extension of Tenure of Government Control of Railroads, 1919, pages 1364 et seq:

(Personal and Confidential)

On Pennsylvania Railroad train No. 21
February 22, 1896

Samuel Spencer, Esq.
President Southern Railway, 60 Broadway, New York City.
Dear Sir:

Pizarro. How shall we divide the new world?

Cortez. I will take North America and you can have all of South America, except ——, and neither of us will do anything to the Isthmus without notice to and cooperation of the other.

Pizarro. While Patagonia is not a very large or important part of the world, yet, perhaps, it is as much as I can tote. * * *

You have acquired the G. S. & F., the Atlanta and Florida, and the Central Railroad has been reorganized in accordance with your plans * * *. The L. & N. will not compete for the control of the M. & C. Rd. The L. & N. will not compete for the control of the B'ham, Sheffield & Tenn. River Rd., provided you will acquire it, should it become necessary to do so to prevent its extension into Birmingham, or will not permit it to get into a position where it may become a disturber. The L. & N. Rd. will not compete for the control of the Mobile & Birmingham with the expectation that you will acquire it. It is not clear what disposition ought to be made of the Georgia & Alabama Railroad * * *.

Yours truly

—— —— President

63 I. C. C.

were routed via Waycross over this line. The Louisville & Nashville has at times routed its "Dixie" and "Southland" flyers over this line, shortening the haul by about 42 miles as against other possible routes. All the evidence points to a natural relationship between the Atlanta, Birmingham & Atlantic and this great system. Probably the least valuable portion to the Louisville & Nashville, and in fact, although heavily constructed, probably the least needed portion of this road in general, is the stem to Birmingham. But there is certainly a through route thus made available from Kansas City over the Frisco line into Birmingham. This route is dotted on map 11. Not even construction by the Louisville & Nashville from West Point to Albany, to bridge the gap, would afford so good a line for all purposes, as is already available by the Atlanta, Birmingham & Atlantic. The conclusion therefore from all points of view seems well founded that merger of the Atlanta, Birmingham & Atlantic, with the exception of the branch to Thomasville which is serviceable to the Seaboard Air Line (page 547, *infra*), in the Louisville & Nashville-Atlantic Coast Line system is desirable in the public interest.

As to the terms on which such merger should take place, that is a matter which lies beyond the scope of this report; but it would appear as if, in view of the demonstrable interrelation of the several properties, an equitable basis for exchange of securities might be found. If thereafter the rich traffic of the Atlantic Coast Line in Florida were thus routed, the investment would appear to have a fair basis for support. The only other possible way of bridging this gap would appear to be by means of a joint use with the Southern Railway (map 10) of the line of the Georgia Southern & Florida from Macon to Tifton, together with trackage on the Southern Railway between Atlanta and Macon. But even this seems not to possess the advantage of directness which is afforded by the Atlanta, Birmingham & Atlantic line.

Another supplementation of the Louisville & Nashville-Atlantic Coast Line system, filling in the empty space in Georgia, is by means of the line, depicted on map 11, of the Georgia & Florida Railway. This little road from Augusta southwest to Madison, Fla., now in receivership, is one of the smaller properties which ought to be incorporated in the stronger systems. Its particular value is in connection with a through route between Florida and Cincinnati by the Carolina, Clinchfield & Ohio gateway. The intervening link (map 11) between Augusta and Spartanburg is afforded by the Charleston & Western Carolina Railroad, which is owned entirely by the Atlantic Coast Line. Traffic by this route, moving north over the Chesapeake & Ohio, as further described in connection with the Carolina, Clinchfield & Ohio (page 551, *infra*), would apparently find a direct routing parallel to and competitive with the other Louisville & Nashville northern outlet via Knoxville; and also with the Queen & Crescent-Southern Railway route between Atlanta and Cincinnati (map 10). Question is also raised as to the proper disposition corporatively of the Atlanta & West Point Railway. This is the property from Atlanta southwest (shown on map 11) to West Point on the Georgia-Alabama boundary. The further continuation of this line to Montgomery is known as the Western Railway of Alabama. A mixed ownership obtains as to these properties. The Atlanta & West Point, the Georgia half, is controlled by the Louisville & Nashville and the Atlantic Coast Line, although the Central of Georgia Railway owns 1885 of the 12,322 shares of capital stock. The Western of Alabama, the Alabama half, is owned half and half by the Louisville & Nashville and the Central of Georgia. But, as shown by map 12, the Central of Georgia operates a competitive roundabout line between Atlanta and Montgomery via Columbus, Ga. This investment therefore in both the Western of Alabama and the Atlanta & West Point by the Central of Georgia Railway it appears ought properly to be transferred to the system which operates the line. Possibly it is the one-third interest of the Atlanta & West Point in the Atlanta Terminal

Company which renders this crisscross investment desirable. But a readjustment of terminal investment ought properly, as it appears, to straighten out this tangle, with its inevitable division of responsibility.

The Norfolk Southern is one of the smaller independent railways in the southeast which must be incorporated in one of the larger systems, if the general consolidation plan is carried through to a logical conclusion. This little property, as map 11 shows runs through the middle of North Carolina with its base on Hampton Roads. But it runs principally at right angles to the stems of the three leading systems north and south, and its territory is sandy and sparsely populated. Only at Raleigh and Charlotte does it really touch any considerable population centers. Where shall it be placed? It can contribute no strength. Its gross operating revenue per mile of line was only $5,648 in 1917. Investment account to be sure is low—for 1917 being only $33,374 per mile of line—almost the lowest in the south. The net operating income yielded only 3.7 per cent on the investment. It is apparent therefore that some one of the larger systems should assume responsibility for this property, as in a measure its share of the "white man's burden." The Seaboard Air Line assuredly, although it operates in this neighborhood, could not take it on. Furthermore, it has a competing line (map 13) both between Raleigh and Charlotte and Norfolk. The Southern Railway likewise (map 10) is a direct competitor along the whole length of the Norfolk Southern. Thus, by a process of elimination, one is forced to the conclusion that the Louisville & Nashville-Atlantic Coast Line, must assume the burden, such as it is. Possibly some day, if the Louisville & Nashville (map 11) should ever build to a connection with the Clinchfield road, as subsequently described, all that would be needed would be trackage the rest of the way from Charlotte west over the Seaboard to a junction with the Clinchfield, to complete a new tie between the different parts of this great southeastern system. And, of course, the Atlantic Coast Line, not now either in Raleigh or Charlotte, might conceivably profit on the long haul which the Norfolk Southern now has to turn over to connections. At all events, whether profitable or not, this seems to be about the only disposition which can be made of this independent property.

The divorce of the Chicago, Indianapolis & Louisville Railway, otherwise known as the Monon, from the present joint control through stock ownership by the Southern Railway and the Louisville & Nashville, is elsewhere discussed in connection with the trunk line group. The reasons for its inclusion in the Baltimore & Ohio system are there set forth. Briefly to review them, it appears that there is no longer a substantial traffic interest by either of these southeastern systems in their considerable investment. The disadvantage of extension of a railway beyond its natural territory, most suitable for intensive development, is again demonstrated. The Southern Railway prefers to hold itself free to dispose of its interchange at the Ohio River gateways freely among all trunk line connections without prejudice. It thus avoids entanglements and jealousies which would be engendered by its continued participation in through carriage to Chicago. And as for the Louisville & Nashville, the Monon from Louisville has never been of any value; inasmuch as Evansville is its natural Ohio River gateway, and much of its Chicago business, especially the phenomenal development of coal traffic out of eastern Kentucky, moves by way of Cincinnati, at present over the New York Central lines. Both the great southeastern systems therefore are acquiescent in the matter of this relinquishment of their joint investment in the Monon Railway.

As to other minor additions to the Louisville & Nashville-Atlantic Coast Line system, there is only one further suggestion. This has to do with the Winston-Salem branch of the Norfolk & Western. In pursuance of the general policy to adhere as strictly as may be to the established boundary of southeastern territory, following the main line of the Norfolk & Western Railroad, this branch should be transferred to a

southern system.[2] As shown on map 11, it extends from Roanoke southward to a connection at Winston-Salem with the so-called Winston-Salem Southbound Railroad. This latter road is at present jointly owned by the Atlantic Coast Line and the Norfolk & Western. It is recommended that this entire line up to Roanoke be merged in the Atlantic Coast Line system.

Finally, a matter of general interest, corporatively, concerns the entire Louisville & Nashville-Atlantic Coast Line system. This is the tenuous connection by which the two operating halves of this great system are bound together. The Atlantic Coast Line Railroad, since its original purchase of the Louisville & Nashville in 1902 has continued its control by the ownership of a bare majority of the capital stock. In 1919 it held $36,720,000 of the outstanding shares of the Louisville & Nashville Railroad. This situation was forced upon the Atlantic Coast Line in 1902 by a threat of the bankers in control to dispose of the controlling block of the Louisville & Nashville stock to the Seaboard Air Line. The then business of the Plant lines in Florida, now incorporated in the Atlantic Coast Line Railway, was divided about half and half each side of the mountains to the north. The Louisville & Nashville in the hands of the Seaboard, a competitor, might close the western outlet to the Atlantic Coast Line. The only alternative was to take the stock and pay the price. The investment has turned out to be a fortunate one; but that does not warrant indefinitely a continuance of this tenuous connection. The temptation can not be resisted to recommend therefore, in so far as it falls within the scope of this consolidation plan, that a complete merger by exchange of securities shall supplant the existing arrangement.

The continued independence of the existing Seaboard Air Line Railway merits attentive consideration. Its financial condition does not permit it to support further additions which are not at least of equal contributing strength. Map 13 shows that at present the road is unduly spread out and that its various arms westward are entirely disconnected. These arms, on the other hand, extend somewhat entreatingly toward a connection with some western system, notably the Illinois Central. And a combination of the two properties, as already worked out in the Oldham plan, gives a general comprehensiveness to the combined group, quite analogous to the reach and scope of the other two great systems. There are substantial reasons commending such a merger. Especially would advantage follow in view of the possible inclusion of the Frisco line from Memphis to Birmingham in the Illinois Central. There would thus be set up, over the lines subsequently recommended in this plan for inclusion in the Seaboard, an inviting route between Florida and the west. Yet, assuredly, such a merger of the Seaboard and the Illinois Central would be a radical and forced alliance. The Central of Georgia being already controlled by the Illinois Central, the effect of adding the Seaboard would be to abolish competition entirely at Americus, Ga., Huntsville, Ala., and a number of other smaller places. The Seaboard and the Central of Georgia are to-day strong competitors at Savannah, at Albany, Columbus, Athens, and Atlanta in Georgia, and at Montgomery and Birmingham, Ala. The merger would abolish competition, and it would not follow established routes of commerce. For the Atlantic Coast Line is to-day the preferred connection with the Central of Georgia on traffic from the west; and the Atlantic Coast Line and the Southern Railway are preferred connections on eastern traffic. The Seaboard Air Line is not at present a preferred connection of either the Illinois Central or the Central of Georgia Railway. Nor would such a merger contribute to the distribution of coal, since both the Illinois Central in Alabama and Tennessee and the entire Seaboard system are lacking in coal development. For these and other reasons the alternative is elected of retaining the independence of the Seaboard Air Line as a fourth system in the southeast. This recommendation is made with some misgivings; but it is

[2] Cf. the policy laid down in the *Bluefield Shippers Asso.* v. *N. & W. Ry. Co.*, 22 I. C. C., 519.

apparently compelled as a compromise with the situation. Such being the case, the Seaboard system must be strengthened wherever that is possible without committing lines essential to the general situation to its slightly precarious charge.

And yet there are certain elements of strength in the Seaboard Air Line which, if it can be built up sufficiently to enable it to survive in competition, may render it ultimately an important factor in the development of the southeast. It has a highly diversified traffic. It enjoys a long haul on rapidly growing business in Florida. And the abstention of the Southern Railway from Florida development leaves the Seaboard with only one competitor, the Atlantic Coast Line, for this lucrative and rapidly growing business. Given a coal supply from the north by participation in the affairs of the Clinchfield property, and the Seaboard may well establish itself finally as a great railroad. But if its strength be dissipated in overextension without sufficient originating lines, this future may be conceivably be jeopardized. Such recommendations for addition, therefore, as are herein made are essentially conservative.

The Georgia Southern & Florida Railway operates about 400 miles of line in southern Georgia and northern Florida. It extends from Macon on the north to Jacksonville and Palatka, as shown on map 10 by the dotted line. It was constructed in the nineties, largely with reference to orange culture, but the second great freeze drove this business farther south, and as a local proposition the line seems somewhat to have languished. It is controlled at present by the Southern Railway through a majority stock ownership, together with $2,000,000 of bonds. It would accord apparently with the announced policy of the Southern to abstain from local development in Florida to withdraw from a part of this investment. The Southern Railway, as elsewhere described, is most profitably utilizing the main line of this railroad. But the southern branch from Valdosta, Ga., to Palatka (map 10) quite appropriately fits into the Florida network of lines in the Seaboard system. Negotiations were opened some years ago for this transfer, but the Seaboard at that time was unable to arrange the financing. A considerable flow of through traffic has been recently forwarded by the Seaboard over this line, thus indicating that it is a natural part of its system. The Seaboard has manifested a further interest in the entire Georgia Southern & Florida Railway (dotted on map 13). This would carry them up to Macon and incidentally would tie together the two dissociated western arms of the Seaboard system. Taken in connection with the Atlanta, Birmingham & Atlantic (also dotted on map 13), a through line up to Birmingham might be provided. Were the Seaboard financially strong enough also to take on the Memphis-Birmingham Frisco division, almost an air line from (Kansas City) Memphis to Florida could be set up. But, as elsewhere stated in connection with the Illinois Central and the Frisco, it is doubtful even whether as strong a system as the Illinois Central should be permitted to break up the long-standing interest of the Frisco in this route. The Seaboard may still enjoy the interchange of traffic with this route, but it seems inexpedient to risk overextension until its finances have become more substantially consolidated, as it is hoped with the present rate of growth they may in time become.

It is furthermore recommended that the Durham branch of the Norfolk & Western Railway (shown on map 13), extending from Lynchburg south, be merged in the Seaboard Air Line system. This is analogous to the disposition of the other Winston-Salem branch (page 545, *supra*). At Durham it connects with the Seaboard, the Norfolk Southern, and the Durham & Southern. This last (shown on map 13) is one of the so-called Duke lines, and interchanges almost exclusively with the Seaboard. The transfer of the Durham branch from the Norfolk & Western would conform to the general plan of strict delimitation of southern rate territory, and it would also effect a material saving of mileage on all traffic coming from the west either by the Norfolk & Western or the Chesapeake & Ohio Railway. The net result as to the Virginia gateways would be to give access for the Southern Railway to all of them except

Roanoke and Petersburg; to give the Atlantic Coast Line access to every Virginia gateway except Lynchburg, and to let the Seaboard into all of them except Roanoke. Coincidently all these southern systems would be afforded satisfactory interchange points with all three of the principal Chesapeake routes to the west. The Atlantic Coast Line perhaps would be slightly favored because the Roanoke gateway would afford a through route to the east by way of the Norfolk & Western to Hagerstown. But this advantage is a necessary feature of the situation.

The Seaboard Air Line would also profit from a connection by trackage or otherwise between Spartanburg and Columbia, S. C. Without this link, as map 13 shows, the southern half of the property would not be in position to benefit by any connection with the Clinchfield enterprise, soon to be discussed. This link would, however, assist substantially in the development of coal business toward the south and of long-haul business from Florida; possibly some day to Cincinnati, as elsewhere described.

The Illinois Central occupies a unique position among the carriers of the country. Traversing one of the most fertile regions on the earth, confronted by no physical obstacles of grade or alignment, and rigidly confining its activities to the cultivation of its native territory, it has prospered accordingly. In the rare instances where it has acquired control of other lines, the choice has been so well exercised as to contribute strength to the parent company. The net operating income in percentage of the investment in road and equipment for the typical year 1917 clearly reflects its relative prosperity and the general strength of all of its parts. For the Illinois Central Railroad this return for 1917 was 5.17 per cent. For the Central of Georgia Railway it was 4.62 per cent, and for the Yazoo & Mississippi Valley it was 6.05 per cent. It is evident that one has to do here with a system which is industriously pursuing its own best ends and contributing thereby to the upbuilding of the country. It is competent to stand alone and has an average return which approximates closely the average return of 5 per cent which it is the endeavor of this consolidation plan to make general for all of the great systems. Neither from an operating, traffic, or financial standpoint does there appear to be a necessity for disturbance of the existing situation. Such modification as is suggested is merely in detail. The only broad question, which has already been decided in the negative, is as to whether the superflous strength of this existing system should be used through merger to average up the Seaboard Air Line status.

The Illinois Central system at present, as shown by map 12, is something of a hybrid. It is a north-and-south trunk line; but between Chicago and Omaha it is also an east-and-west stem. It operates in the southeast, in trunk line territory, and in the western field. Obviously it can not be cut in halves at the Ohio River in order to conform to the policy adopted for the other southeastern roads. It must remain as a trunk line to the Gulf. Serious question is raised, however, as to its continuance under a consolidation plan, as practically a stem line in the western territory between Chicago and the Missouri River. It is urgently represented that this western stem should logically be amputated and merged in one of the other western transcontinental systems. The practical elimination of Omaha as an open trading center for traffic interchange tends to confirm this proposal. The already predominant interest of the Union Pacific Railroad in this property commends the suggestion that a transfer of this entire western division to the Union Pacific would scarcely disturb the existing relationships. It will be recalled that the Union Pacific control was originally acquired by Mr. Harriman with the expectation that it would afford him an independent entry into Chicago for his great transcontinental system. To be sure, it was never utilized exclusively for that purpose, because of the complications which developed at the proposal to change the rôle of the Union Pacific east of Council Bluffs to a competitor rather than a connection with its neighbors on the east. During 1917,

the Union Pacific delivered 13,375 carloads of freight at Council Bluffs to the Illinois Central, and received from it 5,692 cars. Comparison with other roads, as afforded by the general table on page 573 indicates that the traffic interchanged with this road was surpassed only by the North Western and the St. Paul. Obviously this western division is of very great importance. There is a heavy movement of lumber, coal, and grain. So important a channel of commerce is it, that the burden of proof assuredly rests upon the proposal to change.

Among the objections to dismemberment of the Illinois Central the historical considerations are of weight. The line into Sioux Falls was the first railroad west of Chicago to reach the Missouri River. During all the years since intervening, the Illinois Central has built itself into the traffic conditions in this region, and it is a serious matter to uproot the established relationships. Another historical consideration is disclosed by map 12. The main line traversing Illinois is not, as commonly supposed, the road into Chicago. That was subsequently built and was always known as the Chicago "branch." The "main line" authorized in the original charter ran from Centralia, Ill., due north through Freeport up to Madison, Wis. This "main line" is largely dependent for its through traffic upon tonnage received over the western division. For naturally none of the western lines into Chicago would consent to short-haul themselves on traffic destined to the Gulf. This "main line," to be sure, would still be largely utilized for coal destined to the northwest. But it would be substantially dried up by amputation of the western arm. Furthermore, if thus transferred, the inclusion of this line to Council Bluffs would practically duplicate the facilities already possessed by the different systems, as enlarged under this plan. Uniting the Chicago & North Western with the Union Pacific disposes of any further need of another line between Chicago and Council Bluffs (map 15). Even worse duplication would arise from incorporation of this line in the Burlington system (map 16); particularly as this division of the Illinois Central almost completely parallels the Chicago Great Western. It is true that the addition would let the Burlington into eastern South Dakota, and possibly some more detailed segregation of this western Illinois Central division might be worked out, assigning different parts as has already been done in various cases. But by and large it is recommended that no change take place in so far as the stem from Chicago to Council Bluffs is concerned.

The Memphis-Birmingham division of the St. Louis-San Francisco Railway is one of the great arteries of commerce in the south. The old Kansas City, Fort Scott & Memphis line, by these rails, handled a very lucrative business in the supply of foodstuffs to the southern states and the return carriage of coal and steel products to the western country. It is a serious matter to recommend any interference with a property which has so thoroughly established itself in the trade currents of any region. Yet this extension of a western road, east of the Mississippi, into the heart of the southeast, violates the general principle already laid down, of drawing rather strictly the boundaries of consolidation territory. Whatever disposition is made, however, must fully protect the route and assure its continued upkeep and development. The Birmingham division of the Frisco could be utilized, as elsewhere set forth, in several ways. The Seaboard system evidently covets it, to complete a through line to Jacksonville, but this claim has been rejected largely on financial grounds (page 546). The other disposition of it, and one which is recommended by the best authority among unprejudiced railway executives, is that it be assigned to the Illinois Central system. Consideration of map 12 demonstrates that for three reasons it should be thus placed. The Illinois Central is already dependent upon this Frisco line, as shown by map 12, from Jasper into Birmingham. Also, the inclusion of this division would take care of the Illinois Central stub at Aberdeen Junction. The Illinois Central, moreover, has the financial strength to support and develop the line. There is one objection, however, which, were the Seaboard system financially stronger, might

turn the scales. The Illinois Central has, in fact, another competitive route over its own lines up to St. Louis. And it would preserve competition more fully were these two competitive routes between the packing-house centres and the south to be kept independent of one another. But conformably to the best expert opinion, it seems that the Illinois Central on the whole could take better care of the line than anyone else, were it to be transferred.

As against the foregoing proposal, it should be borne in mind that high-grade fast through service from Kansas City to Birmingham and the southeast generally passes in large volume over this line. The return movement of company fuel for the Frisco system, and of a large volume of the products of the Birmingham district rolling mills—rails, angles, bars, bolts, spikes, and all other products manufactured from iron—is very heavy. The division is one of the best revenue-producing units, both gross and net, in the Frisco system. It is urged that the Illinois Central already has a good line from the north into Birmingham through Martin, Tenn., and really does not need the other inlet. The important point to consider is the effect upon the through movement of traffic, of breaking up this route. Of course it would have to break somewhere between Jacksonville or Savannah and Kansas City, in any event. But if the greater volume of it stops or originates in the Birmingham district, there would seem to be good ground for the contention that the through route from Kansas City to Birmingham should remain intact in the hands of a single management.

The Illinois Central has so far built the Yazoo & Mississippi Valley road (map 13) into its system that to recommend any transfer would be manifestly prejudicial to the parent system. A competing line might be set up, by transfer of this property to one of the Gulf systems across the river, for example, the St. Louis-San Francisco; and this proposal has been made as a possible plan. But, on the other hand, the Yazoo road, with its many branches and feeders, must be treated as an originating property, fitted for attachment to a strong through line; and the established relationship is therefore recommended for continuance. The only other addition to the Illinois Central system is the Tennessee Central, affording entrance into Nashville (map 13); and the Gulf & Ship Island, which more naturally attaches to this system than to any other.

The Carolina, Clinchfield & Ohio Railroad, although operating only 291 miles of line, is so situated strategically in its relation to the southeastern territory, and particularly to the coal supply, that its disposition under a national consolidation plan merits most careful consideration. It is at once a bridge line and also an almost indispensable fuel line for the south. As a bridge it traverses the rugged mountain region which divides the Ohio Valley above Cincinnati from the southeastern piedmont and seacoast belt of the Carolinas and Georgia. The northeast-southwest trend of the Allegheny range affords a number of gaps or openings for the lines which follow the general direction of the mountain ridges. The situation is best depicted on map 10. The Norfolk & Western, for example, finds its way naturally in southwestern Virginia through the gap at Roanoke down to a connection with the Southern Railway at Bristol, then on to Knoxville, Chattanooga, and New Orleans. But an impenetrable wall or ridge extends along almost the entire western boundary of Virginia, broken only by the Chespeake & Ohio passage at Covington, and the Norfolk & Western which, as above described, slips through the gap west of Roanoke. South of Roanoke the impassable barrier, lying south of the Norfolk & Western line as far as Bristol, again effectively shuts off all connection between north and south at right angles to the trend of the ridge. And toward the southwest again, north of Asheville, the long stretch of the Unaka Mountains extends down into northern Georgia. This Allegheny barrier, running the whole length of the western boundary of North Carolina (map 10 again), is penetrated into Tennessee by only two lines. One is the Southern Railway line

by Paint Rock, above Asheville. This is an important link in the great Southern Railway system. The Carolina, Clinchfield & Ohio is the other bridge line. Its location is shown on maps 10, 11, and 13 in relation to the other carriers. It is not only independent, but it cuts clear through both the Carolina-Tennessee ridge, known as the Iron Mountains and then goes on up to the northwest and penetrates again the parallel barrier between Virginia and Kentucky. In other words, it cuts clear through all the intervening ridges, occupying perhaps the only available location for a direct through line between the upper Ohio Valley and the Carolinas. Not only does it entirely penetrate this otherwise almost impassable country, but it does so with a high standard of construction and easy grades which fit it for the carriage of an immense tonnage. Consequently, the line, because of its strategic location, is essential in many ways to the successful operation of a number of adjoining systems.

The second dominant feature of the Clinchfield property is its relation to the coal supply of the southern states. The coal measures of the territory of eastern Kentucky, western Virginia, and northeastern Tennessee constitute the supply primarily for the entire southeastern territory. This is true not only of the company fuel needed for railroad purposes, but also for the fuel supply of the great industrial development in recent years of the Carolinas and Georgia. The Birmingham district lies so much farther west that it need not be considered except as competitive in parts of Georgia. The Central of Georgia Railroad is said to have only one coal operation on its lines. The Illinois Central has none in either Alabama or Tennessee. There are no coal measures whatsoever in the territory of the Seaboard Air Line, except through its entrance at long range into Birmingham. But the recent participation of the Louisville & Nashville and of the Southern Railway in the development of these Kentucky, Virginia, and Tennessee coal fields is of the utmost importance. The interest of the Louisville & Nashville in this region has to do largely with shipments toward the northwest. The location of these lines, shown on map 11, which tap the so-called Harlan and Hazard fields in southeastern Kentucky, demonstrates that their serviceableness lies in the direction of carriage away from rather than into the south. Certainly the Louisville & Nashville is dependent upon a very roundabout route via Atlanta to a contact with the Atlantic Coast Line at Augusta. The demand, in fact, for the Louisville & Nashville coal from the direction of the Ohio Valley has increased so phenomenally as to tax the facilities of that railroad to the utmost. On the other hand, the interest of the Southern Railway in the development of the coal fields necessary to supply the phenomenal growth of manufactures throughout the piedmont belt is manifested on map 10 by the lines which extend to the boundary between Virginia and Kentucky and which penetrate Kentucky just west of the extreme western tip of Virginia. But this company, unlike the Louisville & Nashville, is primarily concerned in the carriage of this coal to the southern states, the gateway being by way of Paint Rock, just north of Asheville. As the map discloses, the Paint Rock gateway also affords the only connection over its own rails between the eastern and western wings of the Southern Railway system, north of Atlanta. There is only one other railroad operating in this region. This is the Seaboard Air Line. Having no coal development whatsoever on its own lines, it in turn is rendered entirely dependent upon its neighbors for its own fuel supply as well as the need of its industries.

The foregoing general description may now serve to elucidate the important rôle assumed by the recently constructed Carolina, Clinchfield & Ohio. Both as a bridge, affording connection to the railways north and south of the barrier, and also in its relation to the coal supply of many of its neighbors, it is almost indispensable. Its interest to the Southern Railway, shown on map 10, lies in the fact that it affords a much more direct carriage from much of the coal territory opened up by this railroad than is possible by the roundabout shipment southbound via Paint Rock and Asheville

into the Carolinas. And, in the opposite direction, northbound, the Southern might conceivably find it very advantageous to have another through route opened up from the Carolinas into the Ohio Valley other than away around through Knoxville and Harriman Junction up to Cincinnati. The Clinchfield might thus serve more effectively to bind the widely separated halves of the Southern system together. The Clinchfield moreover is the short route between the Carolinas, and north of the Ohio River *east* of a line from Portsmouth, Ohio, through Columbus to Detroit; whereas Paint Rock, for miscellaneous traffic, is the short line to points *west* of the zone thus defined. But this miscellaneous traffic is a negligible part of the whole, so that incorporation of the Clinchfield in the Southern system would by no means put an end to competition, as called for under the transportation act.

As for relationship to the Louisville & Nashville Railroad, the Clinchfield does not yet touch this property; but, according to map 11, its eastern Kentucky lines and also one in Virginia come close to a contact with the Clinchfield. This, if made, might possibly afford a valuable outlet for Louisville & Nashville coal or traffic into the Carolinas. And such a connection has been already projected by means of a tunnel through the divide. This is bound to come in due season. But until that time the interest of the Louisville & Nashville may be regarded as relatively remote, although certainly prospective. If once effected, consideration of map 11 shows that a new bond would also be afforded between the two great halves of the Louisville & Nashville-Atlantic Coast Line system. At present they meet only at Augusta. Were the Hazard and Harlan coals to be made available for fuel supply to the Atlantic Coast Line system in the Carolinas, great advantages to the entire system might accrue. But it is to the Seaboard Air Line, smallest and weakest of the southern systems, that the Clinchfield road is most nearly indispensable. As already set forth, the Seaboard has no independent coal supply. The Clinchfield, if incorporated therein, would put it into the heart of the great fuel reserves of the south.

The relationship of the Clinchfield as a bridge in long-haul through-route development to these several southern systems must also be comprehended. On the north its connection is direct with Cincinnati over the Chesapeake & Ohio, as shown by dotted lines on maps 10, 11, and 13. Unfortunately, in the past this road has apparently given slight consideration to the possibilities of through carriage. This is possibly due to the major interest of the Chesapeake & Ohio in the Virginia gateways, which afford it, of course, a much longer haul to and from the west. But there can be little question that the national interest demands that greater attention be given to the provision of this new through route between the west and the Carolinas. Toward the south a through route utilizing the Clinchfield bridge, judging by maps 10, 11, and 13, is most naturally constituted either over the Atlantic Coast Line from Spartanburg (map 11) or by way of the Southern Railway via Columbia, S. C., thence to Charleston and Savannah (map 10). The little Georgia & Florida Railway (map 11), recommended for inclusion in the Louisville & Nashville-Atlantic Coast Line system, contends that it is naturally serviceable in the constitution of such a through route down into Florida. The Seaboard in this connection (map 13) is relatively weak. Its lines are so located that it could make at present but very indirect use of the Clinchfield road as a great north-and-south bridge. Until it connects Spartanburg and Columbia, S. C., by trackage or over its own rails, it is ill-suited to perform this necessary function.

Certain details of the history of the Clinchfield in its relation to its neighbors are pertinent. The road apparently was projected by the same people—the Blair interests—who then controlled the Seaboard Air Line. The Cumberland corporation, dissolved in 1918, was originally a holding company which included certain Clinchfield coal properties, parts of the Clinchfield as successively built, and a large block of Seaboard Air Line stock. The coal properties were first sold, and then the Seaboard

holdings, leaving only the Clinchfield stock at the time of dissolution. The Seaboard is said to have had a charter itself to build upon this location; and it is alleged that the Clinchfield was built specifically to serve that property. Certainly the same people were heavily interested in both companies, and on behalf of the Seaboard Air Line it seems to have been expected that ultimately the Clinchfield would become part of the Seaboard system. A lease of the Clinchfield to the Seaboard was in fact almost consummated at the time of the Hawley administration of the Chesapeake & Ohio. This latter road, especially its traffic people, have also kept a watchful eye upon its development and are said in fact to have "almost flirted" with it some years ago. But, unfortunately, despite the paramount interest of the Seaboard Air Line, it seems not to have been fully alive to the possibilities of the Clinchfield road for independent successful operation. It is even charged that unwillingness to cooperate with the Clinchfield and the general attitude respecting a lease indicate an anticipation that it might be subsequently acquired more cheaply after its downfall financially. At all events, a sharp division of policy is apparent in the Clinchfield management. Certain members have been consistently favorable to the Seaboard affiliation, but certain others have resented some aspects of interchange and policy of the Seaboard people, and in the meantime the record shows that the Southern Railway has assiduously cultivated the Clinchfield. It is, indeed, alleged to have been as friendly as the Seaboard was the reverse. At all events. the interchange of traffic with the Southern Railway has most rapidly developed in recent years, and this relationship was strengthened by the federal Railroad Administration, which allocated the Clinchfield to the Southern system for operation. This was done particularly in order to facilitate direct coal shipments rather than by the roundabout route through Paint Rock, already described. The friendly relation with the Southern system has, in fact, crystallized into a profitable traffic agreement which is alleged to be more favorable than is afforded by any other railroad thereabout.

Analysis of the traffic interchange between the Clinchfield and the three principal systems operating in the Carolinas confirms the impression as to the great and increasing preponderance of business with the Southern Railway. The bulk of the total Clinchfield traffic, about 70 per cent, is coal, most of which is distributed in North Carolina, Georgia, and Florida and the Spartanburg district of South Carolina, together with a growing movement of fuel to Charleston for export. Of the coal deliveries by the Clinchfield to all its connections, the proportion going to the Southern Railway increased from 51 per cent in 1917 to 71 per cent in 1920. The coal deliveries, both to the Atlantic Coast Line and the Seaboard, during the corresponding period appreciably diminished. The Atlantic Coast Line received 29 per cent of the coal in 1917 and only 20 per cent three years later. And the Seaboard Air Line, which received only 14 per cent in 1917, shrunk to 6 per cent in 1920. As to receipts of miscellaneous freight, the proportions remain substantially unchanged during this period, and the deliveries of miscellaneous freight remain distributed among the three principal companies about constant. The Southern Railway not only received almost three-quarters of the Clinchfield coal delivered to connections in 1920; it also turned over to the Clinchfield in exchange a substantial amount of its Virginia coal, 25,656 cars in 1920. In brief, the Clinchfield interchange with the Southern Railway greatly exceeds that with all other lines combined. This is partly the result of the natural geographical relationship above described; it also followed upon the arrangement under federal control, since embodied in the traffic agreement above mentioned, under which the Southern Railway most advantageously turns over the greater part of its coal southbound because of the numerous grades and heavy curvature on the Southern Railway route. This diversion also relieves the Paint Rock route, enabling it to handle the heavy miscellaneous freight traffic as well as coal entering from Tennessee and Kentucky. The arrangement at once yields the Clinchfield a profit and

relieves the Southern Railway of undue operating expense and of the necessity of rebuilding its own difficult coal lines.

Financially, judging by the returns for the typical year 1917, the Carolina, Clinchfield & Ohio has a large railway operating revenue per mile of line, $13,411, which yielded a net operating income per mile of line in 1917 of $5,073. This exceeds the net operating income by far for all the other southern roads except the Alabama Great Southern, which of course is also a main stem. Even the Illinois Central, as shown by the comparative returns on page 538, had a net operating income per mile of line in 1917 of only $3,417. But the handicap of the Clinchfield is the enormous capital account, $189,627 per mile of line. This is over three times the corresponding figure for the Louisville & Nashville, and practically five times the investment account of the Atlantic Coast Line. The Southern Railway has a high investment account, but for the Clinchfield it is considerably more than twice as great. This heavy investment account, due partly to the difficult and expensive construction, partly to the thoroughness of the work, reduces the percentage of net operating income to investment to the lowest figure for any of the six leading southeastern railways (page 538). Either reorganization with a reduction of the capital account, or an extended support through a policy of free interchange of traffic from its neighbors, is evidently necessary to bring this property up to a parity with the general standard for the region. It is in part because of this necessity of support and interchange in order to realize the magnificent possibilities to which the road is entitled that certain recommendations for joint participation in its affairs are made. It would not be made, otherwise, for it is believed that an examination of the operating accounts of most jointly controlled properties will show a lack of the economy and efficiency which obtains under concentrated responsibility.

In conclusion, it is clear that while originally the Seaboard stood closest to the Clinchfield enterprise, that the rôle of next friend has been most successfully assumed by the Southern system. The Seaboard, to be sure, has no other coal, but its lines traverse a distinctly nonindustrial district, so that the major part of its reliance is for company fuel. And most of the coal now taken by the Atlantic Coast Line is likewise for its own fuel. The Southern Railway, traversing the great industrial piedmont belt, has assuredly built itself into the enterprise. For this reason it is recommended that the Clinchfield be merged with the Southern Railway. But, nevertheless, the interest of the other railways above outlined in this important enterprise should be protected. The Clinchfield can hardly be regarded as purely local in character; yet the proposal to vest its control in a joint holding by the Coast Line, the Seaboard, and the Southern is rejected on the ground that it does not conduce to upkeep and efficient operation to the same degree as an undivided proprietary relationship. To make the Southern Railway distinctly responsible for the property and then to invite such trackage arrangements as shall protect the reasonable interest of neighboring railroads, commends itself as the wisest plan under all the circumstances. Whether or not the high capital account is excessive will depend upon the results of federal valuation, and the terms under which it might be taken over must of necessity be the result of a trade.

The Richmond-Washington Company, incorporated in New Jersey in 1901, owns about two-thirds of the voting common stock of the Richmond, Fredericksburg & Potomac Railway and all of the stock of the Washington Southern. It thus controls the Union Railway line between Washington and Richmond, Va. This again is a bridge used by the six railways entering from the south. These six roads are the Pennsylvania, the Atlantic Coast Line, the Baltimore & Ohio, the Southern, the Seaboard, and the Chesapeake & Ohio. Each of these six railways owns one-sixth of the capital stock of the Richmond-Washington Company. Our consolidation plan proposes no disturbance to this arrangement. The suggestion as to a detour from the

west around Washington (page 501) is intended to be worked out in connection with this existing scheme for joint operation of the bridge line to Richmond. But otherwise conditions may well be allowed to go on as they stand at present.

The geographical location of the Florida East Coast Railway is depicted on maps 10, 11, and 13. It is plotted in its relation to all these southeastern railways because of the fact that it is a bridge line, operating in a territory which assuredly will not support, at least for many years to come, another competing line. The entire country is dependent upon it for rail connection with Cuba, the operation of car ferries to Havana having been initiated in 1915. Such properties, lying on the confines of the United States, are entirely analogous to the New England railroads or those which occupy the Michigan peninsula. For all such roads, in so far as they perform a universal service either as terminals or as bridges to something beyond, the policy which has thus far been pursued in these other cases is again recommended for the Florida East Coast Railway. It would be a manifest injustice and a hardship to other railroads to tie this property up to any single system. Fortunately the financial status based upon the returns for the typical year 1917 is so near normal that the road may be trusted to pursue its own course. It neither has strength to contribute to others, nor does it need to draw upon its neighbors for support. The percentage of net operating income to investment in road and equipment for 1917 was 4.74. This, for a rapidly growing property, is about as near as one could hope to find to the standard of 5 per cent for 1917, elected as a standard for the country as a whole. It is recommended, therefore, that the Florida East Coast Railway remain independent, or else that some plan be evolved which shall guarantee by joint control equal and impartial treatment for the Southern Railway, the Louisville & Nashville-Atlantic Coast Line system, and the Seaboard Air Line.

The statistical summary herewith is intended to show the probable results upon net operating income in proportion to investment of the mergers herewith recommended. The calendar year 1917 is, as usual, chosen as typical. Briefly stated, the results are as follows:

System.	Percentage relation; net operating income to investment in road equipment.	Road and equipment investment per mile of line.
Southern Railway	4.31	$75,392
Louisville & Nashville-Atlantic Coast Line	5.34	48,634
Illinois Central	4.83	58,005
Seaboard Air Line	3.45	54,515
Florida East Coast	4.74	67,236

Thus it appears that the earning power of these systems while by no means equal so far as one can predict by such data, is more nearly equal than in the case of the constituent roads, each taken separately. As was expected, the percentage of net operating income to investment is well below par for the Seaboard at 3.45, but, on the other hand, the investment account for the Seaboard stands at $54,515, a figure approximating that for the Illinois Central and substantially higher than for the Louisville & Nashville-Atlantic Coast Line system. The results of federal valuation can alone be depended on to show whether this investment account of the Seaboard is excessive. And if indeed it be so, then the percentage of net operating income thereon will be automatically increased. Such a check on these results in terms of valuation rather than capital account is, of course, necessary as a basis for any final dependable conclusions.

CHAPTER V.—THE WESTERN TRANSCONTINENTAL REGION.

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The grand strategy for transcontinental traffic in western territory necessarily depends upon the supply of available through routes connecting either Chicago or St. Louis with the Pacific coast. And the number of passes through the Rocky Mountain barrier, either now traversed or remaining for future construction, must in turn be ultimately decisive in fixing the number of these competitive routes. The gateways, therefore, are the starting points of analysis. The location of the watershed, or rather of the most difficult Rocky Mountain territory, is indicated roughly on map 14 by a dotted line. This runs from the neighborhood of Spokane, Wash., straight toward Pueblo, Colo., but turns southwesterly before reaching that point and passes off toward Mexico across Arizona. The gateways through this barrier at present in use are limited to seven; and the stems of the seven shorter transcontinental routes, stripped of all branches and feeders which serve these gateways, are likewise shown upon map 14. The number of these gateways is thus strictly limited. But that is not all. These transmountain routes evidently, by the map, lie in three groups—northern, middle, and southern, respectively. In the northern group there are three lines: The Great Northern, the Northern Pacific, and the Chicago, Milwaukee & St. Paul. Then proceeding southward there is an unbroken barrier across Idaho and Wyoming at present not penetrated by rail. The middle group of gateways is located in Wyoming and Colorado. There is the Union Pacific at Cheyenne, north of Denver, and south of Denver, penetrating the mountains behind Pueblo, is the Denver & Rio

Grande. Still following southward along the Rocky Mountains there is a wide desert strip of territory until one reaches the southern gateways across Arizona and New Mexico. These states are traversed by the Santa Fe and the Southern Pacific lines. This completes the present array of possible transcontinental stems. The most probable construction in the future which will tie in the Pacific coast with cismontane territory is the provision of some through route passing directly by Denver, for at present the existing gateways lie about equidistant north and south of that city. And then some day a way will doubtless be found by which the Burlington may penetrate the great mountain barrier.

The western transcontinental problem thus resolves itself into such an arrangement of these seven existent stems as shall best preserve a well-balanced competition within each of the three territorial groups above described, and which, again, in an even broader way, shall promote a normal rivalry as between group and group, covering the entire transcontinental field from Canada to Mexico. It thus appears that there are two distinct phases of the matter in hand. One obtains locally within each of the three subdistricts taken by itself—southern California or Washington-Oregon, for example. The other phase is completely national, as comprehensive in scope as the entire field of the United States west of the Mississippi. Of these, the latter, because of its comprehensiveness, merits first consideration. After its analysis, the more restricted phase, group by group, will be taken up, and then in conclusion the individual systems within each subdistrict may be treated in detail. Such is the general plan of campaign to be pursued. And in and through it all, furthermore, to conform to the statute, there must be as little disturbance as possible of existing corporate relationships and of the present currents of traffic.

The situation in western territory is greatly complicated by a general circumstance again well illustrated by map 14. The population, proceeding westward, becomes progressively less dense as one approaches the Rocky Mountains and the number of east-and-west lines with through connections to the coast also lessens. The entire railway net, comprising branches and feeders, necessarily becomes more open west of middle Kansas, Nebraska, and the Dakotas. These east-and-west plain lines naturally end at important centers like Omaha and Denver. And, to a considerable degree, the situation at St. Paul-Minneapolis is the same. More through lines, in short, enter each of these cities from the east than there are available through lines leaving them toward the west. The neck of the bottle, in other words, becomes progressively narrower. This circumstance greatly complicates the strategic analysis, for it forces a choice as to stem connections among a much greater number of available roads toward the east than the seven possible gateways which penetrate the Rocky Mountains. Many are called, but few can possibly be chosen. Not only must the choice be made, but provision must follow for those lines which are rejected as through routes. Stated in another way, the lines within this territory are distinguishable into two groups, according to their character. One, out on the open plains, is constituted mainly of the so-called granger roads which originally stopped short of the base of the mountains. These roads ramify widely and have a large proportion of local business. The other type consists of the bridge lines. They traverse the inhospitable deserts or mountain territory, relying upon through traffic moved in solid trainloads. There is relatively little local business. Such are the Central Pacific and the Western Pacific, entirely separate entities. At times corporatively their fate is merged with other roads, such as the Southern Pacific. And some of the lines are resolvable into two elements, only the western of which is properly a bridge line. This is the case with the St. Paul, the Great Northern, and the Northern Pacific. But whether actually separated as distinct corporations or not, the difference between the ordinary railroad and the mere bridge line is basic and determinant.

The practical effect of the foregoing condition is well exemplified in detail by the Colorado situation. Denver, the leading commercial center in the middle Rocky Mountain territory, is entered from the east, as map 14 shows, by six railroads; whereas there are only two lines, the Union Pacific and the Denver & Rio Grande, which go out due west. These six railroads from the east are indicated by dotted lines on the map. They are, from north to south, the Union Pacific, the Burlington, the Rock Island, the Kansas Pacific (Union Pacific system), together with the Missouri Pacific and the Santa Fe lines into Denver via Pueblo. Obviously only two of these six lines entering from the east can be treated as trunk lines, to be linked up with the two roads which penetrate the mountain barrier westward. To be sure one might attempt to provide each westward stem with two trunk lines to Chicago and St. Louis respectively. But even then, only four of the six available lines across the plains would be utilized. It is evident that some stub ends must be left in any event. The point, however, at this moment is to indicate the nature and the necessity of the choice with which one is confronted. Not yet need the choice actually be made. That step will be taken in due course. A precisely similar complication presents itself at the twin cities, as it will appear, where six trunk lines enter from Chicago and only three (with possibly one more through Canada) go out toward the west. The number of roads entering Omaha and leaving it east and west respectively is even more ill-balanced. Kansas City is more fortunately situated, owing to the number of stems southward to the Gulf of Mexico. But the roads thereabouts are to be considered in a Gulf group by themselves. They need not complicate the transcontinental situation.

A general principle must be settled at this point, before laying a shoulder to the main propositions. Why should all these transcontinental systems be based upon Chicago in fact, rather than upon the twin cities and the Omaha gateways respectively? It has been urgently represented, especially by the Union Pacific, that the western transcontinental situation does not demand the severely logical projection of all these systems into a common base at Chicago. This point is discussed more fully in another connection, but the final judgment rests upon the policy laid down by the majority of these roads themselves. The scope and reach of the most comprehensive ones prescribe in fact the range to be given to their competitors; and inasmuch as the Santa Fe, the St. Paul, and the Hill lines have all elected to conduct transcontinental business competitively under unified ownership clear through from the Pacific coast into Chicago, it seems imperative that the same scope should be given to all the rest. The price paid is avowedly a heavy one; for the open market for choice of routing at the Missouri River gateways and at the twin cities is bound to be restricted by the provision of these corporatively unified through routes. But the advantage on the whole seems to compensate for the loss in flexibility which must necessarily result. The fact that the Gulf-Southwestern lines have also been projected into Chicago under this plan is also by no means immaterial.

Certain peculiarities of transcontinental traffic, particularly from California, deserve mention on account of their bearing upon problems of operation. One of these is the large proportion of tonnage transported in refrigerator cars or other forms of special equipment. Fruit, packing-house products, and fresh vegetables all require such special equipment. Many of them require fast movement on account of the perishable nature of the goods. The total freight earnings of the Santa Fe for 1917 amounted to $110,000,000. These earnings were distributed among staple commodities as follows:

Fruit and vegetables	$10,000,000
Grain	8,000,000
Live stock	6,000,000
Coal and coke	7,000,000
Crude and refined oil	10,000,000
Lumber	7,000,000
Total	48,000,000

A corresponding exhibit for the Southern Pacific lines west of El Paso and Ogden, covering movement in carloads to points east, during the calendar year 1917, is also reproduced.

Commodity.	Tonnage.	Proportion.
	Tons.	*Per cent.*
Fresh fruit and vegetables	870,644	18.8
Smelter products	523,407	11.3
Other agricultural products	1,063,053	22.9
Animals and fish, and products	147,009	3.2
Forest products	573,705	12.4
Canned goods	298,613	6.4
Sugar	264,074	5.7
Other manufactured products	554,574	12
Other mineral products	310,063	6.7
Miscellaneous products	27,320	.6
Total	4,632,462	100

This second exhibit, it will be noted, is for tonnage and not earnings. But the agreement is significant. For both roads, approximately one-fifth of the staple traffic named, as it appears, is fresh fruit and vegetables. For the Santa Fe another fifth is constituted for the movement of oil, also special-equipment business.

Traffic analysis of the Union Pacific interchange at Council Bluffs still further emphasizes the importance of the transcontinental tonnage moved in special equipment. The number of carloads for 1920, of such products eastbound was as follows:

Eggs and poultry	218 carloads.
Citrus fruits	9,176 carloads.
Apples and other fresh fruits	32,909 carloads.
Vegetables	4,210 carloads.

The total of this perishable traffic, 46,513 carloads, compares with the other heavy movements eastbound of—

Canned goods	5,098 carloads.
Coal	2,472 carloads.
Lumber, etc	35,891 carloads.
Sugar, etc	4,148 carloads.
Wool, etc	1,625 carloads.

The relative importance of this special-equipment business is as striking therefore on the Union Pacific as on either of the other two roads above mentioned. This is all carload traffic, and much of it moves in solid trainloads, especially fruit and vegetables, more so at Ogden than at Council Bluffs. Asiatic goods, all imported, moved through Council Bluffs eastbound in 1920 to the amount of 517 carloads. Of export goods, practically all cotton, 1,917 carloads moved westbound in 1920. Solid trainloads westbound are mainly confined to automobiles and steel products. Of the former 14,463 and of the latter 5,332 carloads were handled westbound. Summarily, therefore, the evidence still further points to the importance of the carload traffic and particularly of the carload traffic handled by special equipment. Based upon the movement of perishable products, the operating relationship of the Union Pacific is certainly closer to the southern group of roads than to any of the carriers which lie farther north.

The Union Pacific Railroad is the key log to the transcontinental jam—it is the clue to the plot. It is at once the oldest and the shortest, logically the most perfect and financially the strongest, among all of the transcontinental stems. Not only does it antedate by many years the opening of any other Pacific coast rail route, because, naturally enough, of its directness and physical inevitability, but it was also the first to receive the official sanction and financial support of the federal gov-

ernment. Inspection of map 14 throws into strong relief the superiority, geographically, of this route over any of the others which penetrate to the coast, either by the northern or the southern gateways. And until the completion of the Western Pacific line from Ogden (Salt Lake City) westward, the Union Pacific was a veritable monopoly, the only through route directly to San Francisco. Never, indeed, would it have been put through, in face of the physical obstacles to be overcome, without the full appreciation of its significance as a key line, a bridge, which, despite federal support, actually broke down until taken in hand by a master mind in the late nineties. The present situation is unique. The Union Pacific has attained an inordinate strength and a dominant position, as practically the only first-class direct through route. And yet there is available for competition with it another new bridge line, the Western Pacific, which, while physically prepared to function, has broken down because of the lack of interchange, connection, and support at both ends. The first essential choice to be made therefore is of such a merger for the Western Pacific—and with it also, of course, the Denver & Rio Grande—as shall enable them to be matched against this dominant key line, the Union Pacific Railroad. And as will shortly appear, by the Union Pacific is meant also the through route comprising both the Union Pacific and the Central Pacific as well (page 565 *infra*). The new competition to be provided must face not only a perfection of operating facilities but a strength of financial resources which is almost without parallel. The financial status of the Union Pacific in 1917 is of an investment account per mile of line of $76,153 and a net operating income of $4,805 per mile of line. The result thereof is a return of 6.42 per cent upon what, by comparison with other roads and in the light of the physical circumstances, does not appear to be an inordinate valuation of the property. Yet this is not the whole story. Behind the Union Pacific stands its imposing array of investments, yielding an income from interest and dividends alone in 1920 equal to 80 per cent of its own fixed charges. These investments are in part the result of thrift and masterly management and in part the result of bold and successful speculation. Regardless of source, however, the fact remains that to successfully rival the Union Pacific will call for an array of operating and financial resources which it will be extremely troublesome to find.

The difficulty of matching the Union Pacific by a rival direct route is not confined alone to the carriage of the burden of the Western Pacific. This bridge line is pivotal to the situation. It is manifestly a precarious bridge, with absolutely no friendly footing at the western bridgehead. But that is not all. The Denver & Rio Grande is almost equally a bridge line, essential to the constitution of any direct through route by way of Salt Lake City. It also is in a pathetic and parlous state. Even before the present general breakdown, it had gone to pieces and is now undergoing reorganization. It has within itself a great network of branch and feeder lines, many of them narrow gauge, with very light traffic. But their continued operation is essential to the population of a great state. Where shall strength be found adequate to carry this appalling array of liabilities, able also through its interchange and support to transform these liabilities into a national asset for the United States? And where, also, may sufficient credit be found to carry through the enterprise of providing the Denver & Rio Grande with a low-grade gateway through the Rocky Mountains, the last essential for an effective competitive direct through route to San Francisco?

There are but two railroads in western territory which by reason of their geographical location, their traffic interchange, and their inherent financial strength are adequate to undertake the effective utilization and development of the Western Pacific-Denver & Rio Grande bridge. The first of these is the Chicago, Burlington & Quincy; the other is the Santa Fe. As for the former, it is easily first among the granger properties. Map 16 shows its geographical location. A comparison of its layout

with that of its neighbors discloses, particularly, its close-knit compactness, entirely within the richest territory in the heart of the United States. Unlike the Rock Island, it does not sprawl all over the map. Unlike the Chicago & North Western, it does not divide its energies between extension due west from Chicago and wide ramification from Chicago north. Over a series of parallel lines closely bound in with one another, the Burlington runs directly west to the base of the mountains both at Denver and at Cheyenne. It is self-sufficient, having amply strengthened itself by the provision of coal lines the entire length of Illinois. These feeders afford an ample coal supply for company use as well as for fuel for the western country. Furthermore, the resources of the Burlington have been carefully husbanded through the continued reinvestment of surplus earnings above a reasonable dividend rate, until by the close of 1919 its corporate surplus amounted to $241,000,000. The details concerning its property and capitalization are to be found in the record of the recent application to capitalize its surplus. The financial strength revealed in these proceedings before the Interstate Commerce Commission finds no counterpart elsewhere among American railroads except in the statements of the Union Pacific. The Union Pacific possesses an enormous reservoir of investment in outside properties. The resources of the Burlington are to be found in its own reserved earnings. It is the accumulation of these revenues, especially through recent years—$70,000,000 added to the suplus during the last five and one-half years, for example—which constitutes the foundation for the belief that an earning power is inherent in the Burlington which can be well extended for the support of another transcontinental bridge line. Add to this the fact that the Burlington road is unquestionably first among the six roads, already described, which enter Denver from the east, and the strength of its claim to priority is well-nigh established.

But not even the Burlington with all its inherent strength could be intrusted to carry the Western Pacific-Denver & Rio Grande bridge line alone. The handicap is bound to be enormous at the western end, without abundant local branches or feeders. The main source of Western Pacific traffic in California is at San Francisco, the one point where water competition is always bound to be white hot. And then again the cost of developing the new gateway west of Denver, soon to be outlined in detail, will be enormous. Large sums must also be spent upon the Denver & Rio Grande to effect its own rehabilitation. Evidently the Burlington must be still further strengthened by some alliance with another strong railroad. The direction in which this alliance must be sought is immediately disclosed upon examination of map 16 by the two Burlington extensions to the northwest, to meet the Northern Pacific near Billings, Mont. The nature of the traffic interchanged over these lines will shortly be analyzed; but in the meantime it will suffice to call attention to the physical contacts evinced by the map. All the relationships which our subsequent examination reveals, point to the Northern Pacific Railroad as the most obvious side partner with which to undertake a difficult joint enterprise, the support of the Western Pacific bridge line. There is yet another reason for some such alliance between the Burlington and one of the northern transcontinental lines—the Northern Pacific or some other. That will be considered in connection with the twin cities' affairs. It will there be shown that an effective counterpart for the Union Pacific can be produced only by some such alliance between a middle transcontinental road and one lying in the north. From these two distinct points of view, then, comes corroboration of the opinion that the Burlington must add to its strength and traffic resources by drawing upon this northern region, if it is successfully to undertake to match up with the Union Pacific. And of these northern properties, as will be established in due time, the Northern Pacific appears to be the one to select.

The second choice for a through system as a counterpart to the Union Pacific is the Atchison, Topeka & Santa Fe. Its admirable and effective layout will be somewhat,

minutely described in due time. The geographical location is shown on map 22, together with the relationship to the Denver & Rio Grande and the Western Pacific. Inspection of this map immediately brings out the interdependence between the three. The through route from Chicago to San Francisco would not be as direct as by the Burlington line, shown on map 16, particularly to Denver. Denver, in fact, lies well to the north of Pueblo and it is by way of Denver that the new gateway must be approached. The proposal nevertheless embodies certain significant advantages. All the necessary financial strength is there, and this is certainly essential. But the plan commends itself especially on operating and traffic grounds. The previous analysis of transcontinental business has brought out the high proportion of traffic which moves from California in refrigerator cars or other special equipment, not less than 20 per cent in fact of the tonnage and earnings of staple commodities. This equipment represents a large investment which ought to be made productive by being used throughout the year. The immense tonnage of fresh fruits and vegetables out of California consists in the main of citrus fruits in the early part of the year and the deciduous fruits later on. The utilization of this special equipment would be much more effective, it is alleged, were the Ogden gateways to be operated under the same management as the Arizona gateways. The same cars could be moved by the southern route during the cold season and be chilled by ventilation over the Ogden route with the advent of warm weather. This advantage was contemplated and in part realized under the Harriman régime as well as under the federal Railroad Administration, on the Union Pacific. There can be no question of a natural affiliation in this regard between the middle routes via Ogden and those which traverse New Mexico and Arizona. Nor is this all. The location of the Denver & Rio Grande is such, and the Santa Fe so approaches it, that this property to the Santa Fe would be a feeder, more than a mere bridge. This reason alone, it is quite clear, was the reason for a long persistent interest in Rio Grande affairs on the part of the Santa Fe directorate. Note, however, that it was not interested equally in the Western Pacific, when built, as the Santa Fe already had a first-class through line of its own. To the Burlington, both the Denver & Rio Grande and the Western Pacific would be merely means to an end. To the Santa Fe, one of them—the former—would be a thing in itself. For these reasons, the Santa Fe is better fitted to assume the new obligation of the Western Pacific bridge line than the Burlington.

The foregoing advantages of Santa Fe-Western Pacific merger are made the basis of a significant comprehensive plan for consolidation prepared by Mr. Edward Chambers, vice president and traffic manager of the Santa Fe system. A subdivision of all the railroad mileage west of the Mississippi into five great systems, is proposed. The first consists of the alliance between the Santa Fe, the Denver & Rio Grande, and the Western Pacific, as above described, thus setting up a key line to match against the Union Pacific. The superabundant strength of the Santa Fe, in other words, is devoted to carrying the load of the unproductive western bridge route. This project fulfills in effect the ultimate plans of the late E. P. Ripley. The Santa Fe is thus provided with an east-and-west entry into California, both at San Francisco and Los Angeles. This is the foundation stone of the Chambers system. The second group fulfills the original plans of the late E. H. Harriman, by providing for the amalgamation of the Union Pacific, the Southern Pacific, the Rock Island, and the North Western. This system, likewise, it will be observed, provides for an east-and-west line both into northern California and into the south under the same management. The same economies in the use of special equipment would be afforded as for the proposed Santa Fe system. The third group under the Chambers' plan is that of the Hill lines as at present related—the Burlington, the Northern Pacific, and the Great Northern. The natural advantages of this affiliation are too obvious to require description. The fourth system lies in the southwest, comprising the Frisco, the Missouri Pacific, the Katy, etc.; and the fifth includes all the rest, notably the St. Paul, the Soo, the Chicago Great Western, the Minneapolis & St. Louis, the Chicago & Alton, etc.

It is needless to specify in detail certain advantages of the Chambers plan. Its emphasis upon the natural interest of the Santa Fe in Colorado affairs; more effective management of the refrigerator business; the manner in which the Western Pacific could be tied in with the California feeders of the Santa Fe; these are all incontrovertible. But certain radical defects attend such grouping. The first is the hopeless weakness of the fifth system built upon the St. Paul. It contains nothing but "leavings," *membra disjecta.* One can not conceivably figure out a return on an investment account which is fairly comparable with that of the three strongest systems. Financial ill-balance, then, is the first defect. The Chambers plan is in the second place faulty, in that it violates the transportation act by matching the three strongest Hill roads in the northwest against the very weakest one, the St. Paul, even loading down this weakest one, as above indicated, with all the broken-down carriers out of Chicago. Thirdly, although the act requires competition, both all the Hill lines and the Harriman lines are amalgamated. Thus the federal attack upon both these combinations is entirely ignored, unless the Sherman act is held to be entirely repealed as to railroads by the transportation act of 1920. This defect is fundamental. The next objection is that in the Southwestern-Gulf region most of the now outstanding competitors, the Missouri Pacific, the Frisco, and the Katy lose their identity within a unified system. Competition vanishes over night. It is also objected that the size of the proposed Chambers systems is inordinate. Only five systems for all the railroad mileage west of the Mississippi threatens to render them unwieldy, and as between one and another they are found to vary too greatly in extent, ton mileage, etc., to say nothing of earning power. This Chambers plan would produce systems for exceeding a length of 25,000 miles of line, and this figure is held by the most competent authority to be too large for really effective management. California, looking far ahead, is surely bound to be adequate to provide support for four transcontinental bridges, independent of one another, instead of limiting the number to three. Or even, as under the Chambers plan, merging them all in only two huge competitive units.

The Chambers plan, built upon the Santa Fe, being held in general inadequate, contains nevertheless a suggestion of great weight. This, as we have seen, is that the Santa Fe has a natural interest in and superabundant strength to carry the weak or bridge line of the Denver & Rio Grande-Western Pacific. Yet to give it exclusive control of this bridge line shuts out the Burlington from San Francisco, at least until such time as it builds through to the coast, and the very purpose of the act is to discourage premature duplication. How would it do to recognize the joint interest of these two powerful companies, and to require them in unison to carry the load of the new bridge enterprise, through the period of its tender youth at least? Or why not even let the Central Pacific and the Western Pacific, as under federal administration, be operated as a double-track line for the benefit of all parties concerned, the Union Pacific, the Burlington, and the Santa Fe? The objection to such an arrangement is always that joint and equal ownership, even of a short line, serves to dwarf initiative. It denatures, so to speak, the local officers rendering them so chary of criticism on both sides that they take the line of least resistance. These two bridge lines are too long perhaps for such administration. Perhaps something might be worked out like the existing cooperative arrangement between Portland, Oreg., and Seattle. This bridge line is owned by the Northern Pacific; but full trackage rights are enjoyed both by the Oregon Short Line and the Great Northern Railway. Each of the three runs both its own engines and train crews over the line. There are joint station agents, but train dispatchers are provided by the Northern Pacific owner. This joint operation is said to be as effective as by the two competing lines between St. Paul and St. Cloud, Minn. In effect the entire advantage of double-track operation is said to be enjoyed by such means, and except for local business, a full measure of competition would continue to exist.

There are other objections, however, to this modification of the Chambers plan, certainly unless all the Harriman roads are remerged, and this we assume is out of the question legally, as well as impossible by reason of size. If, however, the Southern Pacific and the Central Pacific be separated, and if then the Central Pacific, for the cogent reasons hereinafter given, be transferred to the Union Pacific, to constitute it a through key line to the coast, the impracticability of either of the above-mentioned cooperative plans shines forth. How manifestly unfair it would be to the Southern Pacific, for example, to take away its Central Pacific line through the Ogden gateway and then coincidently to confer upon its great rival, the Santa Fe, the entire or even a part interest in the other Ogden bridge line. Such action would be utterly indefensible from every point of view. This objection is fundamental, interlocking as it does with the treatment to be accorded the Central Pacific. It should be clearly recognized that Santa Fe participation in the Western Pacific is utterly incompatible with a merger of the Central Pacific with the Union Pacific. If the latter is desirable, the former becomes thereby impossible. Also, as a general consideration, it should be borne in mind that the Santa Fe line into southeastern Colorado is a branch. Its entrance is by way of Pueblo, and the Denver & Rio Grande gateway back to Pueblo is physically impossible for the stem of a great national railroad. The James Peak project, soon to be described, providing a route directly through Denver, the metropolis and capital of the state, would not be feasible as part of a Santa Fe development. Physically, therefore, whether in part or in whole, the Santa Fe merger is deemed impracticable.

The foregoing discussion of the relative interest of the Santa Fe and the Burlington in an Ogden gateway induces a somewhat general comparison of the relationship which subsists between the middle transcontinental routes and those lying north and south, respectively. For the Burlington, with either the Great Northern or the Northern Pacific, has its roots embedded primarily in the north; while the Santa Fe stands for all of the interests and affiliations of the southern lines. It may be enlightening, therefore, to compare the situation north and south in a large way, in order to discover its bearing upon the choice which must in this instant case be made. The first difference between the Santa Fe and the Burlington-Northern Pacific (or Great Northern) as respects California business is that the former has a considerable gathering mileage the length of California. The Burlington, taking the Western Pacific, would be quite neutral at the coast—as neutral as the Union Pacific, in fact—reaching San Francisco by means of the Central Pacific alone. There is the same objection to Santa Fe control of the Western Pacific, that is to say, of two gateways into California, as there is to the single control by the Southern Pacific of both these same two gateways. Seeking to produce evenly matched conditions, therefore, the Burlington-Western Pacific is much more closely parallel to a Union Pacific-Central Pacific system than any combination built upon the Santa Fe could possibly be.

The physical conformation of North America creates a wide difference between transcontinental competitive conditions, north and south. The continent narrows toward the equator, distances become less from coast to coast, and the Panama Canal is much closer to and potentially more important to the Arizona gateways than to any of the others, middle or north. The greater intensity of this competition with the Panama Canal through the southern gateways constitutes in fact the only rightful claim which the southern lines have to continued control of the north-and-south originating roads throughout California. Were it not for the form of the continent and the imminence and intensity of Panama competition, an evenly matched rivalry would not obtain were so much of the local north-and-south California mileage to remain in the control of the southern transcontinental lines. But this justifiable control of the gathering and distributing lines in California, in order to afford compensation for the Panama Canal handicap, in turn requires that the Ogden gateways

remain independent of southern control. It is just as essential that the Western Pacific be administered free from Santa Fe control, as that the Central Pacific be divorced from the Southern Pacific Company. Not to do so would far more than counterbalance the Panama handicap. It would then so far press the advantage against the other railroad connections into Ogden from the east as to jeopardize their future.

The situation is so rigid that it may be otherwise stated in the form of a syllogism: *Given* equality of competing strength of the Santa Fe and Southern Pacific, and *given* also merger of the Rock Island and Southern Pacific systems, then—

(1) *If the Central Pacific remains a part of the Southern Pacific system,* and the Santa Fe and the Denver & Rio Grande (Western Pacific) are combined, *the Union Pacific is not only completely eliminated from San Francisco, but is also threatened both at Los Angeles and Seattle.* For it will stand only as part of a broken direct through route, with its essential connection to San Francisco controlled by a competitor (the Southern Pacific) having one complete indirect route of its own via El Paso, and another direct one almost joined up, by way of Ogden (the only link lacking, with Rock Island entrance to Denver, being between Ogden and that point). The only choice under these circumstances to save the Union Pacific from being pocketed would be to cut off the Denver division of the Rock Island. Or else—

(2) *If the Central Pacific be transferred from the Southern to the Union Pacific, this alternative jeopardizes the Southern Pacific everywhere in California* by withdrawing its Central Pacific Ogden link, while coincidently adding a new Ogden link to its deadly rival, the Santa Fe, creating thereby a new direct through line. Either way you treat the Central Pacific, a complete upset of the competitive equilibrium results. The conclusion is inescapable that the Burlington rather than the Santa Fe must be charged with sponsorship for the Denver & Rio Grande (Western Pacific) route.

These wearisome general considerations, then, all go to fortify the opinion that a northern and not a southern affiliation for both of the Ogden bridge lines will tend most effectively to produce an evenly matched rivalry all round. In brief, the conclusion is reached that the Burlington and not the Santa Fe should be elected as the David to meet the Goliath of the Union Pacific on its own ground.

The situation must now be viewed from the eastern end. Inasmuch as there are only three transcontinental roads in the northern group, all naturally based upon the twin cities, there can not possibly be more than three northwestern through systems; and the express terms of the statute as to competition do not permit less than two. But the choice between the alternative, two or three, depends in part upon the available first-class Chicago connections, suitable for the stems of such transcontinental systems. There are only four of these, traceable on map 14. Two are the water-grade Mississippi River lines of the Burlington, on the left bank, and the St. Paul, on the right bank. Then, across Wisconsin there is the Soo line (Minneapolis, St. Paul & Sault Ste. Marie) and the line of the Chicago & North Western system through Madison. Another route across Iowa, possibly also deserving consideration as a connection between St. Paul and Chicago, is that of the Chicago Great Western. This also is dotted upon the map. And the Rock Island has a competitive line, but it is so much more circuitous that it may well be ignored in this connection (See table on page 574.) The distances, Chicago to the twin cities (St. Paul) by these several routes, constitute one factor in their availability. These are as follows:

Chicago & North Western via Janesville	396.1 miles.
Chicago & North Western via Milwaukee	408.9 miles.
Chicago, Milwaukee & St. Paul via Janesville	408.8 miles.
Chicago, Milwaukee & St. Paul via Milwaukee	410 miles.
Chicago Great Western	424.7 miles.
Chicago, Burlington & Quincy	430.8 miles.
Minneapolis, St. Paul & Sault Ste. Marie	450.7 miles.
Chicago, Rock Island & Pacific	512 miles.

But of equal or even greater weight is, of course, the condition of the properties as to double-tracking, grades, and curvature, and equipment with signals, grade crossings, and the like. The choice which must be made is necessarily based upon a complex of these elements.

Upon the basis of the foregoing facts, then, a decision as between two or three independent competing northwestern systems through the twin cities must now be made. This is the next step in a logical analysis. It must be followed by an appropriate selection for Chicago connections or stems from among the six available lines, as above described. Thus there are two independent elements in the problem, each of which might almost, be decisive. But of the two, the conditions west of the twin cities are more conclusive than are those east of that point. After deciding, therefore, as between two or three lines in the light of conditions west, it will be in order to apply that judgment to the conditions which obtain between St. Paul and Chicago.

Shall the three through lines west of the twin cities, then, be combined into two systems, or remain independently as three? At present the Great Northern and Northern Pacific are allied through their joint ownership of the Burlington. The choice of *two* systems under the requirements in the statute, of a combination of weak and strong points to a rearrangement of these properties. For, to leave the Great Northern and the Northern Pacific together, would combine two strong roads against the St. Paul, which is the weakest of the three. The only possible solution therefore under a two-system scheme is to couple with the St. Paul whichever one of the other two is the more complementary to it, for the statute also directs that complementary rather than competitive roads shall, wherever possible, be put together. There is another aspect of the two-system plan presented by the situation east of the twin cities. That will be discussed in another paragraph. But as to the situation west of St. Paul, it is obvious that the plan for two northern transcontinental lines calls for determination whether the Great Northern or the Northern Pacific is the better fitted for merger with the St. Paul. This again involves considerations of location, of feeders, of coal supply, of sources of revenue, of terminals, and, particularly, to satisfy the statute, of the preservation of competition at as many points as possible. This choice also will be discussed in due time.

The alternative of *three* transcontinental systems west of the twin cities, instead of two, rests upon two general considerations. The first is whether three lines independently will balance up as to competition better or worse than an arrangement by which two of them are allied, each reenforcing the other. This is a question of earning power and of finance. The second consideration has to do with geographical location. The plan for three northwestern transcontinental lines is rejected in favor of two systems, upon both grounds above mentioned. Subsequent financial analysis clearly establishes such a diversity as to earning power, feeders, and general conditions, between the three lines west of St. Paul, that a much better balance can be brought about by pitting the two weaker companies against the Northern Pacific than by leaving all three of them to compete with one another. Statutory requirements, in other words, as to combination of weak and strong roads while still preserving competition, leads to this conclusion. And also upon the second ground, of insufficient available connections of uniform standard and capacity, between St. Paul and Chicago, the same conclusion is reached. The Chicago Great Western is held at present to be inadequate as a stem for a transcontinental system; and no other stem may be had, as aforesaid, unless either the Chicago & North Western or the Canadian Pacific systems be bereft of their backbones in Wisconsin. Either of these two grounds, it is believed, is conclusive. Nor is the argument weakened by the discovery of a distinctly better use to which the Chicago Great Western can be put. The plan proceeds therefore upon the basis of two through northwestern transcontinental systems.

But the plan for two northwestern transcontinental systems instead of three commends itself on other more general grounds. It better preserves a balance of power among all the other transcontinental roads. Not separately, alone, may these northern lines be treated. Their competitive relationship to the middle group of transcontinental systems, via Colorado, must also be considered. This compels a broader view of the entire transcontinental layout. It subsequently appears that for decisive reasons the Union Pacific and the Chicago & North Western should be merged in a very strong combination, running due west from Chicago, and no other relationship for a direct eastern stem for the Union Pacific conforms to the statute as to preservation of existing trade routes. But this arrangement obviously intertwines the northwestern transcontinental sector of the United States with the middle group of through lines. The only way to avoid it would be to dismember the Chicago & North Western system in Wisconsin by segregation of its Wisconsin lines. This might be done as above mentioned, in order to procure an independent third high-grade line from Chicago to the twin cities for a third transcontinental system. But this alternative has been already rejected on other grounds. Thus the Union Pacific-Chicago & North Western combination is left in possession of lines, not only due west to San Francisco, but up into the territory northwest of Chicago as far as the head of Lake Superior. This system also penetrates by way of the Oregon Short Line into the far northwest, in Washington and Oregon alike. This last is the significant point. The Union Pacific middle-group combination competes inevitably both at San Francisco and at Seattle. And the same would be true were the St. Paul, possibly as hereinafter discussed, to be selected to pair off with the Union Pacific instead of the North Western. It is the strongest single combination in the entire western field. To balance up conditions, it is imperative that an equally strong and an equally comprehensive system be set up against it, having as wide a range on the Pacific coast. The only way to accomplish this grand strategy, as we have already seen, is to utilize the Burlington at the eastern end as the stem for lines which reach both California and the state of Washington. That is another logical reason for the particular choice as to alliance east of Colorado with the Denver & Rio Grande-Western Pacific. The Burlington is selected among the other roads east of Denver for this purpose, not only, as will subsequently appear, because it is the best line physically but also because by remaining intact as a system, including the river line to St. Paul, it creates a worthy competitor as to reach and power with the powerful Union Pacific group. Only by way of the Burlington and the Northern Pacific, the two strongest roads through St. Paul, is Seattle reached by a line able to cope on even terms with the Oregon Short Line (Union Pacific system). And coincidently, as has already appeared, the Burlington directly west is best able to support and perhaps carry through the Western Pacific program to match up with the Union Pacific at San Francisco.

The only way, seemingly, to avoid such interrelationship of the combinations due west from Chicago with those through the twin cities to the northwest would be to dismember both the Burlington and the Chicago & North Western systems. Figuratively speaking, as map 16 shows, the Burlington lies like a hand with the fingers pointing to Denver and a solitary thumb sticking up to St. Paul; while the Chicago & North Western, less clearly, perhaps, reverses this situation with the fingers of the hand pointing northwest while its thumb runs to Omaha. To separate the western from the northwestern transcontinental situation would involve cutting off each of these thumbs and transferring each to the other set of fingers. The thumb of the Burlington to the twin cities could be built into a second transcontinental system through St. Paul, as above mentioned, using it either for the Northern Pacific or the Great Northern; and the North Western line to St. Paul could be utilized as a stem for the remaining third transcontinental line via the same gateway. Then the thumb

of the North Western to Omaha could likewise be excised to create a Union Pacific route due west from Chicago, dissociated from any transcontinental line or other local lines in Minnesota. But such disruption of corporate, operating, and traffic conditions is naturally to be considered only as a last resort. And even if it were done it would not dissociate transcontinental competition between the middle and northern groups, for the Oregon Short Line would still hold the middle group in the far northwest; although the northern group would be effectively cut out of participation by rail in traffic from California. The situation, in other words, would be quite out of equilibrium.

The simplest solution for the northwest therefore, apparently forced by the express terms of the statute and in order to minimize existing corporate disruption, is to elect the alternative of two rather than three transcontinental systems through the twin cities. And this choice, as already manifested, involves a divorce of the Great Northern from the Northern Pacific; and the alliance of one or the other, whichever is the more complementary thereto, to the St. Paul system. This might conceivably strengthen the Chicago, Milwaukee & St. Paul, as contemplated by the statute, both for operation and traffic, so that there would result throughout the northwestern sector of the country competition on more nearly equal terms between two first-class systems; and, coincidently, as between the northwestern and the middle group of transcontinental lines, it would also be productive of more evenly balanced rivalry.

The primary advantage of a possible combination of the St. Paul and the Northern Pacific railroads is disclosed by consideration of map 17-A. The former is designated thereon by a light solid line and the latter by a light line with short transverse crosses. The two roads practically parallel one another for almost a thousand miles across Montana, Idaho, and Washington. For 600 miles west of Butte the same principal towns are reached by each line. The economy of joint operation might be very great, transforming two single-track lines into a double-track property. The carrying capacity of the present rails would practically be doubled, without the expense ordinarily attendant upon such increase of facilities. About 400 miles of the St. Paul line is already electrified, on which a much larger volume of transportation would be possible for the benefit of the two companies. It is alleged, in fact, that it alone could handle all the business of the two. The St. Paul line is 90 miles shorter than the Northern Pacific between Spokane and Seattle; and the St. Paul crossing of the Cascade Range is electrically operated. The outstanding weakness of electrification is the constant overhead and wastage, with only occasional utilization of power, depending upon the density of traffic. Traffic density, in other words, is imperative for the full realization of the economies of electrical transmission; and unified operation of these two roads invites just such concentration. Furthermore the two lines supplement one another as to feeders. This also appears from inspection of the map 17-A. The Northern Pacific is amply provided with branches at the western end, just where the St. Paul is notoriously weak. And, conversely, the wealth of branches throughout the territory northwest of Chicago admirably supplements the Northern Pacific in reaching traffic-originating territory. All these considerations, of economical operation, conservation of investment for future use, and grouping as to branches and feeders, commend this union. On financial grounds it is attractive to the St. Paul as extending the strength of an old established property in its time of need, it being avowedly the weakest of the three northern lines. Historically, it is not without interest to note the divergent views of the financial leaders during the last great period of transcontinental consolidation 20 years ago. James J. Hill and J. P. Morgan were alike interested in securing a Chicago connection for the Great Northern and the Northern Pacific. But Hill greatly preferred the Burlington for that purpose. Morgan wanted the St. Paul. Hill finally deferred to Morgan; the St. Paul was approached; its dominant

stockholders refused to part with it; and Hill, therefore, in the end had his way. The Burlington was purchased jointly by the other two roads, the arrangement persisting to this day. Now it becomes a question to consider the propriety of disrupting this combination; and in that event, of effecting a better rearrangement of the constituent properties.

The union of the Northern Pacific and the St. Paul is open, however, to one fundamental objection. It runs directly counter to the terms of the statute as to the preservation of competition. At present most of the stations for a number of hundred miles are common points. This is as true of all the local stations as it is of Butte and Spokane. In the words of a Northern Pacific official, the St. Paul literally "runs through our bowels." To unite these roads, then, would substitute monopoly for the existing competition. This is a serious matter from the standpoint of public opinion, however it may balance up in the view of experts on the ground of operating economy. Furthermore, these two properties lie so closely together that the geographical scope of the joint system is relatively much narrower than that which would result from other groupings. It has been calculated roughly that the St. Paul west of Wisconsin, combined with the Northern Pacific, would serve an area of 630,000 square miles. Combined with the Great Northern, owing to the wider separation between the main stems, this area would amount to about 730,000 square miles, about 16 per cent more territory. But as against this, the territory of the Northern Pacific is more fully developed than that of the Great Northern, because of its longer life. In either event, it is believed that the objection springing from the almost complete obliteration of competition by merger is conclusive in and of itself.

Almost every advantage except that of economy and efficiency from joint operation attaches to a consolidation of the Chicago, Milwaukee & St. Paul with the Great Northern Railway. The two lines instead of being locally competitive, and keenly so, are in several ways supplementary. This is made clear by map 17. The two main stems are so far apart that they give a wide comprehensiveness to the system as a whole. There are very few points locally except Great Falls and Lewiston, Mont., where the two roads meet; although of course, on through business at Spokane, Seattle, etc., the condition is practically the same as with the Northern Pacific. As to branches and feeders, the Great Northern is materially more developed at the western end than the St. Paul, and its numerous feeders through North Dakota add to, rather than duplicate, the St. Paul lines. The lines and terminals of the Great Northern at Duluth and Superior appreciably strengthen the slight connection through trackage which the St. Paul now has with those important points. And this merger has certain decided advantages as to terminals over the St. Paul-Northern Pacific combination. Both the Great Northern passenger station at Minneapolis and the joint line between Minneapolis and St. Paul could be directly used, avoiding a back-up for passenger trains and very expensive track-elevation proposals.

Financial considerations of weight also favor grouping the Great Northern rather than the Northern Pacific with the St. Paul. The St. Paul for the year 1917 earned (in operating income) only 4.43 per cent on its investment (cf. exhibit 6). The Northern Pacific earned 6.08 per cent, as against the Great Northern with 7.09 per cent. The same results comparatively are disclosed by average annual results for a 10-year period. The St. Paul for 1910–1919 inclusive had a surplus above dividends of only $1,062,678; the Northern Pacific $5,148,233; while the Great Northern produced a surplus of $6,039,693. The strength of the Great Northern, comparatively, consists of its low proportion of funded debt to total capitalization. This appears in the following table of funded debt outstanding and ratio to total capitalization:

Year.	Chicago, Milwaukee St. Paul.		Great Northern.		Northern Pacific.		Chicago, Burlington & Quincy.	
	Debt.	Ratio.	Debt.	Ratio.	Debt.	Ratio.	Debt.	Ratio.
		Per ct.		*Per ct.*		*Per ct.*		*Per ct.*
1910	$147,807,500	38.97	$109,385,900	34.3	$190,952,500	43.5	$196,787,300	63.9
1911	192,860,655	45.44	144,441,909	40.8	190,325,500	43.4	200,459,800	64.4
1912	227,599,155	49.53	143,757,909	40.6	191,365,500	43.5	199,196,200	64.2
1913	299,554,755	56.39	143,655,900	40.6	192,352,500	43.7	197,245,400	64
1914	331,227,455	58.75	143,478,900	38.4	194,737,500	44	203,222,900	64.7
1915	356,146,655	60.42	143,391,909	36.5	206,479,000	45.5	181,690,000	62.1
1916	356,157,255	60.45	143,275,758	36.5	205,922,000	45.4	179,858,500	61.9
1917	380,833,255	62.04	163,140,515	39.5	203,474,000	45.1	174,972,200	61.2
1918	381,961,255	62.07	163,051,515	39.5	202,713,000	45	174,599,300	61 2
1919	379,255,255	61.92	162,910,515	39.5	202,108,000	44.9	168,050,000	60.2

Again the Great Northern heads the list with only 39.5 per cent of funded debt to total capitalization for 1919. This compares with 44.9 per cent for the Northern Pacific and 61.92 per cent for the St. Paul. Assuming that these companies are not to require financial reorganization, but would be merged by exchange of securities as they stand, it is obvious that the best balance as to margin of safety of earnings above fixed charges, would be produced by combining the road with the lowest proportion of funded debt (the Great Northern) with the one having the highest proportion (the St. Paul); both set off against the Northern Pacific, which occupies a mean position in this regard. Furthermore, viewed over a term of years, the fixed charges proportionately have been rising most rapidly on the St. Paul, and appreciably so on the Northern Pacific, while on the Great Northern they have remained constant.

The fundamental test of financial stability, namely, margin of safety above fixed charges, commends the Great Northern-St. Paul combination. The same result is disclosed by the figures as to capital stock and total capitalization per mile of line. This, again, appears by the accompanying tables as to capital structure. A combina-

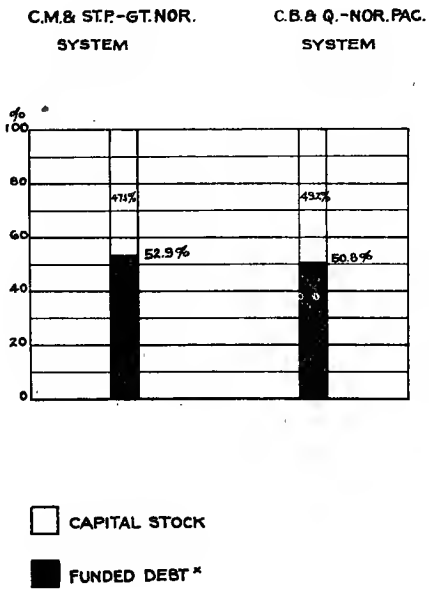
Items.	Chicago, Milwaukee & St. Paul and Great Northern (18,400 miles operated).	Chicago, Milwaukee & St. Paul and Nor. Pacific (16,772 miles operated).
Capital structure.		
Capital stock	$482,728,950	$481,251,800
Funded debt	542,165,770	581,363,255
Total capital	1,024,894,719	1,062,615,054
Capital stock per mile of road	26,220	28,700
Funded debt per mile of road	29,480	34,630
Total capital per mile of road	55,700	62,300
Property investment account.		
Road and equipment less depreciation	1,001,052,180	1,088,085,964
Improvements on leased lines	5,157,455	11,172,341
Investment in affiliated companies	126,679,491	77,396,237
Other investments	32,980,702	47,918,431
Total investment	1,165,869,828	1,224,572,973
Income account.		
Standard return	56,632,792	58,035,511
Other income	6,069,419	6,610,572
Gross income	62,702,211	64,645,783
Fixed charges	29,319,742	31,736,202
Net income	33,382,469	32,909,581
Dividends [1]	26,572,095	25,469,206
Balance	7,810,374	7,440,375

[1] Annual dividends at the rate of 7 per cent on St. Paul preferred stock are herein included.

tion of the St. Paul and the Great Northern yields total capitalization per mile of road of $55,700, as against the figure of $62,300 for the St. Paul combination with the Northern Pacific. But of course this comparison is hardly fair; because the Northern Pacific in turn is to be merged with the Burlington, according to this plan. Comparison should be made therefore with the final combination. This is impossible until a decision is had upon the pending application of the Burlington to capitalize its surplus. But it is believed that on the whole the conclusions as above stated would be borne out by more detailed and careful computations.

PERCENT OF CAPITAL STOCK AND FUNDED DEBT OF TOTAL CAPITALIZATION

AS OF DECEMBER 31, 1919.



* C.B.&Q. Jt. 45 not included in Funded Debt of Gt.Nor. and Nor.Pac.

The St. Paul-Great Northern system needs certain additions in order to balance competition throughout the northwest more fairly with the very powerful Northern Pacific-Burlington combination. Map 17 shows the geographical location. First and foremost, it must be protected as to access into Portland, Oreg. The Spokane, Portland & Seattle line down the north bank of the Columbia River is at present owned jointly by the Northern Pacific and the Great Northern. This admits the St. Paul automatically under the proposed merger to Portland territory. Possibly the Northern Pacific might withdraw its investment from the Spokane, Portland & Seattle entirely, in favor of the St. Paul, in so far at least as it has a parallel line of its own. But upon this point decision may be withheld. And the continuance of the joint line owned by the Northern Pacific between Seattle and Portland would assure competition south of Seattle. North of Seattle, the alliance admits the St. Paul over the Great Northern lines into Vancouver, a point from which it has heretofore been excluded. Similarly the rights of the Great Northern in the Deschutes River canyon and down the Willamette Valley should be assured equally with the St. Paul. Thus, it appears that each company would profit greatly by the partnership and would be able to cope more successfully with the old and firmly intrenched Northern Pacific line in this district.

At the eastern end the St. Paul-Great Northern combination requires modification only in detail. An element of strength is the duplicate line of the St. Paul to Chicago by way of La Crosse and Savanna, Ill. The water-grade line, only 14 miles longer than via Milwaukee, greatly increases its capacity to handle the business of the two existing companies as it develops in future years. The coal supply is a vital factor. The Great Northern gets its supply by way of the lakes, but the St. Paul has always been handicapped in this regard. To meet this need the Chicago, Terre Haute & Southeastern has been recently acquired. Its location with reference to the St. Paul-Great Northern system is shown on map 17, together with the location of the Indiana Harbor Belt line and the Chicago, Milwaukee & Gary. Every inducement to avoid congestion in the Chicago district should be afforded, and it may well be that the Chicago, Milwaukee & Gary will serve as an outer belt line for this system, to meet the New York Central outer belt line. This, however, should be considered as a part of the great terminal problem at Chicago. Certain phases of it, together with the possible merger of the Soo system, are gravely considered in connection with other details of the St. Paul-Great Northern system, later in this chapter.

The Union Pacific Railroad is unique among transcontinental lines, in having thus far refrained from entrance into Chicago over its own rails. Most of the other competitors north and south have found it advantageous to operate their own trains from Lake Michigan to the Pacific coast. The control of the Illinois Central was originally acquired by the Union Pacific in 1906, directly and through the so-called Railroad Securities Company, in order to provide its own independent entrance to Chicago. But the complications with eastern connections which threatened, compelled subsequent treatment of the Illinois Central western lines on an equal footing with all competitors. The Union Pacific business at Council Bluffs is at present widely distributed. For 1917 the cars delivered and received from seven eastern connections were as follows:

	Cars delivered.	Cars received.
Chicago & North Western	35,493	24,472
Chicago Great Western	3,965	4,638
Chicago, Burlington & Quincy	6,070	3,942
Chicago, Rock Island & Pacific	7,906	4,453
Chicago, Milwaukee & St. Paul	[1] 24,291	13,880
Illinois Central	13,375	5,692
Wabash	3,399	1,193

[1] California, Utah, Nevada, and Colorado business (all except north coast).

The outstanding fact is the preponderance of the Chicago & North Western. Excepting the St. Paul, the North Western exchanged more cars than all of the rest of the lines put together. This is doubtless due to two facts. The first is the exceptional facilities afforded by the North Western. But its line according to the table of distances from Omaha to Chicago herewith is no shorter than that of the St. Paul.

Chicago & North Western	487.7 miles.
Chicago, Milwaukee & St. Paul	487.9 miles.
Chicago, Rock Island & Pacific	502.7 miles.
Chicago, Burlington & Quincy	504 miles.
Chicago Great Western	508.2 miles.
Illinois Central	519.2 miles.

An equally potent factor which accounts for the preference to the North Western over the St. Paul, doubtless, is the heavy traffic from the east by way of the Vanderbilt lines which the North Western is able to offer in exchange. The cars received from the North Western are almost double the number which the St. Paul, without preferred eastern connections, was able to turn over. To accommodate this heavy traffic, the Chicago & North Western has created a first-class low-grade double-track line, strictly equal to the best Union Pacific standard. Its terminals at Chicago and its eastern affiliations render it beyond all question the natural eastern connection for this system.

Historically, the present traffic interchange between the Union Pacific and the North Western at Council Bluffs is significant. During the seventies there were only three railroads in competition, the Burlington, the Rock Island, and the North Western. These three operated into Chicago for years as the California Fast Freight Line, which distributed the traffic equally. Then, as the Burlington and the North Western invaded the territory west of the Missouri River, thereby becoming competitors of the Union Pacific, the latter, in 1883, entered into a new very secret tripartite traffic arrangement with the Rock Island and the St. Paul. To this, subsequently, most of the eastern connections except the Burlington were admitted, but the St. Paul remained as a preferred connection with the Union Pacific over the North Western only 24 days. With the gradual inclusion of six eastern connections, all bearing the solicitation and gathering expense in order to give the Union Pacific a long haul to Ogden in solid trainloads, the secret arrangement lost its charm. It was succeeded in October, 1902, by the present Union Pacific-North Western compact, under which the latter becomes a first-preferred connection into Chicago. This it remained except for a brief interval, when the North Western put on a through passenger train to the northwest over the Northern Pacific. The result was that the St. Paul was promptly and for a brief season promoted to a distinctly closer second-preferred connection. The incident is significant as indicating the whip hand which the Union Pacific is able to hold over its connections into Chicago. It is a situation, superficially at least, which is hardly satisfactory from the point of view of fairness in the division of the through rates.

The alliance of the Chicago & North Western with the Union Pacific conforms in another respect to the requirements of the act. The statute directs that strong and weak properties shall be combined. The North Western, always considered a strong road because of its honest and conservative financing, has suffered nevertheless, along with other properties, similarly circumstanced, by reason of war conditions. The case is quite parallel to that presented by the New York Central system in 1914. The strength of the Lake Shore and of the Union Pacific alike arose in part from the fact that they enjoyed the long haul over the line, and yet were not exposed to the heavy overhead and other terminal expenses incident to location in a congested center; and as labor costs, interest rates, and other overhead have risen, the division of the through rate between terminal properties and line properties has lost balance. The New

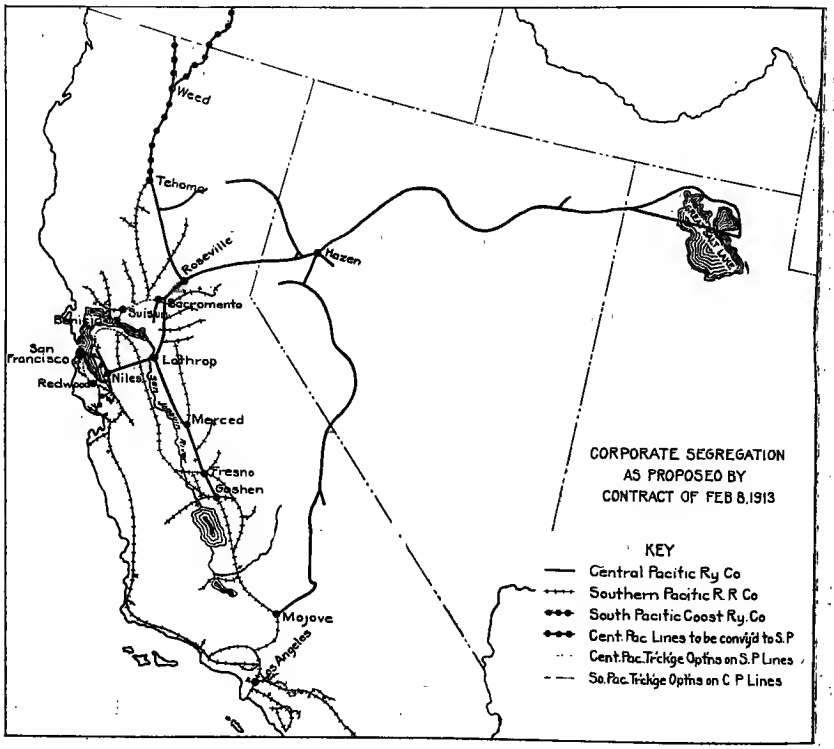
England situation is quite analogous, also. On the New York Central system, the Gordian knot was cut by merger in 1914 of the Lake Shore and the New York Central. Thus the superabundant strength of the Lake Shore was employed to assist the New York Central through its difficult terminal problems, making it possible among other things to issue bonds for large amounts on the joint credit of all the mileage which profited by the terminal outlay. Applied to the case in hand, the strength of the Union Pacific ought in precisely similar fashion to be used to lighten the terminal load laid upon the North Western at this juncture. The two properties are part and parcel of the best direct transcontinental route at present. But it should be operated as one property from end to end, permitting the earnings on the long haul to balance up against the heavy expenses at either end, but notably in Chicago. Such matters as taxes on increased land values and abolition of grade crossings are among the other items above mentioned for which provision has to be made. This expedient of merger of connecting strong and weak roads will also avoid the difficult task in the future, otherwise laid upon the Commission, of having to decide upon the proper division of the through rate. It is believed therefore that this consideration fortifies substantially the recommendation for merger based upon interchange of traffic. And incidentally, of course, the Chicago, St. Paul, Minneapolis & Omaha, controlled by the North Western system since 1883, and built into it fundamentally, should be merged corporatively with the other two.

Comprehensive development of the Union Pacific system calls for adequate entrance into St. Louis. This, neither the present Union Pacific nor the North Western has ever had. Hitherto the policy of open trading on traffic interchange at the Missouri River gateways has obviated the necessity for such a line. But a well-balanced national strategy obviously requires that St. Louis as well as Chicago be utilized as an eastern base. The lines most favorably placed for this purpose are those of the Wabash system, west of the Mississippi River. Their location appears upon map 15. A considerable interchange with the Wabash even now is indicated by the cars delivered to it at Omaha, according to the foregoing table. But a substantially heavier delivery by the Union Pacific to the Wabash occurs at Kansas City. In 1917, the Union Pacific turned over 7,954 cars and received 3,154 carloads in exchange. It is obvious again that a natural current of traffic here exists—a closer relation, in fact, than is indicated with any other of the great systems. The proposed dismemberment of the Wabash affords an opportunity to build in these lines with, it is believed, constructive effect. The Wabash trackage over the Missouri, Kansas & Texas (dotted on the map) to Hannibal affords an eastern connection to the proposed Erie system, and constitutes another through route from the west, avoiding the congestion both of Chicago and St. Louis. This latter link might well be taken over bodily from the Katy. As elsewhere described, it is of little or no use to the proposed Frisco system.

Yet another essential complementary line in the new Union Pacific system is abstracted from the Chicago Great Western, that system, it will be recalled, being built into the Burlington-Northern Pacific system (page 592 *infra*). But the line from Des Moines to Kansas City is superfluous for the Burlington and, as map 15 indicates, it distinctly adds to the effectiveness of the Union Pacific system. It is recommended therefore that this division of the Chicago Great Western be thus transferred; and that trackage rights up to Marshalltown, Iowa, be given, in order to cut off the corner on the route to Chicago. This would have an added advantage, as the Chicago Great Western has a poor station and location at Marshalltown. The station of the North Western, it is alleged, could profitably serve for both systems.

The possible transfer of the Central Pacific from the control of the Southern Pacific Company to the Union Pacific is one of the gravest single issues calling for determination under this plan. The geographical relationship of these properties is depicted on map 15. An immense investment and a vital and integral interest of the Southern

Pacific, deeply rooted historically, conflicts with the alleged national policy laid down two generations ago in the Pacific railroad acts. The issue involved has engaged the attention of the Supreme Court of the United States since 1906. The first suit (226 U. S., 61) resulted in a decree by the Supreme Court in 1912, directing an unmerger of the Southern Pacific from the Union Pacific. Thereafter proceedings were again instituted in 1914, to compel a severance of the Central Pacific in turn from the Southern Pacific. The first decision, in 1917, in this second suit was rendered in the United States district court of Utah in favor of the Southern Pacific Company. Since that time judicial proceedings seem to have been held in suspense; and, as already set forth, the apparent intent of the transportation act of 1920 was to transfer all such matters concerning consolidation, railroad competition, and the like, to the jurisdiction of the Interstate Commerce Commission. But the formal proceedings in the second dissolution suit have not been entirely discontinued. The brief for the appellant is already in print, containing a mass of valuable evidence.



The Central Pacific and the Southern Pacific *ab initio* are an organic unit of interdependent parts. Historically there can be no question about this. In fact, for many years the Central Pacific was the nucleus from which the great Southern Pacific system developed. The two properties, born of a common parentage, subsequently grew up as "interdependent members of one united family. They were conceived and constructed as parts of one system." The utter absence of plan, in fact, as to corporate relationship between these two properties even suggests that it was not without design. A brief resume of the history seems essential. The Central Pacific Railway was built by the "big four," Huntington, Stanford, Hopkins, and Crocker. In 1870 the constructed road ran from Ogden, Utah, north of the Great Salt Lake via Sacramento,

Lathrop, and Niles to Oakland, Calif. The detailed geography is shown by the sketch map herewith. At this time there was no railroad route open to the east by way of southern California. It was not until 1883 that the junction was made with other railroads from New Orleans on the Gulf of Mexico. Until this time all the California lines, as constructed, oftentimes by the so-called Southern Pacific Railroad, were merely feeders for the Central Pacific Railroad. The entire combination, even in 1883, after the junction with the railroads from New Orleans, was known as the Central Pacific system. In 1884 the Southern Pacific Company was incorporated, and to it all of the various railroads, regardless of ownership, were leased for long terms. At this time the name was then changed from the Central Pacific to the Southern Pacific system. But throughout this extended period an utter lack of legal coherence attends the development.

The physical interrelationship of the Central and Southern Pacific railroads resulting from this haphazard history is exhibited upon the sketch map herewith. The original line from Lathrop down the San Joaquin Valley to Goshen was owned by the Central Pacific, but all the feeders up to Sacramento were built by the Southern Pacific. Increasing business brought about the construction after 1891 of a second line through the San Joaquin Valley. This is known as the West Side line, owned by the Southern Pacific, in contradistinction to the East Side line, owned by the Central Pacific. But the two lines from Goshen north are apparently operated as essential parts of a double-track system. Constant congestion, it is alleged, would result without their complementary use. A further vital interrelation exists concerning the so-called Benicia short line. This route, shown by the dotted line from Sacramento, shortens the distance to San Francisco by 50 miles. It was built and owned by the Southern Pacific. And then subsequently the Southern Pacific built the line from Redwood City directly into San Francisco. Thus the Central Pacific became dependent upon the Southern for this sole access to San Francisco, other than by the Oakland ferry service. Yet further interrelation arises at the terminals themselves in San Francisco. These all belong to the Southern Pacific Company or the Southern Pacific Railroad Company. The Central Pacific has no terminals, while at Oakland the reverse is true, the main terminals belonging to the Central Pacific. And then, in conclusion, the Central Pacific, as the detail map shows, owns the original line from Roseville, Calif., to the Oregon boundary. Even to-day the Southern Pacific has no line of its own up the Sacramento Valley beyond Tehama. The financial relationships of the two corporations are even more intricate, if possible, than their intertwining physically. Not two corporations, but three now become involved. The Southern Pacific Company, not the Southern Pacific Railroad Company, is the owner of all the outstanding stock of the Central Pacific. Whether necessarily or not, this holding company has guaranteed payment of the principal and interest of practically all the outstanding bonds of the Central Pacific. There are nearly $170,000,000 of indebtedness, including a European loan of 250,000,000 francs. This particular issue of 4 per cent bonds—note the rate of interest in case of refunding—becomes payable immediately whenever the Southern Pacific Company ceases to own the Central Pacific. All told, it is a pretty congeries of physical and financial relationships.

The objections to an unmerger of the Central Pacific from the Southern are substantial, many of them self-evident already. They are sharply distinguishable into two types, legal and economic, respectively. The legal objections have to do with two bodies of law enacted at widely separate intervals of time. The Pacific railroad acts were passed before these railroads were constructed. The Sherman antitrust law was enacted in 1890, years after they had entered into all the intimate relationships above described. It might well happen therefore that the control of the Central Pacific by the Southern Pacific so far antedated the Sherman act as to leave that rela-

tionship valid under the statute against monopoly, while still it might be true that this continued control was in contravention of the purpose of the original Pacific railroad acts. Upon these legal points, precisely, it would be presumptuous to essay an opinion. But upon the economic issues and the matters of practical business—downright feasibility and the like—a judgment under this consolidation plan must be rendered. Little aid as to economic reasoning is derived from the judicial proceedings, particularly in view of the absence of unanimity. But the record of facts adduced in these proceedings as to competition throughout the Pacific coast territory is necessarily vital.

The economic advantage of ownership and operation of a line from the middle west clear through to San Francisco, absolutely independent of all other routes, is so evident technically as to suffice in itself for such recommendation in this plan. The facts developed in judicial proceedings demonstrate that the Southern Pacific prior to 1900 enjoyed a monopoly of the California field. This company participated unavoidably in all coast-to-coast business, whether it went direct over the Central Pacific, owned by the Southern Pacific, or whether it went by way of the Sunset Route through New Orleans. San Francisco was reached in either event only over its own rails. But it was evidently not a matter of indifference whether this traffic moved one way or the other; in view of the fact that the Southern Pacific received less than one-third of the total revenue from transcontinental freight via Ogden, whereas by the Sunset Route through the Gulf ports no division whatever with connecting lines was necessary. There was active solicitation naturally for each route. But it was not immaterial to the Southern Pacific which way the traffic moved. Nor, in fact, was the Union Pacific entirely neutral in its attitude toward coast-to-coast business, because of the choice within its own system, of routing traffic via the northwest over its own Oregon Short Line, or of turning it over to the Central Pacific at Ogden and dividing the revenue with the Southern Pacific as a connection. The judicial record is filled with evidence of the keenness of competition, prior to the Harriman merger, which was practically ended by the consolidation after 1901; and which ceased from that time until the dissolution decree in 1912. As to the existence of such competition in general there is abundant evidence in the Supreme Court proceedings. Evidently the Southern Pacific had enough interest in its subsidiary to maintain an active rivalry for business. But what apparently was not sufficiently developed in this record was the distinction between rivalry for business from the Atlantic seaboard and its neighborhood, and competition for business from the middle west; and upon this distinction much of the advantage which may conceivably accrue from a complete severance of the two companies depends. The point is so important that it merits particular emphasis.[1]

The entire transcontinental rate adjustment is affected by the circumstance that the Southern Pacific and other transcontinental lines, wholly or in part operated by water, compete most effectively at the Atlantic seaboard. This arises from the relative cheapness of water carriage for certain classes of traffic. But the effectiveness of this competition progressively decreases as the distance inland from the seaboard becomes greater. For, obviously, the traffic, if it go by the roundabout sea route, must first bear the rail cost of carriage back eastward to the port. This circumstance accounts, of course, for the so-called blanket rate on transcontinental business for the United States east of Chicago. Applying this circumstance to the case in hand, it is evident that progressively with increase in the distance from the seaboard, the force of Southern Pacific competition for its Sunset Route declines, until a dead center is reached at which traffic presumably might move directly all

[1] This point is surprisingly neglected; even in the Brief for Appellant, United States Supreme Court, *U. S. A.* v. *So. Pac. Co.*, etc., recently published.

rail via Ogden, or else back to the seaboard and by vessel round to New Orleans. This business from the neighborhood of the coast was naturally that to which the Southern Pacific had the strongest claim. Both because of operating ability and strength of financial motive, what happened practically was that competition was open and keen between the all-rail, that is to say, the Central Pacific route, and the Sunset Route, throughout the territory in which the Sunset Route was more or less handicapped by reason of the expense of the back haul to the Atlantic seaboard. But actually a dead line existed, somewhere between Chicago and Pittsburgh, the location varying according to the nature of the traffic; and the Southern Pacific did not solicit or prefer to haul via Ogden any traffic having origin or destination east of that line. The Central Pacific was, in fact, accorded by the Southern Pacific every opportunity to do the maximum amount of transcontinental business, provided only that its origin or destination was west of the dead line above mentioned. And the fact that all through business depended finally upon the good will of the Southern Pacific, manifested in rates, facilities, dispatch, and all of the other concomitants, gave that company a decisive influence ultimately in the carrying out of its plans. This circumstance undountedly influenced the late E. H. Harriman to acquire the control of both the Southern Pacific and the Central Pacific in order to command the situation.[2]

The existence of competition between the Central and Southern Pacific before 1901 and since 1918 is clearly established. Even the circuit court decision of 1917 in favor of the Southern Pacific conceded this point. But while genuine for certain territory, it was only half-hearted or less for certain other territory; and the Central Pacific—that is to say, the Union Pacific—coincidently was bound to be excluded from certain regions, so long as it was controlled by another transcontinental through line operating partly by sea. But the effect of the existing relationship upon competition is not confined to the Central Pacific alone. All other lines in Pacific coast territory would be affected by this unmerger. The disability of the Western Pacific at its San Francisco terminus is a matter of history. Effective competition, for this line or any other in future, depends upon a determination of the overwhelming predominance in California transportation which has been exercised by the Southern Pacific Railroad. Competition in transportation with the outside world is and always has been the supreme need of California. The unmerger of the Central and Southern Pacific would open up business to the Western Pacific and perhaps to the Santa Fe, as it never can be opened up otherwise. It should not be forgotten that an immense tonnage originates in California, the preponderating movement being east rather than west. Thus in 1917 the Union Pacific received 71,339 carloads of freight from the Central Pacific (Southern Pacific) and delivered westbound in exchange only 40,005 carloads. Of the eastbound tonnage only 11,000 carloads were destined to local points on the Union Pacific, and of the westbound traffic only 7,341 carloads originated on the Union Pacific. This relativity is typical. The California lines hold the big end of the stick. Theoretically the California shipper has a right to route his freight; but the Southern Pacific, controlling at present all of the local lines, is too powerful to risk affronting. To confer a real freedom of routing upon the California shipper, as well as thoroughgoing rivalry in service everywhere, would certainly be an unmixed advantage.

The danger of subjection of an entire community to the undue influence of two railroads like the Southern Pacific and the Atchison, Topeka & Santa Fe is very considerable when such lines perform the double function of gathering or delivering traffic locally and thereafter of enjoying solely the long haul thereon. In other words,

[2] Cf. again Brief for Appellant, etc., pages 147, 154, and 158 especially.
[3] Cf. Brief for Appellant, etc., pages 81, 142, and 181, especially.

the situation in California might conceivably be bettered, did it not involve drastic dismemberment, if all of the California north-and-south lines—gathering lines, so to speak—from Seattle to Los Angeles were completely independent of the long-haul transcontinental lines. This suggests a regional group treatment for the Pacific slope like that adopted under this plan for New England, Florida, and the Michigan peninsula. It would avoid the prejudice against direct carriage which arises from the performance of the double function by the same railroads, gathering and delivering the freight locally, as distinct from consolidating it for the long haul. The present condition whereby lines through southern California compete clear up to Seattle with the more direct routes, makes, to be sure, for activity of competition, but also for economic waste. But such general considerations are hardly to the point. The immediate decision, seeking to minimize corporate disruption, has to do only with the relation of the Central Pacific to the Southern Pacific. And, on the ground that a more nearly universal and thoroughgoing instead of half-hearted and tepid competition may be promoted for the California slope, the dissolution is herewith recommended.

Another advantage of Central Pacific unmerger concerns provision for the future of a Central Pacific Railroad developed fully up to the physical standards of the Union Pacific and the Chicago & North Western to constitute a prime transcontinental route through the heart of the United States. It is not alone that through-train schedules by one company could be made, or that through rates and billing could be established, but also that ample investment should be made in double tracking and all of the other instrumentalities necessary to a first-class line. While the Central Pacific naturally is so profitable to its present owner it will never be allowed to lapse into downright neglect. But there is a real distinction between passive maintenance, even at a high standard, and a positive program of upbuilding and development. It seems clear beyond question that an undivided control is desirable to attain this end. No consent and concurrence at every point by a company in possession only of the western end of a through route, and which also owns and is more largely interested in operating a competing and a longer-haul line, should be allowed to prejudice the future policy of the direct line as to its physical development.[3]

The foregoing considerations are in entire consonance with the federal railroad acts of 1862–1864, which were unquestionably intended to promote direct intercourse with the Pacific coast as part of a great national policy. These acts provide as a condition of the subsidies and land grants that "the whole line of said railroad * * * shall be operated and used for all purposes of communication * * * so far as the public and government are concerned, as *one connected, continuous line* [our italics]." Whether or not the existing relationship violates the Sherman antitrust law, subsequently enacted in 1890, may remain open to question; but it is evident that continued Southern Pacific control is in contravention of such statutes as these, under which the Union Pacific and the Central Pacific were constructed. These acts were intended to provide for a system of railroads "from the Missouri River to the Pacific Ocean." Is it not clear that the purpose both of laws and of the large grants to aid in the construction of these railroads would be defeated if practically one-half of this route were to remain in the hands of a rival company, operating a competitive and more circuitous route, which afforded it a longer and more profitable haul on much traffic that otherwise would follow the direct all-rail line?

Finally—and this caps the argument for transfer of the Central Pacific to the Union Pacific system—this entire plan purports to bring about a more evenly balanced competition. An endeavor is being made to match two great transcontinental systems with one another in order to keep each one on its toes and to provide service for the public. The Burlington system, if it be given the Denver & Rio Grande and the

Western Pacific, will also have a line clear through from Chicago to the coast. It will be free to compete for business by this direct all-rail line everywhere throughout the east. It will not be embarrassed by having to protect or to consider another roundabout water line, which constitutes in fact a major investment. There will be no dead line, setting off territory from which traffic will not be allowed to move by the most direct all-rail route. To balance competitive conditions, the Union Pacific must be equally free. Its line from Chicago to the coast must be utterly untrammeled by complications arising from interrelated investments. The only way to bring this about is to constitute of it an equally consolidated property clear through from Chicago to San Francisco.

The Central Pacific unmerger can not be discussed without due consideration of the economic—not the legal—objections thereto. The first of these is that local transportation in California would probably suffer at first from the disorganization incident to separation of these properties. This accounts in part, perhaps, for the attitude of the California railroad commission, which has resolutely set its face against the proposal. The president of the commission, Mr. Eshleman, testified not only that the separation would tend to increase rates where double service was substituted for single service, but also that these lines, separately owned and managed, could not furnish as good service as is now rendered under single management. "The acquisition of the Central Pacific by the Union Pacific would result in breaking up a well-constructed single system of railroads in this state into two dissociated and incomplete systems, neither of which would be adequate conveniently to serve the traffic needs of the state of California." There is force in this objection. As to all that concerns the impracticability of unmerger, answer will shortly be given. That is an immediate and temporary consideration. For the longer future, choice has to be made between competition in service and monopoly. And all that has been said about the advantage of a transportation monopoly for terminal communities like New England is equally applicable to the terminal community on the Pacific slope. Local California business may possibly pay the penalty, temporarily at least, for dissolution; but it is believed that a genuine open competitive market for through business with the outside world by rail will be correspondingly promoted.

The utter impracticability of Central Pacific unmerger, by virtue of the historic corporate interrelation already described, is stoutly represented as a bar thereto. A conclusive answer to this objection, superficially formidable as it is, is at once at hand. This is the second dissolution plan, so called, which was adopted and completely worked out in detail, by the Central and Southern Pacific companies as a result of the dissolution decrees of the Supreme Court of the United States in 1912. This agreement, dated February 8, 1913, involved the sale by the Southern Pacific to the Union Pacific of its Central Pacific stock. The properties were separated by assignment to the Southern Pacific of the line from Tehama north to the Oregon boundary (see map at page 576) and of the line from Newark to Redwood, together with running rights over the Central Pacific main line from Brighton to Lathrop and Niles. This left the Southern Pacific a continuous line from north to south, as well as complete entrance to San Francisco. Conversely, the Southern Pacific agreed to give the Central Pacific a 999-year joint use of the Benicia short line from Sacramento to Oakland. The exclusive grant of this last facility, which excluded the Western Pacific, was made the ground for disapproval by the California railroad commission. The supplementary agreement of March 14, 1913, also reprinted herewith, expunged this provision. But the whole matter ultimately fell through because of expiration of the underwriting syndicate formed for the purpose of carrying out the dissolution plan. Nothing came of the business therefore; but the agreements reached, even although under legal duress, are believed to be practicable.

They afford a conclusive answer to the objection that such unmerger is impossible. A copy of the pertinent section of this agreement and the supplementary agreement of March 14, 1913 (not executed), is reproduced herewith.

Agreement, dated February 8, 1913.

Second.

11. It is hereby agreed by all the parties hereto that, immediately upon the effective date of this agreement, the Central Pacific Railway Company will make and the Southern Pacific Railroad Company will accept, and the Southern Pacific Company will guarantee on the part of the Southern Pacific Railroad Company, a lease, for a term of 999 years, of the line of railroad of said Central Pacific Railway Company extending from Tehama, in Tehama County, in the State of California, to a connection with the line of railroad of the Oregon and California Railroad Company at the boundary line between the States of California and Oregon, with all franchises, rights, privileges, immunities and other property appertaining thereto, except equipment, at an annual rental payable in equal semiannual installments, on the first day of June and the first day of December of each year, equal to a year's interest at the rate of five per cent per annum on the value of said line of railroad and its franchises and appurtenances (other than equipment) to be leased as aforesaid, to be ascertained by arbitration as hereinafter provided, in the event that the parties hereto shall be unable within twelve months from the effective date hereof to agree upon said valuation; with an option to the Southern Pacific Railroad Company to purchase the said leased line of railroad and its appurtenances at the valuation fixed as the basis of rental in accordance with this Section 11 whenever said line and its appurtenances can be conveyed by the Central Pacific Railway Company free from the mortgage liens now existing thereon. The Central Pacific Railway Company hereby agrees that it will create no additional lien upon said line of railroad without the consent of the Southern Pacific Railroad Company or of the Southern Pacific Company, and that it will pay the interest upon all bonds now outstanding secured by mortgage liens upon said line of railroad, as such interest shall mature, and will pay the principal of said bonds at maturity, and that it will at all times indemnify and hold harmless the Southern Pacific Railroad Company and the Southern Pacific Company from and against the enforcement upon said line of railroad and its appurtenances of the lien of any of said mortgages; and the Union Pacific Railroad Company hereby guarantees the performance of said obligations assumed by the Central Pacific Railway Company. Said lease shall be substantially in the form of the draft of lease hereto attached and marked Exhibit A, except such changes in said form as shall be made by agreement of the parties and approved by the Railroad Commission of California.

12. It is hereby agreed by all the parties hereto that, immediately upon the effective date of this agreement, the Central Pacific Railway Company will sell and convey to said Southern Pacific Railroad Company and that said Southern Pacific Railroad Company will purchase the line of railroad of the Central Pacific Railway Company, constructed and under construction, extending from a connection with the line of railroad described in Section 11 hereof at Weed Station, Siskiyou County, California, to a connection with the line of railroad of the Oregon and California Railroad Company at or near Natron Station, Lane County, Oregon, by way of Klamath Falls, Oregon, with its franchises, rights, privileges, immunities and other property appertaining thereto, conveyed by the Oregon Eastern Railway Company to Central Pacific Railway Company by deed dated February 29, 1912. As the consideration for the sale aforesaid said Southern Pacific Railroad Company hereby agrees to assume, and indemnify said Central Pacific Railway Company from and against, any expenditures made by the Central Pacific Railway Company or for its account for construction, additions or betterments in connection with the said railroad and its appurtenances, since the 29th day of February, 1912, and agrees to assume, and indemnify and save harmless the Central Pacific Railway Company from and against, the California Northeastern Division First Mortgage Bonds of the Oregon Eastern Railway Company to the amount of $5,000,000, face value, and Extensions Purchase Notes of the Central Pacific Railway Company to the principal amount of $7,055,097.20, together with the interest maturing and payable on said bonds and notes after the date of purchase provided for in this section, and to reimburse the Central Pacific Railway Company for all interest paid by it on said bonds and notes which accrued subsequently to February 29, 1912, and further hereby assumes and agrees to pay any other indebtedness and liabilities now outstanding of the Oregon Eastern Railway Company heretofore assumed by the Central Pacific Railway

Company in and by the deed of February 29, 1912, aforesaid; and the Southern Pacific Company hereby agrees to guarantee the obligations agreed in this section to be assumed by the Southern Pacific Railroad Company, and further agrees to cancel and surrender the aforesaid Extensions Purchase Notes now held by it to the amount aforesaid, and to execute and have duly recorded a release by it, as the holder of the aforesaid bonds issued by the Oregon Eastern Railway Company, of all obligations concerning said bonds assumed by the Central Pacific Railway Company in and by the aforesaid deed dated February 29, 1912.

Third.

13. The said Southern Pacific Company and Southern Pacific Railroad Company agree to grant, and hereby do grant, to the Central Pacific Railway Company the equal joint use and possession, from the effective date of this agreement, for a term of 999 years, of all that part of the railway and appurtenant property, owned either by the Southern Pacific Company or the Southern Pacific Railroad Company, including telegraph and telephone lines, from the connections thereof with the Central Pacific Railway Company's tracks in Sacramento, California, via Benicia and Port Costa, to connections with the Central Pacific Railway Company's tracks in Oakland, California, including the ferries between Benicia and Port Costa and ferry slips at Benicia and Port Costa, and any bridge, tube or tunnel substituted for the ferry between Benicia and Port Costa, and the appurtenances thereof, except rolling stock and supplies. A contract shall be executed and delivered by the parties aforesaid, immediately upon the effective date of this agreement, covering said joint use and possession, which shall contain a provision for the payment by the Central Pacific Railway Company as an annual rental and consideration for such use and possession, the sum of two and one-half per cent per annum on the value of the property covered by said agreement, in two equal instalments, on the first day of June and the first day of December in each year, to be increased by two and one-half per cent per annum upon the actual cost (which shall include transportation and insurance and a just sum to cover the cost of superintendence and management) to the Southern Pacific Company or the Southern Pacific Railroad Company of all improvements, betterments and additions to the property properly chargeable to capital account, which valuation shall be determined by agreement of the parties or by arbitration hereunder; and a provision for the payment by the Central Pacific Railway Company of a proportion of the expense of maintenance and operation of said line of railroad, with its terminals and other appurtenances. Said contract shall contain substantially the terms expressed in, and shall be substantially in the form of, the draft of contract hereto attached and marked Exhibit B, except such changes in said form as shall be made by the parties and approved by the Railroad Commission of California.

14. From the effective date hereof the Central Pacific Railway Company shall be entitled to trackage or running rights for a term of 999 years over the line of railroad of the Southern Pacific Railroad Company and Southern Pacific Company between Redwood and San Francisco, for the operation of through freight trains only, without right to do local business—Redwood to be considered local to Southern Pacific Company—with an option, however, to the Central Pacific Railway Company to withdraw from such trackage or running rights at any time within two years from the effective date hereof; the rental to be paid by the Central Pacific Railway Company for such trackage or running rights to be determined by arbitration in the manner hereinafter provided, if the parties hereto are unable to agree thereon.

15. Union Pacific Railroad Company and Central Pacific Railway Company hereby agree that the Central Pacific Railway Company shall, and Central Pacific Railway Company does hereby, grant to the said Southern Pacific Company and said Southern Pacific Railroad Company, or either of them, an option for a period of two years from the effective date hereof to acquire the equal joint use and possession, for the term of 999 years, of the railway owned by the Central Pacific Railway Company, from Newark to Redwood, California, and the appurtenances thereof, except rolling stock and supplies, upon the same terms, conditions and rights provided in the foregoing Section 13 with reference to the joint use and possession of the line of railroad between Sacramento and Oakland. Such use shall extend to the cars or trains of any corporation owned or controlled by the Southern Pacific Company.

Fourth.

17. From the effective date hereof, the terminals of the Southern Pacific Railroad Company (or the Southern Pacific Company) and the Central Pacific Railway Company at all junctions of their respective lines within city limits, including industry tracks, shall become and be subject to the joint and equal use of both parties, their

lessees or assigns, for a term of 999 years, with the option to either party to withdraw from its use of any of the terminals of the other at any time within two years from the effective date hereof, and the maintenance and operating expenses and taxes thereof shall be apportioned by agreement or by arbitration. The value of such terminals when owned exclusively by one party, and the difference in the value when jointly owned by several parties, shall be ascertained by arbitration, if the parties hereto are unable to agree thereon, and a rental upon the value, or the excess value, as the case may be, at the rate of two and one-half per cent, shall be paid for the use of such terminals by the tenant company. The foregoing grant and provisions contained in this section shall extend in all respects, in favor of the Central Pacific Railway Company, to the freight terminals of the Southern Pacific Railroad Company and of the Southern Pacific Company, including roundhouses and shop facilities for light and temporary repairs, in the City and County of San Francisco, but not including shops or roundhouses at other points; and, in favor of either the Southern Pacific Company and Southern Pacific Railroad Company on the one part, or the Central Pacific Railway Company on the other part, to all freight and passenger terminals at Oakland, Oakland Mole, Alameda and Alameda Mole, and all ferries between Oakland and San Francisco, and Oakland Mole and San Francisco, and Alameda Mole and San Francisco, and ferry slips and landings in San Francisco, and the passenger buildings adjacent thereto, owned or leased by the other of said parties. But the ownership and operation of electric lines, and stations and terminals thereon, are to remain as at present until otherwise disposed of, with an equitable apportionment of the earnings and expenses in the meantime.

18. The Central Pacific Railway Company agrees that it will use and employ its shops and shop facilities, roundhouses and other appurtenances at Sacramento, Oakland and other points in California for the repair and maintenance of the engines and cars and for other shop work of the Southern Pacific Company and the Southern Pacific Railroad Company in the same manner as it uses and employs the same for the repair and maintenance of its own equipment and for its own other shop work, without discrimination, for five years from the effective date hereof; the compensation of said Central Pacific Railway Company for the repair and shop work and shop facilities to be fixed upon some equitable basis, including a return upon the value of the plant, and if the parties are unable to agree upon such compensation the same shall be determined by arbitration as hereinafter provided.

Fifth.

19. The Southern Pacific Company hereby agrees to sell, assign and transfer to the Union Pacific Railroad Company, and the Union Pacific Railroad Company hereby agrees to purchase, immediately upon the effective date of this agreement, $3,000,000, face value, of First Mortgage Bonds of the Central California Railway Company, $1,000,000, face value, of First Mortgage Bonds of the Chico and Northern Railroad Company, $8,500,000 face value, of First Mortgage Bonds of the Nevada and California Railway Company, $2,500,000, face value, of the First Mortgage Bonds of the Sacramento Southern Railroad Company, and $3,084,252.33, face value, of Extensions Purchase Notes of the Central Pacific Railway Company, dated March 1, 1912, now held by the Southern Pacific Company, for and in consideration of the payment by the Union Pacific Railroad Company of a sum equal to the aggregate principal amount of said bonds and notes, together with the accrued interest thereon, (except that the consideration for the purchase of said First Mortgage Bonds of the Chico and Northern Railroad Company shall be the book cost thereof to the Southern Pacific Company), and the Southern Pacific Company agrees to deliver to the Union Pacific Railroad Company the bonds and notes aforesaid; and the Southern Pacific Company further agrees to sell, assign and transfer to the Union Pacific Railroad Company, and the Union Pacific Railroad Company agrees to purchase, at the face value thereof and accrued interest, all other indebtedness of the Central Pacific Railway Company to the Southern Pacific Company, on account of advances or otherwise, representing expenditures for construction and betterments made since the 29th day of February, 1912, and on account of materials and supplies not paid for out of earnings, in connections with the lines of railroad formerly owned respectively by the Central California Railway Company, Chico and Northern Railroad Company, Nevada and California Railway Company, Sacramento Southern Railroad Company, Goose Lake and Southern Railway Company, Fernley and Lassen Railway Company and Modoc Northern Railway Company, acquired by the aforesaid, each dated February 29, 1912.

Supplementary agreement, dated March 14, 1913 (not executed).

Section 4. That all of the provisions contained in Sections 13, 14 and 15 of the Original Agreement are hereby abrogated and annulled.

Section 5. That Section 16 of the Original Agreement is hereby modified and amended by striking out the following words at the beginning of said section, viz: "During the continuance of the option rights in regard to trackage or joint use or"

Section 6. That all of the provisions contained in Section 17 of the Original Agreement are hereby abrogated and annulled.

Section 7. That the parties hereto hereby agree upon the following additional provisions to be inserted in the Original Agreement and numbered respectively Sections 17–A, 17–B, and 17–C.

Section 17–A. Prior to the effective date of the surrender by the Southern Pacific Company of the possession of the railroads of the Central Pacific Railway Company, the Southern Pacific Company and the Central Pacific Railway Company will file with the Railroad Commission of the State of California tariffs, effective upon the effective date of such surrender, of joint rates and fares for the transportation of freight and passengers between all points in the State of California between which the Southern Pacific Company had tariffs in effect on February 24, 1913, whether over the railroad lines of the Central Pacific Railway Company or other lines operated by the Southern Pacific Railway Company, which said joint rates and fares shall not exceed the rates and fares of the Southern Pacific Company between the same points on file with the said Railroad Commission on said 24th day of February, 1913. The Southern Pacific Company and the Central Pacific Railway Company, respectively, will also file with said Railroad Commission, effective upon the effective date of such surrender, their tariffs of local rates and fares between points within the State of California so far as such new tariffs shall be required by reason of the altered conditions as to the ownership and operation of railroad lines resulting from Original Agreement or from this Supplementary Agreement, which rates and fares shall not exceed the rates and fares in effect between said points on the 24th day of February, 1913, over the lines then operated by the Southern Pacific Company.

Section 17–B. The Southern Pacific Company intends to route all interstate traffic having origin or destination in the State of California at Santa Barbara or Mojave or points north thereof over its lines via Los Angeles, so far as it may be able to secure the routing of the same via its lines, but as to all such traffic, which it cannot so secure it hereby agrees to preferentially solicit and route the same via the through routes composed of its own lines and the lines of the Central Pacific Railway, Union Pacific Railroad and Oregon Short Line Railroad Company if not otherwise routed by the shipper or consignee. And the Central Pacific Railway Company, Union Pacific Railroad Company and Oregon Short Line Railroad Company intend to route all interstate traffic having origin or destination in the State of California at Santa Barbara or Mojave or points north thereof over their own lines, so far as they or either of them, may be able to secure the routing of the same via such lines; but as to such traffic which they, or either of them, cannot so secure, they, and each of them hereby agree to preferentially solicit and route the same via the through routes composed of their own lines respectively and the lines of the Southern Pacific Company if not otherwise routed by the shipper or consignee.

Section 17–C. The Southern Pacific Company intends to route via its own lines all traffic having origin or destination at points in Oregon so far as it may be able to secure the routing of the same via its lines, but as to all traffic moving through the Portland gateway which it cannot so secure it hereby agrees to preferentially solicit and route the same via the through routes composed of its own lines and the lines of the Oregon-Washington Railroad & Navigation Company, Oregon Short Line Railroad Company and Union Pacific Railroad Company, if not otherwise routed by the shipper or consignee, at equal divisions of rates.

And Union Pacific Railroad Company and Oregon Short Line Railroad Company for themselves and as owners of all the capital stock of the Oregon-Washington Railroad & Navigation Company hereby agree to solicit and route all traffic moving through the Portland gateway to or from points in the State of Oregon south of Portland via the through routes composed of their own lines and the lines of the Southern Pacific Company, if not otherwise routed by the shipper or consignee, at equal divisions of rates.

Equally worthy of attention is the objection to unmerger that it is not desired either by the shipping or the general California public. In other words, it is alleged, and seems actually to be a fact, that the California authorities, expressive of public senti-

ment, still hold to the view above quoted from an opinion of the railroad commission. To this view, as part of a national plan, two answers may be given. The first has, in fact, already been stated. It is that disturbance temporarily of established conditions, and perhaps long-time prejudice to the conduct of strictly local business—traffic to and fro from points on the Pacific slope—may be expected; but that the compensating advantage of a keener rivalry for traffic with the outside world may ensue. But what about the other motive in public sentiment? This concerns the natural desire of state authorities and of the California shipping public to control the local situation. So long as the Central Pacific is a part of the Southern Pacific system, a large fraction of the lines jointly owned by both are subject to the jurisdiction of the state of California. The withdrawal of the Central Pacific and transference of its ownership and management to the Union Pacific, which is but slightly represented by mileage in California, would materially lessen the weight in its councils of local opinion and authority. This is a real objection from the point of view of California; but it can not be allowed to interfere with national policy. The conflict of state and federal government is again in evidence at this point; and it is confidently believed that the claim of the nation is paramount to that of the locality. Dissolution, obviously, if ever effected, must be carried out with due regard to this local opinion. But it is not believed that this objection locally should be allowed to prevail.

Along with the Central Pacific lines there are a considerable number of isolated branches. Those which appear to belong to the Central Pacific are as follows; known as the Placerville, Ione, Valley Springs, Raymond, Madera, and Oakdale branches. These are matters of detail, but are instanced in order to show the likelihood of a decision being called for in the event of final consummation of a consolidation program.

Summarizing, the resultant layout in California, after unmerger of the Central Pacific and the Southern Pacific, will leave the following lines as depicted on map 23 in the Southern Pacific system. The smaller map on page 576 *supra*, already utilized in discussion of Central Pacific affairs, shows it more in detail. There will be a through line to Tehama and on to Portland, with existing trackage to Seattle, together with the spur from Weed. This latter is important as extending toward a connection some day from the north down the Deschutes River. The Southern Pacific will also have full running rights from Brighton, near Sacramento, to Lathrop, Niles, Redwood, and Oakland, thus completing a through line the length of California and into San Francisco. But decision is reserved for further examination, as to whether it would cripple service, wholly to exclude the Southern Pacific from the line from Lathrop down the west side of the San Joaquin Valley to a Southern Pacific connection again at Goshen. The important point is that service shall not be prejudicially affected by too drastic an attempt at separation. Cooperative utilization under a pooling arrangement for the two lines down the San Joaquin Valley would probably suffice. In exchange, the Southern Pacific should give full privileges to the Central Pacific from Redwood into the San Francisco terminals, together with a grant of equal running rights over the Benicia cut-off line from Sacramento to Oakland. In this cut-off the Western Pacific should also participate.

What shall become of the Southern Pacific lines in Oregon? North of the California boundary they are separately incorporated as the Oregon & California Railroad. The location appears in relation to the Southern Pacific and also to the Union Pacific systems on maps 15 and 23, respectively. The geographical circumstances should be understood. The watershed along the summit of the Siskiyou Range follows the northern boundary of California. But the natural separation from a transportation standpoint between the two properties occurs at Tehama, Calif. This is the head of the fertile Sacramento Valley and the beginning of the canyon or bridge line. It is stoutly urged that these lines, either north of California or north of Tehama should be

transferred from the Southern Pacific Company to the Oregon Short Line, thus also forming part of the Union Pacific system. The argument therefor is largely an operating one, and there are substantial precedents for such action. Under the Harriman régime, when all the lines throughout this territory were corporatively united the Oregon & California Railroad was managed as a part of the Union Pacific system. A similar policy was pursued by the federal Railroad Administration, and the then regional director recommends that this policy be pursued. Furthermore, it is represented that public opinion along the Willamette Valley, traversed by these lines, strongly favors such segregation. The argument in all these cases is that the Siskiyou Range is a difficult watershed to cross. The natural flow of traffic, it is alleged, is down hill to the north from the California boundary, and thence out to the east by the Oregon Short Line; and, similarly, that southbound traffic should move toward San Francisco from the frontier. Complaint is cited of car shortages in the Willamette region, due to this cause. It is alleged that there is heavy tonnage, lumber and the like, out of this territory, and that this calls for a constant inward flow of empty cars. The lumber loaded thereon moves from the Willamette Valley either to Omaha, St. Paul, etc., or else southward to California, Arizona, and New Mexico. The empties, it is alleged, under Southern Pacific management, even for eastbound traffic over the Oregon Short Line, must climb over the summit of the Union Pacific-Central Pacific line, and then up through northern California and over yet another high range into Oregon. And inasmuch as the Southern Pacific only enjoys the short haul on this directly eastbound business, a consistent neglect to provide an adequate supply of empty cars is alleged. The net effect, it is said, is to discourage lumber movement to the eastern market, as against the one located along the main Southern Pacific lines. All told, the gist of this contention is that operating efficiency would be promoted were this segregation to take place, and that a broader lumber market would also necessarily result.

The Southern Pacific vigorously combats this proposal. A heavy investment, of long standing, has been made. It is alleged that the ability of the Southern Pacific to compete effectively in Oregon with the other transcontinental routes would be destroyed by dismemberment. The Southern Pacific line through northern California was constructed, it appears, with a view to continuous operation through into Oregon; and amputation would leave these lines in the air at the California boundary. A comprehensive analysis of traffic on the Oregon lines is offered in order to show that the principal business hereabouts is north and south rather than east and west. Of the total number of passengers picked up on the Oregon lines over 80 per cent are said to be ticketed to stations on the existing Southern Pacific system. Less than 20 per cent of the passengers from points on these lines to other destinations are noted. Over 80 per cent of the carloads of freight are alleged to be picked up or delivered at or to stations embraced in the present Southern Pacific system. Certain other details concerning traffic are set forth in the following memorandum:

Four passenger trains in each direction are operated *daily between Portland and San Francisco,* which now run over a single system, that would have to be operated over two systems if the Oregon lines were separated from the Southern Pacific. These trains earn an average of approximately $4.23 per train mile, which earnings are not approached by any East or Westbound transcontinental train. They indicate the volume of the north and south passenger business.

Of the *total number of carloads* of freight picked up or delivered at points on Southern Pacific lines in Oregon, more than *80%* are to or from stations in Oregon, California, Nevada, Utah, Arizona and New Mexico—the service *being performed almost entirely by the lines embraced in existing Southern Pacific System.*

Of the total number of carloads of freight picked up or delivered at points on Southern Pacific lines in Oregon, less than 20% originate at or are destined to points north and east of Portland, Ogden and El Paso. These include all carloads to and from American and Canadian Northwest which are delivered at Portland to or by the Northern Pacific, Great Northern and Chicago, Milwaukee & St. Paul. They include all carloads to and from the Middle West and East which are routed via Ogden, the Denver & Rio Grande and its Eastern connections, and all carloads which are routed via El Paso and the Rock Island, as well as the

Texas Pacific. They also include all carloads from and to points in Mexico served only by the Southern Pacific Railroad of Mexico, and all carloads routed via El Paso to and from all points in Louisiana and Texas (including points in the Republic of Mexico interchanged by Southern Pacific at Rio Grande crossings and of carloads interchanged with ocean lines at Gulf ports) as well as of carloads routed via the steamship lines of the Southern Pacific Company between Gulf ports and the Atlantic Seaboard—the diversion of which would materially reduce the revenue of these lines and the Southern Pacific System as a whole

This is certainly an impressive exhibit, coupled with the possible effect upon through service of substituting two new sets of terminals at junctions for the present terminals at Portland and San Francisco. The only point not successfully met is the alleged effect upon the lumber market. The precise details of administration under the Harriman and federal régimes should be analyzed. The possibility even of the withdrawal of through rates from and to these points via the Central Pacific route, in order to confine movement of the Oregon traffic through Portland, must be considered. It seems preferable without detailed examination of these conflicting claims to reserve decision upon this important matter. Further time for comparison of data is necessary.

Subsequent investigation and especially a comparison of earning power in proportion to investment account, as shown on page 613, *infra*, for each of the five competing transcontinental systems, gives warning that the Southern Pacific-Rock Island system in order to compete on evenly-balanced terms with its neighbors, despite its present strength, must not be too roughly handled. The accompanying table is significant. It is a statement of total tons passing through El Paso, Ogden, and Portland, during the period March to November, 1920. It shows how very large, relatively, is the tonnage through both the Ogden and the Portland gateways as compared with the El Paso line.

	Westbound.	Eastbound.
Via El Paso	802,226 tons.	1,046,733 tons.
Via Ogden	1,076,395 tons.	1,616,861 tons.
Via Portland	571,172 tons.	749,557 tons.
Total	2,449,793 tons.	3,413,151 tons.

The amputation of the Central Pacific is a real loss. By no means all of this tonnage, of course, will desert the Southern Pacific, but some portion of it is bound to be taken away. Panama competition will certainly increase, and the roundabout transcontinental routes can hardly be expected to hold their own unless afforded every encouragement. To take away the Portland traffic also, or even a goodly share of it, in addition to the loss of such part of the Central Pacific traffic as will be diverted by the new arrangement, would be manifestly unfair. This is peculiarly true in view of the competitive strength of the Union Pacific and the Burlington as disclosed by our statistical exhibit for 1917. Southern Pacific competition throughout Oregon and up into Washington should probably be left undisturbed. It is, therefore, finally recommended that these Oregon lines remain in the possession of the Southern Pacific-Rock Island system. The several maps are constructed upon this basis.

The broadest national interests invite attention to the course of future construction in the great undeveloped triangle, with its western base on Portland-Sacramento and its apex at Salt Lake City. This great domain, bounded on the west and south by the Southern Pacific lines, and on the north by the Oregon Short Line, was apparently marked by the late E. H. Harriman [3] for exclusive development, upon acquisition by the Union Pacific of the Southern Pacific in 1901. Then came the invasion from the north by the Hill interests, which projected a line down the Deschutes River, evidently headed toward San Francisco. Harriman retaliated by the Columbia River construction, entered Seattle, and immediately proceeded to parallel the Deschutes River line. His plans contemplated a line (dotted on map 15) from Ontario on the eastern boundary straight across southern Oregon to Crescent Lake, near which a junc-

[3] Cf. Commissioner Lane's report and map, 12 I. C. C., 277

tion would be effected with the line down the Deschutes River. The natural continuation of this line to the west would then come out at Eugene, Oreg., on the San Francisco-Portland main line. This construction was halted by the federal dissolution suits. For, obviously, there was danger that, if built, the line might go to a rival company. From a national point of view, the important line, strategically, is the continuation of the north-and-south Deschutes River line to complete another route between the Columbia River and California. This project is the so-called Oregon Trunk Railway. It would come out at the southern end by Klamath Falls, and so on to a connection at Weed with the Southern Pacific at San Francisco. The larger significance of this project is that it would provide the Pacific coast with at least two through lines of railway to connect California and Washington. Southern California has three railroads north and south, parallel to the coast. Northern California and Oregon, at the narrowest point in Oregon, have only one complete through line. Two roads are built part way; but from Tehama to Eugene there is but a tenuous line of communication. A trestle blown up, or a tunnel wrecked, in time of war would compel military communication to take place by encircling the entire huge triangle east to the Great Salt Lake. The need of such another interior north-and-south line of communication was clearly demonstrated in the late war. North, in Washington, the military necessities are adequately covered. Complete protection would not be afforded, however, merely by effecting a junction of the Oregon Trunk Railway into Weed. There would still be a little stretch in northern California with but a single line of communication. The program ultimately necessary for completion of an entire interior line of communication should be the reconstruction of the Nevada-California Oregon Railway (map 16) from Reno, Nev., north, acquired by the Western Pacific in 1917; bringing it to standard gauge; and then completing it to a connection from the north with the Deschutes line. Thus would be provided a military detour route which might be of great importance in time of need.

The only foreshadowing conclusion which may be ventured as to the great undeveloped area in and about southern Oregon, is that it probably ought to fall rather under the control of the Union Pacific and Burlington-Northern Pacific systems, than that it should be developed by the St. Paul-Great Northern system. The extension southward of this last system has hardly the justification which attaches to an attempt of either of the other great systems to unite the western ends of their transcontinental stems to Seattle and San Francisco, respectively. Unless indeed, viewing the matter still more broadly, it should be held desirable that at some future time the St. Paul-Great Northern system should reach San Francisco by rail from the north, just as the two great southwestern transcontinental systems attain it from the south. Then, indeed, the scheme for evenly balanced competition all round, would be complete. But it is yet a long way from the railhead of the Oregon Trunk Railway down the Deschutes River to San Francisco. Rather does it seem desirable that the interior north-and-south line should be pushed up from the Western Pacific at Reno, and perhaps down from the north by a line down the Deschutes River under Northern Pacific auspices, to effect the junction.

The foregoing projects for penetrating the great undeveloped area in southern Oregon manifest a keen competition between all of the great interests. The Union Pacific is intruding from the east; the Southern Pacific (Oregon & California Railroad) is coming in from the west; the Hill and Union Pacific lines follow the Willamette and Deschutes rivers down from the north; while from the south, at Reno, the Western Pacific (Burlington-Northern Pacific, under this plan) and the Southern Pacific by Klamath Lake, are pressing forward to effect a junction in the interior. Shall zones of influence be laid out in advance, or is the wiser course to encourage construction by a grant of wide latitude? The issue is bound to arise upon application for further

construction. But at this time it is recommended that no general policy as to control be foreshadowed. Ultimately, of course, it is to be hoped that the great systems reaching the coast in Washington and California, respectively, shall be linked up by north-and-south connecting lines. But as yet it seems too early to declare just which lines shall be elected for that purpose. This plan contents itself, therefore, merely with emphasizing the national interest in the completion of an interior line of communication parallel to the coast, reserving details for future consideration.

What bounds shall be set to the zone of influence of the Oregon Short Line in the northwest, in order to balance up conditions? Shall the Union Pacific system continue to extend from Portland north into Seattle, by means of the existing trackage contract with the Northern Pacific? When the Oregon Short Line competes at Seattle with the Great Northern-St. Paul system, it must do so for the same transcontinental through rate as at Portland, although there is a lateral haul of 150 miles without compensation. This looks like a premium set upon roundabout haulage. But, on the other hand, under the new conditions set up by this plan, the Burlington-Northern Pacific combination, set up as a counterpoise to the Union Pacific, will be left unbalanced against it at Seattle unless the Union Pacific is also admitted. It would appear as if an equipoise would best be promoted by continuation of the existing trackage rights to the Oregon Short Line into Seattle, coupling this with such an adjustment of rates as to discourage roundabout hauling. The activities of the Union Pacific in the northwest ought not fairly to be circumscribed short of the same competitive opportunities which attach to its great rival, the Burlington-Northern Pacific. To drive the Union Pacific entirely out of Seattle, while also not giving it the Oregon lines of the Southern Pacific, would manifestly constitute most unfair discrimination. The desirability of balancing conditions in the northwest in this manner constitutes an additional reason to those already cited, for the transfer of the Southern Pacific lines in Oregon to its system, the point upon which final decision was however rendered in the negative.

It would doubtless contribute to more effective operation of the Union Pacific system as well as to promote competition, were full and equal trackage rights to be accorded by the Colorado & Southern Railroad from Orin Junction, Wyo., south to Cheyenne. Duplication of the line is apparently unnecessary at the present time. To the same end there ought to be trackage on the Burlington line (compare map 16) from Pratt, the end of a Union Pacific stub, also up to Orin Junction. Thus again it would appear as if more effective operation might be promoted without the necessity of duplication of an existing line.

The Union Pacific Railroad has a substantial investment in the Chicago & Alton. For a decade, to 1919, it has held $10,343,100 par value of the preferred stock of this road. And in 1912, in order to further safeguard this investment by financing the needs of the Alton, the Union Pacific Railroad acquired one-half of a substantial amount of its general-mortgage bonds. Subsequently additional bonds were taken, the aggregate in 1919 being upwards of $8,000,000. It is recommended that this control be transferred, as elsewhere set forth, to the Gulf system of the St. Louis-San Francisco system (page 627, *infra*), in order to afford a direct entrance into Chicago.

The Chicago, Burlington & Quincy Railroad has been selected as the Chicago connection for the Northern Pacific and also as the main stem of the second transcontinental line set up for competition with the powerful Union Pacific-Chicago & North Western combination. The reasons, based upon both the broadest consideration of western transcontinental conditions and of local situation in the northwest, have been already set forth. It is next in order to develop the necessary relationships within this great system, which ramifies throughout the far west almost as broadly as its great competitor. The geographical location is shown in detail by map 16. As

to the northwest, the justification for alliance with the Northern Pacific appears in the two routes across Wyoming to Billings, Mont. The traffic interchange with the Burlington at this point, although the Great Northern comes down directly through Great Falls, Mont., is very heavily in favor of the Northern Pacific as against the Great Northern. The course of this interchange since 1896 is manifested by the accompanying table of interchange of freight traffic at Billings. From this it appears that the Burlington received from the Northern Pacific in 1919 much more than double the tonnage received from the Great Northern, and that it delivered to the Northern Pacific almost three times as much traffic as to the Great Northern. Tonnage is stated in tons of 2,000 pounds.

Year.	Received by Chicago, Burlington & Quincy from—			Delivered by Chicago, Burlington & Quincy to—			Total interchange.		
	Great Northern.	Northern Pacific.	Total.	Great Northern.	Northern Pacific.	Total.	Great Northern.	Northern Pacific.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1896	.....	86,994	86,994	.....	22,071	22,071	.....	109,065	109,065
1897	.....	137,610	137,610	.....	43,014	43,014	.....	180,624	180,624
1898	.....	122,202	122,202	.....	55,735	55,735	.....	177,937	177,937
1899	.....	140,742	140,742	.....	66,704	66,704	.....	207,406	207,406
1900	.....	172,512	172,512	.....	76,178	72,178	.....	244,690	244,690
1901	.....	261,630	261,630	.....	93,593	93,593	.....	355,223	355,223
1902	.....	339,354	339,354	.....	108,505	108,505	.....	447,859	447,859
1903	.....	341,118	341,118	.....	146,263	146,263	.....	487,381	487,381
1904	.....	366,135	366,135	.....	167,159	167,159	.....	533,294	533,294
1905	.....	476,720	476,720	.....	273,892	273,892	.....	750,612	750,612
1906	.....	528,034	528,034	.....	369,987	369,987	.....	898,021	898,021
1907	.....	513,900	513,900	.....	599,273	599,273	.....	1,113,173	1,113,173
1908	[1] 23,514	463,092	486,606	[1] 4,907	345,098	350,005	[1] 28,421	808,190	836,611
1909	168,957	482,473	651,430	97,912	389,561	487,473	266,869	872,034	1,138,903
1910	228,644	481,966	710,610	152,793	439,437	592,230	381,437	921,403	1,302,840
1911	202,516	394,469	596,985	180,891	265,266	446,157	383,407	659,735	1,043,142
1912	213,290	406,240	619,530	170,472	311,482	481,954	383,762	717,722	1,101,484
1913	197,178	422,411	619,589	206,308	375,242	581,550	403,486	797,653	1,201,139
1914	205,672	420,224	625,896	155,331	310,389	465,720	361,003	739,613	1,091,611
1915	277,036	494,129	771,165	185,104	358,610	543,714	462,140	852,739	1,314,879
1916	306,925	698,490	1,005,415	318,177	577,756	875,933	625,102	1,256,246	1,881,341
1917	310,651	871,941	1,182,592	424,638	674,366	1,099,004	735,289	1,546,307	2,281,596
1918	354,493	803,473	1,157,966	293,565	637,853	931,418	648,058	1,441,326	2,089,384
1919	392,023	961,887	1,353,910	229,698	636,954	866,652	621,721	1,598,841	2,220,562

[1] Connection with the Great Northern was completed October, 1908.

There can be no doubt as to the course of this natural current of traffic to the northwest. These two routes are a competitive counterpart for the Oregon Short Line in the other great rival Union Pacific system.

The Colorado situation must be examined in detail. At present the Burlington route to the Pacific coast by way of the Denver & Rio Grande at Pueblo, is most indirect. Of the six lines into the Denver district, shown on map 14, it is one of the most roundabout. Three others leading to Colorado Springs or Pueblo direct are shorter. But the choice under this plan is made not for the immediate present, but as part of a national policy for the future. The bulwark of the Rocky Mountains behind Denver is bound to be overcome before long by the construction of a penetrating direct line toward Salt Lake City. The need of such provision of a through route is imperative, not only for the upbuilding of Denver, but for the satisfaction of national commercial needs. It is not alone that the roundabout twist by way of Pueblo is a waste of distance. The route through by Pueblo, by reason of physical obstacles of grade and curvature, can never be brought to first-class transcontinental standards. It is probably in order to supply this need that the Denver & Salt Lake City project has been so persistent, in the face of seemingly insuperable obstacles. Its location as a short cut west of Denver is shown by a distinctive designation on map 16. The

original project for a through line to Salt Lake City follows the river course out through the northwestern corner of Colorado. But it is said to be feasible, by a short and not difficult piece of construction, to leave the Denver & Salt Lake at McCoy, by the dotted line on the map and to reach the Denver & Rio Grande at Dotsero, Colo. Thus the most difficult portions of the Denver & Rio Grande line are avoided. The heavy grades at Tennessee Pass and Palmer Lake would be eliminated. By a short construction of 40 miles, the roundabout route by way of Pueblo would be reduced by 175 miles. The remainder of the Denver & Rio Grande on to Salt Lake City is almost all water grade and could readily be fitted to carry the Burlington load of traffic.

But the Denver & Salt Lake Railroad itself is a formidable project, especially where it cuts through the continental divide by the proposed James Peak tunnel. At present its grades and curvatures are prohibitive. In 1913 the Denver tunnel commission estimated a cost of $4,420,000 and a necessary period of construction of possibly five years. The city of Denver authorized $3,000,000 of bonds, but the Colorado supreme court in 1914 declared the authorization to be illegal. Since that time nothing has been accomplished, although a referendum vote in 1920 rejected the project as a municipal enterprise by a narrow margin. It seems quite possible that with strong financial support, and the promised traffic which could be guaranteed by a great system, a combination of public and private enterprise might bring the project to fruition. Thus might the great investment in an admirable new trunk line west of Denver to a junction at Salt Lake City with the Western Pacific be made available as a national asset. The Western Pacific with its most favorable grade and curvature, rising only 5,000 feet in altitude by 1 per cent grades, while the Central Pacific rises to 7,000 feet, is only 80 miles longer between San Francisco and Salt Lake City. With the pending reorganization of the Denver & Rio Grande competently put through, and the credit of a great system and of the Colorado public jointly employed, the Western Pacific, the Denver & Rio Grande, and the Burlington might readily become a first-class transcontinental route. It would thus match up, as already shown, with the Union Pacific combination.

The only other treatment for the Colorado situation, and one which rather temporizes with existing conditions than boldly proceeds to build for the future, would be to link the Denver & Rio Grande and Western Pacific with either the Santa Fe line into Pueblo, or the Rock Island-Southern Pacific combination into Colorado Springs. Financially the Missouri Pacific is incompetent to afford the necessary strength. But to link this second transcontinental route through the Denver and Salt Lake City openings with either of the two transcontinental routes by way of Arizona and New Mexico, would, as we have seen, completely distort the balance of power which it is sought by this proposal to set up. To permit the Southern Pacific, retaining hold on the Central Pacific, to combine with the Rock Island would threaten disastrously the Union Pacific system. And to give the Western Pacific route to the Southern Pacific-Rock Island combination, would leave the Union Pacific-North Western powerful combination without a peer in Washington and Oregon. To recapitulate, therefore, the grand strategy is to produce a combination which shall cover California, Washington, and Oregon with a competitive and financial power equivalent to that of the Union Pacific group. This consideration forces the alliance set forth in this general plan.

The question of terminals at San Francisco and of California feeders for the Western Pacific is a complicated one. It depends somewhat upon the treatment of the Central Pacific and of the Santa Fe. Feeders will doubtless come in time. But obviously a line to the coast is of no use without adequate approaches to the water front at once. The joint use of essential facilities, which was insisted upon by the California railroad commission in 1914 at the time of the proposed separation of the Central Pacific

from the Southern Pacific, ought to be upheld and developed. This matter is discussed more fully in connection with Central Pacific affairs, but it is also a general terminal question, worthy of detailed examination as part of a national program.

An outstanding characteristic of the Burlington-Northern Pacific system is the lack of connection between the twin cities and the Missouri River gateways. Confirmation of this is afforded by map 16. As already described, the St. Paul division, up the Mississippi Valley, is as isolated from the rest of the system as is the thumb of a hand from the fingers. It seems desirable to bridge this gap. For this purpose it is recommended that the Chicago Great Western be merged with this group. The distances by various routes across this territory appear in the accompanying table.

Omaha to St. Paul via—	
Chicago Great Western	346.1 miles.
Illinois Central—Fort Dodge—Minneapolis & St. Louis	365.8 miles.
Chicago, St. Paul, Minneapolis & Omaha	390.0 miles.
Chicago, Rock Island & Pacific	403.1 miles.
Chicago, Milwaukee & St. Paul	456.9 miles.
Chicago, Burlington & Quincy—Sioux City—Great Northern	466.5 miles.
Chicago, Burlington & Quincy	718.5 miles.
Kansas City to St. Paul via—	
Chicago, Rock Island & Pacific	482.5 miles.
Chicago Great Western	529.0 miles.
Wabash—Albia—Minneapolis & St. Louis	578.9 miles.
Missouri Pacific—Omaha—Chicago, St. Paul, Minneapolis — Omaha	594.0 miles.
Chicago, Minneapolis & St. Paul	599.4 miles.
Chicago, Burlington & Quincy—Sioux City—Great Northern	645.8 miles.
Chicago, Burlington & Quincy	713.1 miles.

The Chicago Great Western is by far the shortest line between Omaha and St. Paul; and between Kansas City and St. Paul it stands second upon the list; whereas the Burlington is one of the most roundabout in each instance. The Great Western and the Rock Island alone operate through passenger trains between Omaha and Kansas City and the twin cities. Furthermore, the Chicago Great Western line from St. Paul to Chicago in future years may well serve as a detour route or as a supplementary means of relieving congestion on the main line. The St. Paul-Great Northern has two trunks, and this arrangement gives its competitor through the twin cities an equivalent advantage in operation. The only part of the Chicago Great Western which is superfluous to the Burlington system lies between Des Moines and Kansas City. There is here, unquestionably, duplication. This division, however, admirably supplies a need in the Union Pacific-North Western system, as map 15 discloses. (page 575 *infra*). In fact, without this addition this latter system lacks entirely a Kansas City–St. Paul direct route. This recommendation as to the Great Western is conditioned, however, upon its drastic reorganization, financially. With a book investment in road and equipment for 1917 of $119,825 per mile of line, it is little wonder that the percentage of net operating income to investment is only 1.75. The net operating income per mile of line, $1,974, is low, to be sure; but as an operating property provided with powerful connections to give it business, it might cease to be a disturbing factor in the western railroad situation within an amplified Burlington–Northern Pacific system.

The Minneapolis & St. Louis may also find a fitting employment in completing the supplementary lines in the Burlington system, along with the Chicago Great Western. Its relation thereto is also shown on map 16. The line of the Minneapolis & St. Louis, west through South Dakota, being connected up along the Missouri River Valley with the not-distant Northern Pacific lines, might afford another short cut across country toward Chicago, thus avoiding congestion at the twin cities. The missing link for such a route is supplied by the Rock Island lines in Minnesota and

South Dakota. These lines, as shown by map 24, are of little use to the Rock Island system, the destiny of which abides in the southwest. They lie outside its natural territory. But by a short trackage west of Estherville, Iowa, a route would be completed clear through from Watertown, S. Dak., to Des Moines and down to the Peoria gateway. This Peoria gateway division is one of the main elements of strength in the Minneapolis & St. Louis line. At the extreme lower end, there is duplication with existing Burlington lines; but from the Mississippi River crossing, straight up through to Bismarck, N. Dak., it appears as if these rails might be more profitably employed to feed the grain of that territory down to trunk line or southern connections than under their present utilization. There is, however, one break in thie cut-off which needs to be bridged within the present Minneapolis & St. Louis system. West of Fort Dodge, Iowa, a little bit of Illinois Central trackage would afford a connection with the western Minneapolis & St. Louis line, and then southeast of Fort Dodge 22 miles of new construction to Story City would there piece on again to a branch leading directly into Marshalltown, Iowa. Or, in lieu of this, the missing link might be supplied throughout by trackage on the Illinois Central and Chicago & North Western rails between the same points. In either case a complete new through line down to Peoria, entirely within the proposed Burlington system, would result. Fortunately there is a way to avoid useless duplication by still further partition. Between Des Moines and Oskaloosa, Iowa, (map 16) the Minneapolis & St. Louis merely uses trackage. It is from Oskaloosa on to Peoria that this line pierces the very bowels of the present Burlington system. But consideration of map 15 demonstrates that this Peoria division admirably builds into the Union Pacific-North Western system, which lacks just such an inlet to the Peoria gateway. It is alleged that a better provision of station facilities at Marshalltown will also be afforded by such a transfer. In this same connection it will be recalled (page 599 *infra*) that one further subtraction is made from the Minneapolis & St. Louis. This is the taking of the road from Mason City, Iowa, south to Albia for the St. Paul-Great Northern system, in order to give it a through line from the twin cities to St. Louis. Thus by means of these detailed assignments the Minneapolis & St. Louis, which has in the past suffered from dearth of traffic and connections, but which possesses many attributes of strength, if properly linked up, may find stable lodgment as an element in the larger systems.

The Great Falls, Mont., industrial district is one of present and growing importance. Probably more tonnage originates there than from the whole stretch of local points west of Billings. It will be recalled that it was the preservation of competition at these local stations which in part affected the decision to ally the Great Northern with the St. Paul road, rather than to take the Northern Pacific. But a comparison of maps 16 and 17 brings out the fact that this particular choice combines two railroads, the Great Northern and the St. Paul, each of which enters Great Falls, whereas the Northern Pacific, standing alone, does not approach it. The requirement of the statute as to competition certainly demands that this situation be met. How, then, shall the Northern Pacific be admitted to the Great Falls district? The St. Paul-Great Northern system, according to map 17, has four other lines in, two of them from the south, on or near the line of the Northern Pacific, at Burgoyne and Butte respectively. To avoid unnecessary duplication, it would appear as if trackage might be granted to the Northern Pacific over one of these approaches. It is recommended that this be done, and it is so indicated on map 16.

The Mobile & Ohio Railroad might conceivably be consolidated with the Burlington system in order to afford a direct outlet to the Gulf of Mexico at Mobile as part of a national policy of encouragement of foreign trade routes through these new outlets. The location of the line is shown on map 10, and in the chapter on the southeastern railways the relation of this property to the Southern Railway system is described. In its present connection and ownership it is largely a useless appendage. In order

to satisfy a similar need for a Gulf outlet in future years, the Burlington purchased control of the Colorado & Southern in 1908. And by a joint arrangement with the Rock Island system it was expected that the Trinity & Brazos Valley Railroad would carry the line on to Galveston. The utilization of this latter route has been somewhat disappointing; but, nevertheless, the extraordinary growth of the port of Galveston proves that roads following these directions constitute natural currents of commerce. The Union Pacific system in turn controls the Illinois Central and through it a line via the Central of Georgia to Savannah, thus enjoying a double outlet through southern ports. Might not the Burlington-Northern Pacific system, likewise, amplified through Iowa, Minnesota, and South Dakota by the incorporation of the railroads as above described in the aggregate offer a tonnage at St. Louis which would substantially build up the Mobile & Ohio and its port on the Gulf of Mexico. The line under present ownership yields no profit and the project of its transfer is worth consideration. No positive recommendation to this effect is made, however, because of the risk of upsetting a nice balance of power, through so formidable a projection of another northwestern system beyond its natural gateways.

Many aspects of Chicago, Milwaukee & St. Paul business have already been discussed in connection with the general railroad alignment through the twin cities. But there are certain other matters peculiar individually to the St. Paul-Great Northern system which deserve attention. The first is the need of strengthening this combination, in face of the formidable competition which is set up through constitution of the Union Pacific-North Western and Burlington-Northern Pacific groups. Statistically, based upon results for 1917, as it appears, this St. Paul-Great Northern combination is materially stronger than the Southern Pacific-Rock Island system. But each of them is just a bit in danger of being elbowed back against the frontier, north and south, by the overwhelming power of the two great middle systems. It is incumbent, therefore, upon this plan to strengthen the St. Paul-Great Northern by every possible means. One of these is the possible addition of the financial strength and mileage of the Minneapolis, St. Paul & Sault Ste. Marie Railway, commonly known as the Soo. Its geographical location is given on maps 17 and 18. The Soo stands not by itself alone, however, but forms part of the great Canadian Pacific system. Its rails all trend northwest-southeast and keenly compete for business with the American lines throughout Wisconsin, Minnesota, and North Dakota. Merger with the St. Paul would, however, eliminate the Soo as a competitor from quite a long list of common points. But practically all of these, it should be observed, would in any event enjoy competition from the other great systems which gridiron the same territory. Hence no violation of the statute in this regard would result. The Soo interchanges abundantly with the St. Paul at Minnesota Transfer, giving it during 1920 in fact more tonnage than any other lines except the Northern Pacific and the Great Northern. In exchange the St. Paul gave to the Soo more traffic than any other railroad except the Northern Pacific. Thus the St. Paul exchange with the Soo at Minnesota Transfer was third in order of St. Paul receipts, and second in deliveries. The excellent freight terminals of the Soo, considerably exceeding its present needs at Chicago, together with its superior facilities in the twin cities, constitute still further elements of strength. The Soo main line from a connection near the half-way point of the St. Paul's Techny cut-off, northerly to a connection with its La Crosse division, could also be utilized for through freight, thereby shortening the distance and avoiding congestion and the long ruling gradients each way out of Milwaukee. The Portage branch of the Soo could also be used for a cut-off from the La Crosse division to the Wisconsin Valley division of the St. Paul to advantage. The operation of one company between Eau Claire and Chippewa Falls would be eliminated. Other economies, it is alleged, could be worked out in connection with the handling of ore in the Iron Mountain district. Probably the Wisconsin & Northern,

which recently the Soo line has petitioned the Commission to merge, would also go in with the rest; and the Duluth, South Shore & Atlantic and the Copper Range ought to be included. These properties will not add much strength, as their lines contribute little business except between Marquette and Calumet. The Spokane International is controlled by the same interests as the two last-named railroads. It would probably be better for the St. Paul to take this than to leave it in the hands of competitors. It would at all events afford an eastern connection with the Canadian Pacific system.

The Soo system at present is financially above the average. For 1917, the type year, the net operating income amounted to 5.7 per cent upon an investment in road and equipment of $44,414 per mile of line, a capital account about equal to that of the Rock Island, but substantially lower than either the Burlington or the North Western. The corresponding investment account for the Great Northern was $56,077 per mile of line and for the Northern Pacific $71,035. The Soo earned in 1917 $2,502 per mile of line as against the Great Northern $3,452, and the Northern Pacific $4,512. But its capital account is so low that it showed up in percentage of return almost as well as the Northern Pacific and substantially better in percentage on investment than the St. Paul. Statistically, then, the Soo would strengthen the proposed Great Northern-St. Paul combination.

It may well be contended that the Soo line should remain as part of an independent Canadian transcontinental route. It has three outlets to the border, and unquestionably at times has afforded access on better terms to the Pacific coast than would have been enjoyed without its keen rivalry with the American roads. Despite the heavy interchange with the parent company, the Canadian Pacific, about 10,000 cars yearly go through to the Pacific coast; and the annual interchange with the Canadian Pacific amounts to 27,000 carloads. Yet in many respects it is still largely a local Wisconsin property. So that the Soo must be treated, as it appears, as part of an American system certainly for protection of the local interests of Wisconsin. In that state there is a large local traffic, particularly forest products, hauled to the sawmills and paper mills in the Fox River and Wisconsin River valleys. The proposal to incorporate the Soo in the St. Paul-Great Northern system, however, at once raises a question as to the effect upon competition throughout this territory. The foregoing list of common points shows how widespread this is. Much of the business is locally competitive; approximately 150 out of 500 Soo stations are served by two or more roads operating herein. This circumstance is fortunate in some ways, however, for competition is so keen and there are so many railroad lines that the merger of the Soo and the St. Paul-Great Northern would still leave the entire region penetrated through and through with competitive local service both from the Union Pacific-North Western and the Burlington-Great Northern systems. This circumstance is well illustrated by maps 19 and 21. These portray the interlacing lines of all three of these systems in their various possible combinations. The only district where competition might largely disappear through this merger would be in North Dakota. There is little mileage there except the Great Northern and the Soo; and it may well be worth considering that only the Soo lines east of St. Paul should be incorporated with the Great Northern, leaving these western portions to function still as parts of a Canadian Pacific system. The Canadian Pacific, in fact, might possibly be left with trackage into Chicago over a main stem, which through transfer of ownership under this plan would form part of an American system. Carload traffic—and 95 per cent of Soo freight business moves in carloads—often betokens long-haul through business, and all such through business belonging to the Canadian Pacific might be handled by a trackage contract over rails which formed part of the Great Northern-St. Paul.

Strength, it is believed, might also be added by the Soo to the Great Northern-St. Paul, especially in connection with the movement of coal. There is an immense

tonnage, rapidly increasing, which goes by water to the head of the lakes, and of course the growth of grain traffic from Duluth and Superior eastbound is enormous. If the inclusion of the Soo lines would contribute to hold this business for the Great Northern-St. Paul, it would perhaps enable that system to support more easily the long bridge lines through the relatively barren territory of Montana and Idaho. The Soo also provides access to Stevens Point, Rhinelander, Manistique, Manitowoc, and other lake-ferry points and affords admission to the Bessemer and Gogebic iron districts in northern Wisconsin and Michigan, with an ore dock at Ashland. It also taps the new iron-ore district west of Duluth, known as the Cuyuna Range in competition with the Northern Pacific. All told, as part of the constitution of an all-American railway system, it is difficult to see what better disposition of this Soo mileage can be made than to treat it thus. In the Northern Pacific-Burlington system, to be sure, it would perpetuate competition in northern North Dakota, instead of putting an end to it. And also it would quicken competition by letting that system into Wisconsin, where, according to maps 16 and 17, the St. Paul is already entrenched, while the Northern Pacific and the Burlington are entirely absent. But probably better than either plan, would be to leave it alone as it is, as part of an independent foreign system. Such indeed, despite the foregoing recital of advantages, is my final recommendation. But it is dotted in on all the St. Paul-Great Northern maps to show how the land lies, if it be included.

Two very profitable railroads in Minnesota are the Duluth & Iron Range and the Duluth, Missabe & Northern. Both are owned either directly or through subsidiaries by the United States Steel Corporation. Their location is shown on map 17. Of the two, the Duluth & Iron Range, the more easterly road, penetrates the iron-ore region at right angles to the shore line of Lake Superior all by itself, whereas the Missabe runs directly in from Duluth, parallel throughout to the rails of the Great Northern. Both of these properties, as shown by exhibit 6, yield a large return annually upon their respective investment accounts. The Iron Range in 1917 earned 8.07 per cent on an average investment per mile of line of $102,784. The Missabe earned 11.65 per cent on a corresponding capital account of $108,997 per mile of line. To accomplish this result, the net operating income per mile of line must necessarily be high, being for the two roads, respectively, $8,698 and $12,381 per mile of line. Evidently one has to do here with very high-grade properties from the point of view of productivity and profitableness. This arises, of course, from the extraordinarily heavy trainloads shuttling back and forth from the ore beds to the docks.

These iron-ore properties must, of course, be treated as common carriers. As such they must find place in this consolidation scheme. Shall they remain together, as now, under one ownership and management, or, as prescribed by the statute, must they be so distributed as to be competitive one with another? The situation obviously differs broadly from that which obtains where a great number of competitive shippers are concerned. The situation at present is highly monopolistic except in so far as the Great Northern, the only railroad transporting this ore which is independent of the steel corporation, serves the other competitive steel manufacturers. Three treatments are possible. Under the first, proceeding upon the assumption that the Great Northern is already equipped and highly skilled in handling the business, both these iron-ore roads would go to the St. Paul-Great Northern system. But if a competitive situation be deemed necessary, then the Iron Range, which is not, according to the map, competitive with the Great Northern, might go in with it in order to round out its system. And the Missabe might be assigned either to the Burlington-Northern Pacific or the Union Pacific-North Western system. This arrangement would introduce competition in the carriage of the iron ore between two of the three northern transcontinental systems set up under this plan. But a third even more competitive situation would result if all three of these systems alike had access to this fertile

traffic-producing territory. The Great Northern is already there. The Iron Range and the Missabe, one way or another, might go respectively to the systems built upon the Union Pacific and the Burlington-Northern Pacific. It is difficult to decide between these possibilities without an extended examination of all the circumstances. But provisionally it is recommended that, for the sake of its profitableness, these two iron-ore properties should be allocated to the Great Northern-St. Paul system. And it will be observed from inspection of exhibit 6 that the result is appreciably to strengthen this combination more nearly to a parity with the other two great systems. Quite possibly this conclusion might be modified upon further inquiry. But at all events the maps and the statistical exhibits are constructed upon this basis.

The St. Paul-Great Northern system ought also to be provided at the start, in view of the violent disruption of long-established relationships, with some sort of a traffic arrangement which would protect it both at Council Bluffs and at the twin cities. The stub end at the Missouri River, as it has already appeared, must look for its livelihood from western interchange with either the Union Pacific or the Burlington. As a preferred connection with the latter and for many years as a close second to the North Western for interchange with the former (page 574, *supra*), this St. Paul stub at Omaha would of necessity dry up were these traffic interchanges to be diverted elsewhere. And the same thing is true at the twin cities. Breaking up the existing Hill combination, and allying the Burlington solely with the Northern Pacific, might well deprive the Great Northern of so much business northbound from the Burlington River line from Chicago as to jeopardize its welfare. No division of traffic could hope to be constantly maintained for a long term of years; but during a transitional period, while the various systems are getting upon their feet, some protection to the Great Northern-St. Paul ought to be afforded by such a contract. The heavy investment of the Great Northern in the Burlington, which will doubtless continue for many years, would naturally tend to encourage such favors. Perhaps the Great Northern will not need this protection, but it ought not to be denied it.

Strength for the St. Paul will undoubtedly flow from the recent acquisition of the Terre Haute & Southeastern Railroad. This will provide a much-needed coal supply for company use, and will also enable the St. Paul to share more largely in the lucrative business of supplying fuel for the northwest. One of the elements of strength in the Burlington system, as already pointed out, is the north-and-south coal line, the length of Illinois. The Chicago & North Western similarly taps the Illinois measures and derives a large revenue from this traffic. In October, 1920, for example, it received 773 carloads of soft coal from the Chicago & Eastern Illinois, 573 from the Terre Haute & Southeastern, and 577 from the Illinois Central for through waybilling. The proposal to include the Terre Haute & Southeastern in the St. Paul will permit it to share in this profitable traffic. But all of the arguments in favor of this plan commend a more substantial one operating in the same direction. The Chicago & Eastern Illinois is clearly separable into two parts, lying in Indiana and Illinois, respectively. Both traverse coal territory, and both alike are bridge lines. The eastern division to Evansville via Terre Haute is a preferred connection of the Louisville & Nashville into Chicago. Most of its coal goes north to the Chicago district or the northwest, and has of late been displacing the lake-ports coal, both for domestic and railroad uses. The western or Illinois half of the Chicago & Eastern Illinois, on the other hand, is a bridge for the railroads southwest of St. Louis into Chicago. As will appear in chapter VI, it is proposed to make use of it for the amplified Missouri Pacific system. Coal from the Illinois mines, moreover, more largely moves southwest, so that this Missouri Pacific consolidation follows along natural economic lines. It is recommended, therefore, that this little property be subdivided and that the eastern half go to the St. Paul-Great Northern system, reciprocal trackage being granted, so that each half may continue to reach Chicago freely.

Addition of the Chicago & Eastern Illinois would materially strengthen the St. Paul-Great Northern system (even more so were the Soo to be included) in several ways. First and foremost it would afford direct connection between coal fields and a great cold but coalless territory. It follows a line of established traffic. The St. Paul during three months to December, 1920, received at Chicago and Ladd, 9,588 carloads, mostly coal, from this property. Its deliveries were much lighter and should be increased, if the St. Paul-Great Northern gets its share of the South American and Panama Canal business. For this it needs an Ohio River gateway of this very sort, connecting with the Southern Railway and the Louisville & Nashville. Thus will Illinois Central competition be afforded. Furthermore, this little road parallels the Terre Haute & Southeastern for 150 miles in such fashion that the two can be worked as double track. It is also believed that after a drastic financial overhauling, now in process, the Chicago & Eastern Illinois will contribute in earning power on the investment, and thus serve to equalize conditions as compared with the other competing systems.

The acquisition of the Terre Haute & Southeastern by the St. Paul, already an accomplished fact, raises the point as to the physical connection between the two properties, and it is urged that the Chicago, Milwaukee & Gary Railroad should also be incorporated in the St. Paul system. Its present connection with the eastern lines is over the Indiana Harbor Belt Railroad and by means of the Elgin, Joliet & Eastern; but it is represented that the Chicago, Milwaukee & Gary, although originally intended for an outer belt line, has never been constructed beyond Rockford on the north and Momence, Ill., on the south. By a short extension east of Momence connection could be had with all the eastern lines, to form still another outer belt for handling through traffic around Chicago. Upon this point decision is reserved, to the end perhaps that a more careful examination may be made of the whole question of terminal facilities. It would be a mistake unquestionably to transfer a single belt line to one system, even an outer one, if it could be otherwise cooperatively developed for the use of all; and yet the St. Paul group should surely have some connecting link around Chicago.

The St. Paul-Great Northern ought surely to have an independent access to St. Louis. It is of the essence of this plan in general that all the transcontinental systems should have a dual base—Chicago and St. Louis. The most feasible connection seems to be to take the line of the Minneapolis & St. Louis from Mason City, Iowa, south to Albia. From this point Wabash trackage with the Union Pacific would carry the line to Moberly, Mo. This route is plotted on map 17. Then from Moberly into St. Louis a feasible line would be to cross the Missouri River and come in by trackage on the Katy (Frisco system) to St. Louis; or, if preferred, entrance into St. Louis could be had jointly with the Union Pacific over the Wabash line. Thus would be provided a route to match with the Burlington-Northern Pacific river line via Dubuque. The possession of this Dubuque line, in fact, renders the Mason City-Albia division of the Minneapolis & St. Louis superfluous in that system.

The independence and prestige of the St. Paul-Great Northern system might well be promoted by taking over the Burlington line from Shoshoni, Wyo., up to Laurel, Mont., or at all events, trackage rights might be given thereon. Inspection of map 16 shows that the Burlington has two parallel lines to the northwest across Wyoming up toward Billings, Mont. Surely it could spare trackage over the western of these two, without risk of an overload. The result would be to establish a direct liaison, as shown by map 21, between the Union Pacific and the Great Northern-St. Paul systems, which otherwise would be widely separated. The establishment of such contacts will surely be more economically effected than by a wasteful expenditure of capital in parallel construction.

Entrance of the St. Paul-Great Northern to Portland, as already suggested, will b provided by means of the Spokane, Portland & Seattle. The Spokane Merchant Association recommends that this line should be made joint for the common use o all systems, and quite probably this might be done. Incidentally, the Northern Pacific, as it appears, might withdraw from a part of this investment in favor of th St. Paul, in so far at least as it has a parallel line of its own.

Merger of the Chicago, Rock Island & Pacific Railway and of the Southern Pacifi Company to constitute a through transcontinental system via the southern gatewa is, after due examination, unreservedly recommended. Such a combination matche almost point for point with the Santa Fe system. The correspondence even as t details is extraordinary, especially after the supplementary changes herewith recom mended. The opinion of experts is unanimous. President Carl Gray, of the Unio Pacific, formerly regional director under the federal Railroad Administration, write that "The Rock Island-El Paso & Southwestern-Southern Pacific combination i ideal for the southwestern transcontinental line, competitive with the Santa Fe." Charles A. Wilson, of Cincinnati, an unprejudiced railway executive of wide ex perience, states that such a combination "is sound." No contrary view has beer anywhere expressed. Perhaps the most careful analysis, in utmost detail, was the elaborate report of J. W. Kendrick upon the Rock Island system to Jacob M. Dickinson, at that time receiver, in 1915.[4]

This authority, commenting upon the not infrequent comparisons of the Rock Island and the Santa Fe systems, points out the likeness which would exist, if closer relations between the Rock Island and the Southern Pacific were to be set up. Separately, the former "extends from Chicago to the Mississippi River and there explodes." It sprawls all over the map to St. Paul, to Omaha, to Denver, to New Mexico, to Galveston, and almost to New Orleans. Its general appearance betokens a failure to concentrate or specialize in any given field. This diversion of activity has left it, "as far as California is concerned, a composite road, whereas the Santa Fe is an entity." But, nevertheless, examination of map 23 proves that the predominant trend of the Rock Island is southwestward, and that it parallels the Santa Fe system as far as it goes in that direction in an unusual way. The Kendrick report definitely recommended intensive development for the Rock Island rather than that it should undertake costly extensions to the Pacific coast, as the Santa Fe has done; and it points out, moreover, that the necessity for such extension is obviated by the natural and binding interrelationship which exists with the Southern Pacific. The Rock Island, in other words, affords the shortest and most direct route from southern California by way of the Southern Pacific to the heart of the middle west.

The connecting link between the Southern Pacific and the Rock Island is the El Paso & Southwestern. This property, as map 23 shows, comprises 1,028 miles of line, running from Tucson, Ariz., eastward to El Paso, thence to Tucumcari, N. Mex., with certain subsidiary lines. The important and connecting link with the Rock Island is the bridge of 332 miles from El Paso to Tucumcari. Over this line from Chicago by the Rock Island, and from El Paso west, a large volume of traffic has moved for many years. Crack passenger trains, two a day, are operated in each direction, matching the Santa Fe service. This route already is clearly one of the existing "channels of trade and commerce" which the statute directs shall be preserved. The El Paso & Southwestern line west of El Paso is parallel to and competitive with the Southern Pacific as far as Tucson. To or from points west of Tucson it is not competitive from lack of connections. The road serves a rich mining and smelting country south of the Southern Pacific and this portion would, if merged, provide a

[4] Pages xi, 613, Voluminous exhibits and maps, privately published. One of the most comprehensive examinations of a railroad property extant.

second track for the handling of through traffic. The property is now owned by the so-called Phelps-Dodge interests and is administered in connection with their numerous mines. The same people are influential in the Texas & Pacific Railway. The El Paso & Southwestern was, in fact, constructed in order to afford a connection with the Texas & Pacific for smelter products to the Gulf at New Orleans, independently of the Southern Pacific. The resultant reduction of the then monopolistic Southern Pacific rates is said to have practically paid for the cost of construction within the first five years. At present the El Paso & Southwestern has intimate and long-standing traffic arrangements with the Rock Island covering the above-described interchange of through business. Incidentally, of course, its rather involved corporate structure, holding companies, and the like would disappear in the proposed new merger.

Such a combination would derive strength from its composite origin. The Southern Pacific has unparalleled extension throughout California. Many of its advantages could never be duplicated by competing roads. On the other hand, the Rock Island is firmly intrenched in the territory between Kansas City and Chicago. It possesses, as the accompanying table[5] reveals, the shortest line between Chicago and Des Moines

Route.	Number of lines.	Rank of Rock Island.	Route.	Number of lines.	Rank of Rock Island.
Chicago, Ill., to—			Omaha, Nebr., to—		
Des Moines, Iowa	5	1	Denver, Colo	3	3
Omaha, Nebr	6	4	Kansas City, Mo., to—		
Denver, Colo	4	3	Oklahoma City, Okla	4	4
St. Paul, Minn	6	6	Fort Worth, Tex	4	4
Cedar Rapids, Iowa	4	3	Galveston, Tex	4	[1] 3
Watertown, S. Dak	4	3	El Paso, Tex	4	1
Kansas City, Mo	7	6	Wichita, Kans	4	2
St. Joseph, Mo	4	3	Denver, Colo	5	2
Oklahoma City, Okla	4	4	St. Paul, Minn., to—		
Fort Worth, Tex	4	4	Kansas City, Mo	4	1
Galveston, Tex	5	5	St. Louis, Mo	3	2
El Paso, Tex	4	1	Oklahoma City, Okla., to—		
St. Louis, Mo., to—			Fort Worth, Tex	3	2
Denver, Colo	4	2	Memphis, Tenn., to—		
Kansas City, Mo	4	4	El Paso, Tex	3	2
El Paso, Tex	2	1			

[1] Rock Island and Santa Fe distances are the same.

and Chicago and El Paso, as also the shortest line between St. Louis and Kansas City and El Paso. It also has the shortest line from Kansas City to Denver and from Kansas City to St. Paul. But its great strength in branches and feeders throughout Kansas, Nebraska, and Iowa is greatly enhanced by its unusual terminal facilities at Chicago. As one of the earliest western roads, it obtained valuable property even in the heart of the metropolitan district. And its peculiar entrance is also noteworthy. Unlike all the other western roads, it sweeps clear around the city and enters it from the east side, with a line to terminal properties on the lake front. Thus it cuts across every trunk line, enjoying direct physical connection therewith. And then its Oklahoma-Arkansas line from Memphis traverses a rich and rapidly growing territory, and another line penetrates the lumber region of Louisiana to the Red River. At this point, as map 23 indicates, there is direct physical connection with the Southern Pacific into New Orleans. Thus the Rock Island, despite its somewhat erratic course and its wide dissemination, has elements of strength in the middle west which admirably parallel and in fact surpass the representation of the Santa Fe in that district. The very difference between the Rock Island constituency and that of the Southern Pacific is noteworthy financially. A certain compensatory quality in the traffic of

[5] From report of examination of the Chicago, Rock Island & Pacific Railway, by E. W. McKenna.

the two roads obtains. The Rock Island is distinctively a granger property. The Southern Pacific derives a large revenue from the carriage of California fruits and vegetables. If the Kansas wheat crop fails, the Pacific coast traffic may remain undisturbed and vice versa.

It may reasonably be inquired at this point, why, if this complementary relationship between the Rock Island and the Southern Pacific obtains, no proposal for closer alliance or merger has ever been made heretofore. The explanation is afforded by certain competitive complications which have at times engendered rivalries not provocative of consolidation. The first arises from the independence of the El Paso & Southwestern. It originates a rich traffic for which both the Rock Island and the Southern Pacific compete, eastbound. The bridge portion across New Mexico north of El Paso constitutes no element of discord. But it is the section parallel to the Southern Pacific as far as Tucson which originates most of the lucrative business. This might go east by way of the Southern Pacific to the Gulf or else northeast via Tucumcari over the Rock Island. As long as this property remains independent of the other two systems there is bound to be competition for this traffic other than smelter products, which naturally go by water via the Gulf. The second obstacle to identity of interest heretofore concerns the routing of through traffic from California. The Southern Pacific is able to reach the central west by other connections than the Rock Island, which afford it a longer haul and consequently a better division of the through rate. The connection at Sierra Blanca with the Texas & Pacific and at Alpine with the Kansas City, Mexico & Orient, although inferior otherwise, permits traffic to be handled by a route longer than that of the Rock Island (cf. maps 25 and 26). And by carriage still further east to a connection with the Katy, or even at New Orleans with the Illinois Central, the Southern Pacific enjoys a still greater proportion of the joint through rate. Thus on the Southern Pacific side there is impatience, perhaps at the close affiliation of the Rock Island with the Phelps-Dodge interests, and a corresponding ground of complaint, contrariwise, against the Southern Pacific on account of its routing propensities. This roundabout routing, by the way, appears to constitute an unmitigated economic waste. Were the El Paso & Southwestern to be merged with both the other properties, each of these sources of misunderstanding would tend to disappear. From every point of view it is confidently believed that the merger would promote efficiency, thereby affording better service to the public, and that it would put an end to certain uneconomic practices in transportation. The substitution of direct hauls for roundabout ones was one of the great contributions of the federal Railroad Administration. This merger would tend to perpetuate those gains.

A prime requisite for logically rounding out the Rock Island-Southern Pacific system is the provision of a line up the Mississippi Valley from Memphis to St. Louis, and thence on to the north. Consideration of map 23 shows that the Rock Island at present has two long isolated branches running eastward to the Mississippi River at Memphis and St. Louis, respectively. There is no connection north-and-south between the ends of these two arms and Chicago. The result is that traffic taken on by interchange from southwestern connections, or originating in Louisiana or Arkansas is carried only a short distance by the Rock Island, and is then turned over for the long haul to other roads. It has long been appreciated that this arrangement constituted an outstanding defect of the system. The ill-fated merger with the Frisco was in part intended to remedy this defect. Backed up and supplemented by the Southern Pacific mileage, so richly represented throughout Texas and Louisiana, this disability becomes all the more glaring. To meet the situation, an exchange with the St. Louis Southwestern is proposed, elsewhere discussed in chapter VI (page 625, *infra*). This, it is believed, permits of a satisfaction of the Rock Island need and will not prejudicially affect the resultant Frisco system. As indicated on map 23, the proposal

takes the form of merger in the Rock Island of the St. Louis Southwestern road from Brinkley, Ark., west of Memphis, up to Illmo at the Thebes bridgehead. In taking this mileage the Rock Island will assume all rights and trackage obligations of the St. Louis Southwestern in its relation to the Missouri Pacific. The Missouri Pacific, in other words, will still have trackage between Illmo and Paragould, Ark.; and in return the Rock Island will take trackage east of the Mississippi from the Thebes bridge up to St. Louis. And the St. Louis Southwestern, as part of the amplified Frisco, will come north over the river division of that system up the west bank of the Mississippi.

Supplementation of the Rock Island system by a line up the Mississippi Valley north of St. Louis is as important as entrance to St. Louis from the south. The Merchants' Exchange of that city proposes that Burlington trackage be taken, absorbing the St. Louis & Hannibal Railway and using trackage on the Wabash to the North St. Louis yards of the Rock Island. The need, however, rather passes the limit of mere trackage; and the recommendation is made, instead, that the river line of the Burlington, at least as far up as Keokuk, should be actually merged in the Rock Island system, and that such use as the Burlington desires to make of it shall be had by means of trackage. This reversal of relationship is based upon a considerable change of operating conditions within the Burlington system since the construction of the low-grade direct north-and-south line (map 16) from St. Louis to Davenport, Iowa. Originally the Burlington road up the west bank of the Mississippi to Keokuk, known as the St. Louis, Keokuk & Northwestern, formed part of the Burlington line between St. Louis and St. Joseph, by way of the former Hannibal & St. Jo Railroad; but with the completion of a better route direct to Kansas City via Mexico, the east-and-west line from Hannibal has assumed a mere local importance; and, with the Illinois north-and-south line above mentioned, the river road up to Keokuk becomes also almost superfluous, except for local traffic. Assuredly the Burlington ought not to be embarrassed in any way by withdrawal of such nonessential links in its system. Doubtless an arrangement one way or another for exchange of facilities could be worked out, and a recommendation to this effect is herewith made. This should of course cover not alone the line up to Keokuk but its continuation on to Burlington. Thus would the Rock Island be fortified for efficient operation in a very substantial way. As for the proposal that the Rock Island (map 23) should be tied in at Peoria by merger of the Chicago, Peoria & St. Louis, this little railroad is so crooked, with such heavy gradients, and in such poor condition that it would cost more to make it a main stem than to lay out a new line. As a Rock Island operating proposition between St. Louis and Chicago the proposal is preposterous for through business. The Alton, the Chicago & Eastern Illinois, the Wabash, and the Illinois Central lines betwen these points vary in length from 284 to 294 miles. The Chicago, Peoria & St. Louis line over Rock Island rails would be 362 miles long, a fatal handicap, aggravated by the poor condition of the line. This little road, as it appears, must be treated purely as a local proposition. What the Rock Island needs across Illinois is another main stem, not a branch.

Taking a broad view of the effect upon the Rock Island-Southern Pacific system of completing the line up the Mississippi Valley, it may be worth while to trace with the eye on map 23 the route which would be afforded under the new arrangement from Texas points north. Starting from San Antonio, thence to Houston, traffic would move north over the Houston East & West Texas to Shreveport, thence either by trackage east over the Vicksburg, Shreveport & Pacific to Ruston, La., on the Rock Island division in Louisiana; or else perhaps by trackage from Shreveport north over the St. Louis Southwestern to a similar connection at Fordyce, Ark. The traffic would then go on over the route described in the preceding paragraph. In the opposite direction tonnage might be moved from Iowa points or north in almost equal competition with the Illinois Central as far down as Louisiana and Texas. A substantial reenforcement of the system could thus be effected and keen competition in service be engendered throughout.

Certain other minor changes are recommended here and there in the Rock Island-Southern Pacific system to fit it more evenly to match up with the Santa Fe. The northwestern branch into South Dakota, it will be recalled, is elsewhere recommended for more effective use in the Burlington-Northern Pacific system (page 593, *supra*). It is extraneous to the Rock Island and quite serviceable by exchange with the Burlington. Northwest of Kansas City the merger is recommended of the Missouri Pacific branch from Concordia, Kans., to Hastings, Tex. This proposal adds no strength, but rather a liability. But it is part of a plan to withdraw the Missouri Pacific from local Kansas service, as elsewhere discussed in connection with that road (page 630, *infra*). The Santa Fe is to take the east-and-west line out to Lenora, Kans., thus paralleling the Denver line of the Rock Island in northern Kansas; but the Concordia-Hastings line fits in better to the Rock Island system to perfect this matched competition in this territory. The burden must be assumed in order to steady the situation. Contrariwise, liability for the Rock Island might well be laid down by the abandonment of the so-called Decorah branch from Cedar Rapids north in eastern Iowa. There are now so many east-and-west lines through this territory that there is not a decent living for a local north-and-south branch.

Another minor change in the Rock Island system might well be the inclusion of the Vicksburg, Shreveport & Pacific road (map 23), cutting east-and-west across northern Louisiana. An alternative disposition is suggested in chapter VI, but this merger is on the whole deemed preferable. For, as the map shows, it would tie in all the Southern Pacific lines in Texas with connections up toward the northeast, and particularly up the new river line above described, reaching clear up to Burlington, Iowa. Yet another addition is feasible. The Midland Valley Railroad (see map 23) is a little independent property running from Wichita, Kans., southwest to near Fort Smith, Ark. It must be cared for somehow under a general plan. But like so many of its sort, it must be regarded as a burden rather than an asset. In either the Missouri Pacific or the Frisco systems its merger would put an end to competition, as these lines ramify widely through northeastern Oklahoma. But in the Rock Island system, as the map shows, the Midland Valley would cut off a corner if connected by trackage of a few miles at the southern end, and it might open up a pretty good route from Wichita down to New Orleans, including the Southern Pacific entrance thereto. It would also let the Rock Island into Tulsa and make that place another common point with the Santa Fe.

Several mergers of subsidiary roads are recommended for the Southern Pacific system. The San Antonio & Aransas Pass, as shown on map 23, ramifies throughout southern Texas, north and south of the main line of the Southern Pacific between San Antonio and Houston. None of the stock is now owned by the Southern Pacific Company, owing to the Texas railroad policy; but the Southern Pacific is the guarantor of principal and interest for $17,544,000 of first-mortgage bonds. It pays substantially all of the interest, approximately $700,000 yearly. Being responsible for the properties, but at the present without effective control, this company ought properly to be merged. As an integral part of the Southern Pacific system the annual deficit can not be borne without such operating economies and saving of overhead as merger would permit. The Texas-Mexican Railway (also shown on map 23) affords contact with Laredo and really ought to go with the San Antonio & Aransas Pass to afford a connection with the Mexican National Railways. Possibly, however, this line ought to go to the Frisco system for a Mexican connection, inasmuch as the Southern Pacific has another contact with the Mexican railroads at Eagle Pass. The Texas Midland is also shown on map 23 as a small road running southwest from Paris, Tex. It originates a good deal of cotton going to the Gulf and, moreover, affords a convenient connection with the Frisco system. It ought either to be allocated to the Rock Island-Southern Pacific or to the Frisco. Other subsidiaries which might well

be included are the San Diego & Arizona, the Arizona & New Mexico, the Houston & Brazos Valley, and the Franklin & Abbeville. But these are all details and might be left for future action. The San Antonio, Uvalde & Gulf road is another little property which also probably belongs in the Southern Pacific group, but which may best be reserved without final decision at this time. Unless it be included here it probably should be tied in with one of the Southwestern-Gulf systems.

Some disposition ought to be made of the Northwestern Pacific, the line from San Francisco between the ocean and the Coast Range. Its location appears upon maps 16 and 22. At present this railroad is controlled through equal stock ownership by the Santa Fe system and the Southern Pacific. But the Southern Pacific has provided funds for extensions and owns $26,029,000 of $30,399,000 of the outstanding bonds. Furthermore, the physical connection of the line apparently commends at least a continuation of the present joint control. The strength of the two middle-group transcontinental lines is such that it hardly seems fair to weaken this participation of the present holders for their especial benefit. Certainly the Union Pacific has no claim to it. The Burlington, without any north-and-south line in California, has a slightly stronger interest; but it, again, is a direct line with superabundant resources as compared with the two roundabout southern transcontinental systems. There is one possibility which has merit. The weakest of all the transcontinental systems, isolated up along the Canadian border, is the St. Paul-Great Northern. Some day it ought to have access to California territory, and the two lines shown on map 17 down the Willamette and Deschutes valleys are fingers pointing in the direction of a natural extension. If, in due time, another north-and-south through line shall be required, as it undoubtedly will, why might not the Northwestern Pacific be then treated as appurtenant to this Great Northern-St. Paul system. It is the one way left by which it may enter. The gap from Trinidad on the coast in northern California to Eugene, Oreg., is already in part bridged by logging roads. These may conceivably develop into substantial railroad lines. When that time comes the Commission might well encourage trading, to the end that the Northwestern Pacific shall pass out of its present hands and into those of the St. Paul-Great Northern. But such affairs need not be seriously considered at this time. There is certainly no ground for recommending any such affiliation at present.

The Atchison, Topeka & Santa Fe system stands as one of the most compact, complete, and financially well-balanced railroads in the United States. It is a monument to the sagacity of its late distinguished president and his fellow managers of the enterprise. A combination of courage and intelligence has produced a railroad which at present reaches almost every point that it should, and which has such connections hither and thither as to consolidate its strength at all strategic points. Nor is energy dissipated anywhere by useless or unnatural extensions beyond its natural gateways. A brief analysis of its layout is necessary to confirm this assertion. And the statement has a direct bearing upon the recommendation that the Santa Fe is inherently strong enough to be trusted to continue alone, even although surrounded by much larger consolidations. It is a prime example of the principle that net mileage, that is to say, mileage which counts, is of more value that a mere heterogeneous aggregation of more or less ill-connected parts. The Santa Fe system, referring to map 22, forms roughly a huge triangle with one corner at Kansas City, another in Texas behind Galveston, and the third corner not far from Santa Fe, N. Mex., at Belen Junction. From each corner there are lines out to strategic gateways on the confines of its natural territory. Northeast, the main line runs into Chicago. Southerly, the line reaches the Gulf of Mexico at Galveston, and might easily be extended to reach it again at New Orleans. And then there is the main line straight through from the western angle at Belen Junction to Los Angeles and San Francisco. Incidentally, to the northwest there is also the line into Pueblo and Denver.

The Santa Fe connection into Denver is significant, historically. The oldest portion of the system is the line from the Missouri River at Kansas City, the original base, due west across Kansas. In eastern Colorado, the road having pointed the way for population to follow across the plains, dips abruptly to the south at La Junta, and follows the old Santa Fe trail down into New Mexico. Only afterward was the spur to Denver conceived of as a logical necessity. In other words the finger pointing to the Pacific coast was directed at Santa Fe rather than across Colorado. This old Santa Fe main line, with its high grades, is still employed for passenger business, but it has been supplanted for freight movement by the direct line across the panhandle of Texas. The construction of the old Santa Fe trail line, then, constituted the first stage in the growth of the system. The second stage was the building of the various ramifications for gathering traffic throughout Kansas. Then came the panhandle line across Texas. By this time, transcontinental ambition is apparent, but a preliminary was the construction of the line into Chicago. This in effect largely contributed to the disastrous bankruptcy in 1893. This tenuous connection by an air-line route to Chicago missed all the principal cities. It gave a short line, to be sure, but it made enemies of all lines east of the Missouri River, transforming them from connections into competitors. Next, in order, came the enterprise of pushing through to California, and, finally, by way of the San Joaquin Valley, reaching San Francisco. Meantime the low-grade line across the panhandle of Texas, with a maximum gradient of 0.6 per cent was pushed across New Mexico to effect a junction with the original Santa Fe trail at Belen. This line, as aforesaid, is utilized principally for freight. In due time came the southwestern extension to match up with the Southern Pacific line to New Orleans. And then at last the Santa Fe pushed its way out to the Gulf at Galveston. Its economic self-sufficiency was still further assured, thereafter, by building into the lumber territory of eastern Texas and Louisiana. This was intended to provide return loadings, to balance the predominant eastbound California traffic.

What more, then, can a system so widely extended and yet so wisely conceived, need to render it an equal competitor with all comers? First and foremost, it is evident that the Santa Fe system should have entrance to St. Louis. The disposition, altogether too much in evidence, to draw traffic into Chicago should be counteracted by affording a direct, more southerly connection to the Atlantic seaboard. All of the eastern trunk lines by this consolidation plan are brought either to St. Louis or to a gateway intermediate between St. Louis and Chicago. St. Louis, furthermore, and the gateways in its neighborhood afford contact with all of the lines in the southeastern region. There are several ways by which this entry for the Santa Fe into St. Louis might be effected. One would be over the Chicago & Alton, with joint trackage along with the Burlington from Mexico, Mo., south of the Mississippi, not crossing that river at Louisiana, Mo., to enter St. Louis from the east. This proposal, indorsed by the traffic department of the Merchants' Exchange of St. Louis, might be feasible, except that the Alton is already preempted as a Chicago connection for the St. Louis-San Francisco system. The Santa Fe prior to the war had already planned to extend from Carrollton, Mo., down the river to new construction cooperatively with the Burlington through Mexico, Mo. The Burlington, it appears, planned to contract with the Wabash for its line east of Kansas City out to Carrollton, and inasmuch as the Wabash and the Santa Fe already jointly operated a stretch of line as a double track, the cooperative enterprise would be still further fostered. The right of way has already been acquired and the details worked out. The present Santa Fe line could be used for nearly half the distance; whereas, either taking trackage on the Missouri Pacific or the Alton would require the use of other lines practically the entire distance. In effect what is desired is a new low-grade line instead of the present Wabash, which in places has a heavy grade. The Santa Fe, having already low grades to Carrollton will probably prefer to build anew, following in general the location of the Wabash. Such is the projected line as shown on map 22.

The next most important supplementation of the Santa Fe is to admit it to New Orleans. Map 22 shows how nearly this has been attained. Obviously an evenly matched competition with the Southern Pacific calls for the provision of this last link in the chain. There are only three possibilities. One would be to extend the present Louisiana arm to the Mississippi River, there taking trackage on the Louisiana Railway & Navigation Company lines (allocated to the Frisco system, page 625 *infra*). Another would be over the rails of the Texas & Pacific from Dallas. But the Texas & Pacific is the New Orleans entrance for the Missouri Pacific system. The third election follows the present course of traffic interchange, which is primarily with the so-called Gulf Coast Lines. This railroad, as shown on map 22, parallels the coast and all across Louisiana affords the most feasible connection. It is recommended, therefore, that the line from De Quincy east be merged in the Santa Fe system. The portion of the Gulf Coast Lines lying west of State Line, Tex., is elsewhere (page 632) assigned to the Missouri Pacific for an extension of its system into southern Texas. It should be said, however, that there is some difference of opinion within the Santa Fe management as to the desirability of entry into New Orleans. It has been felt that Galveston was the natural point of export for the products of Kansas, Nebraska, and Oklahoma, and that the acquisition of a line to New Orleans would only result in the diversion of traffic which ought, on economic grounds, to move through that port. Under existing arrangements, the same rate on wheat would obtain to both ports, so that the additional haul to New Orleans would yield no compensation proportionately. The predicament is analogous to the plight of the Oregon Short Line at Seattle (page 590, *supra*). This disability, it is submitted, would have to be cleared up in any event through the readjustment of competitive rates, which the adoption of any comprehensive consolidation scheme is bound to entail.

One other possibility for disposal of the Gulf Coast Lines remains. Instead of cutting it up, merging the eastern portion with the Santa Fe for an entrance into New Orleans, and then using the western part as an extension of the Missouri Pacific (page 632, *infra*), the southern half might conceivably be used more evenly to match the Southern Pacific with the Santa Fe. The Southern Pacific is to have the San Antonio & Aransas Pass (map 23 and page 604, *supra*). The Gulf Coast Lines compete directly in this same region. Were the Santa Fe to take the entire Gulf Coast Lines instead of a part, the complication of dismemberment would be avoided, and a matched competition between the two great transcontinental systems in southern Texas would be promoted. There is just one other possibility. The San Antonio & Aransas Pass might be lifted out of the Southern Pacific system altogether, and allocated to the Frisco, as developed in chapter VI. With the southwestern half of the Gulf Coast Lines in the Missouri Pacific, and the San Antonio & Aransas Pass in the Frisco, the two evenly matched Southwestern-Gulf systems would keenly compete with one another clear down through the southern portion of Texas to the Mexican border. There is some merit in the suggestion; but on the whole the treatment herewith recommended seems preferable. Everything turns upon whether southern Texas is to be regarded as a natural field for competition between the two Southwestern-Gulf systems or between the two southwestern transcontinental systems. Provisionally, the latter choice is made.

The Colorado & Southern, together with its extension across Texas, known as the Fort Worth & Denver City, is another one of those hybrid properties which it is extremely difficult to allocate. The through route thereby constituted from north of Cheyenne, Wyo., as shown on map 16, cuts at right angles across all the east-and-west lines and tends to draw traffic from the far northwest down to the Gulf ports. The through connection from Fort Worth to Galveston, originally planned, was to consist of the Trinity & Brazos Valley Railroad. This route, northwest of Fort Worth, is now part of the Burlington system, and the portion southeast of Fort Worth, the Trinity & Brazos Valley, is jointly owned by the Burlington and the Rock Island. North of

Fort Worth the system betrayed in 1917 a considerable earning power. The Colorado & Southern, proper, yielded a net operating income of 3.24 per cent even on the high investment account of $62,952 per mile of line. The Fort Worth & Denver City did much better, earning 7.34 per cent upon a corresponding capital account of $56,732. The Trinity & Brazos Valley, at the other end, even with a low investment account of $37,686 per mile of line, had an actual deficit of 2.09 per cent in 1917. Evidently there is some maladjustment as to interchange of traffic at various points along this line, especially evidenced by the barren results for the southern link into Galveston. It is alleged that the Fort Worth & Denver City is peculiarly profitable because of an excessive division of the through rates. The traffic throughout is light—no lumber, ore, coal—although there is a considerable movement of beet sugar and vegetables from Colorado to Texas. There are no large cities and no manufactures, but of late there has been some movement of oil. It is a dry territory, bare agriculturally, even at the southern end. The heaviest movement is of live stock and on this the rate is unremunerative. It it alleged that the Colorado & Southern system, owing to its unique location and enjoying a monopoly between Denver and the Gulf direct, is artificially prosperous because of prorating maladjustment, and that a revision of percentages on interchanged business will substantially lessen its profits. But for the present, at all events, it is obvious that one has to do with a fairly strong line, of vital importance nationally, and yet which is so located that it is neither an east-and-west transcontinental road nor one having everything in common with the Southwestern-Gulf roads.

Four possible dispositions may be made of the Colorado & Southern system, as above described. It is now an integral part of the Burlington system (map 16) and might so remain under this plan. Were the Chambers plan (page 563, *supra*), or anything like it, to be adopted for utilizing the Santa Fe as the stem of a middle-group transcontinental system (map 22), matched against the Union Pacific, the Colorado & Southern would naturally play a leading part therein. But with the rejection of the Santa Fe in favor of the Burlington for this purpose, the Colorado & Southern would lose its main value to the Santa Fe system. A third disposition would be to incorporate it in the Southern Pacific-Rock Island group. Its possible place therein is lightly dotted on map 23, and the advantages and defects of this arrangement must be carefully considered. A fourth utilization, and one which has great force and merit, is that the Colorado & Southern should be treated as appurtenant to the Southwestern-Gulf railroads, rather than as a part of any transcontinental system. This suggestion is based upon such sound operating reasons that it, too, must be canvassed attentively. The choice, in fact, narrows down to these last three possibilities. For the first one, namely, that it should remain as a constituent part of the Burlington, must be rejected on general grounds, of far-reaching significance. According to map 16, the Colorado & Southern, as a part of the Burlington, obviously extends its rails far beyond any gateway set for the competitors of that system. As elsewhere described in connection with the affairs of the Kansas City Southern and of the Union Pacific (pages 142, 166) the proposition has been broached of using the former as a Gulf outlet for the great Union Pacific system. There is force in the suggestion; but it is rejected because of the need of conserving the earning power of the Southwestern-Gulf properties, in order to enable them to carry the heavy burden of their network of branches and feeders. And unless the Kansas City Southern or some other through line to the Gulf were made a part of the Union Pacific system, the Burlington, matched against it point by point, ought likewise to withdraw from entry into the Gulf territory. There are other minor considerations, such as the already excessive mileage within the Burlington system, as compared with all the rest; but the really conclusive reason for withdrawal of the Colorado Southern has to do with the general balance of power, as above described.

The Colorado & Southern system, incorporated in the Santa Fe, would bring to fruition plans carefully developed by the late E. P. Ripley. No possible question

about its value to this system exists, provided that the Denver & Rio Grande and Western Pacific were also merged. But without these last-named properties, the only value of the Colorado & Southern would arise from its contacts with Colorado common points. And with most of these the Santa Fe already has connection over its own rails. The Santa Fe also has its own Gulf line; so that it would have no use for the Colorado & Southern, independently of the Ogden gateway, for this purpose. To allocate the Colorado & Southern to the Santa Fe solely with reference to its utilization as a short cut to the Gulf would, in effect, put an end to the competition which now exists between it and the Santa Fe. In view of the absence of prime advantage to the Santa Fe, therefore, and of this manifest disadvantage, under the express terms of the statute, the project of Santa Fe affiliation is ruled out. Considering, next in order, the feasibility of assigning the Colorado & Southern to the Rock Island-Southern Pacific system, inspection of map 23 brings out the value it might possess from tying in the loose stub end of the Rock Island at Denver. This, as has already been pointed out, is left isolated and possibly unproductive, except for local business, by the provisions of the general plan for transcontinental systems herewith proposed. There are substantial supporting reasons for transferring the Colorado & Southern to this system. Among these are the following: The Colorado & Southern has some good local Colorado territory which would serve as a much needed feeder for the Rock Island's Denver line. Included hereunder might be especially mentioned the coal production about Trinidad, serviceable both for locomotive and commercial use. The Colorado & Southern might also be utilized in place of the existing onerous trackage contract with the Denver & Rio Grande, covering the line between Pueblo and Denver—perhaps also the Union Pacific trackage between Limon and Denver. Rock Island freight, and possibly passenger trains, to and from Denver might be routed via Colorado Springs. In that event a most burdensome contract might be eliminated. A larger interchange of traffic at Amarillo between Colorado, north and east, and Oklahoma and Arkansas, including the territory now served through the Memphis gateway, together with a closer working relationship between the Morgan steamship line, as part of the Southern Pacific, and the Colorado & Southern system, would be supported and distinctly encouraged by this relationship. And the extensive mileage of the Southern Pacific in Texas and Louisiana might originate tonnage which could be moved northwest by this line rather than by way of the Missouri Pacific. An objection, on the other hand, would be that the inclusion of the Trinity & Brazos Valley in the Rock Island-Southern Pacific system would put an end to the present competition with the parallel route of the Houston & Texas Central line. This road now connects Houston and Fort Worth over Southern Pacific rails. Unless the Trinity & Brazos Valley therefore went elsewhere, notably to the Frisco, as elsewhere suggested (map 25), this conflict with the provision of the transportation act might be a source of embarrassment. If it be objected that the addition of the Colorado & Southern system to the Rock Island-Southern Pacific, instead of the Santa Fe, is prejudicial to the evenly matched competition which is intended to prevail between these two systems, it may be added that the Santa Fe, by means of a little construction, could practically parallel this route from end to end. This possibility is shown by a dotted line on map 22. Such a route would consist of trackage over the El Paso & Southwestern side line between French and Tucumcari, N. Mex. (incidentally, the Rock Island probably could not entirely spare so important an artery for company fuel), a bit of new construction from there on to Texico, and thence over the Santa Fe's own rails direct to Galveston. The little gap between Pueblo and Trinidad could be readily bridged by trackage taken from the Colorado & Southern. At present, of course, there is hardly business enough for one line, certainly not for the two which would hereby be set up. But the possibility of such a route within the Santa Fe system in the remote future is not to be gainsaid.

On the whole, rejecting the allocations above described, there remains for the Colorado & Southern only the possibility of its transference from the Burlington system to that of the Missouri Pacific. The underlying reason, based upon the broadest considerations for so doing, is that this strategic line would oe thereby neutralized, in effect, as between the two middle-group transcontinental systems. As proposed under this plan, the Rock Island-Southern Pacific system will have other lines to connect the whole of California and Oregon and practically all Louisiana and Texas points. It will have a direct line from Memphis through Arkansas and Oklahoma, with a direct line from St. Louis. The Santa Fe system likewise serves the same territories, with the exception of Memphis and Arkansas. But both these systems are interested solely in the El Paso or Arizona gateways. A prime purpose of the entire Central Pacific readjustment is to render the Ogden routes truly competitive with the southern ones. Merging the Colorado & Southern with either of these transcontinental systems therefore would still leave the incentive to work business by the southern rather than the middle routes. For the Colorado & Southern in either hands would only afford them a short haul through Denver, as against a long haul through Arizona. Such disposition therefore would inevitably tend to dry up a very important competitive artery. Both the Union Pacific and the Burlington are entitled to participate competitively in this business. To place the Colorado & Southern then, in neutral hands, like either the Missouri Pacific or Frisco systems, would afford adequate through connection between the territories described. Besides protecting the middle-group transcontinental lines, it would also protect the Gulf-Southwestern lines. For both the Burlington and the Union Pacific would thus be rendered dependent upon these roads in order to reach Texas and Louisiana by a direct haul. A trading basis would thereby be set up which would manifestly be to the advantage of the Gulf-Southwestern roads. Perfectly neutral support, coupled with competitive opportunity, would be created for both the connections through Ogden. The Gulf-Southwestern roads, with various loose ends of rail extending into Colorado, and always threatened with starvation through diversion of business from the northwest to the Arizona gateways, would be prevented from being bottled up in one corner of the United States. And on top of this, according to the showing for 1917, the Colorado & Southern lines south of Denver would materially contribute financial strength. The proposal is not without disadvantage, however, and this illustrates how difficult it is to think in terms of widespread consolidation which so completely upsets all existing traffic interchange. Putting the Colorado & Southern system into the Missouri Pacific group would end the quite keen competition which now exists with the competitive route of the Kansas City Southern. For it will be remembered that this road, herein assigned to the Missouri Pacific system, is now a perfect connection for the Union Pacific, in fact the Marysville, Kans., cut-off was in large measure assumed in order to develop this route. And then another disadvantage, unquestionably, is that this proposal tends to upset the quite perfect balance of earning capacity between the Frisco and the Missouri Pacific, which has been worked out in chapter VI. Of the two Gulf-Southwestern systems, the Missouri Pacific is already the larger. Whether it is financially stronger is somewhat problematical. And the inclusion of the Colorado & Southern system would tend to disturb this equipoise. But nevertheless, for the several reasons herein outlined, as well as further developed in chapter VI, this recommendation for its transfer to the Missouri Pacific system seems preferable to all of the others.

Certain minor additions, not affecting the Santa Fe in any large way, are also recommended. None of them will appreciably influence the financial status, although certain ones may be considered as liabilities which must be more or less shared by everybody in order to save the general situation. The first is the merger of the Kansas branch of the Missouri Pacific from Atchison to Lenora, Kans., the north-

and-south branch, however, from Concordia up to Hastings is allocated to the Rock Island, as its inclusion here would merely consolidate two parallel and competing lines. The effect of this transfer will be to consistently make the Santa Fe a Kansas network of local lines. Another change, subsequently discussed in chapter VI, is the transfer of the Santa Fe branch from Dallas to Paris, Tex., to the Frisco system. This now is a part of the Gulf, Colorado & Santa Fe, the Texas subsidiary in the Santa Fe system. This transfer would encourage the utilization of this stretch as part of a main line rather than as a branch which trends nowhere in particular, within the Santa Fe system. In the same connection in chapter VI the recommendation is made that the Fort Worth & Rio Grande, running southwest from Fort Worth as a subsidiary of the Frisco system, be assigned to the Santa Fe. Map 22 shows that this would afford a more direct entrance from the west to Fort Worth instead of passing around two sides of a triangle. The objection of course is that a still shorter line from the west might strike off from the Santa Fe further out, and such a line is is said to have been considered. But for the present, at least, it appears as if the Fort Worth & Rio Grande would answer the purpose, and would result in a more effective utilization of what is now an unprofitable branch in the Frisco system. The suggestion has also been made that the Missouri & North Arkansas should also be included in the Santa Fe, together with trackage into Memphis from Brinkley over the Rock Island. This would give the Santa Fe a bridge line over the Ozarks from the Kansas wheat fields into the southern states east of the Mississippi. The suggestion contains the possibility of caring for a weak independent line through merger in a strong system. The Santa Fe is probably better able to carry it than the Frisco, and no other sponsors are in sight. But the property really ought to be abandoned to the care of its local constituency, like so many others of its kind; as, in fact, since writing the foregoing, it has been discontinued for operation by the receiver, leaving five counties in Missouri absolutely without railroad connection with the outside world.

The feasibility of the foregoing proposals must now be tested, first, as respects the continuance of competition, and, secondly, with regard to the uniformity of earning power. Unless these two essentials are met, the general plan can not stand fire under criticism. As to the former, the perpetuation of competition, the most satisfactory test is graphic. A series of maps is submitted herewith (maps 19, 20, 21, and 24) upon which these five transcontinental systems are shown in pairs. And each of the significant couples is separately displayed. In order to facilitate this comparison and to complete a composite picture, moreover, the same graphic designations are employed for each system throughout the series of maps. One may thus by eye carry across and compare impressions from map to map, until the entire situation is envisaged. But no attempt has been made to match the two southern systems, the Santa Fe and the Rock Island–Southern Pacific, with the three northern systems for two reasons. One is that there is an obvious superfluity of competition from interlocking of all five systems between the Missouri River gateways and Chicago. The other is that west of Kansas City, the two southern systems break so entirely loose from the rest that their problems thenceforth are separate and apart. Only is there a slight overlying where the Rock Island system gridirons Iowa. These four maps are so self-evident in purpose that no elaborate comment is necessary. All that seems to be called for, is a running commentary upon the general layout. The ramifications of the Burlington–Northern Pacific system as against the St. Paul–Great Northern are depicted on map 19. The zone within which the two compete is quite localized along the Canadian border states and down through Iowa, Minnesota, and Wisconsin. Within this zone and particularly in the far northwest the two systems, as amplified, match almost point for point. At the eastern end the St. Paul–Great Northern is

free from this particular Burlington–Northern Pacific rivalry, in Wisconsin and the northerly strip of North Dakota and Montana. But within these particular localities, as the other maps make manifest, competition in abundance is provided throughout Wisconsin by the Union Pacific–North Western system. It is only in the upper third of North Dakota that anything approaching a monopoly by the St. Paul–Great Northern system appears. And setting off the Soo from this group, treating it as a foreign line, would meet this difficulty. This same monopoly extends across Montana from end to end. But it is submitted that this in itself is a necessary compensation for the other handicaps under which this particular system must operate. The foregoing financial analysis evidences that this group is compelled to carry the load of a far-flung bridge line, and that all along between the twin cities and Pacific coast points it lies out on the edge of things. Special favor and encouragement ought to be given to all of these marginal systems in order to even things up.

Passing next in series to map 20, the Burlington system, by means of an identical graphic designation, is shown in juxtaposition to the remaining northern transcontinental system, that of the Union Pacific–North Western. In this instance the rivalry of the two is more widely disseminated, embracing as it does not only the northwest but the Ogden gateways to San Francisco. Two almost perfectly matched routes obtain between Chicago and the Golden Gate direct, and also two routes passing through Kansas City and Omaha and penetrating the far northwest, in the one case across Idaho via Boise or Butte, while by the Burlington route the contact is established by way of Billings, Mont. The coextensive rivalry at the eastern end between these two systems, according to this map, lies in the main south of St. Paul down to Kansas City. All about the periphery on the other hand, taking Omaha as a center, such competition as exists must proceed from other combinations, which will be displayed on the succeeding maps. Wisconsin, again, is portrayed without rivalry from this particular combination, and Colorado likewise is evidently monopolized. Each of these, however, as it will appear, is touched in another connection by the remaining systems.

The third possible juxtaposition of northern groups is displayed by map 21. This exhibits the Union Pacific–North Western system pitted geographically against the St. Paul–Great Northern. No longer is there rivalry through the Ogden gateway, but competition is evidently perpetuated for the far northwest by at least two routes in every important instance. Here at last the necessary competition throughout Wisconsin is afforded, together with the necessary interweaving across South Dakota. And it goes without saying, of course, that the field south of the twin cities is well provided with a crisscross of lines. Taking the series thus far, the only region wherein substantial monopoly will prevail is along the marginal strip bordering Canada, across North Dakota and Montana, in southern Colorado, and down along the line of the Los Angeles & Salt Lake road. There is comfort, however, in the consideration that within these last-named zones, conditions as respects competition will continue no worse than as at present. They are in no wise affected by this consolidation plan, with the sole exception of northern North Dakota. It must be confessed that the merger of the Soo system in that of the St. Paul–Great Northern puts an end to the preexisting rivalry. As for Colorado and the San Pedro lines, such competition as may develop must be had not from these northern transcontinental railways but from those which pass by way of the Arizona and New Mexico gateways.

The conditions set up under this plan for an evenly matched rivalry via the southern transcontinental gateways appear upon map 24, and here, as already prophesied, an almost perfectly even-handed geographical layout obtains. The two through routes run side by side clear through from Chicago to northern California. Note, by the way, the two stub end lines into Denver, which must continue to draw a livelihood from distinctively Colorado business. The two systems of the Santa Fe and the

Rock Island–Southern Pacific alike gridiron Texas, Oklahoma, and southern Louisiana. The only divergencies appear in the Rock Island lines across Iowa and in the Choctaw division of the Rock Island into Memphis. Here are two territories from which the Santa Fe is at present excluded. From the northern region up to St. Paul the Santa Fe is perhaps as well off to be free of this complication. Down to Memphis, if it be given the Missouri & North Arkansas, an inlet to the southeastern states may be said to be afforded. By and large, with these minor exceptions above noted, it is believed that such a substantial matching of one system against the other is afforded as may satisfy the requirements in this regard of the transportation act.

The second test to be applied to the proposed layout for the western transcontinental systems is that of uniformity of financial return. The appended exhibits, conformably to the system elsewhere adopted, based upon 1917, display the results. Summarily, they are as follows for the five proposed systems.

System.	Road and equipment investment per mile of line.	Percentage relation; net operating income to investment.
		Per cent.
Union Pacific–North Western	$67,656	5.55
Burlington–Northern Pacific	64,403	5.39
St. Paul–Great Northern	61,304	5.62
Rock Island–Southern Pacific	68,680	4.69
Santa Fe	65,582	5.64

The fair degree of uniformity in earning capacity based upon capital account as represented in this exhibit is self-evident. The variation in fact is so much less than the probable deviation of the investment account from federal valuation, as to bring the returns, it is believed, well within the requirements of the statute. Not until finally checked by valuation, as more fully discussed in the recapitulation, is anything approximating precision possible in the way of a check or test.

Chapter VI.—Southwestern-Gulf Region.

The railroads operating in the great sector of southwestern territory lying between the Mississippi River and the main lines of the Santa Fe and the Southern Pacific-Rock Island transcontinental systems, are possessed of a sufficient individuality to require that they be treated as an independent group. This region is bounded on the north by the Missouri River between St. Louis and Kansas City and upon the south the boundary is set by the Gulf and the Mexican frontier. The physical geography must be understood in order to interpret rightly the relationship between the several carriers operating therein. The territory is divided east and west by the Ozark mountain range and its foothills. These highlands, sparsely populated and of relatively slight traffic importance, extend from southern Missouri pretty well across Arkansas down to the Red River Valley on the southern boundary of Oklahoma. In other words, northwestern Arkansas and eastern Oklahoma as well as southern Missouri, while penetrated by fertile valleys—that of the Arkansas River, for example—are little inviting for railroad development. The result, as shown by both maps 25 and 26, is that the great railway systems avoid this highland territory, except

for certain bridge lines. From Kansas City and St. Louis, therefore, there radiate certain systems which either split into two distinct halves east and west of the Ozark highlands, or else confine their activities entirely to one or the other flank of these uplands. In the former group is the Frisco system (map 25), mainly lying west and north; and the Missouri Pacific (map 26), widely extended on both sides, with certain bridge lines thrown across. All the other railways except these two operate exclusively on one side or the other of the Ozarks. The Missouri, Kansas & Texas (map 25), familiarly known as the Katy, and so designated hereafter for purposes of convenience, spreads out to the west and south from Kansas City down to Texas (map 25); the Kansas City Southern (map 26), an air line straight south to the Gulf from Kansas City, only cuts across the southern tip of the Ozark highlands; and the St. Louis Southwestern (map 25), commonly known as the Cotton Belt, skirts the Ozarks down the Mississippi Valley, only swinging west well south of Little Rock, Ark., where open country occurs. Beside these properties, there remain for consideration only the goodly number of lesser roads constituting the network of lines in Texas and Louisiana, such as the Texas & Pacific (map 26) and the International & Great Northern; the Kansas City, Mexico & Orient (maps 25 and 26); the Louisiana Railway & Navigation Company (map 26); and the so-called Gulf Coast Lines (map 22).

All of the railroads above enumerated, operating in the Southwestern-Gulf region, possess certain characteristics in common. The more important lines are based upon Kansas City and St. Louis in so far as they have been built from the north down, following the spread of population. But they are nearly all dependent, likewise, not alone upon business in and out of these Missouri River gateways, but upon their relation to the Gulf ports. They have had in the past a certain interest in transcontinental traffic, but only in so far as the Southern Pacific Company has utilized them as a connection through to the Missouri River gateways. And the Southern Pacific has rather consistently cultivated these connections in preference to the obvious and short lines—the Rock Island, for instance—because of the longer Southern Pacific haul resulting therefrom. The extreme instance is afforded by the policy developed under the Harriman régime of shipments to central freight association territory from southern California by way of New Orleans and the Illinois Central. This roundabout carriage thus kept the traffic entirely within the Harriman systems. Elsewhere, in chapter V, in connection with the Rock Island-Southern Pacific combination, other illustrations of this roundabout routing are cited, such as, for example, the connection at Sierra Blanca with the Texas & Pacific, and at Alpine with the Kansas City, Mexico & Orient. The economic waste involved in such indirect carriage is bound to be emphasized under the keen competition now engendered with the Panama Canal and the new American merchant marine. It is confidently predicted that the withdrawal of these circuitous routings for transcontinental business is bound to take place, if the railroads are to continue to share in transcontinental business, susceptible of shipment by sea.

Traffic conditions throughout the Southwestern-Gulf region are fairly uniform. Naturally there are no manufactures, and the carriage outward consists of the products of the territory. Inbound, there is, of course, the lesser volume of manufactures and supplies which are consumed by the population. But the principal earnings of all these roads arise from the carriage of grain, shading off into the carriage of cotton and lumber from the southern and southeastern portions, the carriage of petroleum in large volume from the recently developed oil fields, and the handling of coal in considerable volume from the measures which quite generally underlie a part of the region. These different classes of traffic fluctuate in proportion from year to year. Particularly is this the case with grain, which is very intermittent, as determined by conditions in the drier half of the territory, and reliance upon the grain is also rendered

uncertain by reason of the steady decline in the productivity of the soil. Whereas the yield in Kansas as virgin territory is said once to have been 35 or more bushels of wheat to the acre, the average has now fallen to perhaps 11–13 bushels. The cutting of timber has been going on apace, and this also represents an exhaustion of resources. These circumstances still further emphasize the need of conserving the transportation facilities, by resisting the temptation to separate the through from the local lines. Only by holding them all together, abandoning where absolutely necessary lines which may be dispensed with, can a constructive policy be pursued to the end. Again, one is driven to the conclusion that a general rearrangement of these roads, segregating them into two competing systems in order to conform to the requirements of the act, is the proper course to pursue. One therefore rejects suggestions which have been pressed by competent authority for the creation of three rather than two competitive systems within this Southwestern-Gulf territory. The objection to this course is not only that it brings about forced and abnormal relationships but that it necessarily sets off the through stems from the weaker branches and feeders. It also leaves the systems too small comparatively as consistent units in the great national system which is proposed by this plan.

A marked characteristic of the Southwestern-Gulf territory is the very large amount of mileage which still remains in independent hands. The number of local properties, varying in length from 100 to 300 miles, is very considerable. Some of these, like the Louisiana Railway & Navigation Company, follow the river courses, and are obviously destined to form main stems to strategic points. But many others, like the Midland Valley, the Fort Smith & Western, the Louisiana & Arkansas, etc., out in the open country, have a very uncertain future so far as relationship to the great systems is concerned. Most of these roads are in a precarious condition, hanging on the verge of receivership, into which some of them have plunged again and again. To recommend positively their inclusion in one or another of the two great systems proposed of course operates automatically to close their open market for trading in case of sale. Furthermore, it imposes a definite direction upon the movement of their business; and as yet, with the country only partly developed, such merger, ought to be the result of slow conviction based upon demonstrated natural relationships through the years to come. For most of these smaller properties, however, an endeavor has been made to place them in their best present relationship to the proposed systems so far as one can ascertain it. But these recommendations are made only tentatively, in the expectation that the course of events during the next 25 years may induce the Commission, as it is permitted to do under the statute, to revise its conclusions in this regard. But the systems for this entire region are constituted under this plan with this reservation, merely so as to take up and place definitely most of these properties in their relation to the larger whole. Only thus, it is submitted, may the significance and feasibility of the consolidation plan be envisaged in a large way. If, as these smaller roads more definitely "find themselves," it be discovered that other relationships than these are more natural, there is always opportunity for an application for revision of this plan.

Another general feature of the Southwestern-Gulf region is that there are too many railroads to be supported by the available traffic. This is partly due to the well-known activities of the railway promoter, who has found in this territory the last, and a most inviting, field for the practice of his art. There are more railways in fact than the country can probably support for many years ahead. This condition is more true in this region than anywhere else in the United States, and it is a considerable source of embarrassment. One hesitates to recommend the downright abandonment of a railroad line once constructed. Property values have been conditioned upon its operation, and manifest injustice may result from the withdrawal of transportation.

But it is nevertheless true that many lines have been laid down for which there was never originally a long-time justification. Useless duplication of facilities has rendered both properties unremunerative. Such matters have been brought to a head in connection with the repeated bankruptcies and reorganizations which have characterized the lives of many of these properties. At the moment, for example, the reorganization committee of the Missouri, Kansas & Texas is abandoning to the bondholders as hopeless the two lines of the Katy (map 25), from Oklahoma City southeast to Atoka in Oklahoma, and from Greenville, Tex., southeast to Shreveport, La., respectively. Another line which after protracted bankruptcy has just discontinued operation is the Missouri & North Arkansas from Joplin, Mo., to Helena, Ark. This road, 362 miles in length, cuts clear across the state of Arkansas to Helena on the Mississippi River, as shown by the dotted line on map 26. Originally a logging road, it not only lies almost entirely in the inhospitable Ozark region, but it is paralleled on either side by the lines of the Missouri Pacific. It is alleged that there is not a living for the property and that the only thing to do is to tear it up. It is evident from the map that the road neither begins nor ends anywhere, and it is difficult to see how it could perform any useful function except to serve the towns locally along its line. Whether they can afford sufficient business to keep it alive is open to question. The case is cited merely to illustrate certain local conditions in the Southwestern-Gulf territory which must be dealt with in this plan.

As affording a summary view of the financial status of the principal Southwestern-Gulf lines, the accompanying table, showing data for 1917, is pertinent. It merely assembles the principal data which must enter into any conclusion as to whether the respective roads are strong or weak.

Carrier.	Investment in road and equipment per mile of line.	Railway operating revenue per mile of line.	Net operating income per mile of line.	Percentage net operating income to investment.
Fort Smith & Western	$59,461	$4,651	$317	0.67
International & Great Northern	37,153	10,856	1,203	3.39
Kansas City Southern	203,710	16,025	4,153	3.95
Louisiana Railway & Navigation Co.	63,248	7,087	1,014	1.69
Midland Valley	51,848	7,629	1,151	2.36
Missouri, Kansas & Texas	102,499	14,900	3,355	3.43
Missouri Pacific	51,216	10,598	1,895	3.96
New Orleans, Texas & Mexico	87,948	7,936	1,144	1.44
St. Louis-San Francisco	73,528	12,074	2,877	3.93
St. Louis, San Francisco & Texas	32,497	6,170	*def. 1,845*	*def. 12.01*
St. Louis Southwestern	99,423	12,161	3,558	4.70
St. Louis-Southwestern of Texas	39,057	7,206	684	1.14
Texas & Pacific	60,965	11,669	2,110	3.64

A peculiarity of the Southwestern-Gulf situation, which introduces an element of confusion into all statistical comparisons is the separate incorporation and accounting of the railway lines located in Texas. This is, of course, the result of the strict requirements of the public-service regulations of that commonwealth, particularly of that portion known as the stock and bond law of 1893, which was directed to the prevention of overcapitalization.[1] In this particular regard the statute has perhaps been successful, but an indirect effect, certainly, has been to penalize improvement and betterment by existing companies. New capital, where imperatively needed by large systems having branches in Texas, has necessarily been raised through the issue of their own collateral trust securities, based upon the deposit of Texas-line bonds. Concomitantly this financial segregation has left a considerable number of these supplementary Texas lines in very bad case financially. The following table showing

[1] Cf. analysis in Ripley's "Railroads: Finance and Organization," pp. 301-6.

percentage of net operating income to investment in road and equipment, 1917, illustrates the point:

	Percentage.
Kansas City Southern	3.95
Texarkana & Fort Smith (Kans. Cy. So.) (Texas lines)	4.27
Missouri, Kansas & Texas	3.43
Missouri, Kansas & Texas of Texas (Texas lines)	1.10
St. Louis-San Francisco	3.93
St. Louis, San Francisco & Texas (Texas lines)	def. 12.01
St. Louis Southwestern	4.70
St. Louis Southwestern of Texas (Texas lines)	1.14

It is evident from this showing that, with the exception of the Texas lines of the Kansas City Southern, the subsidiaries in Texas are all notably weak. Whether this is wholly due to the local traffic conditions, or arises in part from prorating and accounting methods, it is difficult to determine. In either case, a general problem is presented of accommodation of the regulatory program of the individual states to that of the federal government. And, as elsewhere discussed in the introduction, such conditions may well form part of the problem of federal incorporation, which is necessarily involved in the matter of consolidation. Its many details remain to be worked out in future.

But the Gulf-Southwestern roads as a whole are not merely a set of local carriers. While not naturally large factors in transcontinental business, they are properly called upon to perform an important function for the nation as a whole through engaging in long-haul business to and from the Gulf ports to the Missouri River gateways. They are necessary outlets for the entire country west of the Mississippi River. And the construction of the Panama Canal and our recently developed mercantile marine interests are bound to emphasize still further the import and export feature of the Southwestern-Gulf traffic. These roads differ considerably, as they have been operated independently in the past, in their ability to participate in this business. Some of them, like the Kansas City Southern (map 26), a bee line between Kansas City and the Gulf, have been favored connections for many years with the great systems operating north of Kansas City.

Others, like the Frisco and the Katy, have suffered from lack of through connection to the Gulf, or else because the trend of their construction indicated rather a purpose to serve St. Louis and Kansas City as bases rather than the ports of Galveston and New Orleans. Serious consideration has been given in this report to the possibility of utilizing certain of these direct north-and-south lines in this Gulf territory as parts of the great transcontinental systems north of the Missouri River gateways. Either the Burlington-Northern Pacific or the Union Pacific system could well use the Kansas City Southern, for example, as an outlet to the Gulf, to match the almost incomparable Illinois Central line to New Orleans. But a serious objection to withdrawing such air lines from this group is the financial condition of all the carriers in the region. Most of them have been in bad case throughout the past, frequent bankruptcy and reorganization succeeding one another. And it is well known that the long-haul through business affords the lucrative traffic, while the gathering lines, branches and feeders, essential to the local development of the territory, can not stand on their own feet by themselves. To withdraw for incorporation in the powerful northern systems certain of the best lines in this territory, thus leaving only the widely ramifying local ones, would render their financial condition even more precarious than at present. It is believed that the wisest policy is to take all of the roads within this territory and so divide them up into two competitive groups as to produce a fairly balanced competition between the two. They should each reach, as far as possible, the same common points. They should each have a fair opportunity to share in the lucrative

long-haul traffic, and each should contribute its part toward the support of the local branches and feeders.

The reasoning just outlined accounts in part for the rejection of an alternative offered by highly competent authority for the general treatment of this region. It has been urged that these roads should be apportioned in part to the two great southern transcontinental systems, the Santa Fe and the Rock Island-Southern Pacific, taking each of them, for example, into New Orleans; and matching the Rock Island likewise, by proper additions to the Santa Fe, with a line across Arkansas. Then, having thus enlarged these transcontinental systems which already tap this territory and draw upon it, particularly for lumber, it is suggested that the remaining local lines should then be consolidated into a single Southwestern-Gulf system instead of two. But the geography of the region, as well as the general layout considered for the country as a whole render this impracticable, it is believed. The situation is analogous in many ways to the proposal discussed in chapter I for merging the Erie and the Nickel Plate-Lackawanna roads, instead of using the backbone of each to constitute two competitive systems. In each case the attempt involves forced relationships and duplication of facilities, where there ought to be competition. Thus for example, the two great widespread systems in this Gulf region are the Frisco (map 25) and the Missouri Pacific (map 26). These pretty well match one another in general scope throughout a considerable territory. Neither one could be incorporated in the transcontinental systems above mentioned; and to put them together in a single Gulf group would involve much duplication and would merge two long-standing competitors. Thus one is forced again to the conclusion that each of these two larger Gulf railroads should be made the nucleus of a comprehensive system, matching one against the other at as many common points as possible, and coupling this procedure with the requisite, already mentioned, that the through lines and the local lines must be put together in such a way that as well balanced financial strength shall result, as the resources of the region permit.

Having adopted the foregoing general program for the Southwestern-Gulf systems, it is next in order to decide whether or not these systems, resident southwest of Kansas City and St. Louis, had best stop short at those strategic points or be extended into Chicago. In other words, will these roads be better fitted to play their part in national development and to serve their local constituencies, if they have their own rails into Chicago, by incorporation of intervening independent properties, rather than to depend upon connections which necessarily under a consolidation plan form part of other great systems? The situation, general consolidation being once in effect, would be notably different from that which obtains at present. One must become accustomed to thinking in terms of consolidation and not, as heretofore, in terms of promiscuous competition. The question herewith presented has already been faced in chapter IV in connection with the southeastern roads. The decision for them was to the effect that the wiser policy would be to restrict their activities to the territory lying south of the Ohio River. It is pertinent therefore at the outset to compare the southeastern and the southwestern situations, as respects Chicago. If the conditions in both regions are similar, the decision reached for the southeast becomes naturally applicable to the southwest. Contrariwise, to discern a difference of circumstances, might commend a distinct policy in this regard. In each case the connection into Chicago is necessarily made through trunk line territory. This eliminates the western roads, and reduces the problem to an analysis of the traffic relations between both southern groups of roads and the trunk lines, viewing each group in the light of the physical and commercial geography.

The first difference discoverable is that the southeastern railroads—east, that is to say, of the Illinois Central—are not competitors with the trunk lines, as are the

roads between Kansas City and St. Louis and the Gulf. The Southern Railway and the Louisville & Nashville, in other words, in relying upon the trunk lines for connection into Chicago, are confiding their interests to complementary rather than to competing carriers, to connections and not to competitors. To be sure a certain amount of western traffic finds its way into the south from the west by the Virginia gateways, but this is mainly local business, and we are speaking primarily in terms of long-haul export or import traffic. Such competition for European overseas business as there is through the south—from New Orleans, for example—is by a roundabout route and under somewhat of a handicap at best. The Illinois Central participates in it because of its direct low-grade line; but the other southern railways, which alone we are comparing with the southwestern roads, have no lines—not even the Queen & Crescent—which naturally form part of European export or import trade routes. For all this European business, therefore, these southern roads are distinctly not competitors with the trunk lines. They may safely depend upon them for impartial treatment as respects entrance into Chicago. And for South American and Panama Canal traffic, likewise, these particular southern roads are not heavily interested, as is the Illinois Central. In this instance, for central freight association territory the movement in any event ought preferably to be via the Gulf ports rather than by the Atlantic ports, served by the trunk lines. In brief, east of the Mississippi a certain differentiation of function ought to obtain as between the north Atlantic ports and the Gulf. Should Charleston and Savannah demonstrate their ability, on the basis of their nearness to Chicago, to hold a place in this foreign commerce, these conclusions might be somewhat modified. But there will always be the inhospitable and difficult intervening mountain ranges behind the Carolinas which tend to handicap these south Atlantic posts in this regard. The Southwestern-Gulf roads, on the other hand, are for certain classes of business keen and direct competitors with the trunk lines for overseas business. The Gulf of Mexico is nearer Kansas City than are the north Atlantic ports by rail—enough nearer to overcome, through Galveston perhaps, the disability of the longer water line even to Europe by this roundabout carriage. But it is for South American and Panama Canal traffic that these Gulf roads are peculiarly keen competitors, favored by all the geographical characteristics of the country. And just in proportion as one moves west from Chicago is the handicap against the trunk lines increased in face of the growing advantage enjoyed by these Gulf roads. In this sense, therefore, the Southwestern-Gulf carriers, including in this class the Illinois Central also, must be accounted competitors of the trunk lines. For them to entrust their fortunes, in so far as entry into Chicago is concerned, to railroads which, under the new conditions, form part of the great trunk line system, might be disastrous. The difference in this regard between the southeastern and the southwestern groups is patent and unmistakable.

The second difference between the southeastern and the southwestern roads is a natural outgrowth of the foregoing traffic relationships. The Southwestern-Gulf systems are now already sandwiched in between great systems which operate entirely over their own rails all the way from Chicago to the Gulf ports. They have the Illinois Central on the east, and are confronted on the west with through, albeit roundabout, lines to Galveston, operated by the Santa Fe and the Rock Island. Not so with the Louisville & Nashville and the Southern Railway. In their respective sectors overseas competitive conditions have so considerably diminished in intensity that their interest and policy have become avowedly indifferent to the need of a Chicago line. And then again—just as an aside—the presence of the great lakes as intensifying railroad competition and throughout part of the year compelling low rates on grain to the Atlantic seaboard, can also not be ignored. The lake water routes are unques-

tionably a factor which enters even into the problem of the Gulf ports. More low-grade traffic certainly tends to move overseas by way of the north Atlantic ports, rather than the Gulf, than would be the case if the great lakes were not situated as they are. This feature of the physical geography constitutes an underlying difference between the railroad geography of the southeast and the southwest.

A third discoverable difference which might warrant a contrasted policy with the southeast arises from the location of the great primary market of St. Louis. Not only St. Louis but Kansas City also, in a way, are primary markets; whereas on the southeast neither Louisville nor Evansville may be said to jeopardize the supremacy of Chicago. But Chicago and St. Louis particularly are keen rivals for business, and it will contribute to national development that they should continue to be so throughout as wide a territory as possible, rather than that private domains should be marked off here and there as appurtenant to each great city. Such being the case, it will unquestionably contribute to holding the Chicago market on a parity with those of the Missouri River cities if the railroads of this region operate their own trains into Chicago and have a substantial investment to support. Through billing and quick delivery, with a number of other favoring concomitants would be much more likely to prevail than if Chicago were compelled to do business in Oklahoma, Kansas, or Texas, both at longer range and without distinct railroad friends at court.

Nor are these the only reasons which commend extension of the Southwestern-Gulf systems into Chicago. These railroads need revenue, to be had from the long haul, as already described in another connection. They should not be condemned solely to perform the local and expensive function of operating networks of branches and feeders. Their somewhat precarious financial condition contrasts mightily with the prosperity of the Southern Railway and the Louisville & Nashville; and out of this need there arises again the justification for a share in the through Chicago traffic. The topic may be dismissed with one final argument. There are a certain number of properties which for many years have confined their activities to the field between Chicago and the Missouri River gateways. The difficult status of these roads under a general consolidation plan has been already set forth in connection with the trunk lines. Not to use the Chicago & Alton, for example, as the stem of a southwestern trunk line, under a general consolidation plan, would condemn it to play the rôle of a local subsidiary within a trunk line system, with which inherently, because of the traffic conditions above described, it could not be expected to have much in common. And the same thing is in a measure true of the through lines of the Chicago & Eastern Illinois, as distinct from the eastern division which serves its coal territory. The natural, albeit the almost inevitable, allocation of these two roads is to the Southwestern-Gulf systems.

The conclusion based upon the foregoing reasons, then, is that the two southwestern systems should include stems into Chicago, comprehended by consolidation within their own groups. In due time the next step will be taken of deciding as to the particular railroads best fitted for this purpose.

The St. Louis-San Francisco Railway system, operating in 1919, 5,252 miles of first main track, ramifies throughout the southwest, as shown by map 25. The strongest portion of it is the old Kansas City, Fort Scott & Memphis line, which passes by way of Fort Scott, Kans., and Springfield, Mo., from the Missouri River gateway down toward the southeast. Over this line passes the great volume of packing-house products and of grain, to feed the population of the cotton-raising south; and back over it a great volume of coal and iron and steel products is hauled from the Birmingham district in Alabama. Both of these classes of traffic afford all-the-year-

round business. So that this division is the strongest part of the system, although it is operated over the Ozarks, rising east of Springfield to an altitude of 1,625 feet above the sea. It is also somewhat roundabout, sweeping quite far to the south by way of Fort Scott. It should be noted in this connection that the direct line, shown on the map from Kansas City to Springfield, Mo., is merely of local importance and contributes little strength to the gross earnings. A weakness of the Frisco system is the fact that its other main stem, which runs southwesterly from St. Louis (map 25) through Springfield and so on into Oklahoma, rises at times by quite heavy grades to a height of almost 1,400 feet in crossing the Ozarks in central Missouri. This constitutes an operating disability as against the lines running up the Missouri River Valley either to Kansas City, or which, like the Katy (map 25 again), skirt the Ozarks and slip down across the corner of Kansas into Oklahoma by much easier grades. But the Frisco is peculiarly strong in the rich alluvial bottom lands of southeastern Missouri and northeastern Arkansas. Here, as the map shows, a considerable network of feeders provides a lucrative and very rapidly increasing business. On the other hand, the system has a number of arms or extensions into middle Kansas, western Oklahoma, or central Texas, which can not contribute to the company budget proportionately to their operating costs. These branches are necessary for the country; but, as elsewhere stated, they must be carried rather as liabilities through the strength of the real assets, which are the main lines.

The financial status of the Frisco, according to the several statistical exhibits, is in general only fair. Its railway operating revenue per mile of line for 1917 (type year) was $12,074, yielding a net operating income of $2,878. The gross revenue about equaled that of the St. Louis Southwestern and was substantially higher than the Missouri Pacific, at $10,598 per mile of line. It was appreciably greater than even the Great Northern, with a railway operating revenue per mile of line of $10,670. The railway operating revenue of the Chicago North Western per mile of line was only $12,996 in 1917. Where the Frisco suffers, the result appearing in the low net operating income, is in the excessive capital account per mile of line. Investment in road and equipment per mile of line in 1917 was $73,528. The corresponding figures for the Southern Pacific were $69,664. For the Chicago, Burlington & Quincy they were only $52,164; for the St. Paul, $60,233; and for the Rock Island only $45,541. The investment account of the Union Pacific in 1917 was only $76,153, much of it being main line and all maintained at top-notch efficiency. The excessive investment account, added to the operating disabilities, together pulled down the net operating income to only 3.93 per cent of the investment in road and equipment. Obviously the Frisco should not be weakened, but ought rather to be upbuilt by the elimination of its weaker units and the incorporation of lines which add earning power, or which effect the completion of through routes or long hauls.

The operating disability of the Frisco main line over the Ozarks has been already mentioned. In order to overcome this difficulty for freight business, the main route from Kansas City south is the line on map 25, via Tulsa, Okla., thence south to Denison, Tex., and on to Dallas and Fort Worth. This is the low-grade main stem. But the main stem for passenger business lies farther east, through Fort Smith, Ark. This line, however, is incomplete as to ownership between Paris and Dallas, Tex. This stretch is owned by the Gulf, Colorado & Santa Fe—the Texas unit of the Santa Fe system. But as such, according to map 22, it is merely a stub end, of no real through use to the Santa Fe system. The Frisco, especially, should not be left dependent upon the use of a branch line of another system. Such conditions do not conduce either to improvement or safety of operation for parts of a main line. It is recom-

mended, therefore, that this branch be transferred to the Frisco system. It might well be exchanged for the Fort Worth and Rio Grande (map 25), which runs from Fort Worth southwest, as dotted on the map. This would carry the transfer also of the little branch known as the Brownwood North and South line. This transfer of the Rio Grande division would not shut the Frisco out of the Stephens county oil field, as it would still come into it over the line northwest out of Waco (map 25), which is added with the Katy inclusion, soon to be described. The transfer would put this Fort Worth & Rio Grande into a system tied in at both ends of the line, instead of attached at one end as at present. Possibly its deficit of 0.01 per cent in 1917 might be in a measure overcome by reason of the change.

The Kansas City, Clinton & Springfield Railway, 162 miles long, closely parallels the entire local division of the Frisco between Kansas City and Springfield (dotted on map 25). It looks like another one of those little properties in this territory which contributes nothing except local service to the community. Reaching neither city which begins or ends its name, it begins nowhere and likewise ends. It is difficult to see where it would add anything to the Missouri Pacific system—certainly nothing either to the Santa Fe or the Rock Island. And from end to end, as above stated, it parallels the Frisco almost like a second track. Its ownership is said to reside in hands friendly to the Frisco, "although not ostentatiously." The case is submitted for consideration as to abandonment, unless the road can indeed be carried along purely as a local enterprise through the support and interest of the towns affected.

Whether or not to divorce the Memphis-Birmingham division of the present Frisco system and transfer it to one of the railway systems lying east of the Mississippi River, is quite fully discussed in connection with the Illinois Central in chapter IV (page 549). On the whole it is recommended that existing conditions be not disturbed.

The Missouri, Kansas & Texas Railway, as at present constituted, operated in December, 1919, 3,863 miles of first main track. The location of this mileage is shown on map 25. The lines owned ramify widely through the territory directly south of Kansas City, trending southwesterly across Kansas, Oklahoma, and Texas. There are two northern extremities, one at the Hannibal crossing over the Mississippi River and the other entering St. Louis by a line paralleling the Missouri River closely from New Franklin east (map 25). This river line into St. Louis enjoys better grades, it is reported, than the main stem of the Missouri Pacific. The Katy has had a troubled and precarious existence financially and is just now undergoing reorganization. Consideration of the table on page 617 shows that it has an absurdly high investment account per mile of line, mainly, $102,499. This is practically double the corresponding figure for the Chicago, Burlington & Quincy. The investment per mile of line for the Rock Island is only $45,541. With the large proportion of unproductive branches in very sparsely settled country, it is little wonder that the percentage of net operating income to investment for 1917 was only 3.43 per cent. Until drastically reorganized, with elimination of the unproductive units, the Katy is little suited to add financial strength to any system. But, nevertheless, the southern portion of its system especially supplements and reenforces the Frisco lines north of Texas. On the whole, it is the judgment of those best qualified to decide, that the Katy should be merged with the Frisco system rather than with the Missouri Pacific. As an instance of the close operating relationships, the through joint passenger service at present from St. Louis to San Antonio, Tex., known as the "Texas Special," runs over the Frisco to Vinita, Okla., thence over the Katy to Denison, Tex., then back on the Frisco to Dallas, and on again to San Antonio over the Katy. In other words, the Texas short line from St. Louis is best constituted of alternative stretches of road taken from the main lines of these two existing corporations.

Theoretically, were one free to apportion roads without regard to existing corporate structure, the best operating allocation could be made by dismemberment of the Katy, utilizing some of the northern parts to piece out deficiencies in the Missouri Pacific system, but reserving the main line across Oklahoma and down to San Antonio for the backbone of an amplified Frisco system. The Frisco now ramifies extensively throughout northern and western Oklahoma and northern Texas, everywhere in the keenest competition with the Katy. If, as elsewhere recommended, the St. Louis Southwestern is in part to be merged with the Frisco in order to amplify its competitive power in Louisiana and east Texas, then it would seem to be fair that the northern part of the Katy system should go to the Missouri Pacific, in order to make up for its relative disability in that region as against the Frisco, there already so strongly intrenched. The Katy, in pursuance of such a plan, would be dismembered north and south of Denison, Tex. But Denison is the very heart of the Katy scheme of operation. And such rough handling, it is submitted, should be avoided wherever possible under this consolidation plan. It is therefore recommended that the Missouri, Kansas & Texas in general be merged with the Frisco, subject, perhaps, to negotiation with the Missouri Pacific concerning some of the minor exchanges above suggested. Only one express amputation of a Katy division is recommended at this time. Consideration of map 25 demonstrates that the line (dotted on the map) from Fort Scott to Oklahoma City is superfluous in a Frisco combination. It would merely parallel the line through Vinita. At present the Missouri Pacific has no line into Oklahoma City; and the transfer of this division of the Katy would remedy this defect and substantially balance up competitive conditions in Oklahoma. It is recommended therefore that the line from Parsons, Mo., into Oklahoma City, with the branch to Tulsa and Muskogee (also dotted on map 25) be so shifted. The Katy line from Oklahoma City southeast to Atoka (also dotted on map 25) and the Katy line from Greenville, Tex., east to Shreveport are, it is understood, to be left out of the pending Katy reorganization. Consideration of maps 25 and 26 indicates, however, that the Atoka line derives a new usefulness in this more comprehensive plan. It provides a short cut between the Frisco Red River division and the lines west of Oklahoma City, as against the long line via Sapulpa. The growing tendency to use the Gulf ports, in connection with water haul to and from north Atlantic ports, makes this cut-off desirable. As to the line from Greenville to Shreveport, it does not supplement this amplified Frisco system, as the Cotton Belt between Texas and Memphis already furnishes a direct line.

The St. Louis Southwestern Railway, otherwise known as the Cotton Belt (shown on map 25) is, as has been already stated, to be utilized under this plan to provide a Frisco competitive service across Arkansas, to match the old Iron Mountain route. Assuredly it could not go into a Missouri Pacific combination, as in that event all competition in the Mississippi Valley throughout Arkansas would disappear, except for the Choctaw line of the Rock Island into Memphis. The St. Louis Southwestern is the strongest financially of all these southwestern properties. As the table on page 617 shows, its capital account is high, $99,423 per mile of line. Its railway operating revenue per mile of line in 1917 was $12,161, yielding a net operating income per mile of line of $3,558. Even on the very high investment account therefore this yielded a return on investment of 4.70 per cent. The record since return to private control has been favorable. The Cotton Belt is one of the two or three roads which rejected the government guaranty to good effect. Its net income for the six months to September 1, 1920, exceeded the standard return for the period by $306,000 after liberal expenditures upon maintenance.

Assignment of the St. Louis Southwestern to the Frisco system without reservation would result in entirely unnecessary duplication of lines up the Mississippi Valley between Memphis and St. Louis. Coincidently, as elsewhere set forth in chapter V, the

Rock Island-Southern Pacific system is greatly in need of a line to tie in the Memphis division (map 23) with St. Louis and Chicago. Expert opinion on both sides supports the recommendation that useless duplication to the Frisco be avoided, while, at one and the same time, the Rock Island can be provided with a necessary line, by division of the St. Louis Southwestern at Brinkley, Ark. This is the junction of the Rock Island line to Memphis with the Cotton Belt stem. It is recommended that the lines north of Brinkley (as dotted on map 25) go to the Rock Island system. They are so added on map 23. This alters the Cotton Belt line into St. Louis, which thereafter will be from Brinkley by Rock Island trackage to West Memphis and thence up the low-grade river line of the Frisco into St. Louis. The taking over by the Rock Island of the Cotton Belt line north of Brinkley, operates merely to substitute the Rock Island for the Cotton Belt in respect to trackage relations with the Missouri Pacific. At present the Missouri Pacific takes trackage over the Cotton Belt between Illmo at the Thebes bridgehead, south to Paragould, where contact with Missouri Pacific rails is again established. In exchange therefor the Missouri Pacific at present gives trackage north of the Thebes bridge up the east bank of the Mississippi River into St. Louis to the Cotton Belt. This reciprocal trackage arrangement under this plan will continue between the Missouri Pacific and the Rock Island

A prime requisite for an effective Southwestern-Gulf system is the provision of through routes to the sea; and these ought to be afforded both to New Orleans and Galveston. This is something which the Frisco has always lacked in competition with the Missouri Pacific, which has enjoyed access both to New Orleans and Galveston over other affiliated Gould lines. The provision of through routes to the Gulf therefore is fundamental. As to New Orleans, a route is afforded, as shown on map 25, by the inclusion of the Louisiana Railway & Navigation Company, from Shreveport to New Orleans, closely paralleling the Red River all the way. Unfortunately this line can not add strength financially, according to the data for the type year 1917. Its investment account is very heavy, $63,248 per mile of line. Its railway operating revenue was $7,087 per mile of line, yielding net operating income of only $1,014. This is a rate of return on investment of only 1.69 per cent. Evidently this Edenborn line, so-called, must be supported by through traffic from a large system. It is so plainly marked to match against the Texas & Pacific from Shreveport down the other bank of the river (map 26) in the Missouri Pacific combination, that it finds a natural and valuable place in the Frisco group. Of course in due time its disability of freight transfer by ferry service instead of a bridge, will disappear. Until then it operates under a heavy handicap.

Consideration of map 25, however, shows that the route from Kansas City to New Orleans provided within this proposed Frisco system will still be quite indirect from Shreveport north. There is nothing corresponding for directness with the air line of the Kansas City Southern, north of that city. The location of this line is dotted on map 25. It traverses a sparsely settled upland territory on the border of Oklahoma-Arkansas west of Hot Springs. To duplicate this line with the present volume of traffic would be a useless expenditure. But possibly trackage might be given which would avoid the wide detour otherwise necessary to the west. It is recommended therefore that trackage be provided, first over the Texas & Pacific from Shreveport to Texarkana, and from that point on over the Kansas City Southern to Hartford Junction, where the main line of the Frisco is once more reached. This double utilization of the key line of the Kansas City Southern, as the country develops and through traffic increases, may conceivably in time lead to the building of a parallel bridge line across this district, or, if necessary, to the double-tracking of the road. But in the meantime, doubtless, the existing rails of the Kansas City Southern can carry all the business, and the overhead charges can be shared by the two systems. Responsibility for upkeep should still rest with the enlarged Missouri Pacific system, but transportation over the premises might well be allowed to the Frisco.

A second through route to the Gulf must reach Galveston as well as New Orleans. The best way apparently is by trackage over the excellent roadway of the Trinity & Brazos Valley (map 25). This is an air line from Dallas and Fort Worth to Galveston. At present its relationship to other railroads is extremely involved. Originally it was a joint enterprise of the Colorado & Southern and the old Rock Island Company, the now defunct holding corporation which headed the old Reid-Moore enterprise. The Rock Island receiver in 1915 disaffirmed the old contracts relative to half-and-half interest in the Trinity & Brazos Valley with the Colorado & Southern. But litigation was finally avoided by an agreement decree. At present the Rock Island Railway is the owner of one-half of the first-mortgage bonds and of the capital stock. The Trinity & Brazos Valley, it may be added, controls the so-called Galveston Terminal Railway. The line has never been utilized to the degree which it deserves. It ought to become an important stem. By means of trackage, to throw business from the great network of lines in the proposed Frisco system to the north over it might add to its earning capacity and overcome the very heavy deficit of 2.09 per cent of net operating income in relation to investment. There is, however, another possible line to Galveston, which is dotted on map 25. Trackage over the Houston East & West Texas, a part of the Southern Pacific system, would serve to connect the southernmost extremity of the St. Louis Southwestern at Lufkin, Tex., with Houston and thus with Galveston. Apparently the rails would stand the additional traffic without prejudice to the interest of the Southern Pacific. But both this line to Galveston and the Trinity & Brazos Valley are not apparently needed; and of the two, the Trinity & Brazos Valley, making the through line from Dallas and Fort Worth, seems to be preferable.

A considerable railroad, which must be taken care of somehow, is the Kansas City, Mexico & Orient. This enterprise, never completed through to the Pacific Ocean at Topolobampo in Mexico, remains stranded high and dry as a local line from Wichita southwest across the arid plains of Texas almost to the Mexican border. The property had an investment account of $39,723 per mile of line in 1917, on which it earned only 0.03 per cent. The road as a whole could not be placed effectively in either one of the two great systems proposed for this region. Its line from Wichita across Oklahoma (map 26) absolutely parallels an existing line of the Frisco (map 25). And from the Red River, forming the northern boundary of Texas, on to Mexico, the Orient road parallels the Texas & Pacific (cf. maps 25 and 26). Thus it is evident that to place this property as a whole in either one of these combinations would abolish competition and create superfluous lines within the same system for either the one half or the other of the property. But to split it up north and south of Altus, Okla., as shown on map 25, permits the southern half across Texas to be added to the Frisco system where it has no line; and then the northern half above Altus may be utilized in the Missouri Pacific system (map 26), to give it a road across western Oklahoma, without which it would have no representation in that district. Furthermore, as shown by map 26, by this means the two systems are much more evenly matched against one another. Each is given a far-flung line clear across western Texas, and each is equally represented in the territory of western Oklahoma. And in both localities competition is provided by means of practically parallel lines. This proposal to subdivide this property, it may be added, has the approval of substantial expert railroad authority. Unless it were so plain a case calling for dismemberment, the recommendation would not be so confidently made.

The Frisco system as compared with the Missouri Pacific is peculiarly lacking in mileage in northern Louisiana. There is a little line known as the Vicksburg, Shreveport & Pacific, according to map 25, which runs due east and west between Shreveport and Vicksburg. It is controlled by the Sterling Trust, Limited, an English holding company, which also owns the Alabama & Vicksburg Railway run-

ning straight on east across Mississippi to Meridian (map 10). This line east of the Mississippi has been allocated in chapter IV to the Southern Railway. The object in cutting the road asunder at the Mississippi River is to allocate the railway mileage to the different rate territories for governmental administrative purposes. The Vicksburg, Shreveport & Pacific Railway, in 1917, had a net operating income of 3.67 per cent upon the investment in road and equipment. As recently reorganized in 1917, it appears to be a not inordinately weak member of the southwestern group. It is recommended that it be added to the Frisco combination as a part of this general plan.

The best railroad for affording an entry into Chicago for the enlarged Frisco system, as heretofore described, is believed to be the Chicago & Alton Railway. Its location in relation to the Frisco is depicted on map 25. The Alton can not add financial strength. At least until it is reorganized, it is bound to be unstable. The immense overload of bonded indebtedness, imposed upon it years ago as a capitalization of its surplus, has rendered it a continual drain upon the Union Pacific treasury. But once reorganized, its rails, according to the map, afford an admirable connection both for Kansas City and St. Louis to Chicago. In the Union Pacific system, as at present, the traffic brought by that system into Kansas City is largely local. The Union Pacific delivery of cars at Kansas City to the Alton amounted to only 5,359 carloads in 1917, most of which originated on the system. The Alton in return delivered to the Union Pacific 4,345 carloads, about one-half of which were destined to points on the Union Pacific system. These figures demonstrate that the Alton is of relatively slight value in its present connection. Yet this road, according to the map, is peculiarly well fitted to serve the Frisco system. For it not only gives a short line from St. Louis to Chicago, but it also affords a better line to the Frisco, as herein amplified, between Kansas City and St. Louis than otherwise would obtain. Consideration of map 25 shows that the existing Frisco system has no direct line at all between Kansas City and St. Louis. The inclusion of the Katy, however, gives it such a route but, according to the map, it is composite and quite roundabout. The river line of the Katy, in fact, from New Franklin down the north bank of the Missouri to St. Charles is so ill-suited that the present reorganization committee is considering its abandonment to the bondholders, and they also find so little value attached to the Hannibal line that that also is scheduled for abandonment. It is recommended, however, in view of the proposed merger of the Katy and the Alton that the Hannibal division be included at least as far as Higbee, Mo., the junction of the Hannibal division with the Chicago & Alton. There is quite a heavy tonnage interchanged at this point, amounting in January, 1921, to a delivery by the Katy of 342 cars, more than three times as much as the Katy delivered to the Alton at St. Louis. As for the Katy line from Boonville into St. Louis along the north bank of the Missouri River, under the cliffs, it is recommended that it be transferred to the Missouri Pacific system. As a low-grade line, in the opinion of the Missouri Pacific officials, it would practically give them a double track, with a lower grade in fact than they now have along the south bank of the river. It should also be noted in connection with the Katy line from Moberly to Hannibal that it may well go to the Union Pacific-North Western system along with the Wabash, west of the Mississippi (see map 15). For the Wabash already uses it by trackage as a part of its system.

The addition of the Chicago & Alton and the transfer to the Missouri Pacific system of the Katy line down the north bank, as hereinbefore described, would still leave the Frisco system with admirable short routes both from Kansas City into St. Louis and up to Chicago as well. The Higbee connection will also be advantageous as affording an alternate route to avoid congestion in the St. Louis terminal. Furthermore, the Chicago & Alton and Frisco terminals at Kansas City are tributary, admitting of practical consolidation. And then at Chicago the Frisco would get a good terminal,

including the modern freight-house layout just completed. It is alleged that the modern Alton facilities at Kansas City would also well serve the Frisco. The provision of a coal supply from the lines of the Alton is also a factor of importance to the Frisco. Macoupin and Sangamon counties in Illinois, traversed by the Alton, rank third and fourth in production among the districts of Illinois. For 50 miles, from Carlinville to Springfield, abundant coal supply is found. The Alton in 1918 shipped 3,364,000 tons of coal from Illinois and 290,817 from Missouri mines in the vicinity of Higbee, Mo. Evidently an adequate supply of fuel for company use and for general consumption throughout the southwest will be afforded by this merger of the Alton in the Frisco system. Nor is this recommendation prejudicial to the competing system built upon the Missouri Pacific. For that system already has adequate communication between Kansas City and St. Louis; so that the Chicago & Eastern Illinois amply suffices for its Chicago entrance and at the same time gives that system a coal supply from along its line well matched against the production of the Alton.

The Missouri Pacific system, portrayed on map 26, assumes the shape of a wide-open fan, ranging widely all over the territory between Pueblo, Colo., on the west and the mouth of the Mississippi River. The system in 1918 operated 7,108 miles of line, of which about 6,800 were owned in fee. This compares with the Frisco mileage of 5,064, owned and operated. The Missouri Pacific therefore is substantially larger already, as a nucleus for the second great competing southwestern system, to match against the Frisco. Moreover, as a result of its reorganization, and because of the historic association between it and the other so-called Gould lines in Texas, there is a greater degree of unity in the geographic layout than is evinced by the Frisco. The reorganization in 1917 merged the St. Louis, Iron Mountain & Southern Railway down along the Mississippi Valley, with the old Missouri Pacific Railway, which formerly comprehended only the lines due west from St. Louis in Missouri and Kansas. The other Gould properties, separately shown on map 26—such as the Texas & Pacific and the International & Great Northern—are, in other words, more integrally related to the main stem than if they had always been controlled by independent and perhaps competitive owners.

A weakness of the Missouri Pacific system, however, as at present constituted is at once apparent upon examination of the map (26). This is the sharp separation on the two flanks of the Ozarks between the western and the southern halves. These are at present united only by two long bridge lines running northwest-southeast over the Ozark uplands or along the valley of the Arkansas River. Nor is this disability a slight one in view of the growing importance of through traffic to the Gulf. The lack of a direct north-and-south route, especially from Kansas City, has in the past proved a serious handicap. From St. Louis, taken in connection with the Texas & Pacific and the International & Great Northern, the old Iron Mountain route had lines both to New Orleans and Galveston. But as connecting the original Missouri Pacific Railroad, lying west of the Ozarks, and Louisiana and Texas points, the disability was very great. Carriage by way of Coffeyville, Kans., then down the Arkansas River Valley to Little Rock, and thence by a sharp turn back toward Galveston was assuredly zigzag. The so-called Womble branch was originally intended to bridge the last gap in a direct route. It was never completed. Under this plan there is no longer need for it. As against this route, the Kansas City Southern Railway goes straight as an arrow from Kansas City (see map 26) down the eastern boundary of Kansas, Oklahoma, and Texas to the Gulf. Nothing could be shorter than this competitive route, which, of course, got most of the long-haul lucrative traffic. Whatever business was held by the Missouri Pacific was of necessity carried at an inordinate cost by reason of the circuitous routing. To remedy this defect it is recommended that the Kansas City Southern Railway be included in the Missouri

Pacific system. Merger of the two provides a supplementation for each of its own individual shortcomings. A far better through route is afforded between Kansas City and New Orleans than was afforded by either route alone. For the short line from Kansas City to New Orleans at present consists of the Kansas City Southern to Shreveport, thence over the Louisiana Railway & Navigation Company to New Orleans. But this latter line having been taken from the Frisco system, the Texas & Pacific answers practically as well. The Kansas City Southern, on its part, also gains, because access is provided more freely to the great Gulf ports without leaving the road entirely dependent, as at present, upon its own outlet at Port Arthur. Such merger of the Kansas City Southern in the Missouri Pacific system is confidently recommended as operating in the public interest.

Financial considerations of weight, as provided by the statute, commend the merger of the Kansas City Southern with the Missouri Pacific. Consideration of the table on page 617 discloses practically the same percentage return of net operating income to investment for each. The Missouri Pacific in 1917 earned 3.96 per cent, as against the corresponding figure of 3.95 for the Kansas City Southern. But this similarity is only apparent. The investment account reveals a striking difference. The capital statement of the Kansas City Southern in 1917 was practically four times that of the Missouri Pacific. At $203,710 per mile of line, it is more than double the next highest figure for this region—$99,423 per mile of line. The investment account of the Missouri Pacific stands at only $51,216 per mile of line. This is, of course, due in part to the great network of lightly built branch lines; whereas the Kansas City Southern is practically all main track. It is a stem line from one end to the other. The Missouri Pacific investment account was presumably scaled down in the recent reorganization, although as a matter of fact the outstanding capitalization actually increased by 4.42 per cent. But while the investment account of the Kansas City Southern per mile of line is fourfold that of the Missouri Pacific, its net operating income is practically double. The indications are that the investment account is still excessive, due allowance being made for the physical characteristics and history of the two properties. Federal valuation will doubtless reveal the situation more clearly. But with a reduction of the Kansas City Southern investment account, its relative earning power would be correspondingly enhanced. The road is assuredly in the best condition perhaps of any property within this group, and its strength, largely built upon its main-line business, should be properly utilized to support the great extent of branch mileage of the Missouri Pacific. Unless the theory of the statute is at fault, this is the procedure which is called for by law.

An improvement now being developed by the Kansas City Southern in order to make it a low-grade line to the Gulf is under way. At present the main line south of Joplin has some grades as high as 1.4 per cent, through the western foothills of the Ozarks. Swinging the road farther to the west, out into the flat country, would make it possible to eliminate this handicap. Negotiations are now in hand for trackage rights over the Kansas, Oklahoma & Gulf (see map 26) from Joplin, through Baxter Springs down to Muskogee, Okla. Thence trackage is to be taken over the Missouri Pacific back to the main line of the Kansas City Southern at Sallisaw, Okla. This detour would give a low-grade line with a maximum of 0.5 per cent grade to be utilized for through freight only. The old main line, still tapping important territory, would be utilized for passenger and lighter business. The significance of this proposal is that it suggests at once the inclusion in the Missouri Pacific system of the entire Kansas, Oklahoma & Gulf road. The purpose of this is at once disclosed by consideration of the map. It would give the Missouri Pacific system, as enlarged, a line directly matching and paralleling the Katy between Muskogee and Denison, Tex. This would open up at once also another through route between Kansas City and Galveston. The inclusion of the Kansas, Oklahoma & Gulf, unfortunately, would

add a liability rather than an asset, as at present operated. The road, according to the returns for 1917, had a net operating income deficit of $251 per mile of line. Its investment account of $38,049 seems not abnormal by comparison with its neighbors. Doubtless the property is in poor shape. But, judging by the map, it possesses a line which if incorporated upon suitable financial terms would provide a necessary link in the enlarged system. Two other minor additions to the Missouri Pacific system should be enumerated. Each has already been discussed in connection with the Frisco consolidation. One is the line of the Katy, as shown on map 26, from Fort Smith into Oklahoma City, with the side line through Tulsa into Muskogee. The other proposed addition is that of the northern half of the Kansas City, Mexico & Orient road from Wichita to Altus, Okla., near the Texas boundary. This is part of the arrangement, as it will be recalled, under which this property was to be divided, the southern half to go to the Frisco system, reserving this northern half in order to give the Missouri Pacific group a line down through western Oklahoma.

Another small addition to the Missouri Pacific system is that of the Louisiana & Arkansas. This is one of the little independent roads so characteristic of the region. It extends from Alexandria, La., northwest to Hope, Ark. The location is dotted on map 26. Judging by the map, this line closely parallels both the Louisiana Railway & Navigation Company (Frisco system, map 25) and the Texas & Pacific Railway (Missouri Pacific, map 26). It is difficult to decide whether it is more serviceable to the one or the other; but on the whole, because of the fact that, with its line to the east opposite Natchez, Miss., it ties into the Missouri Pacific system at three points it is recommended for inclusion therein. Along with this there seemingly should also be merged with this system the Fort Smith & Western, which is depicted on map 26, as running across Oklahoma, roughly between Fort Smith, Ark., and Guthrie, Okla. It provides further representation for the Missouri Pacific in Oklahoma, where, as a whole, the Frisco system is already richly represented. This little road also must be regarded as a liability rather than an asset, its net operating income being equal only to 0.67 per cent on the investment in road and equipment for 1917. The Louisiana & Arkansas was in better case, with a corresponding figure of 2.95 per cent. Neither of these results is very encouraging, but if the policy be to include all the odds and ends, these properties must certainly be taken in.

What shall become of the mileage in the Missouri Pacific system (map 26) north and west of Kansas City? A rigid application of the principle of territorial subdivision would lead to the amputation both of the main river line up to Omaha and of the branch extending far across northern Kansas and up into Nebraska at Hastings. It has been urgently represented that these should be transferred to one of the transcontinental groups. And the force of this contention is conceded as to the Kansas branch. This does not properly belong in a Southwestern-Gulf system. It lies in the territory of the Union Pacific, the Rock Island, or the Santa Fe. Decision is reserved as to its precise allocation, and of course it would do no particular harm to let it rest where it is. But if a desire should develop among any of these transcontinental lines for additional mileage in this region, it is believed that a transfer would be not incompatible with the public welfare. Not so with the main river line up to Omaha. This is as important to the Missouri Pacific system, especially in the carriage of packing-house products, as is the Kansas City-Memphis-Birmingham line in the Frisco group. It might, of course, be transferred to the Union Pacific–North Western system (map 15), in order to match it against the corresponding line on the east bank of the river in the Burlington system (map 16). For these two great systems are not at present evenly matched in this regard. If the line went anywhere else, such should be its destination. But the Missouri Pacific systemn eeds upbuilding in order to sustain its heavy burden of branch mileage. The Union Pacific can do without it. It is therefore recommended that no such transfer take place and that conditions as to the Omaha line be left undisturbed.

The status of the Missouri Pacific line into Colorado, under the plans proposed for transcontinental merger, is somewhat disquieting. The problem is not peculiar to this line. It attaches likewise to the Rock Island and possibly to the Santa Fe lines into Colorado. Combining the Denver & Rio Grande with the Burlington, or with any other great system, for that matter, automatically tends to close the through line to outsiders. There is always, of course, a certain amount of local business, and it would appear as if at all events the Missouri Pacific should have trackage up to Denver. The interchange of the Missouri Pacific with the Denver & Rio Grande was considerable in 1917. Not less than 526,000 tons were delivered to the Denver & Rio Grande, and 828,000 tons were received back from it. The seasonal character of the business indicates that much of it consisted of agricultural products. So serious would be the loss of this business that one is almost tempted to recommend the bodily transfer of this Denver division to the Burlington system. As constituted under this plan, the Burlington system has no appreciable mileage in Kansas (map 16) to match against the Union Pacific line, which traverses that state from end to end due west from Kansas City (map 15). This, in fact, is the old line of the Kansas Pacific. Its status seems to be largely that of a provincial road within the present Union Pacific system. Conceivably this Missouri Pacific Denver line might go to the Burlington system in order to give it something to match with the Kansas mileage of its great competitor. The suggestion is made only tentatively, however, subject to confirmation upon further inquiry.

The disposition of the Colorado & Southern Railway, with its Texas line, known as the Fort Worth & Denver City, is a matter of peculiar difficulty, owing to the fact that these properties are concerned both in transcontinental business and also engage in through carriage to the Gulf of Mexico. Their national function is to afford a short and direct line from Galveston through to the far northwest by way of Denver. Following this course, all of the east-and-west transcontinental routes are cut at right angles. Because of existing stock control by the Chicago, Burlington & Quincy, their status is discussed primarily in chapter V, and reasons are there given for the hesitancy in a definitive allocation to this Southwestern-Gulf group of roads of the line between Denver and Fort Worth. The final choice, as there stated, must be made between transfer of this important bridge line either to the Santa Fe, to the Rock Island–Southern Pacific system, or to the Missouri Pacific. But one point that is definitely settled is that this portion of the Colorado & Southern system should not remain in the control of the Burlington. The main reason therefor is that such extension carries one of the principal northern transcontinental railroads clear outside its natural territory—unless, indeed, one is equally to extend the Union Pacific system, which is matched against the Burlington for transcontinental purposes. And the way to accomplish this last-named transfer is closed by other disposition of the Kansas City Southern, as herein made (p. 628, *supra*). The projection, in other words, of the Burlington–Northern Pacific transcontinental system into the Oklahoma and Texas field, if continued, entails such other amplifications as to completely upset the plan for evenly balanced east-and-west competitive systems. One of the express purposes, indeed, in the differentiation of the Southwestern–Gulf properties from the transcontinental railroads would be frustrated thereby.

The respective claims of the Santa Fe and the Rock Island–Southern Pacific for control of the Colorado & Southern south of Denver being also discussed in chapter V as elements in the transcontinental situation, it is here and now pertinent to set forth affirmatively the reasons for including it instead in the Southwestern–Gulf group. In this latter region it would be treated as a distinctly neutral road for transcontinental traffic. Through connection at the various junctions it could handle all the business destined to the Gulf ports with strict impartiality. The proposal is indorsed by the late regional director of the western federal Railroad Administration.

But if it be so regarded, choice must then be made between the Missouri Pacific and Frisco systems which it is planned to set up hereabouts. To the Missouri Pacific the Colorado & Southern is peculiarly attractive, because it would serve to tie in Pueblo, Colo., already reached by the forthstanding stub of the Missouri Pacific across Kansas. Moreover, this system, according to map 26, is poorly represented, as compared with the Frisco, in the panhandle region of Texas, and the Colorado & Southern directly traverses this field. It goes without saying that the line would add financial strength either to the Frisco or the Missouri Pacific. The Fort Worth & Denver City in 1917 earned 7.34 per cent upon its investment account, although the Colorado & Southern only earned 3.24 per cent. But the general financial status is distinctly higher than that of either of the Southwestern–Gulf roads. In how far this earning power is due to the express interest of the Burlington system is of course indeterminate. But as against any loss from this source through its transfer, there would need to be set the gain to accrue from a neutral relationship with all of the other transcontinental roads. As between the two, according to our statistical data, the need for financial support of the Frisco is somewhat greater than for the Missouri Pacific. But the layout on the map points to the Missouri Pacific as the preferable recipient. It is historically of interest that the Wichita Falls & Northwestern—the constituent in the Katy system (map 25) which follows up the western boundary of Oklahoma and ends at Forgan—was originally intended to go on to a Colorado connection at Trinidad or Pueblo. Its completion was expected to break the monopoly which the Colorado & Southern has so long enjoyed of the short and direct line between Denver and Galveston. Perhaps some day this will be put through. In this event, with the Colorado & Southern south of Denver as a part of the Missouri Pacific, the two Southwestern–Gulf competitors would again be almost perfectly matched against one another in this regard.

On the whole, therefore, weighing the evidence adduced, it appears that the claim of the Missouri Pacific, particularly for the further support of its Pueblo division, is substantiated, and the road is therefore shown tentatively by means of a dotted line upon map 26. Under this consolidation plan it should finally rest either here or in one of the two competing southern transcontinental systems.

The Missouri Pacific system as thus amplified has a certain interest in the so-called Gulf Coast Lines. This latter road, as shown on map 22, closely parallels the seaboard all the way from the Mexican frontier up to New Orleans. From Beaumont, Tex., east to DeQuincy, there is an important stretch wherein the Gulf Coast Lines rely upon the Kansas City Southern entirely for trackage to connect the two halves of their extensive system. The Kansas City Southern (map 26) as it approaches the Gulf turns sharply to the west, parallel to the coast, just where it forks at DeQuincy. The trackage relationship thus set up between the Gulf Coast Lines and the Kansas City Southern is quite intimate, and it seems not unlikely that a reciprocal favor might be extended, giving trackage to the Kansas City Southern over the Gulf Coast into Houston. Such trackage, dotted on the map, serves to tie in what would otherwise be widely separated operating units. The advantage of such connnection is often times great in the matter of car supply. It enables a prompt provision of equipment in time of need. The Missouri Pacific interest in the Gulf Coast Lines is evidenced in the daily trainload through the crop season out of the Brownsville district, which moves through Houston over the International & Great Northern to Longview, thence over the Texas & Pacific to Texarkana. At this point another trainload daily of California products is reclassified with it, and the two move to St. Louis over the Missouri Pacific stem. All of these connections, it will be noted, are in the Missouri Pacific group of roads. On this basis it is recommended that the southern half of the Gulf Coast Lines, from Beaumont on, be assigned to this system. From DeQuincy east, as elsewhere described, the Gulf Coast Lines go to the Santa Fe for

an entrance into New Orleans. This division of the Gulf Coast Lines dovetails in, it will be observed, with the break in its owned mileage between Beaumont and De-Quincy.

In connection with access to Houston the proposal has also been made that trackage should be given over the Houston East & West Texas. This would unquestionably give a more direct line into Shreveport. But inasmuch as trackage (map 25) has already been recommended for the Frisco over this subsidiary of the Southern Pacific system, it is not believed to be desirable to superadd anything further. The need is by no means as great for this entry into Houston for the Missouri Pacific system as it appeared to be in the Frisco.

The necessity for a Chicago line within the enlarged Missouri Pacific system having, it is believed, been demonstrated, it is recommended that the western half of the Chicago & Eastern Illinois, as shown on map 26, be incorporated within this system. At present, to be sure, there is a somewhat heavier interchange of the Missouri Pacific with the Chicago & Alton than with this road. In October, 1920, for example, the Missouri Pacific received 482 carloads at St. Louis and Dupo, Ill., from the Alton as against only 164 from the Chicago & Eastern Illinois. Coincidently it delivered 720 to the Alton and only 373 to the other road. But this indicates no physical disability of the latter road. It is the judgment of those best informed that the Chicago & Eastern Illinois is the most natural connection for the Missouri Pacific into Chicago. The balance of the Chicago & Eastern Illinois, it will be remembered (page 597, *supra*), is recommended for inclusion in the St. Paul-Great Northern system. It is not alone that this Chicago connection is direct and in good condition for service. The Chicago & Eastern Illinois has also been recently reorganized in order to bring its capitalization into line with its earning power and its physical valuation. But the recommendation is also made because of the fuel supply for the southwest, which such a merger would provide. Chicago & Eastern Illinois coal tonnage in general is derived from two distinct fields. One of these, known as the central Illinois field, is directly northeast of East St. Louis. The other, the southern Illinois field, lies south of St. Elmo, along the line of the southerly fork of the Chicago & Eastern Illinois, just below the crook in it (map 26). The coal from this southern Illinois field practically all goes into the southwest by way of the Thebes bridge, or into the southeast via Joppa. In either event, the carriage is by way of the Chicago & Eastern Illinois. And in this way this road feeds directly into the Missouri Pacific system. On the other hand, the coal from the eastern half of the Chicago & Eastern Illinois, as shown on map 5 by means of the heavier designation, all moves north for consumption in Chicago or beyond. The western half of the Chicago & Eastern Illinois is thus allocated to the Missouri Pacific not only for fuel purposes, but because it affords all of the connection which the Missouri Pacific requires with the other Missouri River gateways. For, as heretofore described in connection with the Frisco system, the Missouri Pacific already has one good low-grade river line between Kansas City and St. Louis. It has also been given a second track, it will be recalled, by taking the Katy river line east of Boonville. The portion of the Chicago & Eastern Illinois reserved for the Chicago bridge line is tenuous to be sure, as map 26 indicates, but it is believed that it affords both the fuel supply and the through connection which is required for the service of its proposed parent system. An operating advantage which still further commands this arrangement is the traffic to and from Chicago and New Orleans and east Texas points, which could be handled down the east side of the Mississippi River to Illmo. This would obviate the necessity of routing much business through the congested terminals either of St. Louis or East St. Louis.

The plan under which the two Southwestern-Gulf systems, as heretofore developed under this plan, match one another throughout their common territory is disclosed by

map 26–A. The manner in which all of the leading cities are constituted common points through the entry of each of these evenly balanced competitors, is so clearly set forth as scarcely to require comment. And yet in order to confirm the demonstration, attention is especially directed to the two lines into New Orleans, into Galveston and San Antonio, and the two matching lines far flung across western Texas. And as for direct through lines from Kansas City and St. Louis respectively to New Orleans and Galveston respectively, those essential routes have already been described minutely. Broadly viewed, the Missouri Pacific system is still substantially stronger in the lower Mississippi Valley; and, *per contra*, the Frisco has the advantage in western Oklahoma. But all such minor differences might readily be dealt with through new construction in the future, in pursuance of a carefully devised plan. The control henceforth which the Commission may exercise over new construction affords an opportunity to direct affairs in such a manner as still further to promote even-handed competition. One of the leading traffic officials characterized this plan as presenting "wonderful possibilities" for the future. Whatever these may be, it is submitted, must arise from some such orderly rearrangement of corporate relationships as is herein crudely set forth.

The table on page 617 and exhibit 7 bring out the relative earning power in terms of investment account for the Southwestern-Gulf region, based as always upon the type year 1917. It establishes, so far as these figures can be relied upon, a low yield, which was all that one might expect from this undeveloped and over-berailroaded territory. The encouraging feature, however, if the theory of this consolidation plan be sound, is the substantial equality of the return between the two great systems. For the Frisco the rate is 3.06 per cent on investment account; while for the Missouri Pacific it is 3.75 per cent. But these figures may not stand as baldly stated, for an instant inspection of the data concerning investment per mile of line shows that the Frisco capital account is approximately 25 per cent greater than that of the Missouri Pacific system. Specifically the investment account for the Frisco stands at $72,924 per mile of line as against that of the Missouri Pacific of $57,920 per mile of line. The former, in other words, is 25 per cent greater than the latter. Yet there is no evidence that in any large way the Frisco property is correspondingly worth as much more than the other, as this investment account apparently indicates. The predilection is entirely in favor of a substantial writing down of the Frisco account and in fact probably, as will subsequently appear in the succeeding chapter, of a substantial reduction of both capital accounts. Certainly there is no sound warrant for the disparity in this regard as between the two systems lying side by side throughout this region. For this reason it is submitted that a correction may justifiably be made in the Frisco returns. To write down the capital account by one-fifth would automatically write up the rate of return, bringing it from 3.06 per cent to a substantial equivalent with that of the Missouri Pacific, standing at 3.75 per cent per mile of line.

The uniformity of earning power obtainable, supposing that the returns for the type year 1917 be regarded as once more possible with the reestablishment of normal operating conditions, is noteworthy. Particularly is this significant when taken in connection with the investment in road and equipment according to this showing. But one further step remains, namely to check up the investment account by federal valuation, and this step is reserved for the succeeding chapter, a general recapitulation.

Chapter VII.—Recapitulation.

Résumé and broader aspects of consolidation policy, especially as respects government ownership, 635.—Conspectus of the plan, proposing 21 independent systems, and comment upon the summary map of their respective locations, 636.—Their relative extent and volume of traffic, 638.—General assembly of statistics of earning power, with comment upon regional variations, 640.—Capital account now compared with physical valuation, 641.—Positive conclusions thus obtainable, discussed regionally, 643.—Effect of consolidation upon train movement, 643.—And upon the welfare of individual properties, 643.—Extensive resort to trackage, avoiding needless duplication, 644.—Certain objectionable practices demanding legislative correction, 645.—The tendency toward consolidation in the British Isles significant, 646.

The objects sought in the foregoing plan are as follows: An inherently natural geographic scope for each system; a sound operating adaptation of each unit to its surroundings, due consideration being given to the nature of its traffic; administrative practicability, that is to say, a size under each particular set of circumstances, commensurate with human capacity in management; an ever-present competition between rival roads, in order to insure the continuance of an alert and accelerated service to the public, assuming that the foregoing physical arrangements have already provided economical carriage by each competitor; and such an equalization of earning capacity between these competitors, as to perpetuate such rivalry in service on an even-handed and wholesome basis. This ideal has been otherwise well described by Chairman Clark of the Interstate Commerce Commission, as a service "rendered by large systems with their component parts properly coordinated under a common policy rather than by a substantial number of weaker and, in some instances, impecunious systems, each with its selfish interests and its separate organization striving to promote those interests." All of these requisites for a sound consolidation plan, it should be understood, must of necessity be combined with the least possible disturbance of existing corporate integrity. Matters might be quite differently arranged, were it not for this precipient condition. And indeed it is basic, for two reasons. The first is that the formation of a better sort of competitive system than we now enjoy, must in the nature of things probably be voluntary. The other is that the existing physical instrumentalities, such as division points, roundhouses, residence of employees, and the like, have been closely coordinated with the present corporate structure. Both of these circumstances therefore commend, as the most feasible governmental policy, a process of induced although necessarily voluntary trading between the existing railroad companies through interchange of their corporate securities.

Should the policy of voluntary consolidation not prevail, after due encouragement by governmental authority, it seems clear that an added incentive to government ownership will be afforded. In other words, a failure to seek earnestly the economies of large-scale and systematic operation must necessarily strengthen the arms of those who are contending for the entire supersession of private ownership through a government taking. This phase of the matter can not be overemphasized, in no sense because of antagonism to government ownership, as such, but merely that in the final event a wise adaptation of means to the desired end of the best possible service at reasonable cost to the people may result. The issue of governmental versus private ownership and operation of railroads is constantly pressing itself upon the attention of the Congress and the people. The principal argument in its favor is that it conduces to economy and efficiency because of unified operation. All the wastes of competitive management, it is alleged, may thus be avoided. Nor can it be denied that in considerable measure such economies were brought about in the United States during

the period of federal control.[1] Joint use of terminals, yards, and engine houses, of running tracks and of motive power and cars; the consolidation of car-inspection forces and of ticket offices, with the abolition of off-line offices and competitive consolidation; the short routing of freight and diversion of export traffic to the best-suited ports; "sailing days," pooling of business, consolidated trainloads; standardization of equipment and of operating statistics; simplification of interroad accounting—all these and other eliminations of waste were either realized or in process of attainment during this period. No impartial student can deny the force of the contention that unified operation in and of itself is advantageous both as regards cost and expedition in service. But it is equally incontrovertible that the cessation of competition under a system of complete regional monopoly such, for example, as seems to be contemplated under the pending British plans, is destructive of one of the great incentives to efficiency. That was perhaps one reason why the cost of operation mounted so phenomenally during the war. The instrumentalities may be present; but the vigor and initiative which are commonly set on foot through rivalry are bound to be lessened. One of the larger aspects, then, of this proposed consolidation plan is that it offers a third choice, in place either of completely unified regional ownership and operation with its lack of incentive, on the one hand; or of the economic wastes which are incident to helter-skelter competition between a heterogeneous congeries of more or less imperfectly developed properties, on the other. One alternative threatens stagnation; the other has driven our railroads to the verge of bankruptcy. May not a well-ordered consolidation program offer a way out, without resorting to the ultimate expedient of government ownership from which, once adopted, there can be no withdrawal. It is believed that an opportunity presents itself to seek the advantages of each of the other arrangements, with some chance of escape from their several inherent defects. Such, at least, is the underlying principle contemplated in this plan.

A total of 21 systems has resulted from the foregoing proposals, made serially in detail. These, it will be recalled, are as follows: Five systems within the trunk line region; two lake-to-tide soft-coal systems in the Chesapeake Bay region; in the southeast, four systems; five transcontinental systems west of the Mississippi; and two running southwest toward the Gulf ports. In addition to these, and completing the list, there are three outlying regional groups; in New England, in the southern Michigan peninsula and down the east coast of Florida toward Cuba, respectively. For these 21 systems the main stems are portrayed on map 27. This assembles the regional strategy of all of the different districts. The map, as it appears, throws into the foreground certain primary bases. Some of these, like New York, Jacksonville, New Orleans, Galveston, San Francisco, and Seattle, are located along the seacoast at nodal points, generally at the corners of the great territorial divisions, trunk line, southeastern, western, etc. In the heart of the country there are actually only two primary strategic bases, Chicago and St. Louis, although for the southern territory the Ohio River gateways are in a sense secondary bases. And Toledo, Ohio, and Norfolk, Va., are secondary bases for the group of Chesapeake Bay coal roads. But in the main everything is based, centrally, upon Chicago and St. Louis as far as the main stems are concerned. Wherever possible, the systems are brought in through their main stems to these points. But, as frequently reiterated, it is proposed also to create detours or alternative belt lines, by which congestion may be avoided at these great centers; and cross-country routes which shall avoid them entirely appear upon the detailed and elaborate maps for each system.

[1] The best authoritative review of this matter is the account by Prof. W. J. Cunningham in the Quarterly Journal of Economics, xxxv, 1921, pages 288-340.

The general practice of basing on Chicago and St. Louis, in the heart of the country, is exemplified in detail within each great region upon the map (27). The five trunk lines from the Atlantic seaboard split somewhere in their westerly courses, with branches to each great central base. Similarly the five transcontinental stems which spread out on the Pacific coast, from north to south, are drawn together to the same dual base on Chicago and St. Louis: and from the southwest, likewise, the two systems, only secondarily based on Kansas City and St. Louis, each run also into Chicago. And of course there is always, at the junction points where these main stems from every direction cross one another, the opportunity of free interchange, avoiding the congested centers entirely. Only from the southeast, for the reasons fully set forth in the chapter thereon, has it been deemed wise to stop the systems at the Ohio River and to have them carried into Chicago and St. Louis over trunk line connections.

The objective of conformity to the statute as respects competition, it will be observed, is sought wherever possible by having each considerable city all over the United States tapped by at least two railways; and all of the great competitive routes, hither and thither, are so arranged that there is a matching for competitive purposes everywhere. Thus, following on map 27 with the eye the two southwestern transcontinental systems eastward, it will be noted that the Santa Fe and the Southern Pacific-Rock Island each split in western Texas, with one branch running to the Gulf and another to the dual base on Chicago and St. Louis. For two of the remaining three western transcontinental lines the same thing happens in an inverse direction. Both the Union Pacific and the Burlington-Northern Pacific start out from Chicago (and St. Louis) and split in order to send arms to Seattle and San Francisco, respectively. One, to be sure, splits far back at Chicago; whereas the Union Pacific-North Western splits somewhere out in Wyoming and Utah. The St. Paul-Great Northern system is the only transcontinental one which is localized in the north. And the possibility of its future entrance into San Francisco is clearly foreshadowed. But each and every line has another road of approximately equal competing strength set up to match it. Take the southeast as another illustration. Starting from Richmond one notes, going southwest, parallel to the seacoast, that each of the three systems splits somewhere in the Carolinas, with a southerly arm to Savannah and a northerly one to Atlanta. Or, from the Ohio River gateways, three roads enter from the north, the Southern Railway at Cincinnati, the Louisville & Nashville at Evansville, and the Illinois Central at Cairo. All three alike split into two arms, one of which goes to New Orleans and the other easterly to Savannah or Jacksonville, via either Atlanta or Birmingham. Or, turning to the Southwestern-Gulf region, one finds two systems which really spring from Kansas City and St. Louis as bases matched against each other. They each, to be sure, run up to Lake Michigan, but their Chicago operating divisions are mere bridges. The real originating stems lie southwest of the Missouri River gateways; and each of the two systems reaches San Antonio, Galveston, and New Orleans, albeit by routes which for each particular city are more or less indirect. But by and large, the difference in length of haul between each pair of competitive routes is less than the 15 per cent allowed under the administration of the long-and-short-haul clause. In other words, the routes matched against one another are held to be properly competitive, neither being so indirect in length as to unfit it for rivalry with the other.

The foregoing description of competitive routes, matched in pairs, does not, of course, preclude the possibility of competition between a larger number of roads than two. At most nodal points, for example, it will be found that from three to five are as likely to compete as two. Thus at Seattle, San Francisco, Savannah, Atlanta, or the twin cities, one discovers three systems in competition. At Galveston four systems enter. New Orleans has three systems from the southeast and four

from west of the Mississippi. Kansas City will be touched by at least four of the transcontinental lines, with the two Southwestern-Gulf systems in addition. In short, as a city rises in the scale from third to second or first place, as a strategic center, the number of systems which independently seek to provide competition increases. This, it is submitted, conforms to the spirit of the act. It is inevitable, in any event, that competition becomes keener the greater the commercial importance of the city. But the progression under a well-ordered system seems to be more nearly an expression of the natural geographical fitness of that center, rather than, as sometimes heretofore, because of a fortuitous or artificial, and to that degree, less deserved advantage.

The principle that earning capacity in terms of valuation constituted the ultimate test of the feasibility of any proposed grouping of railroads, in contradistinction to any attempt to bring about an absolute equalization in size among these projective competitive units, was avowedly adopted at the outset. The plan has thus far been worked through solely with this end in view. Yet the relative magnitude of the different systems proposed is not entirely immaterial. An attempt has been made in the grand summary (exhibit 8) to bring out the facts in this regard. Size, relatively, is shown in two respects. One measures the volume of business by the revenue ton-miles. The other finds expression in the mileage operated. The latter shows the geographical scope of the fixed investment, whereas the revenue ton-miles afford a measure of the utilization to which this mileage is subjected. In other words, the revenue ton-miles exhibit the density of traffic rather than the extent of the systems on the map. Each of these two tests of magnitude is significant for its own particular purpose. With this distinction in mind, the exhibits above mentioned may now be considered. The range of mileage is considerable. Excluding the Florida East Coast, which of course is not a system, the smallest of the proposed groups is the Chesapeake & Ohio, with a mileage of 2,761. This is not much exceeded by either the Norfolk & Western-Virginian, the Michigan peninsula system, or the Seaboard Air Line. These four constitute a group apart in size from the rest. For all of the others run above 5,000 miles of operating length; and nine of them exceed 10,000 miles of line. The contrast between the western transcontinental systems in this respect and most of the others is notable. Four at least of these western roads are approximately 20,000 or more miles long, as operated. The only approach to this geographical scope is found in the Atlantic Coast Line-Louisville & Nashville system with 14,170 miles of lines, and in the two Southwestern-Gulf systems with 12,000 and 13,000 miles, respectively. Evidently the range is very wide, especially as between the western and the trunk line or southeastern territories.

Turning now to the second index of size, namely, revenue ton-miles, the same wide variation appears as in the matter of miles of line. But here, with the emergence of the density factor, the differences regionally contrast sharply in another way. Now it is the trunk lines which stand at the head, in some cases with a volume of business 50 or even 100 per cent in excess of that handled by the transcontinental roads. Thus the proposed Pennsylvania system with 47,871,000 revenue ton-miles is nearly twice as large as either the proposed Burlington or Union Pacific systems, judging by the returns for 1917. And as between the different systems within each region there are also wide differences. The Lackawanna-Nickel Plate is as much smaller than its great neighbors, measured by revenue ton-miles, as the Santa Fe system is smaller than the other western transcontinental roads. Likewise, in the southeastern region the volume of business, in view of the mileage operated, is surprisingly light. The retail character of the New England traffic is evident. It is clear that the proposed systems are as diverse in this respect of revenue ton-miles as they have appeared to be in miles of line operated.

The really significant feature of the exhibits respecting size, however, and one which has been kept in mind throughout the evolution of this plan, is the fact that the load thrown upon any single system for administrative purposes is kept well below the existing standards. The criterion for administration must necessarily be found in the revenue ton-miles; that is to say, in the density and the total movement of traffic. The attainment of the Pennsylvania in 1917 to 47,871,000 revenue ton-miles, followed next in order by the New York Central standing at 38,477,000 revenue ton-miles, is not elsewhere approached by any of the other proposed systems. And these two great groups, above named, represent in this plan not additions to the existing corporate business handled, but at least in the case of the New York Central, a substantial subtraction therefrom. The only proposed systems which approach within hailing distance of either the New York Central or the Pennsylvania in volume of business are the Baltimore & Ohio-Reading, the Erie-Lehigh Valley-Wabash, the Burlington, and the Union Pacific systems. In fine, if it lie within the bounds of human capacity to operate the Pennsylvania and the New York Central systems as at present constituted, there is no reason to suppose that these newly suggested systems are too big to be properly managed. This consideration is indeed a very vital one. Its significance could perhaps be better appreciated were it possible to outline all of the comprehensive proposals which have been in turn rejected, largely because of the undue magnitude of their operating units. This plan, it is confidently submitted, has been fashioned with a view to withstanding this test.

Another reason for limitation upon the size and scope of these proposed systems than the one above mentioned, operates in the interest of the local stations along the line. The question is often raised why more than two competing through systems are necessary, inasmuch as two are adequate to provide the competition in service called for by the transportation act. Why, in other words, propose three competing systems in the northwest instead of putting all of the mileage into only two? Or why have five in trunk line territory instead of four? It is submitted in answer to this contention that more and more do the little local communities along the lines of these primary railroads need encouragement and support in face of the commercial and industrial rivalry of the great centers of population. Too comprehensive a scheme of consolidation would unquestionably operate to lessen the number of trunk lines between competitive centers, over each of which there would be provided a main-line quality of transportation. The cities of the intermediate class, Des Moines, Iowa, for example, can not expect all of the rivalry which would arise between carriers at a primary center like Kansas City or St. Louis. But the chances for development attendant upon first-class main-line service will be considerably increased if there are, for example, three or four competing trunk lines of large systems across the state of Iowa, rather than a smaller number. It is also true that each main stem of a system may discover such an advantage due to its location or connections as will encourage it to specialize in certain classes of business. Upon such foundations are reputations as a reward of merit based. And such a specialization of function surely promotes that high grade of transportation which it is the aim of this legislation to promote. If, for example, the system which happens to include the present Kansas City Southern continues to bend its every effort to the best and quickest carriage of grain to the Gulf for export, and similarly if the greater system which comprehends the Frisco line from Memphis to Birmingham continues to better its special facilities for handling packing-house products or iron and steel, each system by so doing will tend by the excellence of its service especially to promote the public welfare. There is a certain danger that too comprehensive a consolidation scheme may be productive of that very stagnation of initiative and pursuit which attaches to any water-tight regional scheme—that of the Prussian or French railways, for example, or of the present British government.

A convenient check upon the uniformity of earning power of these proposed systems is afforded in exhibit 8 by the net operating income per mile of line. Obviously this test may be applied only within each region taken by itself. But assuming that the conditions are fairly uniform within trunk line territory, let us say, this exhibit indicates a rather unexpected uniformity. Thus for the Pennsylvania and the New York Central systems, as proposed, they are almost absolutely equal; and the Baltimore & Ohio is close upon them. The other two trunk lines pair off at $6,100 and $5,900 per mile of line respectively—rather close correspondence. Turning to the southeastern states, with the exception of the Seaboard Air Line (always subnormal) the three leading systems lie between $2,400 and $2,900 per mile of line. For the western transcontinental region the range falls within $3,092 and $3,658 per mile of line. The most completely satisfying result in this regard occurs in the Southwestern-Gulf region, for the two proposed competing systems the net operating income per mile of line falls almost exactly at $2,000 for each one.

Quite irrespective of size, the ultimate financial test of the feasibility of the 21 systems herein proposed is applied by the subjoined table. The significant feature is the right-hand column, bringing out the net operating income in percentage of investment. Further details concerning this relationship are, of course, to be found in the grand summary (exhibit 8) herewith, from which, in fact, these particular figures are compiled. This table, it will be recalled, merely assembles the data already shown at the close of each chapter, dealing with the various regions one after another; and the relativity within each region, that is to say, the earning capacity of each system as compared with its immediate neighbors, has been already discussed. What this summary table attempts is to set up side by side the returns for all the different regions. Otherwise stated, this exhibit is intended to compare region with region rather than line with line; and in the background there is always retained the theoretical standard for the country as a whole of a 5 per cent return on valuation. The measure of success, therefore, is the relative approximation of the earning capacity of each system to that figure.

Systems.	Revenue ton-miles.	Average mileage of road operated.	Investment in road and equipment per mile of line.	Percentage relation; net operating income to investment.
Trunk line region:				
1. Pennsylvania	47,871,000,000	11,276	$169,465	4.50
2. New York Central	38,477,000,000	11,414	138,787	6.11
3. Baltimore & Ohio-Reading	29,118,000,000	8,252	133,215	5.14
4. Erie-Lehigh Valley-Wabash	27,770,000,000	7,612	162,995	4.28
5. Lackawanna-Nickel Plate	16,986,000,000	4,879	143,118	4.39
Chesapeake Bay region:				
6. Chesapeake & Ohio	12,228,000,000	2,761	121,101	5.46
7. Norfolk & Western-Virginian	17,223,000,000	3,382	128,831	6.18
8. New England regional	8,204,000,000	6,796	102,497	5.33
9. Michigan peninsula	3,171,000,000	3,680	49,626	3.23
Southeastern region:				
10. Southern Railway	11,916,000,000	10,489	75,392	4.31
11. Atlantic Coast Line-Louisville & Nashville	13,757,000,000	14,170	48,634	5.34
12. Illinois Central	14,637,000,000	9,389	58,005	4.83
13. Seaboard Air Line	2,117,000,000	3,630	54,515	3.45
14. Florida East Coast	414,000,000	764	67,236	4.74
Western transcontinental region:				
15. Union Pacific-North Western	25,342,000,000	20,747	67,656	5.55
16. Burlington-Northern Pacific	27,937,000,000	22,889	64,403	5.39
17. St. Paul-Great Northern	24,103,000,000	20,768	61,304	5.62
18. Rock Island-Southern Pacific	19,638,000,000	19,655	68,680	4.69
19. Santa Fe	13,097,000,000	11,977	65,582	5.64
Southwestern-Gulf region:				
20. Frisco	10,499,000,000	12,588	72,924	[1] 3.80
21. Missouri Pacific	14,930,000,000	13,564	57,920	3.75

[1] Corrected.

The actual results shown by the grand summary are, in the first place, a substantial uniformity for the trunk line and Chesapeake railroads, seven systems in all. For these the range lies between 4.28 per cent and 6.18 per cent. And of these seven systems, five lie practically between 4.5 per cent and 5.5 per cent. Two, it is true, run substantially higher. The New England regional system in 1917 likewise fell within this group, approximating a return of somewhat above 5 per cent. For the southeast, the range is fairly close and on the whole not very different from that of the trunk line systems. The only exception is the Seaboard, which drops below 4 per cent, along with the Michigan peninsula group. With these exceptions, all of the 14 systems proposed, lying east of the Mississippi, appear to be reasonably close to the norm. Passing beyond the Mississippi, a striking difference between the transcontinental systems and those of the Southwestern-Gulf region emerges. The returns for the former are even closer together than are those of the trunk lines. They are all comprehended between 4.69 per cent and 5.64 per cent. This statistical concentration within an outside range of less than 1 per cent is believed to be noteworthy. For the Southwestern-Gulf systems, while as between themselves within that region the returns are well in line, as contrasted with the transcontinental group they are distinctly subnormal. Whether, however, this subnormality is actual—that is to say, due to a defective earning power—or whether it is merely apparent, arising from an overstatement of capital account, is another matter. That is reserved for subsequent discussion in connection with physical valuation. Probably both of these elements are of weight. But this, at least, may be offered in extenuation, that the subnormality of the southwest is not a creation of this plan, nor is it evidently exaggerated by it. The conditions there existent have long been well understood. Their final correction may be brought about only through the growth and development of the country.

The last step in financial analysis is theoretically necessary and in a measure practicable. The systems herein proposed are intended to be matched one against another to the end that the net operating income in percentage of investment shall be the same for all. For each region thus far, it will be noted, this test has been applied by taking the net operating income for the year 1917 as a percentage of the property account. But this so-called investment account is purely a book statement as to capital. It may or may not reflect the actual investment. The supreme test must be applied by checking everything in terms of financial valuation. Thus alone can it be determined whether the so-called investment account affords a dependable basis for a calculation of the rate of return. One may now turn to the records of the valuation division of the Interstate Commerce Commission in order to check up the capital account.

Returns as yet available from the valuation division are of course mainly working papers. Only a very few final valuations have as yet been made by the Commission. Therefore most of the data is still only tentative. The returns may be regarded rather as straws showing the direction of the wind; that is to say, affording an indication as to whether the investment account is understated, normal, or inflated. The following table comprises the returns as of the dates indicated, for all those roads for which the engineering report, the land valuation, and the accounting report have been rendered. At the same time the recorded investment in road and equipment for the corresponding date is afforded.

The accompanying table, then, exhibits the results thus far available concerning physical valuation. The figures include road and equipment and land value. These data, in other words, comprehend only the engineering and real-estate values. No reports as yet from the accounting division are available. This last-named report will afford an analysis of the recorded investment account, eliminating such items as

Comparison of valuation data with recorded investment of selected carriers for stated dates.

Name of carrier.	Date (June 30).	Reproduction cost for road and equipment.		Present value of land owned.	Total present value (4) plus (5).	Recorded investment.	Ratio of present value (6) to recorded investment (7).
		Cost as new.	Cost less depreciation.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Atlanta, Birmingham & Atlantic	1914	$26,041,491	$21,228,752	$1,407,725	$22,636,477	$51,531,064	43.90
Bangor & Aroostook Railroad system	1916	29,508,992	22,924,261	738,997	23,663,258	28,791,426	82.19
Boston & Maine Railroad system	1914	231,747,893	178,323,640	47,623,631	225,947,271	208,231,433	108.51
Central of Georgia Railway system	1915	74,559,698	57,989,344	15,358,037	73,347,381	69,060,724	106.21
Central Vermont Railway system	1917	25,137,058	19,549,355	2,003,976	21,553,331	21,653,562	99.54
Chicago & Eastern Illinois Railroad system	1915	72,331,056	54,770,938	7,107,765	61,878,703	78,990,279	78.34
Chicago, Rock Island & Pacific Railway system	1915	345,485,880	272,285,598	49,628,714	321,914,312	323,908,166	99.38
Cleveland, Cincinnati, Chicago & St. Louis Railway system	1915	167,406,494	132,773,913	22,598,686	154,772,599	182,267,924	84.91
Florida East Coast Railway system	1916	43,515,318	38,569,822	5,053,815	43,623,637	48,207,859	90.49
Georgia Southern & Florida Railway system	1915	10,297,657	7,690,371	1,329,003	9,019,374	12,273,374	73.49
Kansas City Southern Railway system	1914	46,732,105	38,316,800	4,680,528	42,997,328	111,563,890	38.54
Maine Central Railroad system	1916	66,063,181	51,848,465	4,040,633	55,889,098	54,983,162	101.65
Mobile & Ohio Railroad system	1915	47,595,933	35,932,491	4,985,751	40,918,242	46,978,830	87.10
New York, New Haven & Hartford Railroad system	1915	345,271,883	271,543,976	90,676,404	362,220,380	289,019,595	125.33
New York, Ontario & Western Railway system	1916	47,679,333	37,429,966	2,652,270	40,082,236	92,695,207	43.24
Pere Marquette Railroad system	1915	66,212,550	50,074,537	5,783,112	55,857,649	87,100,297	64.13
St. Louis Southwestern Railway system	1915	60,845,317	45,685,266	6,804,168	52,489,434	99,892,373	52.55
San Pedro, Los Angeles & Salt Lake	1914	43,127,960	35,701,567	4,043,749	39,745,316	75,171,509	52.80
Virginian Railway system	1916	52,846,225	46,111,047	3,221,853	49,332,900	91,180,245	54.10
Western Pacific Railway	1914	60,817,087	55,108,542	6,062,872	61,171,414	156,318,136	39.13

discount on securities and those which are not in accord with the standardized form of capital accounts. Nor is appreciation or depreciation fully reflected in these figures. The latter is deducted in column 4, in order to produce the total present value. But total present value, as the recorded data show in periods like the last five years characterized by rapidly mounting prices, may be quite misleading. Certainly a total present value as of 1914 for the Boston & Maine is quite incomparable with a corresponding figure for the Central Vermont taken three years later. A superficial examination of the phenomenal price changes during that period suffices to discredit all such comparisons. The force and purpose of this recital of qualifications is not that it may totally discredit the exhibit. It should nevertheless establish the need of interpretation only in the very broadest and most general terms. The chance of error is certainly magnified by these circumstances.

Turning now from means and methods of valuation to results, the carriers may best be treated in the great regional groups utilized for consolidation purposes. Considerable testimony along the same line was adduced in Ex Parte 74 by Mr. T. W. Hulme. Most of his statistical data concerned the same properties as are comprehended in this exhibit. His conclusion was that valuation was substantially more than capital account for New England, and for the eastern and southern regions as a whole. Only for the roads west of the Mississippi did he acknowledge that reproduction cost of road and equipment showed a slight deficiency under the capital account; and even for these western roads he excluded the so-called standard properties, such as the Burlington, the North Western, the Rock Island, etc. He contended, furthermore, that appreciation would probably more than counterbalance the depreciation during the years intervening since the date of examination. It is pertinent at this point to test the soundness of these allegations by reference to the statistical exhibit herewith and then to apply the conclusions very broadly to the matter in hand.

The ratio of present value to recorded investment, as shown by the last column of this exhibit, is very uneven for the New England group. It varies from 125 per cent—a heavy excess of valuation over capital account—for the New Haven, to 108 per cent for the Boston & Maine, falling to practical equivalence for the Maine Central and the Central Vermont, and to a deficit of 18 per cent for the Bangor & Aroostook. But the valuation dates, it should be noted, cover a range of three years, characterized by fast mounting prices. The only trunk lines cited are the Chicago & Eastern Illinois, with present value at 78 per cent of recorded investment; the Big Four, at 85 per cent; the New York, Ontario & Western, at 43 per cent; and the Pere Marquette, at 64 per cent. For the Virginian Railway the corresponding figure is only 54 per cent. None of these roads is in the most thickly settled and highly developed region, and several of them are distinctly subnormal financially. The somewhat disquieting returns for these roads, therefore, need not necessarily shake one's confidence in a full valuation or even an excess for the first-class roads like the Pennsylvania and the New York Central. No data for the Erie or the Baltimore & Ohio are available. The returns for trunk line territory, however, are on the whole not as reassuring as the testimony in Ex Parte 74 makes it appear.[2]

For the southeastern region, wherein, according to Ex Parte 74, the capital account stands strongly reanforced by valuation data, the same variability is apparent. The Central of Georgia manifests an excess of valuation at 106 per cent, the Florida East Coast and the Mobile & Ohio stand in the neighborhood at 90 per cent, while the Georgia Southern & Florida drops to 73 per cent. For the Atlanta, Birmingham & Atlantic the deficit is large. There is nothing especially to shake the testimony of Mr. Hulme, yet it is quite apparent that the conditions are most uneven as between

[2] For further discussion of investment account for the trunk lines compare *The Five Per Cent Case*, 31 I. C. C., 351, and idem, 32, 328; and for the anthracite coal roads 35 idem, 266, etc.

one property and another. Some will be grossly overvalued and others perhaps undercapitalized. Such data as is herewith afforded betrays the same irregularity for the western roads as for the southeast. The Rock Island is surprisingly sound with a practical correspondence of present value and recorded investment. At the other extreme stands the Western Pacific, now undergoing reorganization, with present value constituting only 39 per cent of investment account. And the San Pedro, too, is low at 52.8 per cent. Probably, and this confirms the general impression, conditions will be found more uniform in the Southwestern-Gulf region than almost anywhere else in the country. This valuation table includes the two most prosperous properties in that territory. For the St. Louis Southwestern the present value is only 52 per cent of recorded investment; for the Kansas City Southern it is only 38 per cent. In view of the long record of bankruptcies and reorganization for most of the roads hereabouts, the conclusion is inescapable that an excessive property valuation will have to be dealt with. Applying this conclusion to the matter in hand, namely, the percentages of return figurable under this plan for the proposed Frisco and Missouri Pacific systems of less than 3.5 per cent, it is evident that the actual rate of return is substantially higher than this figure. Whether it is enough higher, in the light of due correction of the investment account, to bring the results for these properties to a parity with those for the trunk lines, the southeastern states and the transcontinental roads, must be only a matter of surmise. But incontrovertibly the effect of any and all corrections must be in the direction of a regional uniformity for the country as a whole. Seeking, as this plan proposes, to produce an even-handed distribution of earning power under a given schedule of rates, there is some comfort at least to be drawn from this conclusion.

Examination of transportation conditions in the preparation of this report has disclosed a number of substantial advantages which might be attained through the larger-scale operation which such consolidation permits. One or two of these may be mentioned in passing as indicative of the trend of events. One in particular is the greater proportion of solid train movement from points of origin through to destination, especially with the creation of shipping days between the less important places, which thus permits of solid train movement from the primary yard at least to the neighborhood of destination. The improvements recently put into effect on the Pennsylvania Railroad for coal and coke traffic and also in the carriage of steel, illustrate the point. Among the advantages are the avoidance of congestion by better train loading, more expeditious service, and lessened expense through the constant breaking up of trains and switching of cars en route as well as an improved car supply in times of business activity.

It is somewhat difficult to predict accurately the effect of a larger-scale operation under consolidation upon the several individual properties. The earning power of some of them which have already attained some of the foregoing efficiencies through a high degree of specialization of function will perhaps be lessened. Roads like the Kansas City Southern, for example, which have concentrated upon one class of business, such as the carriage of grain for export, will undoubtedly, as parts of a larger system, display less concentrated energy in the solicitation of such business. This may not always be an unmixed loss. There can be no doubt that an undue solicitation of traffic by the device of shrinkage of the proportional rate and similar means has contributed to the earning power of particular lines. In so far as the movement of this traffic has not been forced or unnatural, this is as it should be. But it is also conceivable that a less highly specialized and a more simple and natural movement of tonnage may follow under such new conditions as are here proposed.

Another operating economy, conducive it is believed to efficiency through a better utilization of the fixed investment, is a considerable elaboration of the device of trackage. The principle, embodied for the first time in the transportation act of

1920, that it is economically sound and socially expedient to avoid useless duplication of facilities, is clearly illustrated in this connection. Already and for many years trackage has been taken by the existing railroads either because a carrier was too weak financially to duplicate a line already in operation, or because the road in question was not for most purposes a competitor and therefore could afford to strengthen the lessee carrier. There is a surprising frequency of downright gaps in the very heart of some of the great systems. Whole divisions, even on the main line, will be found not owned, reliance being had upon long-time traffic agreements. The Rock Island, for example, is honeycombed with such trackage, in many cases the contracts being very much more favorable as to maintenance than could have been expected under downright ownership. For 54 miles on the main line into Kansas City from the east and 67 miles westward to Topeka, the Rock Island apparently is just as well able to afford service as if it owned the rails instead of merely taking trackage. Another significant example occurs between Paris and Dallas, Tex. This trackage is merely a branch line of the Santa Fe system, but it is necessary as a through connection for the shortest passenger service of the Frisco between St. Louis and San Antonio. The Santa Fe at present takes the Frisco trains over this stretch with their entire crews and engines somewhat as the Baltimore & Ohio operates into Jersey City over the Reading-Jersey Central rails. But in the former case a branch line of rails is utilized for a main-line equipment and service. Unless both roadbed and equipment conform in character, there is obviously always the danger of a roadbed not developed to the standard of the rolling stock. The highest degree of public safety is not promoted by such maladjustment. This plan proposes wherever possible to unify the control of the roadbed and the control of the running equipment in the same hands. It is needless to multiply illustrations, but everywhere one discovers instances of such economy in construction through the joint use of an existing line. The recommendation in the Southwestern-Gulf territory for the allowance of trackage over the Kansas City Southern line (made a part of the Missouri Pacific system under this plan) to the Frisco system, affords an extreme illustration of the principle. Here are two great systems, the Frisco and the Missouri Pacific, which it is proposed to match as even-handedly as may be against one another in the Southwestern-Gulf region. The Kansas City Southern more naturally falls to the Missouri Pacific system, but there is one link in it (map 25) from Texarkana to Hartford Junction, Okla., which crosses an inhospitable territory which is not likely to support another parallel line. Unless the competing Frisco system be given trackage, it will be greatly handicapped in competition between Kansas City and New Orleans. Therefore, if this link will not be congested by the traffic from these two directly competing systems, it is believed to be in the public interest that they should jointly contribute to the support of the bridge, even although they are directly competing one with another. Everywhere, as in this instance, where trackage may be had, even as between direct competitors, the device has been resorted to freely. When the traffic develops to a point where the single line is outgrown, it may then be double-tracked or a new link be constructed. What actually happens is that competition arises between different sets of operators over a common highway, a principle which 75 years ago it was believed would be applicable as a general railway policy. Unreservedly applied such competition breaks down, perhaps, because of the lack of responsibility for maintenance of the roadway, if no one of the operators is accountable for it. But where one line owns and it can be made serviceable to others, even though they be direct competitors, it is believed that useless duplication of facilities is thereby avoided to common advantage.

Careful analysis of prevalent conditions respecting traffic interchange strengthens the conviction that certain practices prevail which call for correction. A carrier too often refuses to interchange business destined for intermediate points within its own

territory, while doing so, somewhat grudgingly perhaps, on business which is truly competitive because of the existence of rival routes. Thus, for example, at Denver, it is alleged that the Union Pacific will not now accept business on equal terms for Colorado or Utah points with those accorded to traffic solicited from Pacific coast terminals. Such conditions practically exclude the Rock Island, the Missouri Pacific, and other companies having stub ends of line in Colorado from effective participation in local business. It might conceivably greatly strengthen such stub ends were authority to be conferred upon the Commission to require interchange upon petition and hearing. It is not unlikely that some such jurisdiction may be necessary in order to fully protect the stub ends which can not possibly all be cared for under this plan.

As indicating the trend of transportation events abroad, it is significant that mergers are well under way in the British Isles since the war. The government's declaration that, if parliament approves, it proposes to group the railways into large systems upon the termination of control in August, 1921, is already having an effect. The Hull & Barnsley Company, which was built specifically to compete with the London & Northeastern, has already provisionally agreed to amalgamate. The London & Northwestern has just announced the terms upon which it offers to exchange its securities for the Lancashire & Yorkshire Railway. The way has been prepared by close cooperation, especially under government operation during the war. The Lancashire & Yorkshire is not a large property, and yet the Manchester Guardian refers to the merger as "the biggest all-out purchase that has ever taken place in railway history." It is hoped to be able to procure further data upon the policy of the government, correspondence having already been instituted to that end. From Canada also comes the proposal from Lord Shaughnessy, president of the Canadian Pacific Railway, in April, in a letter to the premier. A merger, making for administration and operation of the entire Canadian national railways by the Canadian Pacific would, it is alleged, bring about such economies as to greatly lessen the current deficit.

The defects and shortcoming of this comprehensive scheme are manifold and in many cases self-evident. No illusion need be entertained in this regard. The outcome is avowedly almost everywhere a compromise, a choice between evils. All of the warring and conflicting interests; all of the hopes, aspirations, fears, and prejudices have come home to roost in the course of its preparation. An extraordinary amount of friendliness and cooperation has been encountered. But, as is inherent and natural under the circumstances, much of this assistance has necessarily been circumscribed by the particular interest of the participants; and a governmental plan, in contradistinction to one projected for private profit or interest, may not content itself with caring even for most of the properties. It must of necessity recognize the right and the interest of every last one of them. It is this requirement of universality which so often compels the halfway expedient, the compromise, the solution which falls so far short of the ideal. And then, again, there are the class interests which deserve recognition. Administrative influences impel one in certain directions; the bankers would have some matters otherwise; the representatives of the employees entertain quite positive views, it may be; and all of the shippers' organizations have to be satisfied. But despite these divergent interests, the desirability, nay more, the downright necessity for the furtherance of consolidation on a large scale as a remedy for the existing situation is almost universally conceded.

Property investment and selected operating statistics of certain groups of roads, including their nonoperating subsidiaries, for calendar year 1917.

EXHIBIT 1.

	Investment in road and equipment, Dec. 31, 1917.		Revenue ton-miles.	Revenue per ton-mile (cents).	Average mileage of road operated.	Railway operating revenue.		Net operating income (standard return).		Percentage of net operating income to investment in road and equipment.
	Total.	Per mile of line.				Total.	Per mile of line.	Total.	Per mile of line.	
Pennsylvania system.										
Pennsylvania (system)	$1,175,573,615	$215,024.94	30,150,533,248	0.559	5,432.51	$295,874.678	$54,463.72	$51,894,577	$9,552.60	4.41
Pennsylvania—Western Lines (system)	280,665,565	153,551.24	8,796,560,765	.648	1,942.26	79,973,145	41,175.30	15,154,720	7,802.62	5.40
Baltimore, Chesapeake & Atlantic	4,145,179	47,313.99	4,416,155	4.534	87.61	365,324	4,169.89	86,647	989.01	2.09
Long Island (system)	83,183,944	215,173.55	131,558,241	3.514	398.36	17,286,179	43,393.36	2,921,321	7,333.37	3.51
Maryland, Delaware & Virginia	2,964,093	38,280.94	2,229,356	4.084	82.62	167,323	2,025.21	42,536	514.84	1.44
Pittsburgh, Cincinnati, Chicago & St. Louis (system)	252,884,737	115,824.72	8,050,345,159	.639	2,398.98	73,507,628	30,641.20	11,334,094	4,724.55	4.48
West Jersey & Seashore	27,465,145	80,987.07	126,970,005	2.151	259.65	8,555,048	23,787.15	952,878	2,649.46	3.47
Grand Rapids & Indiana (system)	25,617,307	45,552.41	609,090,729	.689	574.60	6,491,359	11,297.18	929,385	1,617.45	3.63
Total	1,852,499,585	169,465.13	47,871,703,658	.666	11,276.59	482,220,684	42,762.99	83,316,158	7,388.42	4.50
New York Central system.										
Cleveland, Cincinnati, Chicago & St. Louis (system)	191,151,448	91,026.23	6,372,050,048	.556	2,386.91	52,650,920	22,058.19	9,945,629	4,166.74	5.20
New York Central (system)	953,973,673	169,906.13	24,074,994,019	.616	6,079.40	238,829,800	39,285.09	55,802,631	9,178.97	5.85
Pittsburgh & Lake Erie (system)	73,481,813	373,573.02	2,545,787,537	.830	224.56	25,621,654	114,097.14	8,980,219	39,990.29	12.22
Michigan Central (system)	123,940,639	89,156.31	4,671,847,015	.727	1,906.67	53,130,633	27,865.67	8,105,727	4,251.25	6.54
Cincinnati Northern	4,961,418	24,054.19	496,632,468	.439	245.68	2,440,830	9,935.00	317,628	1,292.85	6.40
Indiana Harbor Belt	12,420,894	273,046.69			116.03	5,121,878	44,142.70	296,054	2,551.53	3.55
Rutland (system)	23,082,278	56,063.05	315,999,069	.756	454.86	4,325,369	9,509.23	1,005,129	2,209.75	4.35
Total	1,383,012,163	138,787.11	38,477,310,156	.634	11,414.11	382,121,084	33,477.96	84,453,017	7,399.00	6.11
Baltimore & Ohio—Reading system.										
Baltimore & Ohio (system)	696,880,941	134,404.04	17,391,149,515	.600	4,976.47	136,716,121	27,472.51	27,899,498	5,606.28	4.00
Chicago, Indianapolis & Louisville	40,760,464	65,941.57	928,653,227	.668	654.36	9,161,898	14,001.31	1,620,259	2,476.10	3.98
Cincinnati, Indianapolis & Western	14,201,398	50,071.92	278,118,895	.655	308.99	2,639,537	8,542.47	422,213	1,366.43	2.97
Philadelphia & Reading (system) including Central Railroad of New Jersey	346,736,287	160,530.52	10,520,699,724	.814	2,313.12	110,975,279	47,976.45	26,470,855	11,443.79	7.63
Total	1,098,579,090	133,215.03	29,118,621,361	.680	8,252.94	259,492,835	31,442.47	55,412,825	6,835.48	5.14

Erie—Lehigh Valley—Wabash system.										
Bessemer & Lake Erie (system)	52,795,201	248,893.08	2,403,893,032	.487	206.45	12,372,619	59,930.34	4,713,564	22,831.50	8.93
Delaware & Hudson (system)	108,434,848	138,142.36	3,974,648,482	.641	923.88	30,142,285	32,625.76	7,489,496	8,084.92	6.89
Erie (system)	427,489,717	209,718.27	10,489,516,224	.584	2,258.68	79,776,368	35,319.91	15,729,068	6,963.83	3.68
Lehigh Valley (system)	191,022,992	136,600.13	6,430,435,729	.670	1,442.94	53,366,359	36,984.81	11,318,714	7,844.20	5.93
New Jersey & New York	3,319,837	96,227.16	4,173,811	3.620	47.76	882,216	18,471.86	*def. 8,710*	*def. 182.37*	*def. .26*
New York, Susquehanna & Western (system)	44,746,935	228,919.71	256,513,744	1.244	228.36	4,151,145	18,178.07	980,135	4,292.06	2.19
New York, Ontario & Western (system)	92,826,415	177,944.28	775,230,400	.742	567.93	9,159,175	16,127.30	2,013,589	3,703.96	2.27
Pittsburg & Shawmut	13,018,891	126,286.65	128,028,071	.849	94.59	1,150,806	12,166.25	613,261	6,483.36	4.71
Pittsburg, Shawmut & Northern	26,840,345	167,804.60	197,023,526	.572	204.67	1,230,927	6,014.20	195,660	955.98	.73
Wabash (east of Mississippi River) (system)	134,670,422	106,002.98	3,110,493,617	.613	1,637.39	26,306,799	16,066.30	3,787,427	2,313.09	2.81
Total	1,095,165,603	162,995.57	27,769,956,636	.619	7,612.65	218,539,199	28,707.38	46,902,204	6,161.09	4.28
Lackawanna—Nickel Plate system.										
Buffalo, Rochester & Pittsburgh (system)	62,341,677	136,421.02	2,696,983,166	.486	586.46	14,795,000	25,534.56	3,281,888	5,596.10	5.26
Delaware, Lackawanna & Western (system)	202,404,066	215,405.97	5,591,042,823	.747	955.09	57,211,224	59,901.40	15,749,477	16,490.04	7.78
Lake Erie & Western (system)	45,408,938	52,088.81	1,082,154,796	.653	900.06	8,122,896	9,024.84	1,548,542	1,720.49	3.41
New York, Chicago & St. Louis (system)	67,470,745	121,887.35	2,615,524,344	.563	571.60	16,901,206	29,568.24	2,440,693	4,269.93	3.62
Pittsburgh & West Virginia	28,563,037	451,161.54	107,775,937	1.254	63.31	1,588,786	25,095.34	237,010	3,743.64	.83
Toledo, St. Louis & Western	39,976,616	88,912.01	1,169,517,238	.534	454.17	7,041,663	15,504.47	1,022,469	2,251.29	2.56
Western Maryland (system)	127,524,116	186,829.36	2,170,181,675	.536	747.25	13,638,450	18,251.52	3,075,048	4,115.15	2.41
Wheeling & Lake Erie (system)	77,465,808	159,188.31	1,514,181,458	.623	511.71	11,028,904	21,553.04	1,586,037	3,099.48	2.05
Zanesville & Western	5,067,512	62,477.03	39,024,433	1.375	89.75	613,347	6,833.95	*def. 107,598*	*def. 1,198.86*	*def. 2.12*
Total	656,222,515	143,118.47	16,986,385,870	.623	4,879.40	130,941,476	26,835.57	28,833,568	5,909.24	4.39

EXHIBIT 2.

Michigan peninsula regional group.										
Ann Arbor	$17,571,174	$58,086.53	427,934,991	0.474	295.56	$2,776,449	$9,393.86	$508,686	$1,721.09	2.90
Chicago, Detroit & Canada Grand Trunk Junction	4,157.068	69,284.47	102,305,898	.852	60.00	1,305,346	21,755.77	195,203	3,253.38	4.70
Detroit & Mackinac	6,581,271	17,039.33	106,880,179	.834	383.82	1,350,450	3,518.45	310,664	809.40	4.72
Detroit, Grand Haven & Milwaukee	7,307,795	38,665.58	214,803,811	1.121	190.52	3,403,425	17,863.87	146,644	769.70	2.01
Pare Marquette	98,886,458	54,157.65	1,873,800,374	.699	2,248.40	18,232,648	8,109.17	3,725,718	1,657.05	3.77
Detroit, Toledo & Ironton (system)	23,401,343	55,949.27	445,450,163	.568	502.29	2,503,354	5,780.23	215,467	428.97	.92
Total	157,905,109	49,626.04	3,171,175,416	.688	3,680.59	29,571,672	8,034.49	5,102,382	1,386.29	3.23
Grand Trunk Western	31,973,061	96,621.62	1,180,640,619	.654	347.05	10,165,881	29,292.27	1,012,994	2,918.87	3.17

Property investment and selected operating statistics of certain groups of roads, including their nonoperating subsidiaries, for calendar year, 1917—Con.

EXHIBIT 3.

	Investment in road and equipment, Dec. 31, 1917.		Revenue ton-miles.	Revenue per ton-mile (cents).	Average mileage of road operated.	Railway operating revenue.		Net operating income (standard return).		Percentage of net operating income to investment in road and equipment.
	Total.	Per mile of line.				Total.	Per mile of line.	Total.	Per mile of line.	
New England regional group.										
Bangor & Aroostook (system)	$29,866,584	$47,117.84	263,257,522	1.257	632.73	$4,414,861	$6,977.48	$1,552,977	$2,454.41	5.20
Boston & Maine (system)	212,034,497	94,538.82	3,465,560,099	1.042	2,354.13	60,731,775	25,797.97	9,826,430	4,174.12	4.63
Central New England (system)	26,843,210	102,015.01	534,169,307	.915	301.30	5,477,288	18,178.85	1,468,124	4,872.63	5.47
Maine Central (system)	55,673,715	50,577.98	847,959,673	1.059	1,216.99	14,125,577	11,606.98	2,894,846	2,378.69	5.20
New York, New Haven & Hartford (system)	299,913,231	150,414.63	2,776,143,607	1.460	1,995.01	85,784,893	42,999.73	17,173,367	8,608.16	5.73
Lehigh & New England	14,685,860	76,544.67	317,653,682	1.103	296.49	3,666,567	12,366.58	1,134,926	3,827.87	7.73
Total	639,017,097	102,497.09	8,204,743,890	1.144	6,796.65	174,200,961	25,630.42	34,050,670	5,009.92	5.33

EXHIBIT 4.

Chesapeake & Ohio system.										
Chesapeake & Ohio (system)	$251,348,909	$118,712.56	10,262,440,801	0.419	2,412.10	$54,643,794	$22,654.03	$13,630,044	$5,650.70	5.42
Hocking Valley (system)	46,398,752	135,919.24	1,966,272,286	.456	349.61	10,696,434	30,595.33	2,637,167	7,543.17	5.68
Total	297,747,661	121,101.60	12,228,713,087	.425	2,761.71	64,340,228	23,297.24	16,267,211	5,890.27	5.46
Norfolk & Western system.										
Norfolk & Western (system)	280,464,553	127,086.45	12,481,972,285	.456	2,220.44	66,518,800	29,957.49	20,640,900	9,295.86	7.36
Toledo & Ohio Central (Columbus division)	14,390,434	72,866.65	768,884,562	.447	217.84	4,044,270	18,565.32	543,325	2,494.15	3.78
Total	294,854,987	122,632.95	13,250,856,847	.455	2,438.28	70,563,070	28,939.69	21,184,225	8,688.18	7.18
Virginian system.										
Virginian Ry. (system)	95,571,812	192,996.39	2,514,639,402	.360	512.62	10,242,473	19,980.63	3,234,725	6,310.18	8.38
Kanawha & Michigan	18,115,232	106,154.30	682,492,107	.448	176.60	3,606,991	20,424.64	1,295,141	7,333.75	7.15
Kanawha & West Virginia	2,869,768	76,731.76	6,510,074	1.461	37.60	140,182	3,728.24	44,552	1,184.89	1.55
Toledo & Ohio Central (eastern line)	14,390,433	72,870.33	768,884,563	.447	217.85	4,044,271	18,564.48	543,326	2,494.04	3.78
Total	130,947,245	145,379.02	3,972,526,146	.394	944.67	18,033,917	19,090.18	5,117,744	5,417.49	3.91
Norfolk & Western and Virginian systems.										
Combined systems	425,802,232	128,831.88	17,223,382,993	.441	3,382.95	88,596,987	26,189.27	26,301,969	7,774.86	6.18

EXHIBIT 5.—SOUTHEASTERN SYSTEM (OTHER THAN POCAHONTAS REGION).

Southern Railway system.										
Alabama & Vicksburg	$5,742,181	$40,583.65	132,735,760	1.072	141.49	$2,139,316	$15,119.91	$322,854	$2,281.81	5.62
Alabama Great Southern (system)	25,169,470	78,551.49	766,402,808	.638	312.27	7,151,055	22,900.23	1,703,180	5,454.19	6.77
Carolina, Clinchfield & Ohio	60,206,707	189,627.42	627,945,816	.627	326.58	4,379,982	13,411.67	1,656,869	5,073.39	2.75
Cincinnati, New Orleans & Texas Pacific (system)	45,721,999	128,176.95	1,194,775,138	.778	358.52	13,211,527	36,850.18	3,596,268	10,030.87	7.87
Georgia, Southern & Florida (Macon to Jacksonville)	8,931,938	27,996.30	116,602,887	1.017	328.20	2,067,748	6,298.54	339,827	1,035.14	3.80
Mobile & Ohio	47,254,955	51,437.32	1,763,262,252	.639	1,160.21	13,604,566	11,725.90	2,620,125	2,258.32	5.54
New Orleans & Northeastern	18,075,532	84,801.93	540,568,681	.654	203.73	4,969,265	24,391.42	1,204,992	5,914.65	6.67
New Orleans Great Northern	16,147,407	65,347.66	105,504,355	1.375	284.60	1,916,218	6,733.02	519,904	1,826.79	3.22
Northern Alabama	3,846,824	24,193.99	95,502,352	.803	112.50	893,847	7,945.31	152,936	1,359.43	3.98
Southern Railway (system)	481,865,135	77,202.18	6,516,208,527	.897	6,982.87	90,716,569	12,991.30	18,653,893	2,671.38	3.87
Southern Ry. in Mississippi (system)	1,597,882	5,515.64	56,457,575	1.339	278.30	1,309,222	4,704.36	6,990	25.12	.44
Total	714,560,030	75,392.23	11,915,966,151	.814	10,489.36	142,359,255	13,571.78	30,777,838	2,934.20	4.31
Atlantic Coast Line—Louisville & Nashville system.										
Atlanta & West Point	4,252,240	46,799.91	72,475,240	1.214	93.19	1,770,251	18,996.15	252,995	2,714.83	5.95
Atlanta, Birmingham & Atlantic	39,017,474	59,870.30	522,264,714	.571	640.42	3,983,368	6,219.93	358,058	559.10	.92
Atlantic Coast Line (system)	186,462,239	38,884.05	3,002,748,180	.966	4,821.56	44,123,412	9,151.27	10,278,570	2,131.79	5.51
Charleston & Western Carolina	8,350,512	24,496.21	192,025,060	.946	342.50	2,401,443	7,011.51	495,685	1,447.26	5.94
Georgia Railroad (system)	11,612,210	35,574.44	259,147,195	1.103	328.90	4,366,637	13,376.49	858,622	2,610.59	7.39
Georgia & Florida	15,598,880	48,976.08	44,638,669	1.413	348.10	904,884	2,599.49	*def. 563*	*def. 1.62*	.....
Louisville & Nashville (system)	295,705,042	63,297.23	7,979,203,229	.698	5,072.84	76,907,387	15,160.62	17,310,495	3,412.39	5.85
Louisville, Henderson & St. Louis	8,015,632	44,114.65	285,846,898	.562	199.80	2,226,650	11,144.39	348,336	1,743.42	4.35
Norfolk Southern (system)	31,538,300	33,374.57	270,667,158	1.396	953.57	5,386,129	5,648.38	1,166,009	1,222.78	3.70
Nashville, Chattanooga & St. Louis	40,315,266	47,655.67	1,032,807,007	1.010	1,236.53	15,194,755	12,288.22	3,163,576	2,558.43	7.85
Western of Alabama	5,888,159	45,241.33	95,677,606	1.025	133.42	1,725,860	12,935.54	288,238	2,160.38	4.90
Total	646,755,954	48,634.85	13,757,500,956	.804	14,170.83	158,990,776	11,219.58	34,520,021	2,435.99	5.34
Illinois Central system.										
Central of Georgia (system)	73,655,532	35,639.89	1,052,560,223	.968	2,022.13	16,175,512	7,999.24	3,402,065	1,682.42	4.62
Gulf & Ship Island	14,400,143	46,906.06	101,469,055	1.689	307.56	2,328,741	7,571.66	595,883	1,937.45	4.14
Gulf, Mobile & Northern	22,800,598	56,763.09	137,285,504	1.357	402.39	2,322,650	5,772.14	489,444	1,216.34	2.15
Illinois Central (system)	318,361,948	71,115.95	11,234,067,259	.563	4,817.64	87,330,875	18,127.31	16,466,251	3,417.91	5.17
Mississippi Central	8,322,121	50,744.64	25,801,027	2.537	164.00	974,750	5,943.60	308,525	1,881.25	3.71
Tennessee Central (system)	21,746,898	73,838.44	119,268,915	1.056	293.94	1,797,252	6,114.35	162,734	553.63	.75
Yazoo & Mississippi Valley (system)	63,799,814	48,800.87	1,966,960,536	.687	1,382.03	18,152,123	13,134.39	3,862,318	2,794.67	6.05
Total	523,087,054	58,005.61	14,637,412,519	.631	9,389.69	129,081,903	13,747.20	25,287,220	2,693.08	4.83
Seaboard Air Line system.										
Georgia Southern & Florida (Valdosta to Palatka)	4,601,301	27,996.96	60,068,154	1.017	169.12	1,065,203	6,298.50	175,063	1,035.14	3.80
Seaboard Air Line (system)	188,926,199	55,802.87	2,056,940,268	.956	3,461.34	30,345,146	8,766.88	6,497,025	1,877.03	3.44
Total	193,527,500	54,515.56	2,117,008,422	.958	3,630.46	31,410,349	8,651.89	6,672,088	1,837.81	3.45
Florida East Coast	50,836,277	67,236.64	414,580,938	1.035	764.65	8,140,167	10,645.61	2,408,171	3,149.38	4.74

Property investment and selected operating statistics of certain groups of roads, including their nonoperating subsidiaries, for calendar year 1917—Con.

EXHIBIT 6.—WESTERN-TRANSCONTINENTAL REGION.

	Investment in road and equipment, Dec. 31, 1917.		Revenue ton-miles.	Revenue per ton-mile (cents).	Average mileage of road operated.	Railway operating revenue.		Net operating income (standard return).		Percentage of net operating income to investment in road and equipment.
	Total.	Per mile of line.				Total.	Per mile of line.	Total.	Per mile of line.	
Union Pacific system.										
Central Pacific (main line, Mojave branch, and Sacramento Valley line to Fresno)	$160,164,516	$89,664.73	2,173,892,804	0.923	1,808.71	$29,761,167	$16,451.36	$7,704,113	$4,259.45	4.81
Union Pacific (system)	597,775,566	76,153.44	11,040,260,259	.846	7,986.86	129,932,862	16,268.33	38,367,243	4,803.80	6.42
Los Angeles & Salt Lake	82,600,440	79,879.74	722,502,535	1.139	1,154.88	12,766.723	11,054.59	3,420,417	2,961.71	4.14
Chicago & North Western (system)	414,412,131	49,388.16	9,270,928,675	.789	8,423.80	109,479,440	12,996.44	23,364,029	2,773.57	5.64
Chicago Great Western (Des Moines to Kansas City)	25,345,406	119,825.10	245,951,191	.671	224.41	2,455,248	10,940.90	443,017	1,974.14	1.75
Minneapolis & St. Louis (Oskaloosa to Peoria)	7,554,026	40,898.90	134,390,508	.744	197.61	1,362,288	6,893.82	329,401	1,666.92	4.36
Wabash (west of Mississippi River)	72,514,842	106,003.45	1,674,881,178	.613	881.67	14,165,200	16,066.33	2,039,383	2,313.09	2.81
Missouri, Kansas & Texas (Moberly to Hannibal)	6,817,917	102,494.24	79,270,783	.938	69.77	1,039,629	14,900.80	234,153	3,356.07	3.43
Total	1,367,184,844	67,656.70	25,342,077,933	.823	20,747.71	300,962,557	14,505.82	75,901,756	3,658.32	5.55
Burlington system.										
Chicago, Burlington & Quincy (system)	479,780,862	52,164.16	13,200,166,346	.663	9,628.47	123,214,596	12,796.90	33,390,080	3,467.85	6.96
Northern Pacific (system)	495,932,439	71,035.02	8,826,481,478	.742	6,676.66	88,575,453	13,266.43	30,130,069	4,512.75	6.08
Minneapolis & St. Louis (west of Oskaloosa)	55,396,192	40,899.70	985,530,396	.744	1,449.14	9,990,113	6,893.82	2,415,607	1,666.92	4.36
Chicago Great Western (except Des Moines to Kansas City)	143,623,970	119,825.44	1,393,723,413	.671	1,271.65	13,913,075	10,940.96	2,510,433	1,974.15	1.75
Denver & Rio Grande (system)	182,792,276	69,382.47	2,082,531,562	1.049	2,580.23	28,423,138	11,015.74	8,054,260	3,121.53	4.41
Western Pacific	86,985,845	80,690.38	1,186,336,845	.672	960.87	9,898,484	10,301.59	1,900,350	1,977.74	2.18
Denver & Salt Lake (Denver to McCoy)	13,980,277	89,353.68	121,140,856	.843	158.39	1,280,434	8,084.06	219,040	1,382.92	1.57
Rock Island (Watertown branch north of Sioux Falls line)	6,984,540	45,540.46	141,520,145	.844	164.39	1,792,174	10,901.96	317,614	1,932.08	4.55
Total	1,465,476,401	64,403.81	27,937,431,041	.722	22,889.80	277,087,467	12,105.28	78,937,453	3,448.59	5.39
St. Paul-Great Northern system.										
Chicago, Milwaukee & St. Paul (system)	618,932,798	60,233.72	10,601,359,115	.766	10,633.49	115,255,475	10,838.91	27,404,327	2,577.17	4.43
Great Northern (system)	405,836,263	56,077.66	8,406,087,981	.767	8,334.44	88,932,615	10,670.50	28,771,360	3,452.10	7.09
Chicago, Terre Haute & Southeastern	24,767,369	68,529.84	578,874,193	.609	374.68	3,805,025	10,155.40	944,453	2,520.69	3.81
Chicago, Milwaukee & Gary	11,270,535	104,318.16	96,810,822	.547	141.82	571,689	4,031.08	*def. 37,514*	*def. 264.52*	*def.* ....

Chicago & Eastern Illinois (eastern portion)	43,357,782	81,042.68	1,623,384,226	.518	699.64	11,136,452	18,571.90	1,561,381	2,603.86	3.60
Duluth & Iron Range	29,170,380	102,784.99	896,257,252	.769	270.76	7,371,399	27,224.84	2,355,242	8,698.63	8.07
Duluth, Missabe & Northern (system)	43,953,260	108,997.54	1,905,305,100	.740	413.68	15,306,600	37,001.06	5,122,051	12,381.67	11.65
Total	1,177,288,387	61,304.14	24,103,078,658	.743	20,768.51	242,379,255	11,670.52	66,121,300	3,183.73	5.62
Minneapolis, St. Paul & Sault Ste. Marie (system)	185,550,746	44,414.36	3,611,368,749	.702	4,227.81	34,540,491	8,169.83	10,578,977	2,502.24	5.70
Rock Island-Southern Pacific system.										
Southern Pacific system (excluding part of Central Pacific)	828,505,336	89,664.98	11,245,198,580	.923	9,356.19	155,949,739	16,454.32	39,852,143	4,259.44	4.81
Chicago, Rock Island & Pacific system (excluding Watertown branch)	342,242,461	45,541.79	6,934,487,090	.844	8,054.97	87,816,548	10,902.16	15,563,067	1,932.11	4.55
El Paso & Southwestern (except Colfax branch)	47,122,386	57,897.02	995,745,912	.925	894.74	11,862,331	13,257.85	3,606,239	4,030.49	7.65
St. Louis Southwestern (Brinkley to Illmo)	15,691,101	99,424.03	209,557,102	.941	207.46	2,523,120	12,161.96	738,265	3,558.59	4.71
San Antonio & Aransas Pass	24,310,391	33,587.17	174,209,631	1.637	726.25	4,178,192	5,753.10	357,479	492.23	1.47
Texas Mexican	5,196,933	32,109.56	26,949,335	1.279	161.85	503,780	3,112.63	60,473	373.64	1.16
Northwestern Pacific (one-half)	33,252,136	126,768.98	52,087,774	2.280	253.65	2,435,798	9,602.99	597,394	2,355.19	1.80
Total	1,296,320,744	68,680.70	19,638,235,424	.906	19,655.11	263,269,508	13,394.96	60,775,060	3,092.09	4.69
Santa Fe system.										
Atchison, Topeka & Santa Fe (system)	723,101,332	64,007.13	12,908,121,857	.906	11,454.41	165,926,982	14,485.86	42,833,167	3,739.45	5.92
New Orleans, Texas & Mexico (east of De Quincy)	15,190,507	87,948.74	126,566,679	.838	172.10	1,365,844	7,936.34	196,896	1,144.08	1.30
New Iberia & Northern	1,637,369	28,645.37	10,746,042	1.521	96.90	169,953	1,753.90	*def. 39,460*	*def. 407.22*	*def.* .....
Northwestern Pacific (one-half)	33,252,136	126,768.98	52,087,774	2.280	253.65	2,435,797	9,602.99	597,393	2,355.19	1.80
Total	773,181,344	65,582.87	13,097,522,352	.912	11,977.06	169,898,576	14,185.33	43,587,996	3,639.29	5.64

EXHIBIT 7.—SOUTHWESTERN—GULF REGION.

Frisco system.										
Chicago & Alton (system)	$132,951,682	$131,692.70	2,396,078,107	.594	1,052.65	$20,525,689	$19,499.06	$3,178,315	$3,019.35	2.39
Fort Smith & Western	11,955,278	59,461.25	51,346,318	1.564	253.65	1,179,849	4,651.48	80,499	317.36	.67
Kansas City, Mexico & Orient of Texas	6,607,775	12,518.28	116,563,183	.903	465.71	1,308,779	2,810.29	5,698	12.24	.09
Louisiana Ry. & Navigation Co	21,121,682	63,248.04	149,828,357	1.253	352.37	2,497,535	7,087.82	357,353	1,014.14	1.69
Missouri, Kansas & Texas	170,447,925	102,499.17	1,981,769,573	.938	1,744.30	25,990,721	14,900.37	5,853,831	3,355.98	3.43
Missouri, Kansas & Texas of Texas	56,325,332	50,352.97	970,080,086	1.011	1,793.33	16,300,156	9,089.32	621,773	346.71	1.10
St. Louis-San Francisco (system)	348,633,346	73,528.38	3,856,531,669	.986	4,756.88	57,434,625	12,074.01	13,690,213	2,877.98	3.93
St. Louis, San Francisco & Texas	2,772,701	32,497.67	71,122,566	1.063	180.39	1,113,130	6,170.69	*def. 352,953*	*def. 1,845.74*	*def.* .....
St. Louis Southwestern (south of Brinkley)	36,374,825	99,422.80	485,791,464	.941	480.93	5,849,051	12,161.96	1,711,432	3,558.59	4.70
St. Louis Southwestern of Texas (system)	31,280,367	39,057.01	318,296,991	1.288	810.50	5,840,929	7,206.57	555,165	684.97	1.77
Trinity & Brazos Valley	11,412,217	37,686.47	67,392,172	1.203	368.80	1,095,339	2,970.01	*def. 238,906*	*def. 647.79*	*def.* .....
Wichita Falls & Northwestern	7,222,284	21,973.60	34,456,189	1.855	328.68	1,053,274	3,204.56	144,004	438.13	1.99
Total	837,105,414	72,924.94	10,499,266,675	.907	12,588.19	140,189,077	11,136.56	25,626,425	2,035.75	2.06

Property investment and selected operating statistics of certain groups of roads, including their nonoperating subsidiaries, for calendar year 1917—Con.

EXHIBIT 7.—SOUTHWESTERN—GULF REGION—Continued.

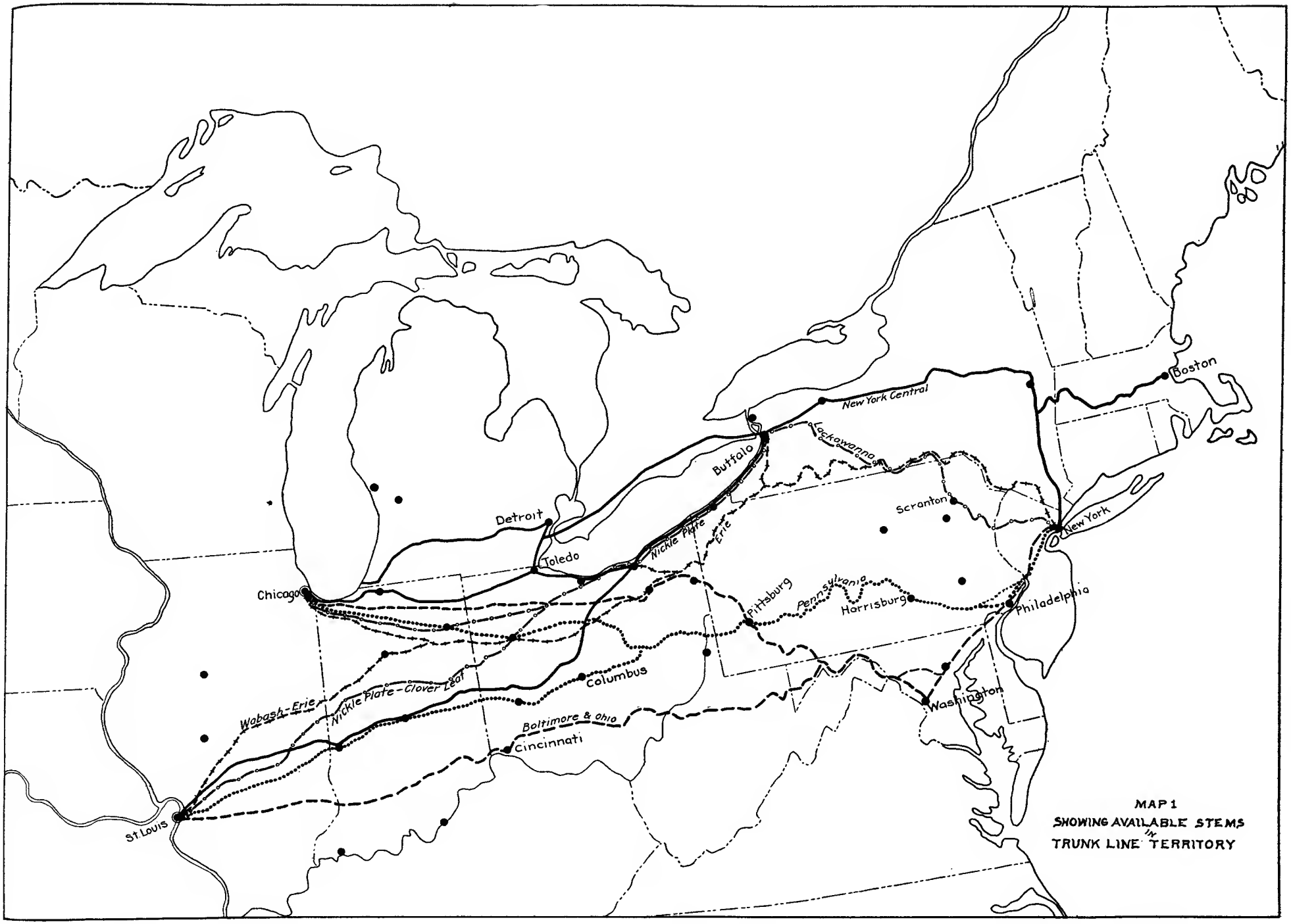
	Investment in road and equipment, Dec. 31, 1917.		Revenue ton-miles.	Revenue per ton-mile (cents).	Average mileage of road operated.	Railway operating revenue.		Net operating income (standard return).		Percentage of net operating income to investment in road and equipment.
	Total.	Per mile of line.				Total.	Per mile of line.	Total.	Per mile of line.	
Missouri Pacific system.										
Chicago & Eastern Illinois (Chicago to St. Louis and Joppa)	38,449,353	81,043.26	1,439,604,878	0.518	531.75	9,875,721	18,572.11	1,384,620	2,603.89	3.60
Colorado & Southern (south of Colorado Springs)	19,209,446	76,617.13	208,107,749	.987	273.47	2,719,733	9,945.27	615,341	2,250.12	3.20
Fort Worth & Denver City (system)	25,764,646	56,732.83	439,516,494	1.011	454.14	6,546,863	14,415.96	1,891,386	4,164.76	7.34
International & Great Northern	41,091,882	37,153.60	751,526,133	1.142	1,159.50	12,588,224	10,856.60	1,394,946	1,203.06	3.39
Kansas City, Mexico & Orient	22,197,091	70,955.76	101,433,621	.989	272.16	1,217,344	4,472.90	3,375	12.40	.02
Kansas City Southern	81,502,645	203,710.78	1,349,509,637	.707	774.43	12,410,965	16,025.94	3,216,698	4,153.63	3.95
Louisiana & Arkansas	12,163,303	44,495.55	97,100,472	1.251	302.34	1,569,722	5,191.91	359,362	1,188.60	2.95
Missouri, Oklahoma & Gulf (system)	12,044,941	38,049.47	196,015,084	.755	332.00	1,906,916	5,743.72	*def. 85,603*	*def. 251.82*	*def.*
Missouri Pacific (system)	355,606,487	51,216.07	8,784,444,725	.656	7,431.07	78,755,620	10,598.15	14,084,358	1,895.33	3.96
Texas & Pacific	112,882,521	60,965.84	1,480,535,434	1.009	1,946.50	22,714,007	11,669.15	4,107,432	2,110.16	3.64
Texarkana & Fort Smith	7,470,703	38,790.71	83,049,099	1.067	87.30	1,136,522	13,018.58	318,730	3,650.97	4.27
Total	728,383,018	57,920.57	14,930,843,326	.731	13,564.66	151,441,637	11,164.43	27,292,645	2,012.04	3.75

Grand summary of property investment and selected operating statistics of certain groups of roads, including their nonoperating subsidiaries, for calendar year 1917.

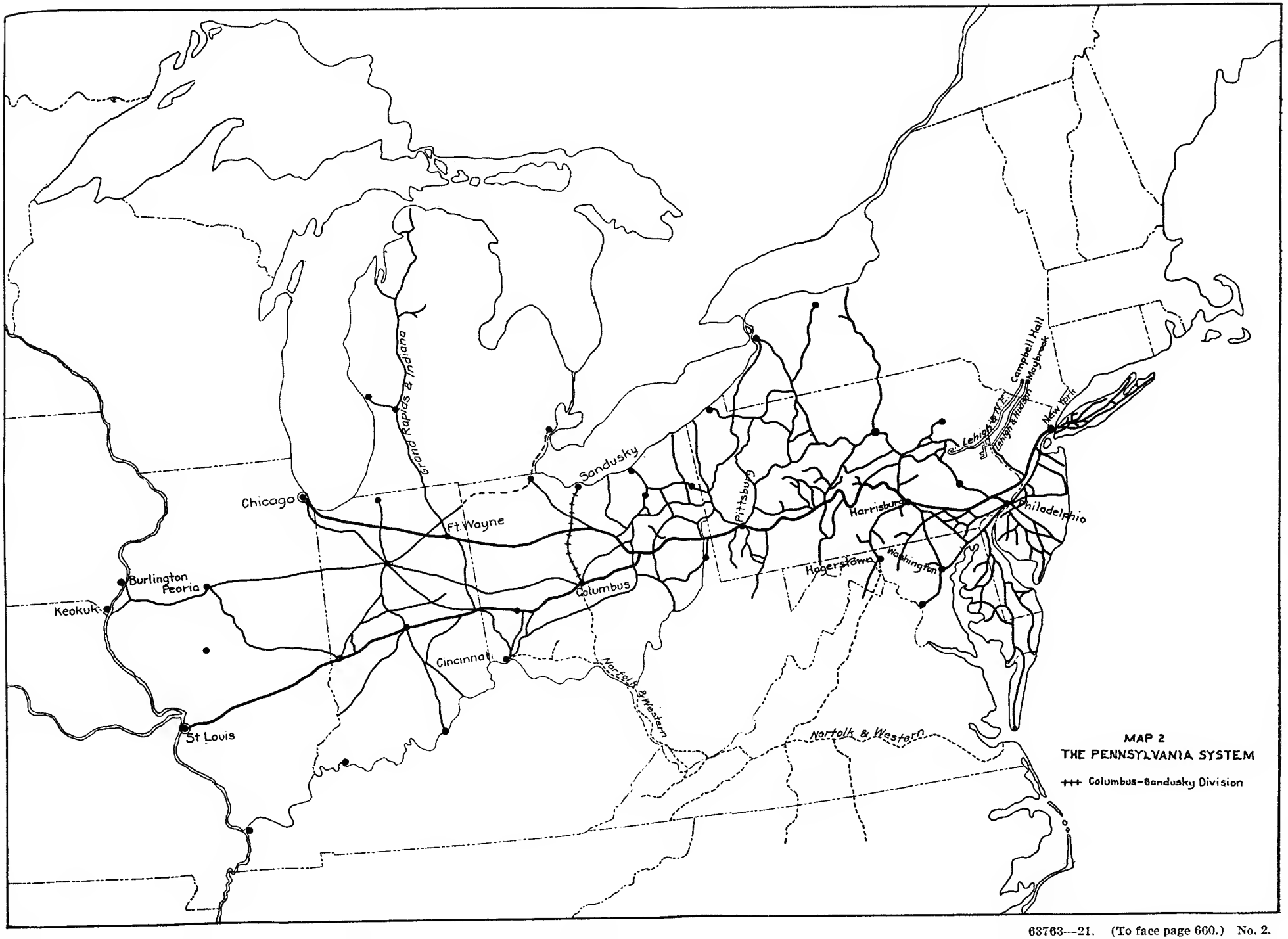
EXHIBIT 8.—GRAND SUMMARY.

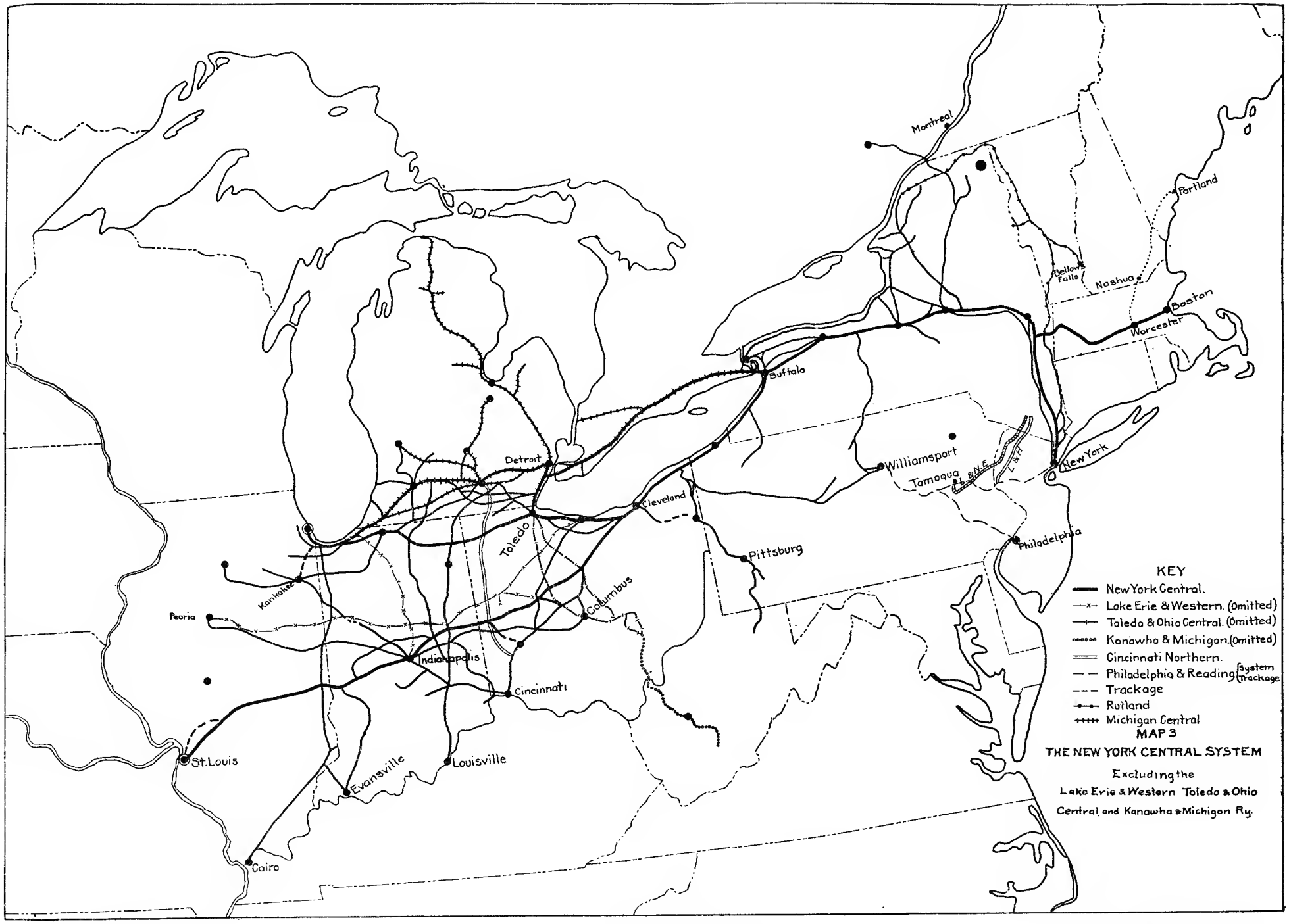
	Investment in road and equipment, Dec. 31, 1917.		Revenue ton-miles (millions).	Average mileage of road operated.	Railway operating revenue.		Net operating income. (Standard return.)		Percentage of net operating income to investment in road and equipment.
	Total.	Per mile of line.			Total.	Per mile of line.	Total.	Per mile of line.	
Trunk line group.									
Pennsylvania system (exhibit 1)	$1,852,499,585	$169,465.13	47,871.7	11,276.59	$482,220,684	$42,762.99	$83,316,158	$7,388.42	4.50
New York Central system (exhibit 1)	1,383,012,163	138,787.11	38,477.3	11,414.11	382,121,084	33,477.96	84,453,017	7,399.00	6.11
Baltimore & Ohio-Reading system (exhibit 1)	1,098,579,090	133,215.03	29,118.6	8,252.94	259,492,835	31,442.47	56,412,825	6,835.48	5.14
Erie-Lehigh Valley-Wabash system (exhibit 1)	1,095,165,603	162,995.57	27,770.0	7,612.65	218,539,199	28,707.38	46,902,204	6,161.09	4.28
Lackawanna-Nickle Plate system (exhibit 1)	656,222,515	143,118.47	16,986.4	4,879.40	130,941,476	26,835.57	28,833,566	5,909.24	4.39
Michigan peninsula regional group.									
Michigan peninsula system (exhibit 2)	157,905,109	49,626.04	3,171.2	3,680.59	29,571,672	8,034.49	5,102,382	1,386.29	3.23
New England group.									
New England system (exhibit 3)	639,017,097	102,497.09	8,204.7	6,796.65	174,200,961	25,630.42	34,050,670	5,009.92	5.33
Chesapeake Bay group.									
Chesapeake & Ohio system (exhibit 4)	297,747,661	121,101.60	12,228.7	2,761.71	64,340,228	23,297.24	16,267,211	5,890.27	5.46
Norfolk & Western-Virginian system (exhibit 4)	425,802,232	128,831.88	17,223.4	3,382.95	88,596,987	26,189.27	26,301,969	7,774.86	6.18
Southeastern region (other than Pocahontas region).									
Southern Railway system (exhibit 5)	714,560,030	75,392.23	11,916.0	10,489.36	142,359,255	13,571.78	30,777,838	2,934.20	4.31
Atlantic Coast Line-Louisville & Nashville system (exhibit 5)	646,755,954	48,634.85	13,757.5	14,170.83	158,990,776	11,219.58	34,520,021	2,435.99	5.34
Illinois Central system (exhibit 5)	523,087,054	58,005.61	14,637.4	9,389.69	129,081,903	13,747.20	25,287,220	2,693.08	4.83
Seaboard Air Line system (exhibit 5)	193,527,500	54,515.56	2,117.0	3,630.46	31,410,349	8,651.89	6,672,088	1,837.81	3.45
Florida East Coast Ry. Co. (exhibit 5)	50,836,277	67,236.64	414.6	764.65	8,140,167	10,645.61	2,408,171	3,149.38	4.74
Western transcontinental region.									
Union Pacific system (exhibit 6)	1,367,184,844	67,656.70	25,342.1	20,747.71	300,962,557	14,505.82	75,901,756	3,658.32	5.55
Burlington system (exhibit 6)	1,465,476,401	64,403.81	27,937.4	22,889.80	277,087,467	12,105.28	78,937,453	3,448.59	5.39
St. Paul-Great Northern system (exhibit 6)	1,177,288,387	61,304.14	24,103.1	20,768.51	242,379,255	11,670.52	66,121,300	3,183.73	5.62
Rock Island-Southern Pacific system (exhibit 6)	1,296,320,744	68,680.70	19,638.2	19,655.11	263,269,508	13,394.96	60,775,060	3,092.09	4.69
Santa Fe system (exhibit 6)	773,181,344	65,582.87	13,097.5	11,977.06	169,898,576	14,185.33	43,587,996	3,639.29	5.64
Southwestern-Gulf region.									
Frisco system (exhibit 7)	837,105,414	72,924.94	10,499.3	12,588.19	140,189,077	11,136.56	25,626,425	2,035.75	3.06
Missouri Pacific system (exhibit 7	728,383,018	57,920.57	14,930.8	13,564.66	151,441,637	11,164.43	27,292,645	2,012.04	3.75

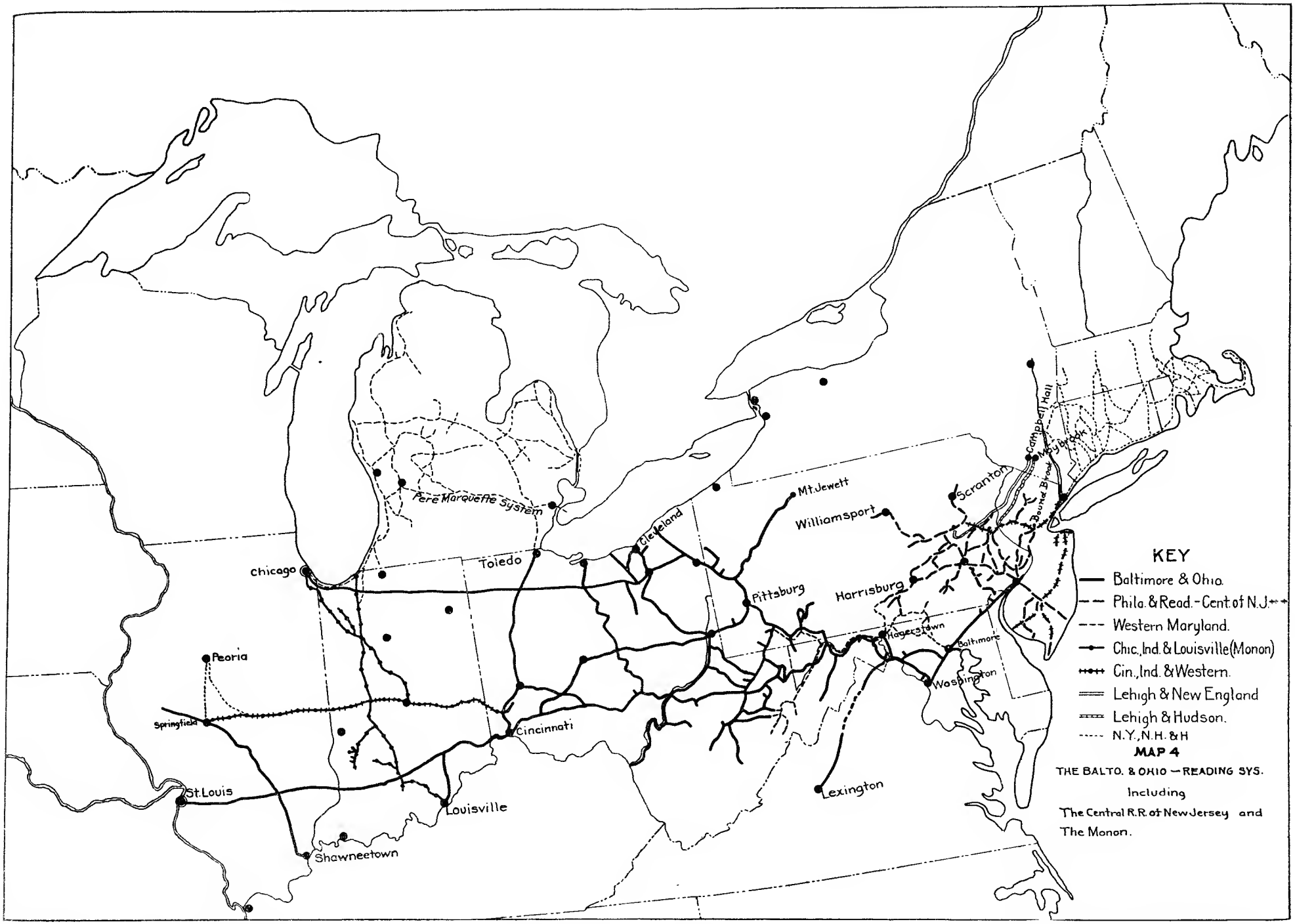
INDEX TO RAILROADS.

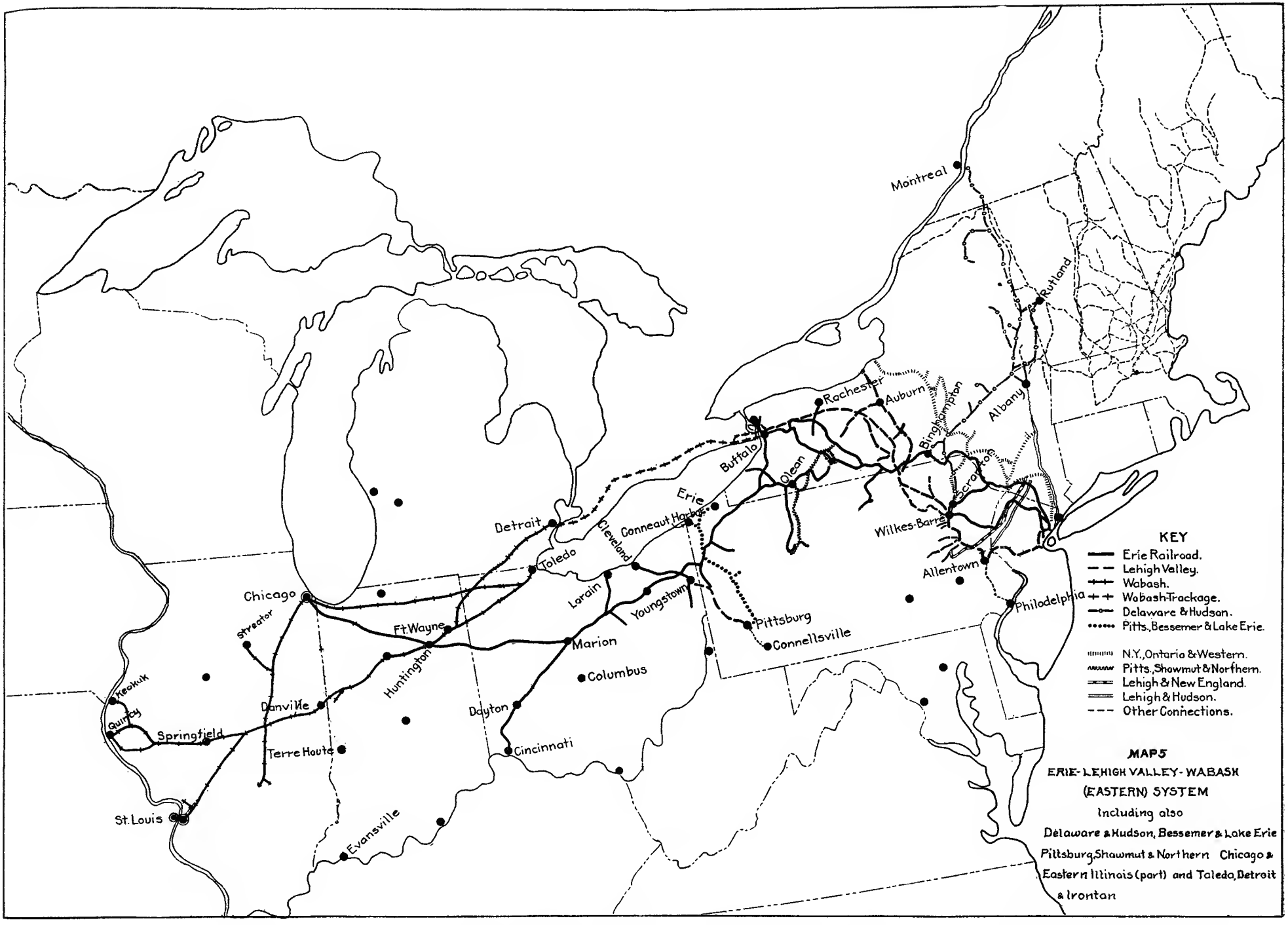


MAP 1
SHOWING AVAILABLE STEMS
IN
TRUNK LINE TERRITORY

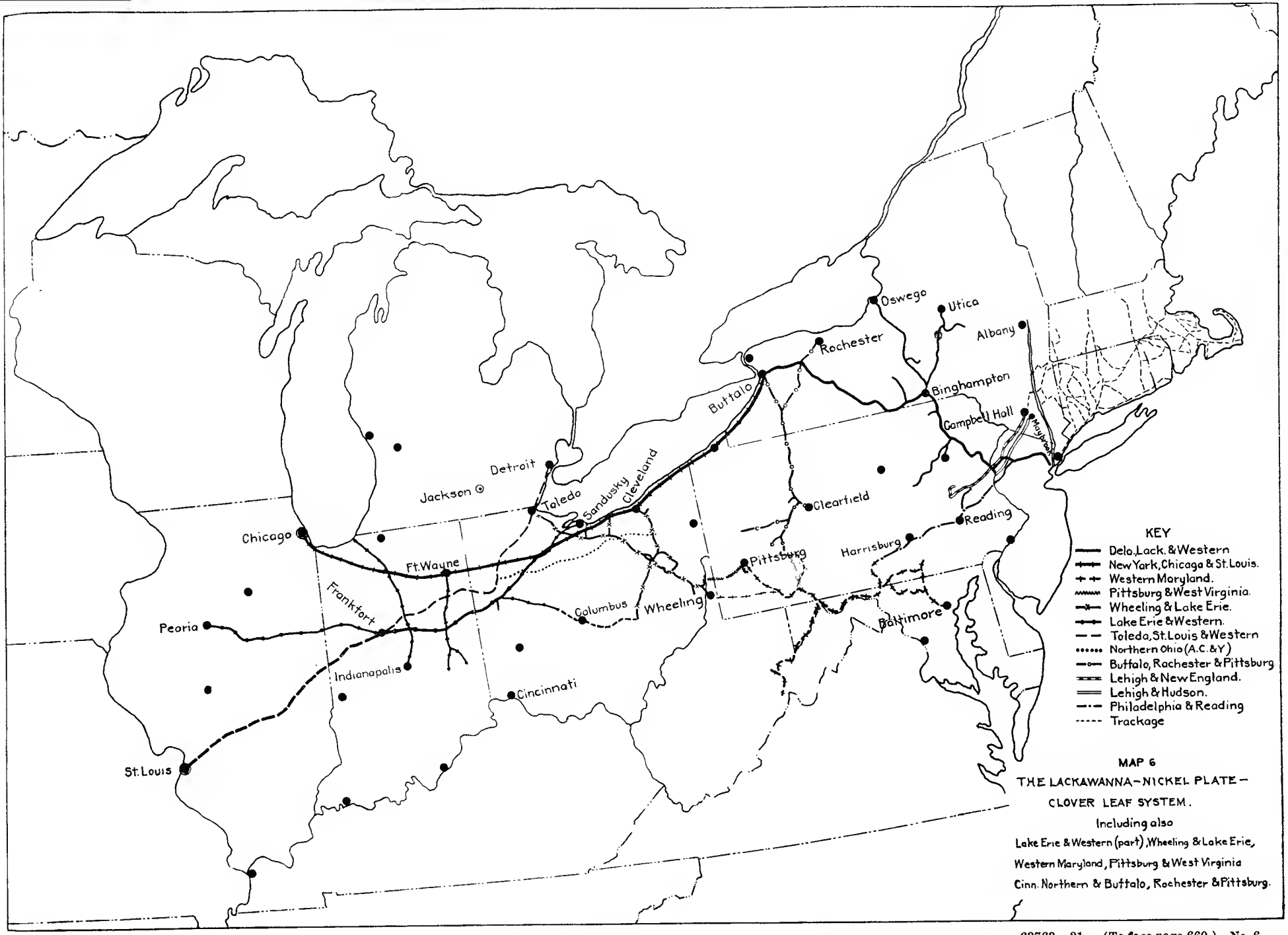

Grand Rapids & Indiana
Chicago
Ft. Wayne
Sandusky
Pittsburg
Harrisburg
Philadelphia
New York
Lehigh & N.Y.
Lehigh & Hudson
Campbell Hall
Maybrook
Hagerstown
Washington
Burlington
Peoria
Keokuk
Columbus
Cincinnati
St Louis
Norfolk & Western
Norfolk & Western
MAP 2
THE PENNSYLVANIA SYSTEM
+++ Columbus-Sandusky Division


Montreal
Portland
Bellows Falls
Nashua
Boston
Worcester
Buffalo
Detroit
Cleveland
Toledo
Pittsburg
Williamsport
Tamaqua
L. & N.E.
L. & H.
New York
Philadelphia
Kankakee
Peoria
Columbus
Indianapolis
Cincinnati
St. Louis
Evansville
Louisville
Cairo
KEY
New York Central.
Lake Erie & Western. (Omitted)
Toledo & Ohio Central. (Omitted)
Kanawha & Michigan. (Omitted)
Cincinnati Northern.
Philadelphia & Reading (System trackage)
Trackage
Rutland
Michigan Central
MAP 3
THE NEW YORK CENTRAL SYSTEM
Excluding the
Lake Erie & Western Toledo & Ohio
Central and Kanawha & Michigan Ry.


Pere Marquette System
Cleveland
Toledo
Chicago
Mt Jewett
Williamsport
Scranton
Bound Brook
Campbell Hall
Maybrook
Pittsburg
Harrisburg
Hagerstown
Baltimore
Washington
Peoria
Springfield
Cincinnati
St Louis
Louisville
Shawneetown
Lexington
KEY
Baltimore & Ohio.
Phila. & Read. - Cent of N.J.
Western Maryland.
Chic., Ind. & Louisville (Monon)
Cin., Ind. & Western.
Lehigh & New England
Lehigh & Hudson.
N.Y., N.H. & H
MAP 4
THE BALTO. & OHIO — READING SYS.
Including
The Central R.R. of New Jersey and
The Monon.



63763—21. (To face page 660.) No. 5.

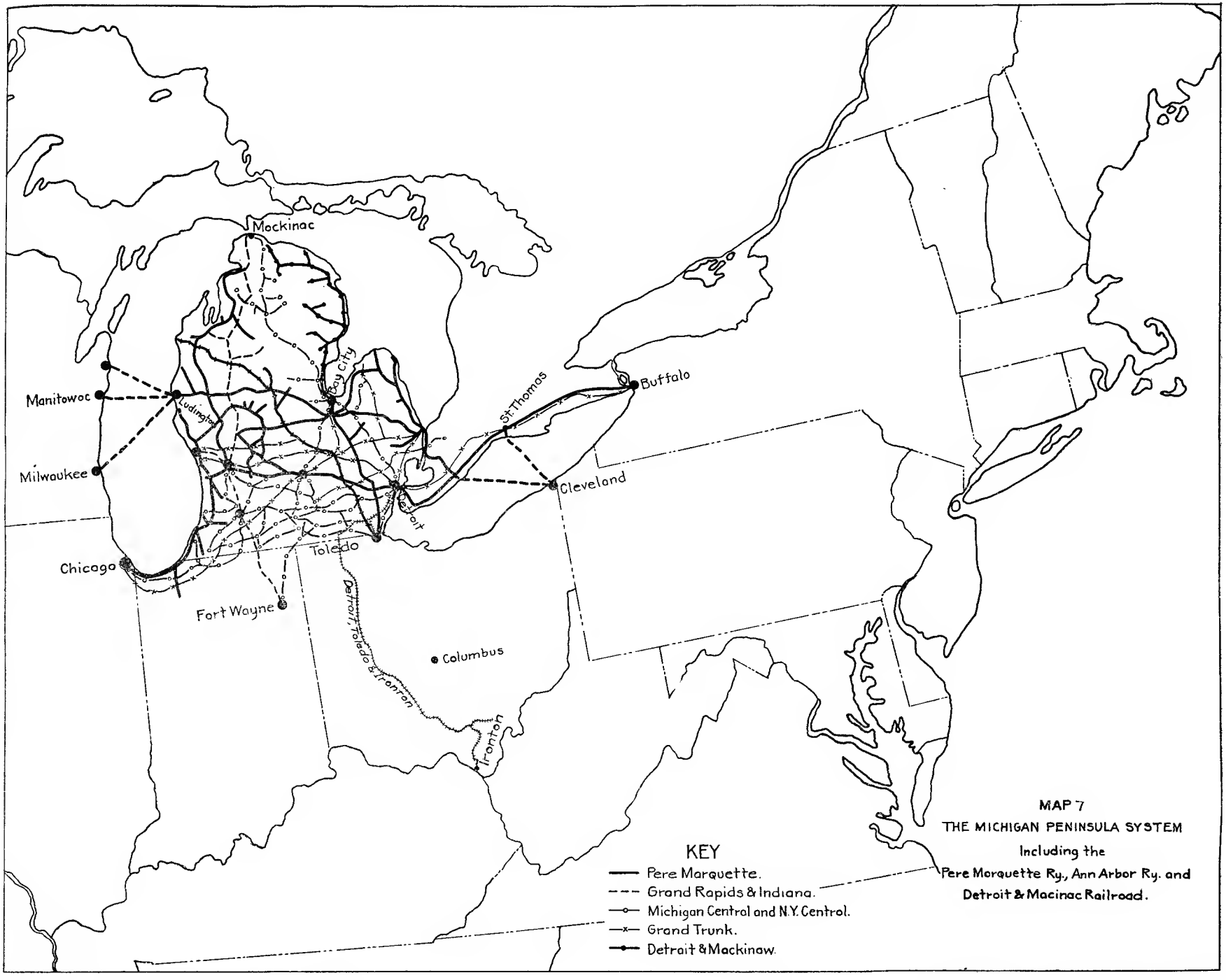


MAP 6

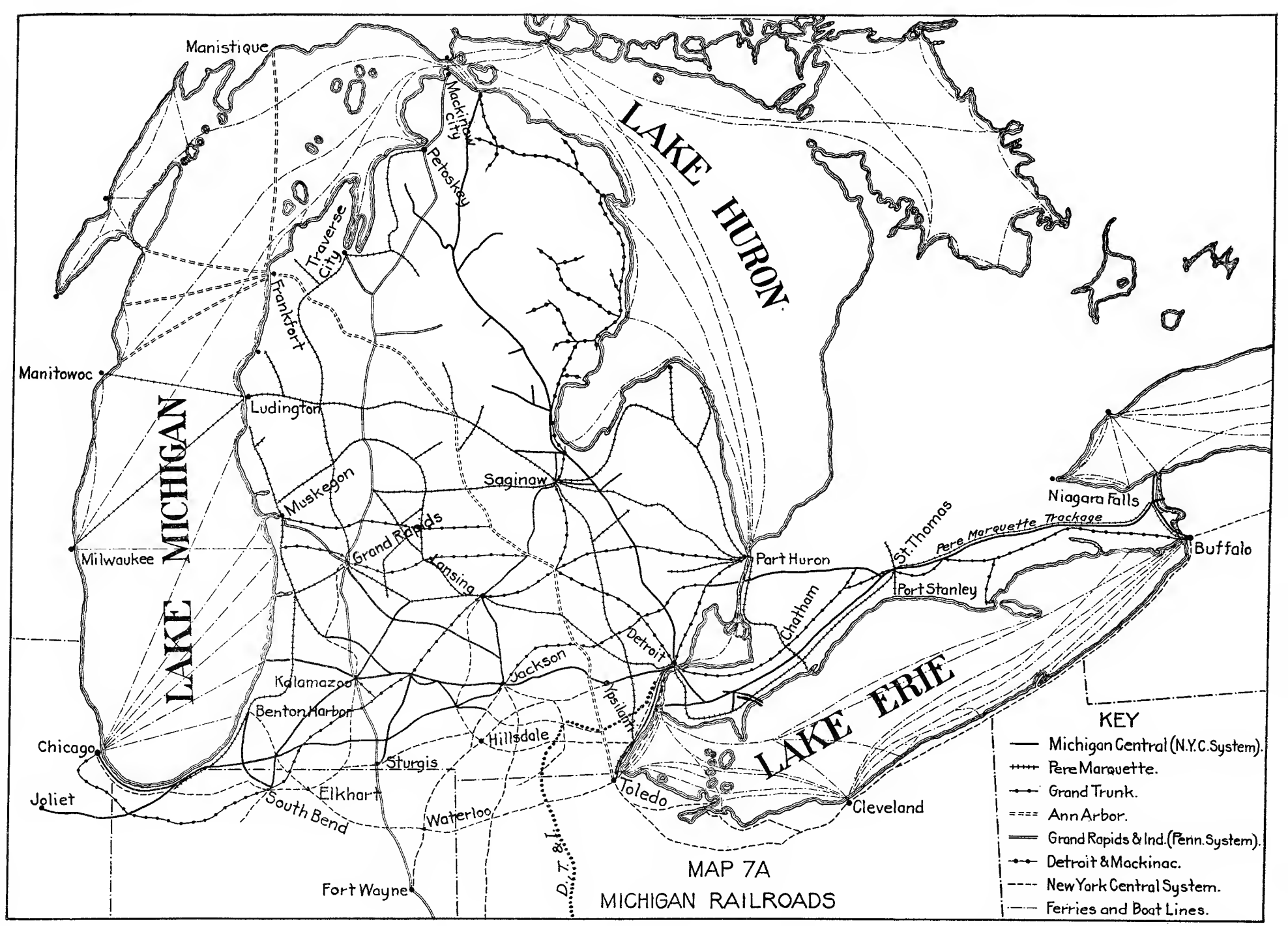
THE LACKAWANNA–NICKEL PLATE–CLOVER LEAF SYSTEM.

Including also

Lake Erie & Western (part), Wheeling & Lake Erie, Western Maryland, Pittsburg & West Virginia Cinn. Northern & Buffalo, Rochester & Pittsburg.



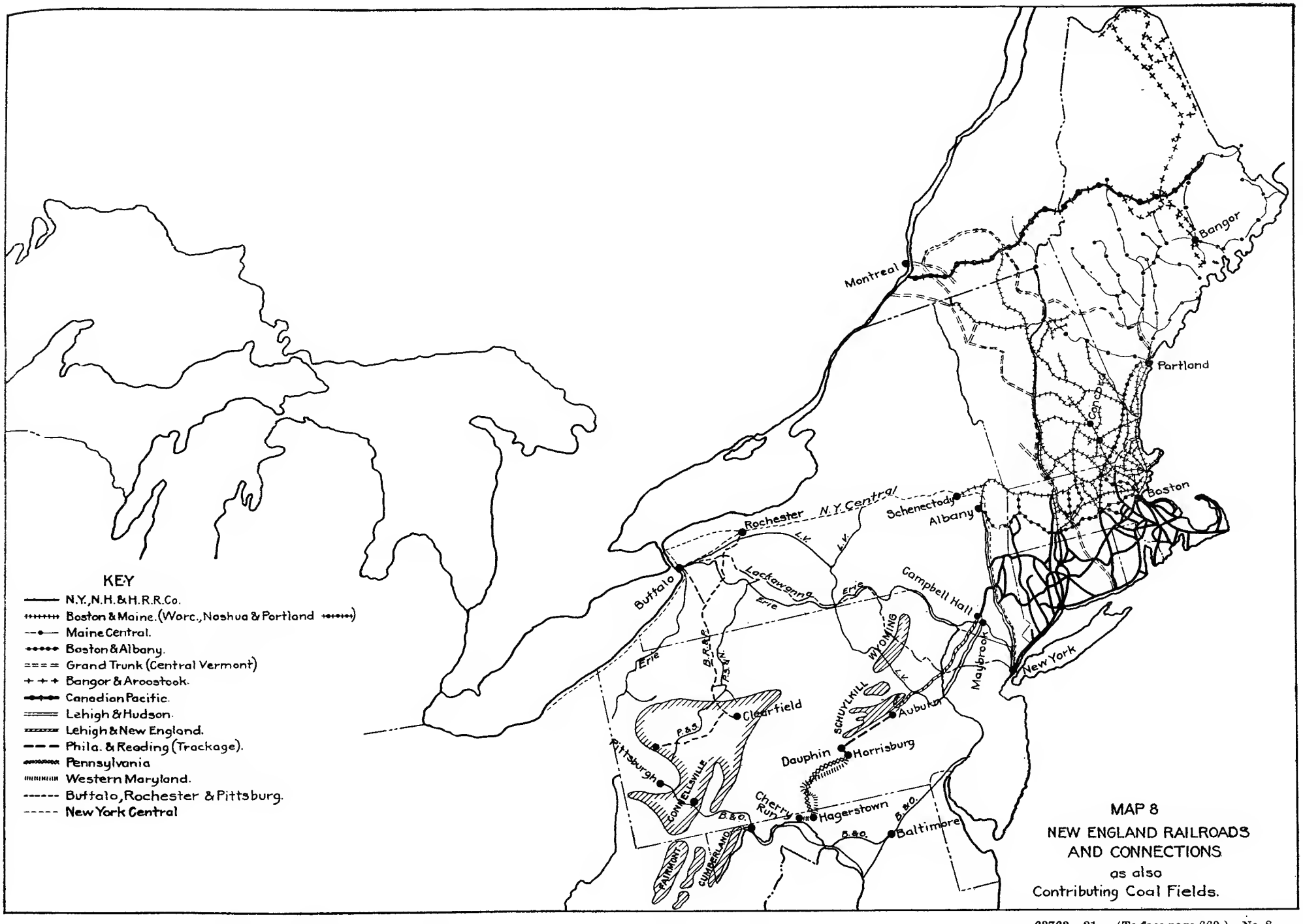
63763—21. (To face page 660.) No. 7.



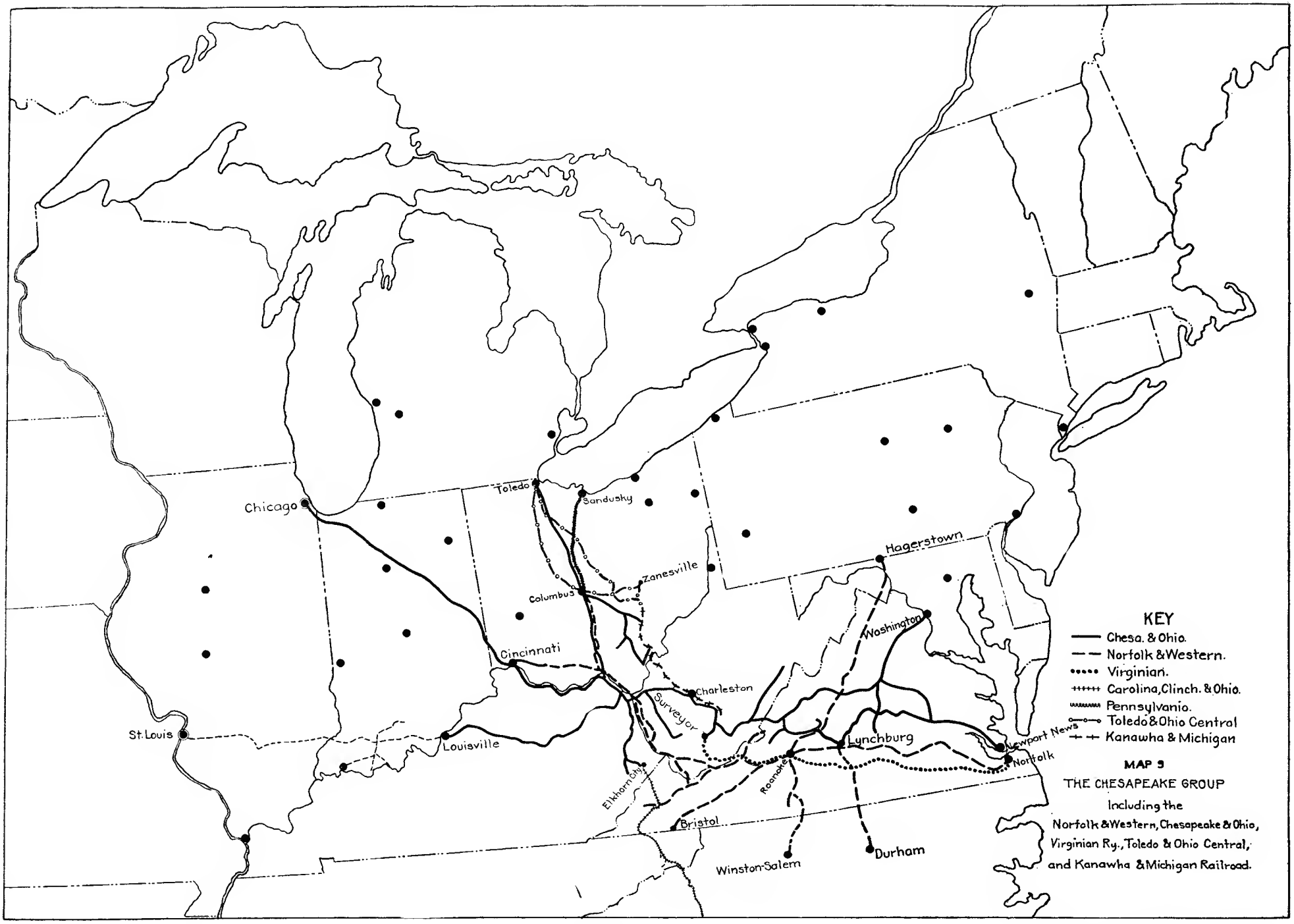
MAP 7A

MICHIGAN RAILROADS

63763—21. (To face page 660.) No. 7A.



MAP 8
NEW ENGLAND RAILROADS
AND CONNECTIONS
as also
Contributing Coal Fields.



MAP 9

THE CHESAPEAKE GROUP

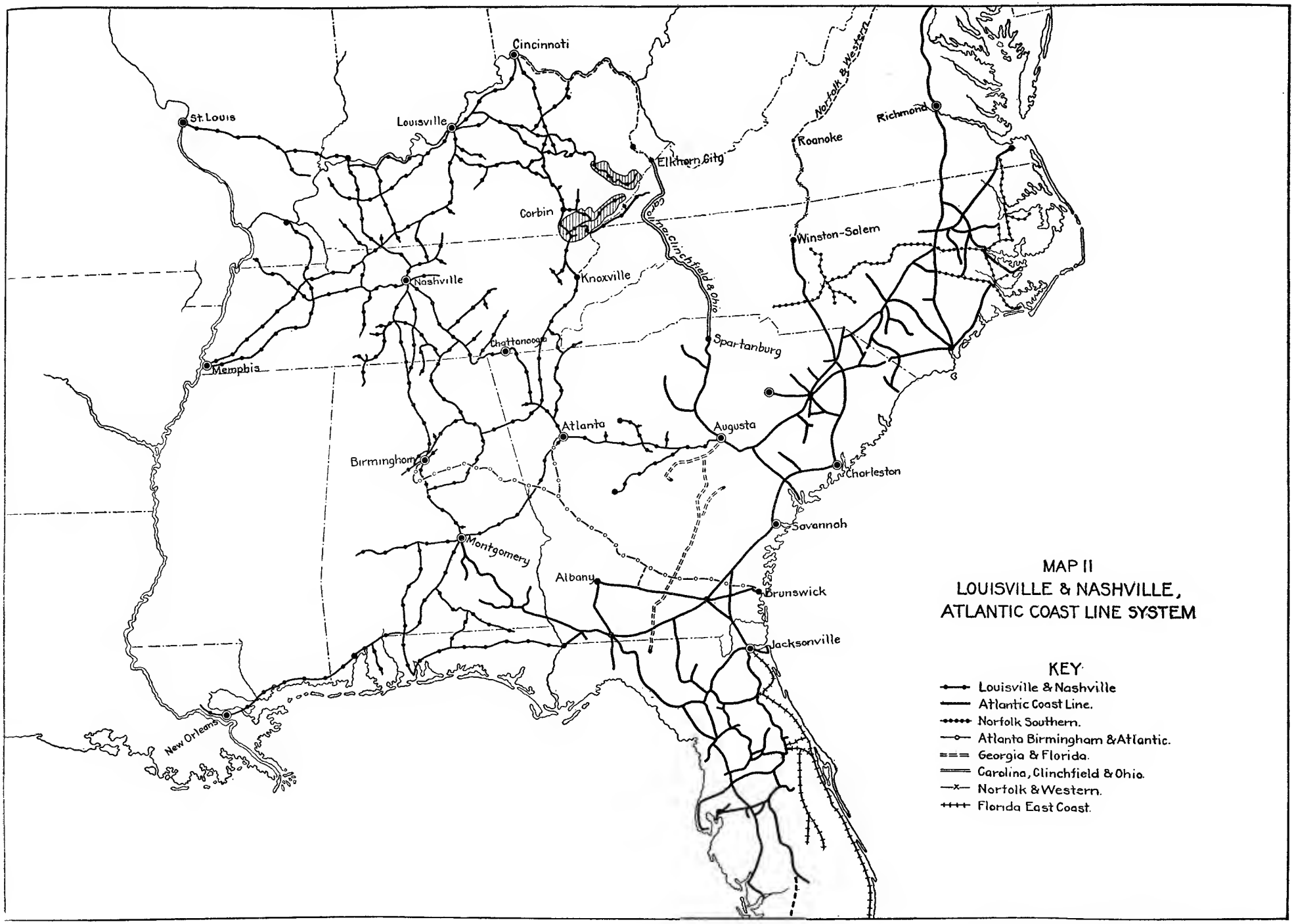
Including the

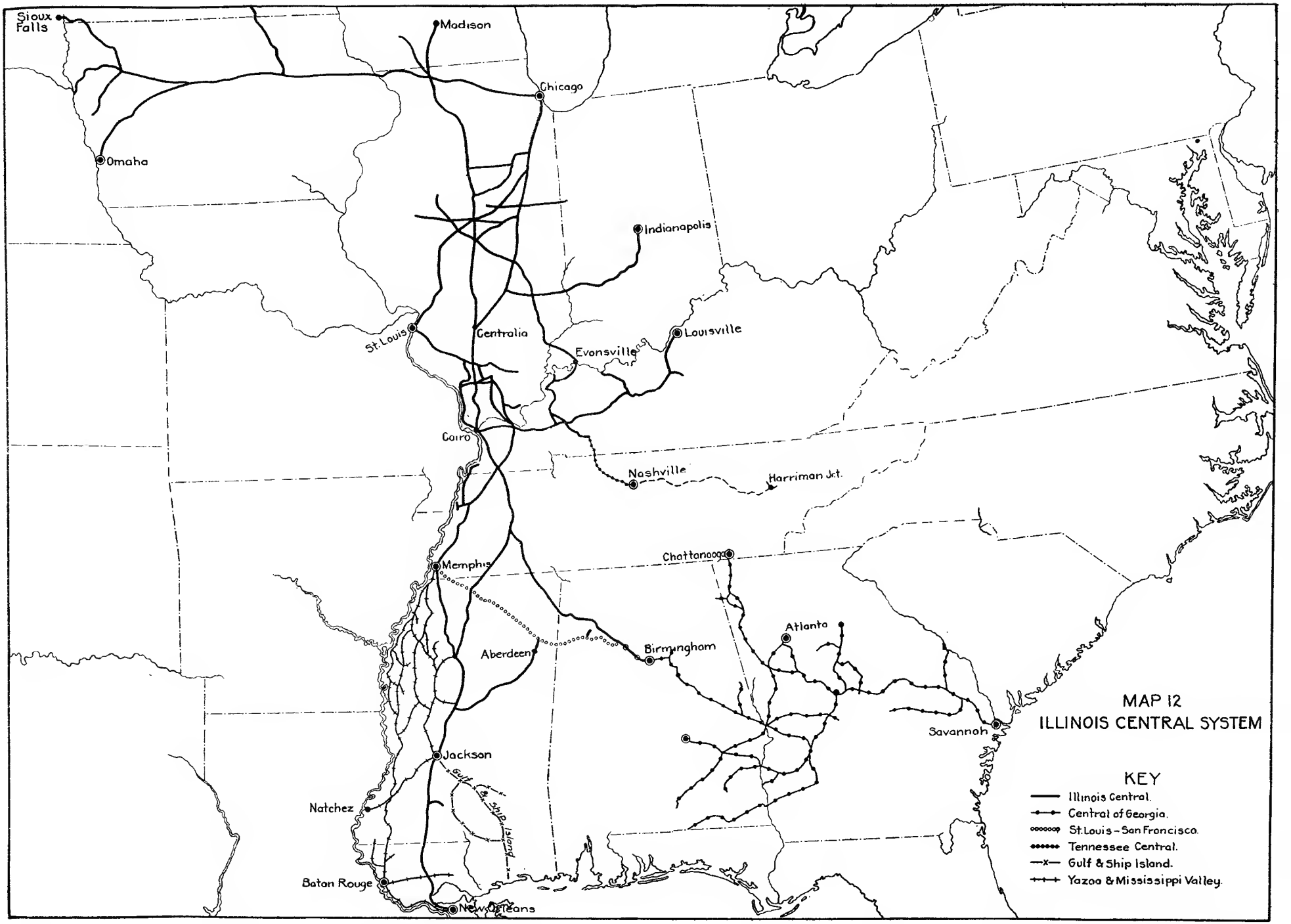
Norfolk & Western, Chesapeake & Ohio,

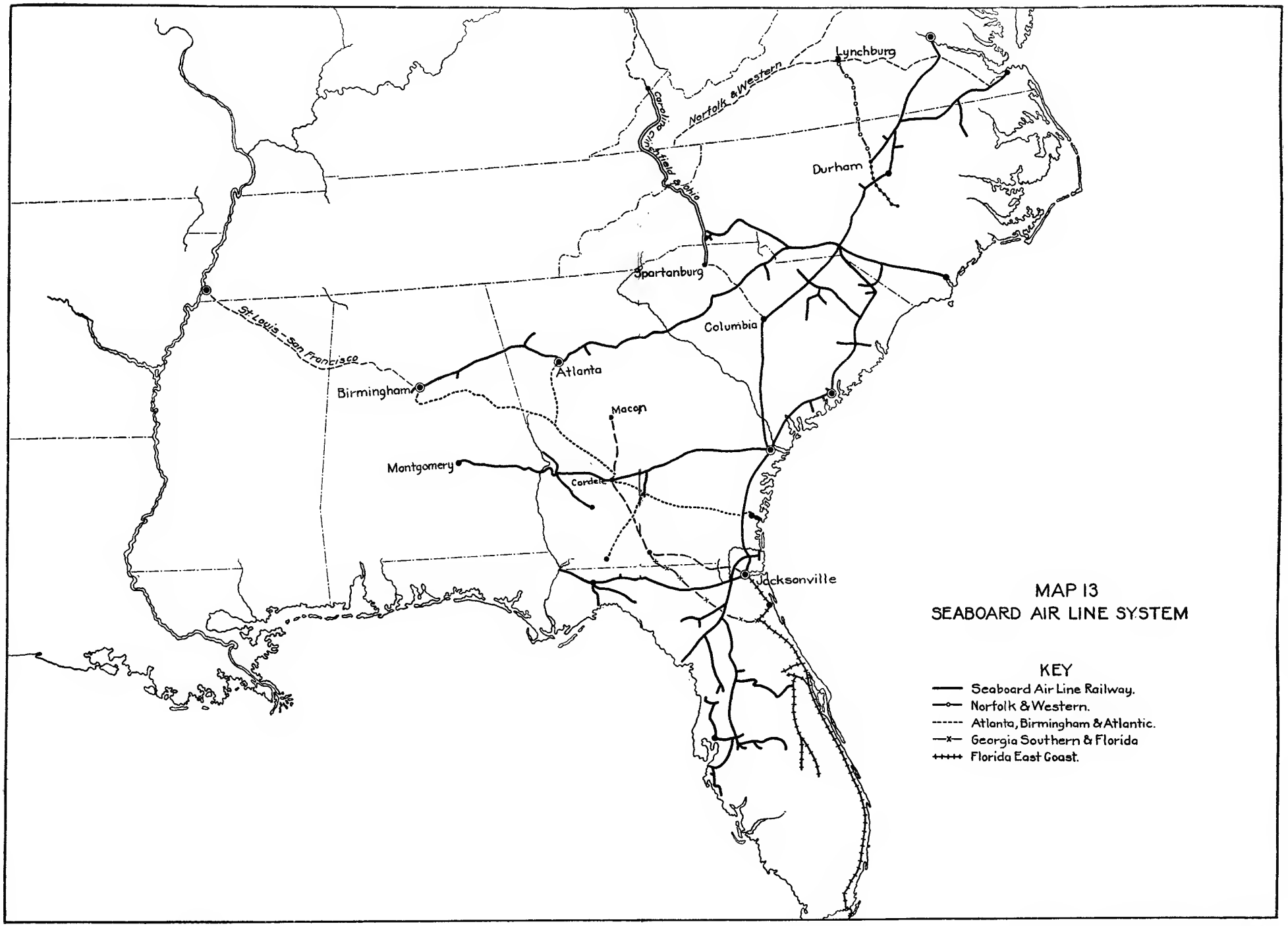
Virginian Ry., Toledo & Ohio Central,

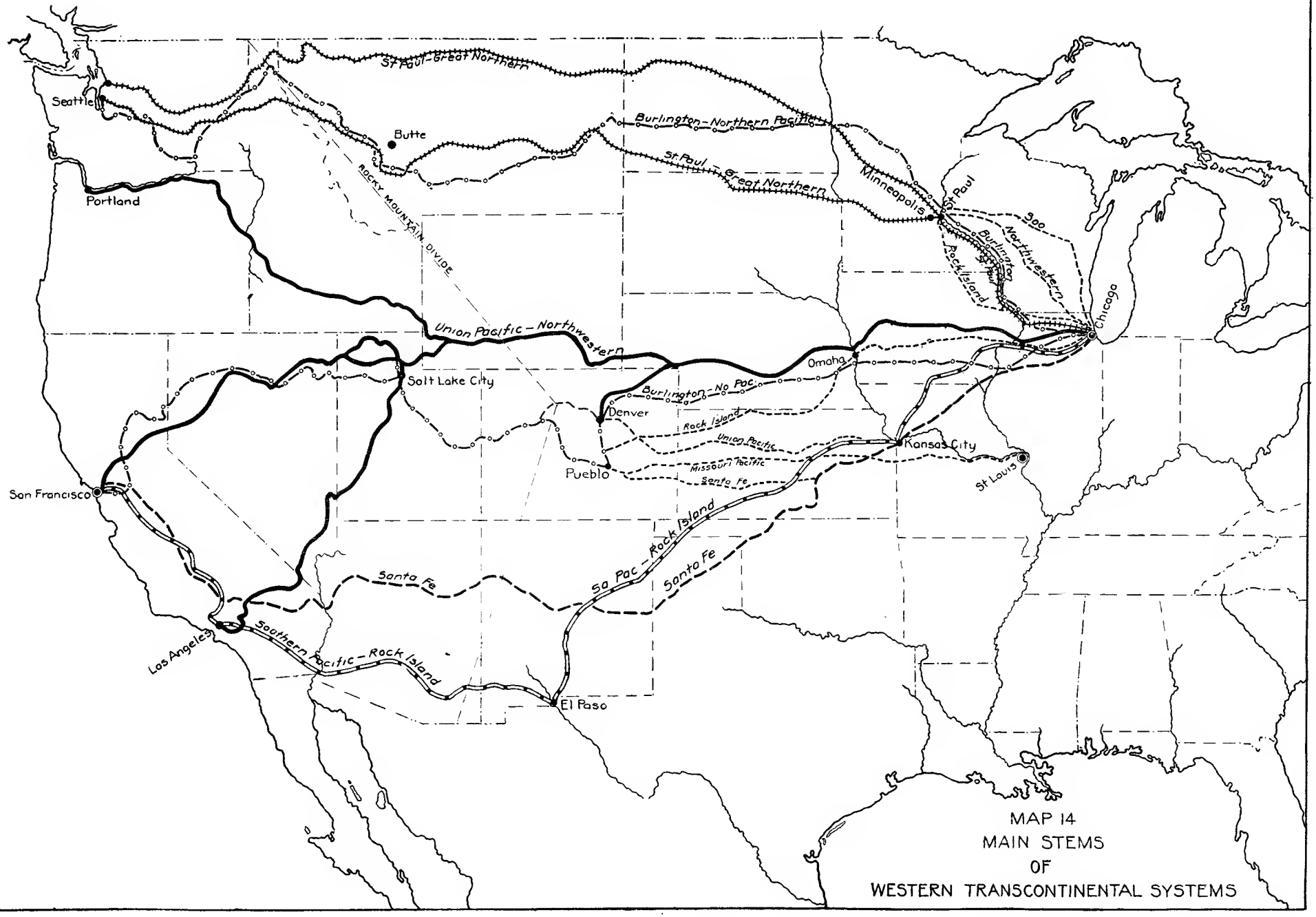
and Kanawha & Michigan Railroad.


Washington
Cincinnati
Louisville
St. Louis
Roanoke
Norfolk
Bristol
Tenn Central
Nashville
Knoxville
Point Rock
Ashville
Chattanooga
Memphis
Birmingham
Atlanta
Charleston
Macon
Savannah
Montgomery
Vicksburg
Meridian
A.B.&A.
Brunswick
Valdosta
Jacksonville
Mobile
Palatka
New Orleans
Florida East Coast
MAP 10
SOUTHERN RAILWAY SYSTEM
KEY
Southern Railway.
Mobile & Ohio.
Alabama & Vicksburg.
New Orleans & Northeastern.
New Orleans Great Northern.
Georgia Southern & Florida.
Carolina, Clinchfield & Ohio.

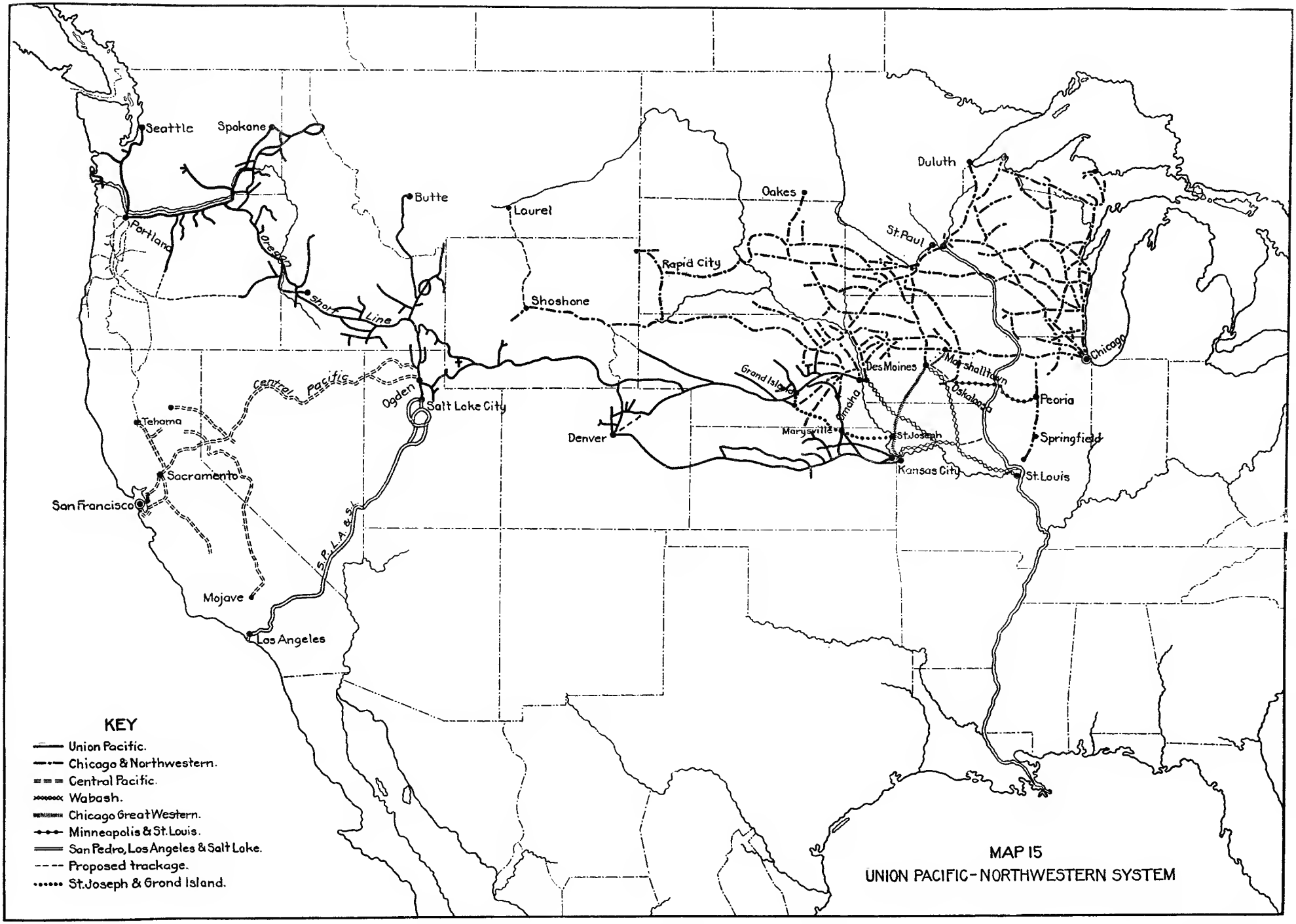

Cincinnati
St. Louis
Louisville
Elkhorn City
Norfolk & Western
Roanoke
Richmond
Corbin
Carolina, Clinchfield & Ohio
Winston-Salem
Nashville
Knoxville
Chattanooga
Spartanburg
Memphis
Atlanta
Augusta
Birmingham
Charleston
Savannah
Montgomery
Albany
Brunswick
Jacksonville
New Orleans
MAP II
LOUISVILLE & NASHVILLE,
ATLANTIC COAST LINE SYSTEM
KEY
Louisville & Nashville
Atlantic Coast Line.
Norfolk Southern.
Atlanta Birmingham & Atlantic.
Georgia & Florida.
Carolina, Clinchfield & Ohio.
Norfolk & Western.
Florida East Coast.

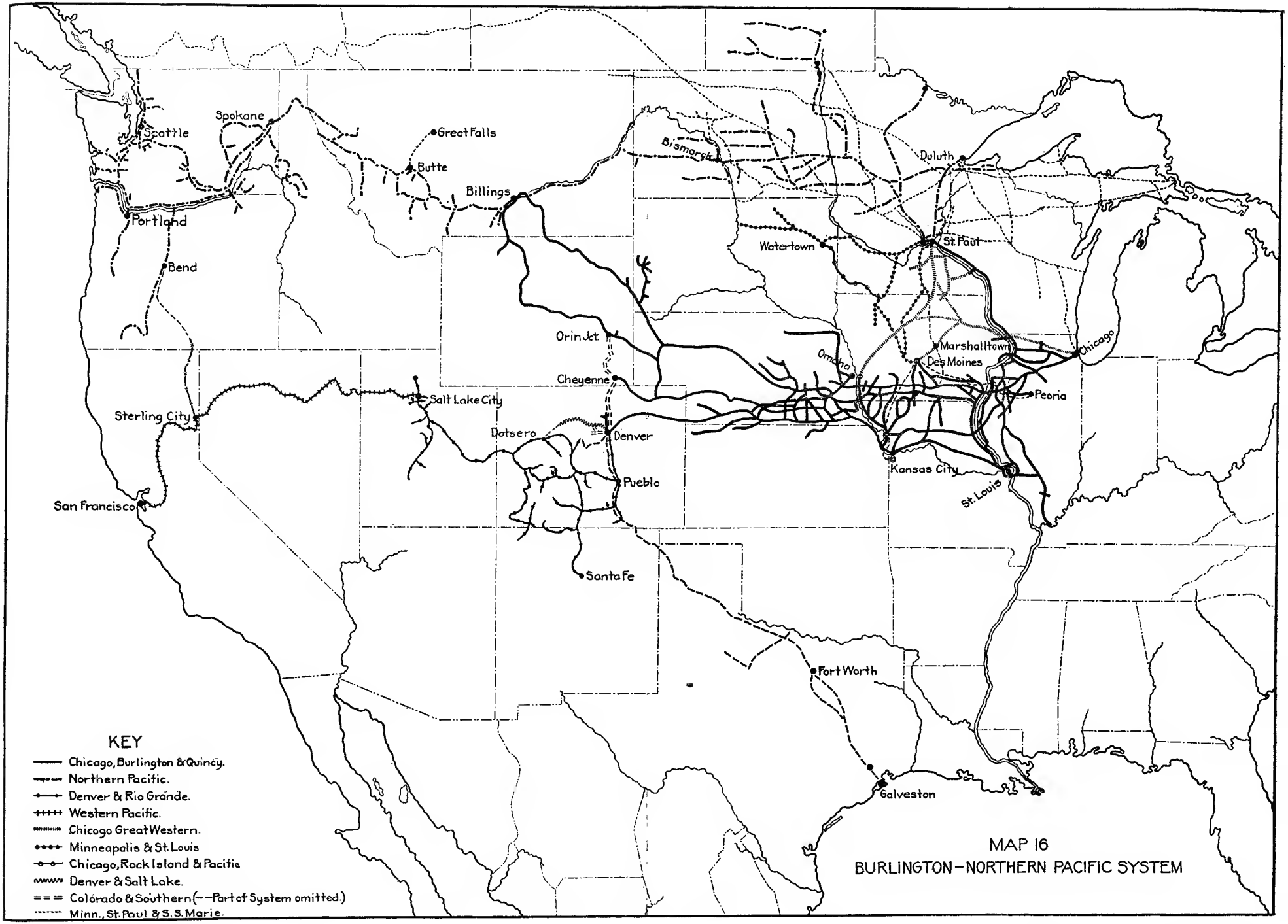

Sioux Falls
Madison
Chicago
Omaha
Indianapolis
St. Louis
Centralia
Evansville
Louisville
Cairo
Nashville
Harriman Jct.
Chattanooga
Memphis
Atlanta
Aberdeen
Birmingham
Savannah
Jackson
Gulf & Ship Island
Natchez
Baton Rouge
New Orleans
MAP 12
ILLINOIS CENTRAL SYSTEM
KEY
Illinois Central.
Central of Georgia.
St. Louis - San Francisco.
Tennessee Central.
Gulf & Ship Island.
Yazoo & Mississippi Valley.

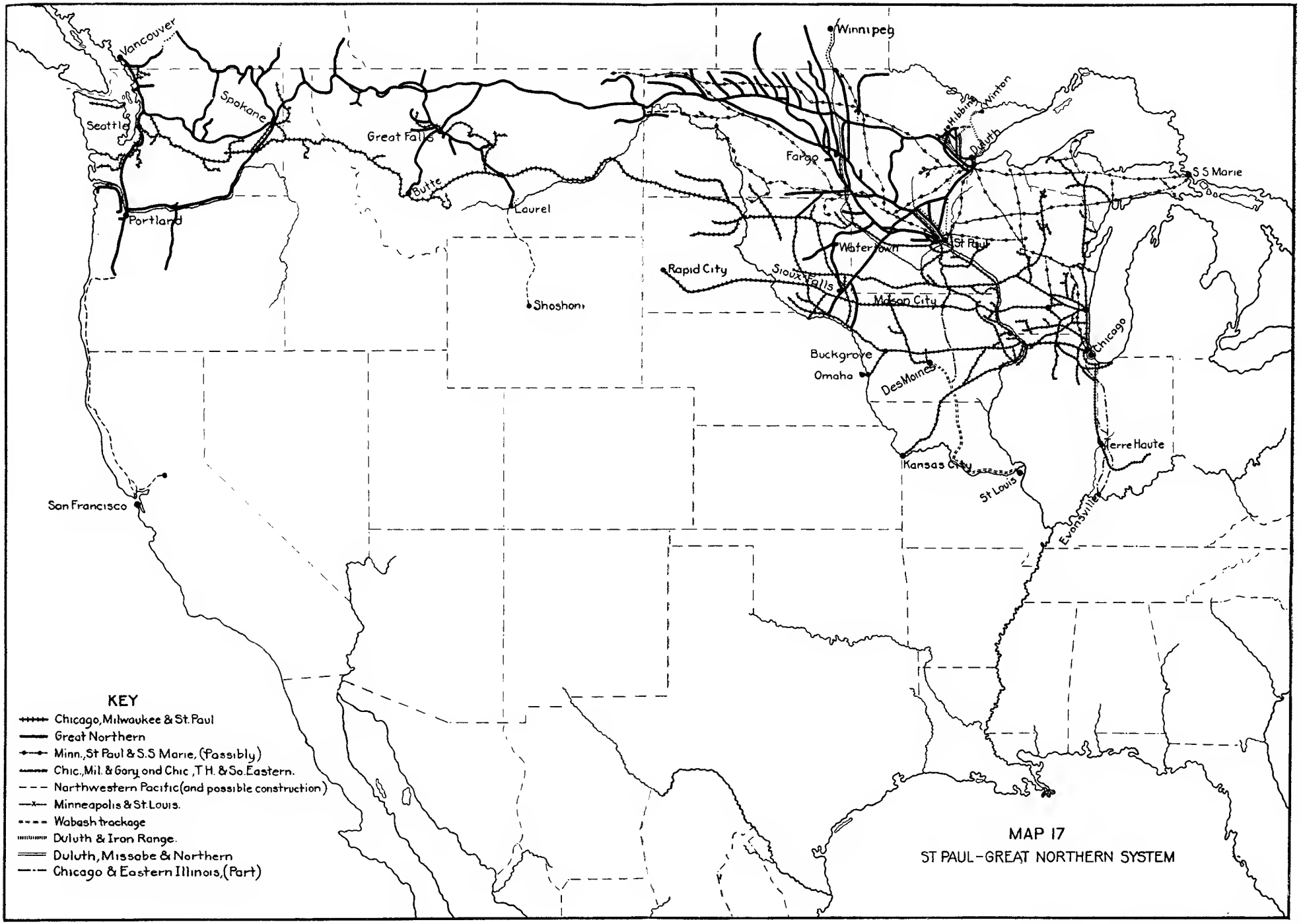

Lynchburg
Norfolk & Western
Carolina, Clinchfield & Ohio
Durham
Spartanburg
Columbia
St. Louis - San Francisco
Atlanta
Birmingham
Macon
Montgomery
Cordele
Jacksonville
MAP 13
SEABOARD AIR LINE SYSTEM
KEY
Seaboard Air Line Railway.
Norfolk & Western.
Atlanta, Birmingham & Atlantic.
Georgia Southern & Florida
Florida East Coast.

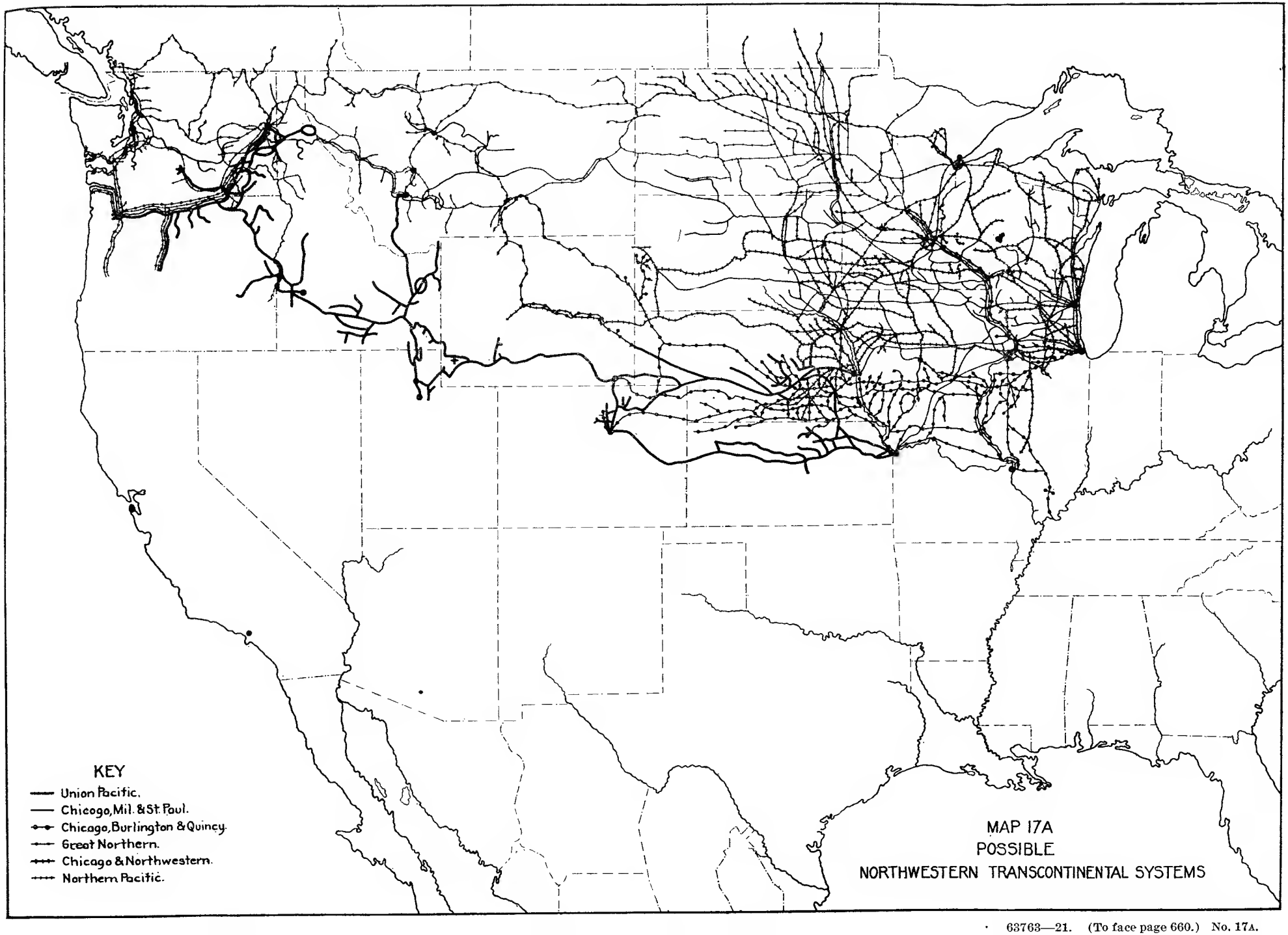


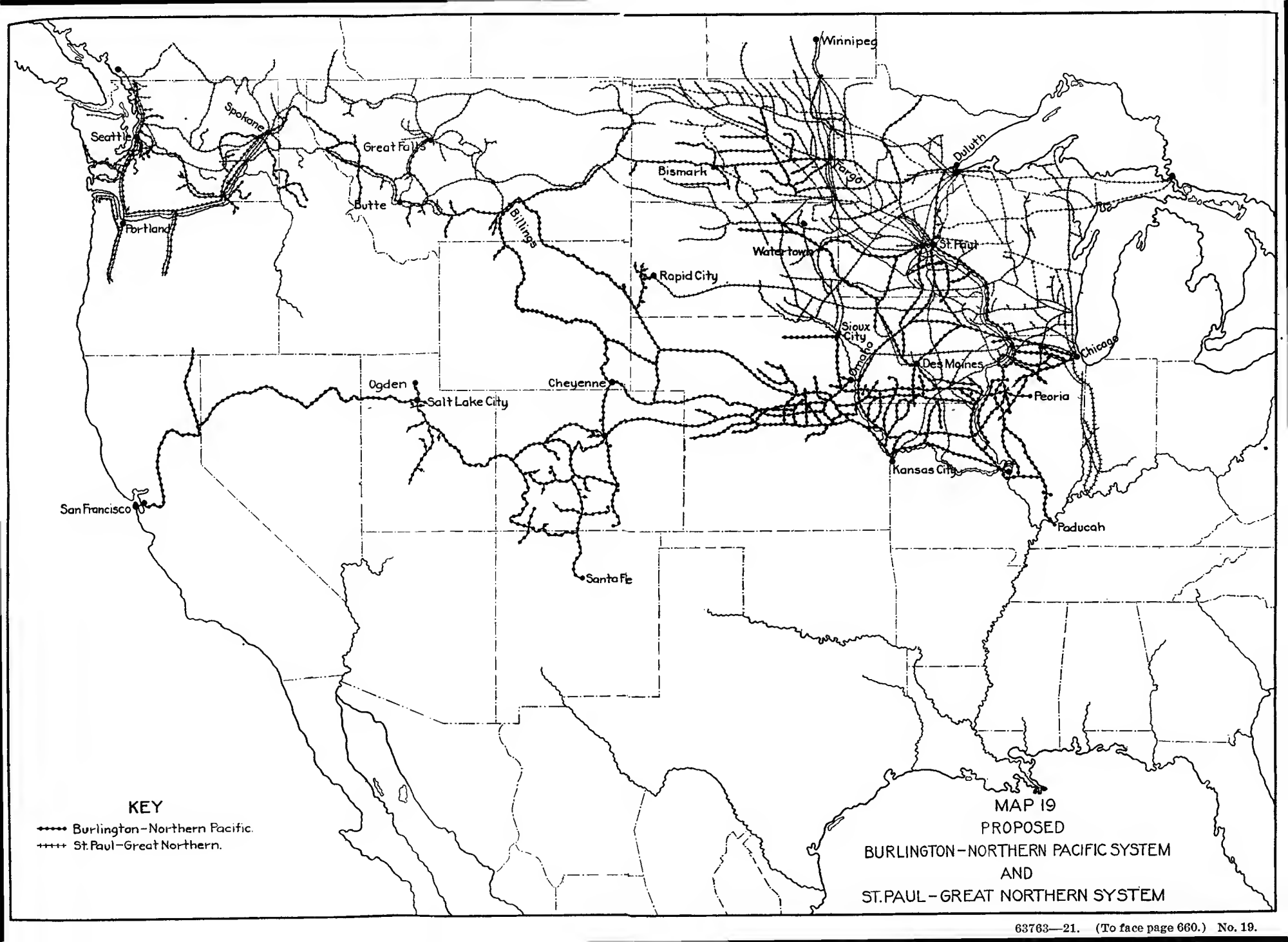
63763—21. (To face page 660.) No. 14.

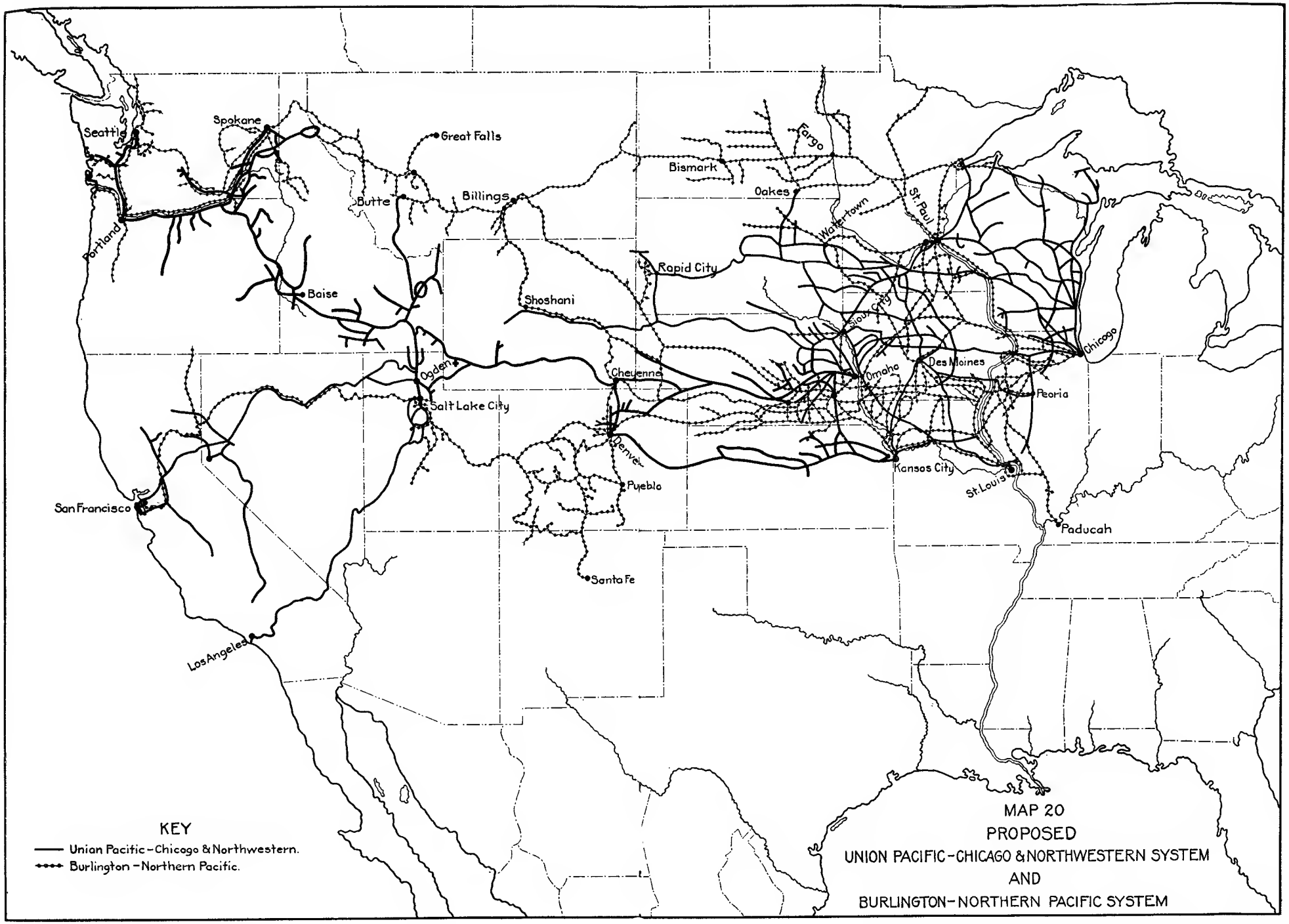

Seattle
Spokane
Portland
Oregon Short Line
Butte
Laurel
Shoshone
Rapid City
Oakes
Duluth
St. Paul
Chicago
Des Moines
Marshalltown
Oskaloosa
Peoria
Springfield
St. Louis
Grand Island
Omaha
Marysville
St. Joseph
Kansas City
Denver
Ogden
Salt Lake City
Central Pacific
Tehama
Sacramento
San Francisco
S.P.L.A.&S.L.
Mojave
Los Angeles
KEY
Union Pacific.
Chicago & Northwestern.
Central Pacific.
Wabash.
Chicago Great Western.
Minneapolis & St. Louis.
San Pedro, Los Angeles & Salt Lake.
Proposed trackage.
St. Joseph & Grond Island.
MAP 15
UNION PACIFIC-NORTHWESTERN SYSTEM


Seattle
Spokane
Great Falls
Bismarck
Duluth
Butte
Billings
Portland
Watertown
St. Paul
Bend
Orin Jct.
Marshalltown
Chicago
Omaha
Des Moines
Cheyenne
Peoria
Salt Lake City
Sterling City
Dotsero
Denver
Kansas City
Pueblo
St. Louis
San Francisco
Santa Fe
Fort Worth
Galveston
KEY
Chicago, Burlington & Quincy.
Northern Pacific.
Denver & Rio Grande.
Western Pacific.
Chicago Great Western.
Minneapolis & St. Louis
Chicago, Rock Island & Pacific
Denver & Salt Lake.
Colorado & Southern (--Part of System omitted.)
Minn., St. Paul & S. S. Marie.
MAP 16
BURLINGTON-NORTHERN PACIFIC SYSTEM

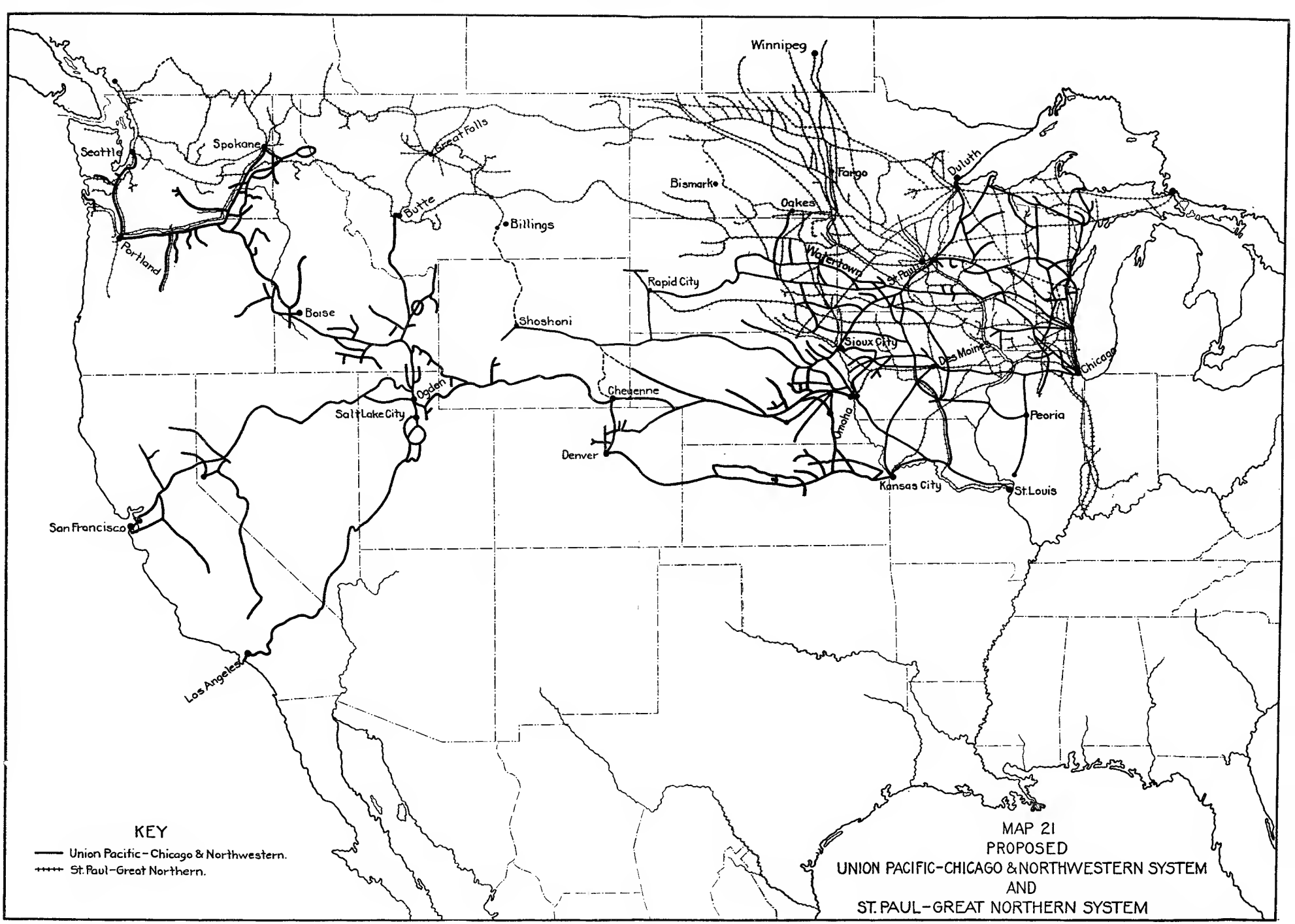

Vancouver
Winnipeg
Seattle
Spokane
Great Falls
Hubbard
Winton
Duluth
Fargo
S S Marie
Butte
Laurel
Portland
Watertown
St Paul
Rapid City
Sioux Falls
Mason City
Shoshoni
Chicago
Buckgrove
Omaha
DesMoines
Terre Haute
Kansas City
St Louis
Evansville
San Francisco
KEY
Chicago, Milwaukee & St. Paul
Great Northern
Minn., St Paul & S.S Marie, (Passibly)
Chic., Mil. & Gary and Chic, T H. & So. Eastern.
Northwestern Pacific (and possible construction)
Minneapolis & St. Louis.
Wabash trackage
Duluth & Iron Range.
Duluth, Missabe & Northern
Chicago & Eastern Illinois, (Part)
MAP 17
ST PAUL-GREAT NORTHERN SYSTEM

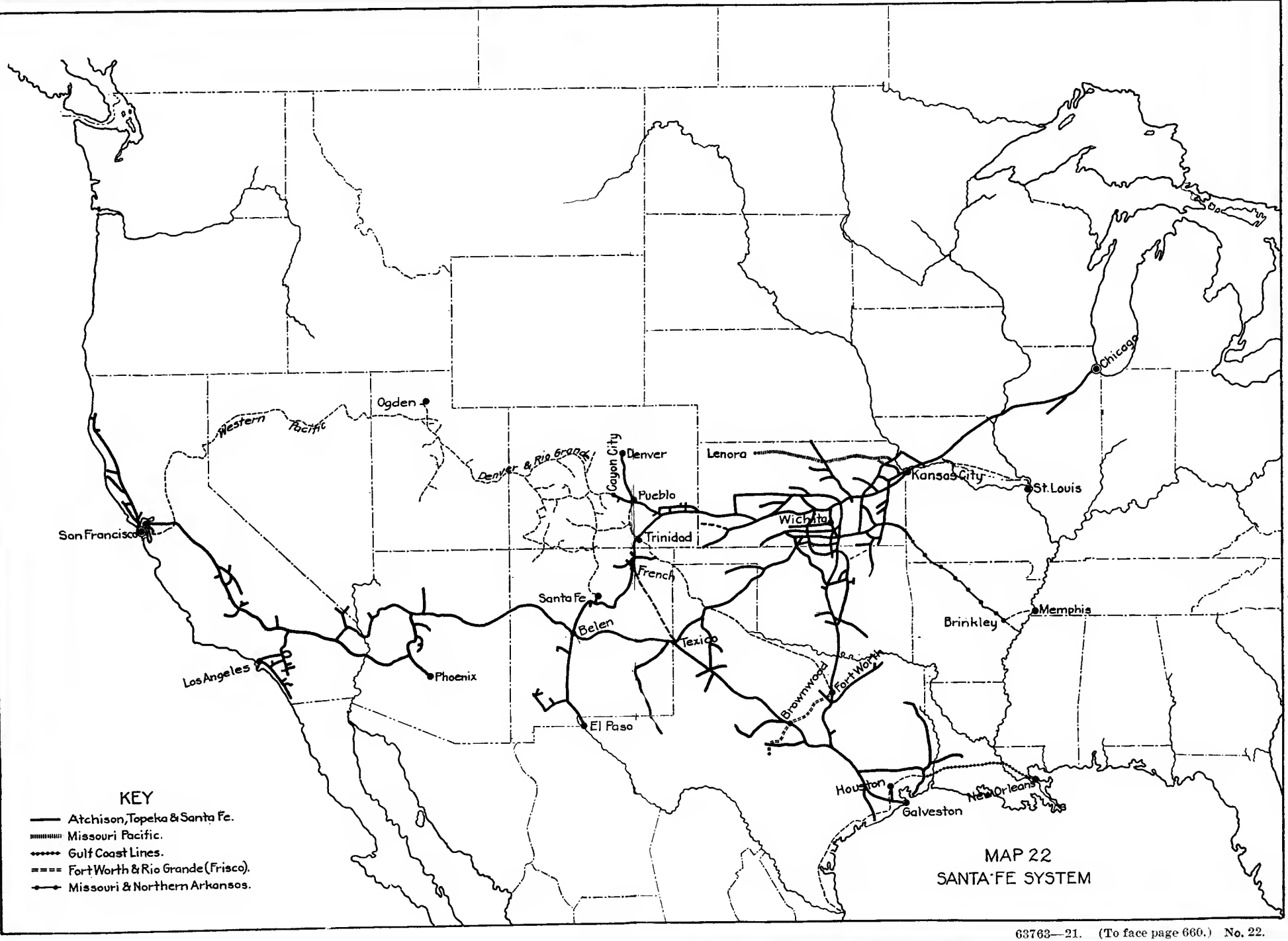

KEY
Union Pacific.
Chicago, Mil. & St. Paul.
Chicago, Burlington & Quincy.
Great Northern.
Chicago & Northwestern.
Northern Pacific.
MAP 17A
POSSIBLE
NORTHWESTERN TRANSCONTINENTAL SYSTEMS

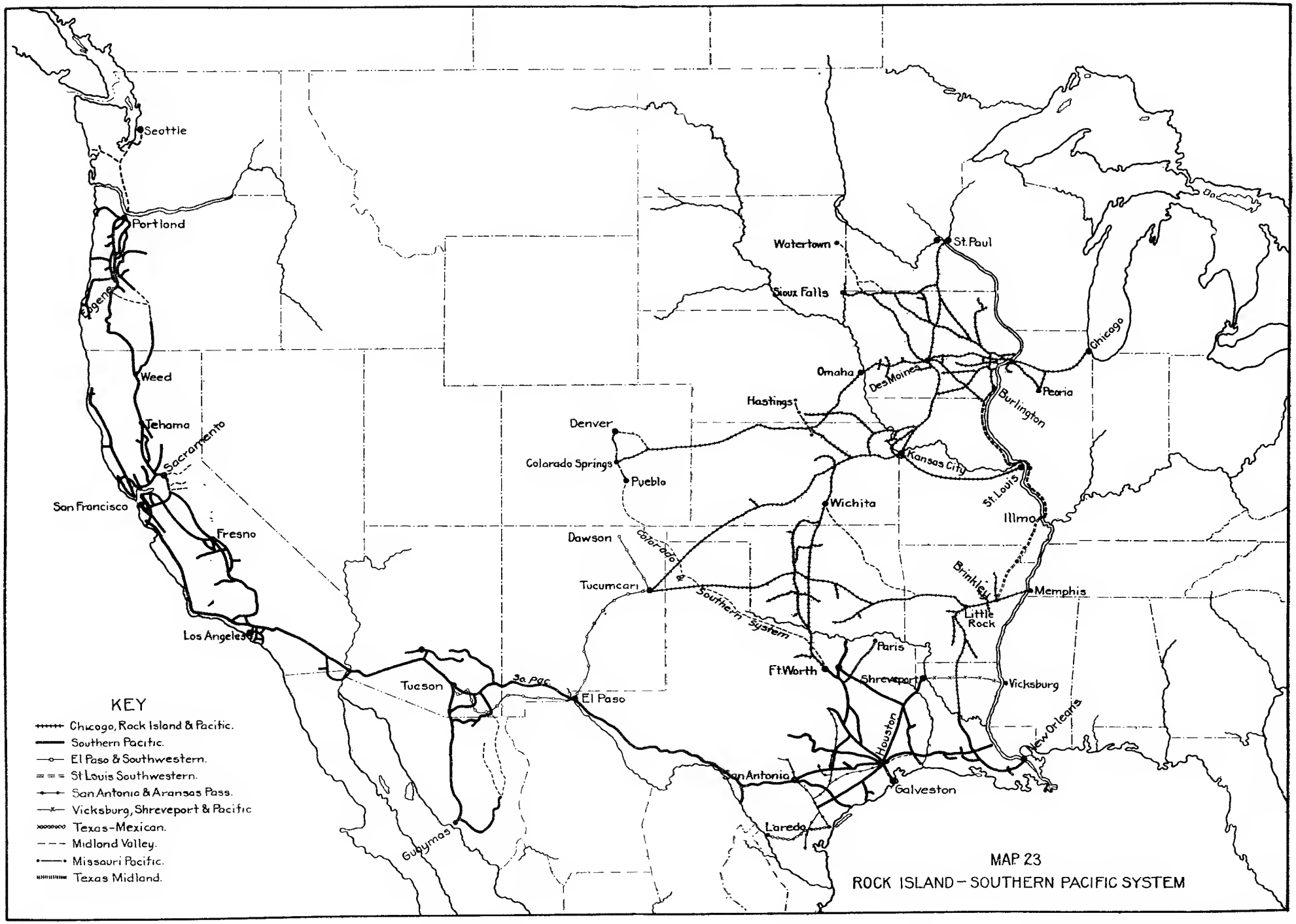

Winnipeg
Seattle
Spokane
Great Falls
Bismark
Fargo
Duluth
Butte
Billings
Portland
Watertown
St. Paul
Rapid City
Sioux City
Omaha
Chicago
Des Moines
Ogden
Cheyenne
Salt Lake City
Peoria
Kansas City
San Francisco
Paducah
Santa Fe
KEY
Burlington-Northern Pacific.
St. Paul-Great Northern.
MAP 19
PROPOSED
BURLINGTON-NORTHERN PACIFIC SYSTEM
AND
ST. PAUL-GREAT NORTHERN SYSTEM

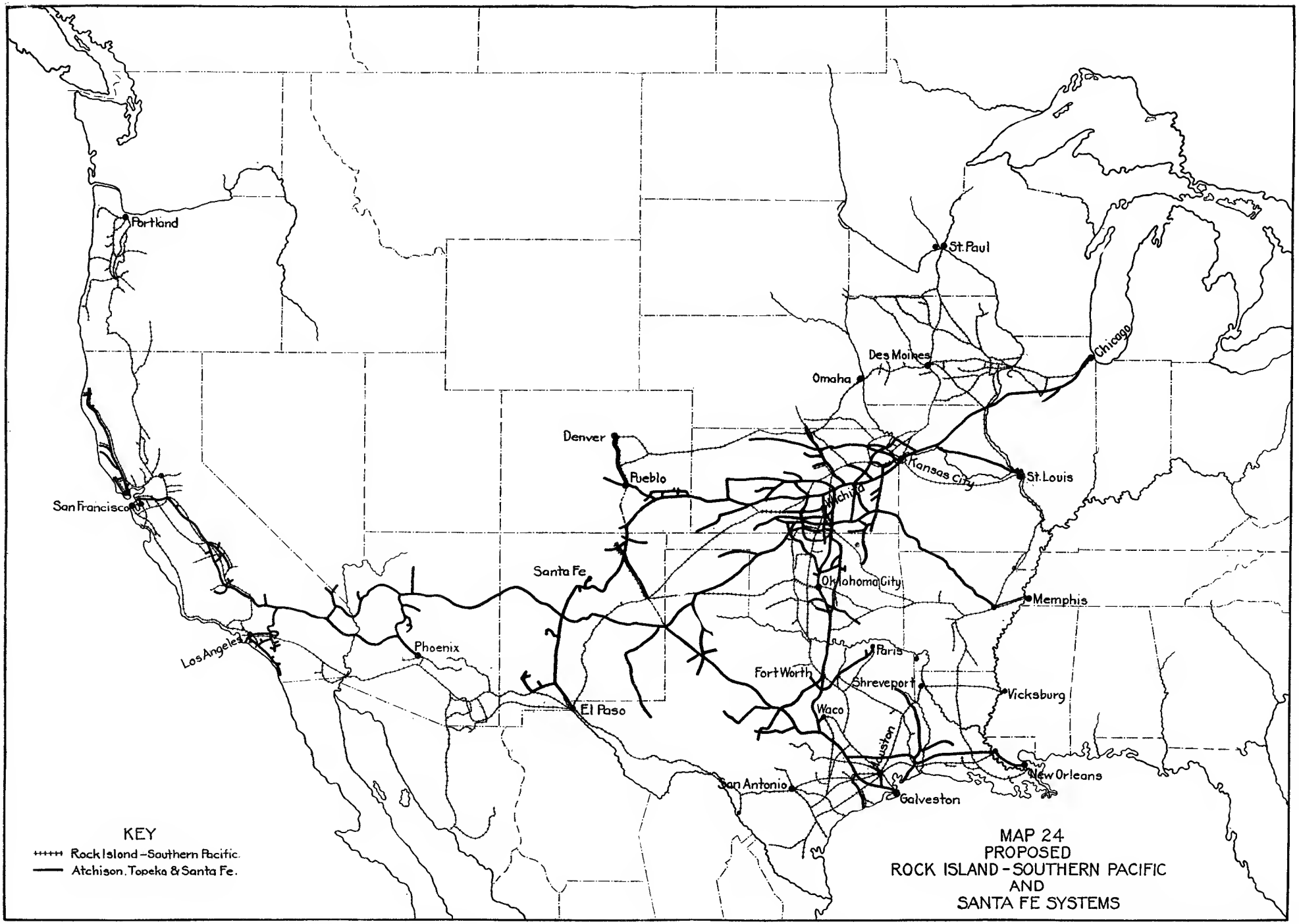


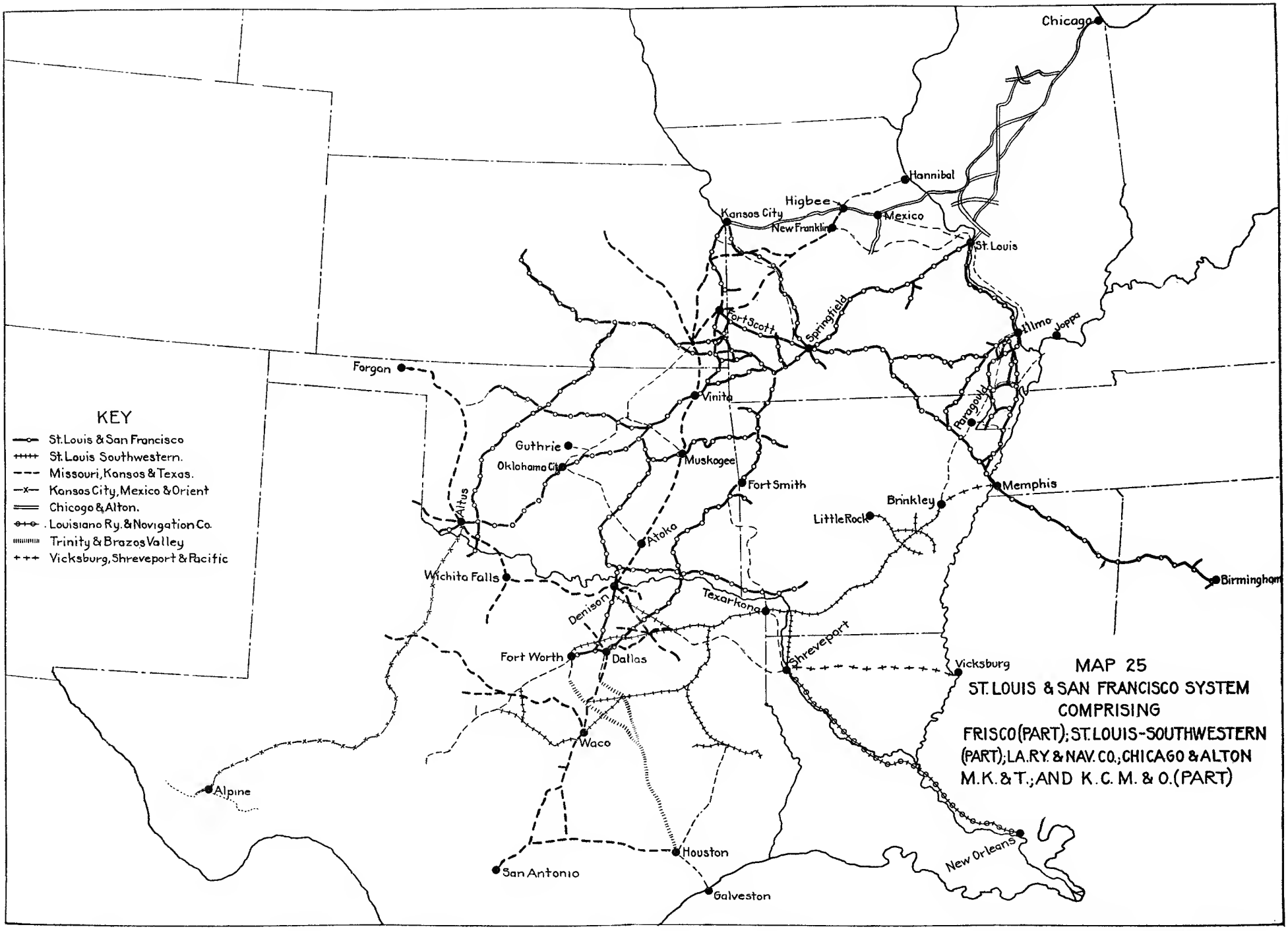
63763—21. (To face page 660.) No. 20.

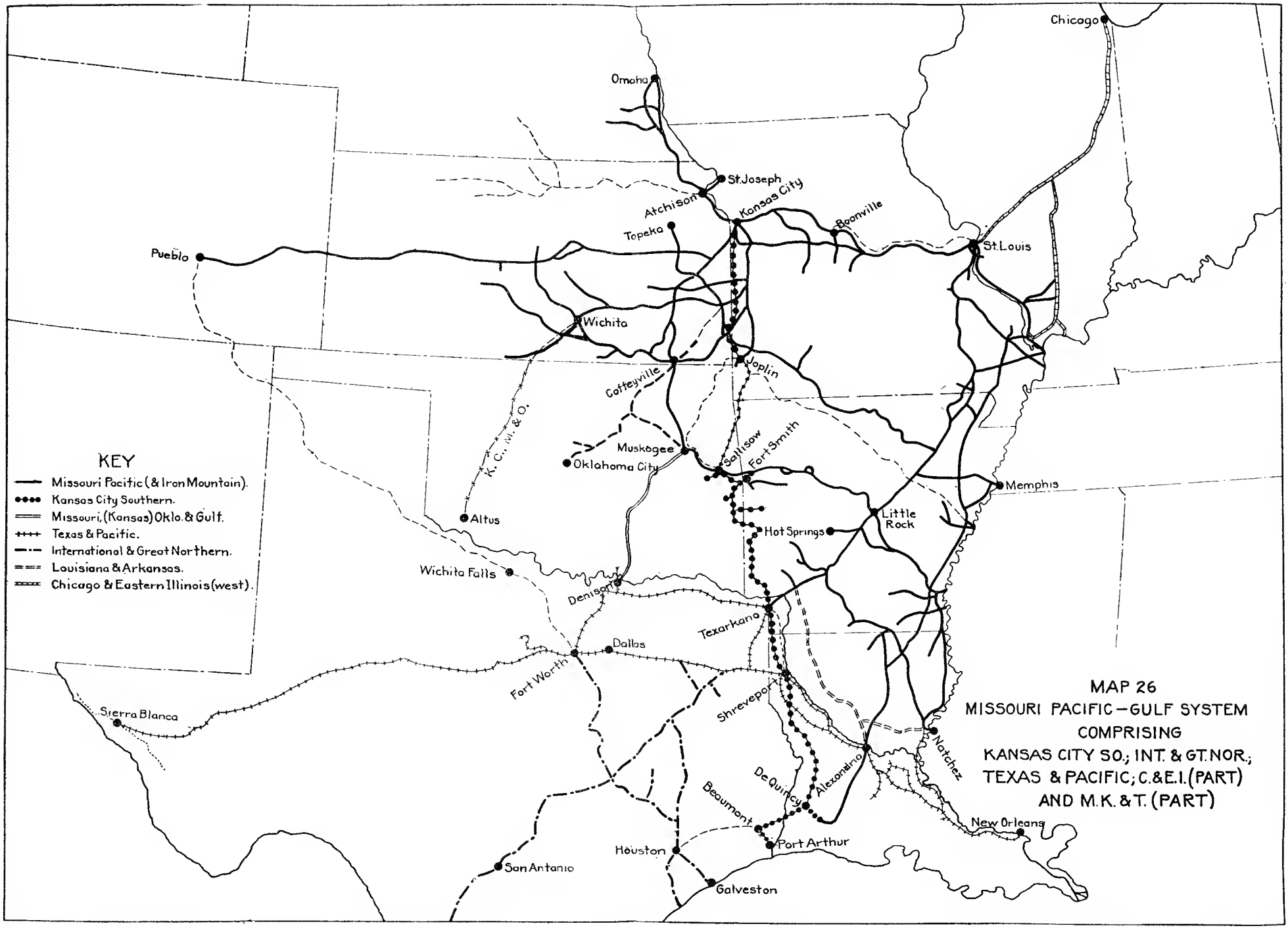

Winnipeg
Seattle
Spokane
Great Falls
Bismark
Fargo
Duluth
Oakes
Butte
Billings
Portland
Watertown
St. Paul
Rapid City
Boise
Shoshoni
Sioux City
Des Moines
Chicago
Ogden
Cheyenne
Salt Lake City
Omaha
Peoria
Denver
Kansas City
St. Louis
San Francisco
Los Angeles
KEY
Union Pacific - Chicago & Northwestern.
St. Paul - Great Northern.
MAP 21
PROPOSED
UNION PACIFIC-CHICAGO & NORTHWESTERN SYSTEM
AND
ST. PAUL-GREAT NORTHERN SYSTEM


Ogden
Western Pacific
Denver & Rio Grande
Cañon City
Denver
Lenora
Kansas City
St. Louis
Chicago
Pueblo
Wichita
San Francisco
Trinidad
French
Santa Fe
Belen
Texico
Memphis
Brinkley
Los Angeles
Phoenix
El Paso
Brownwood
Fort Worth
Houston
New Orleans
Galveston
KEY
Atchison, Topeka & Santa Fe.
Missouri Pacific.
Gulf Coast Lines.
Fort Worth & Rio Grande (Frisco).
Missouri & Northern Arkansas.
MAP 22
SANTA FE SYSTEM

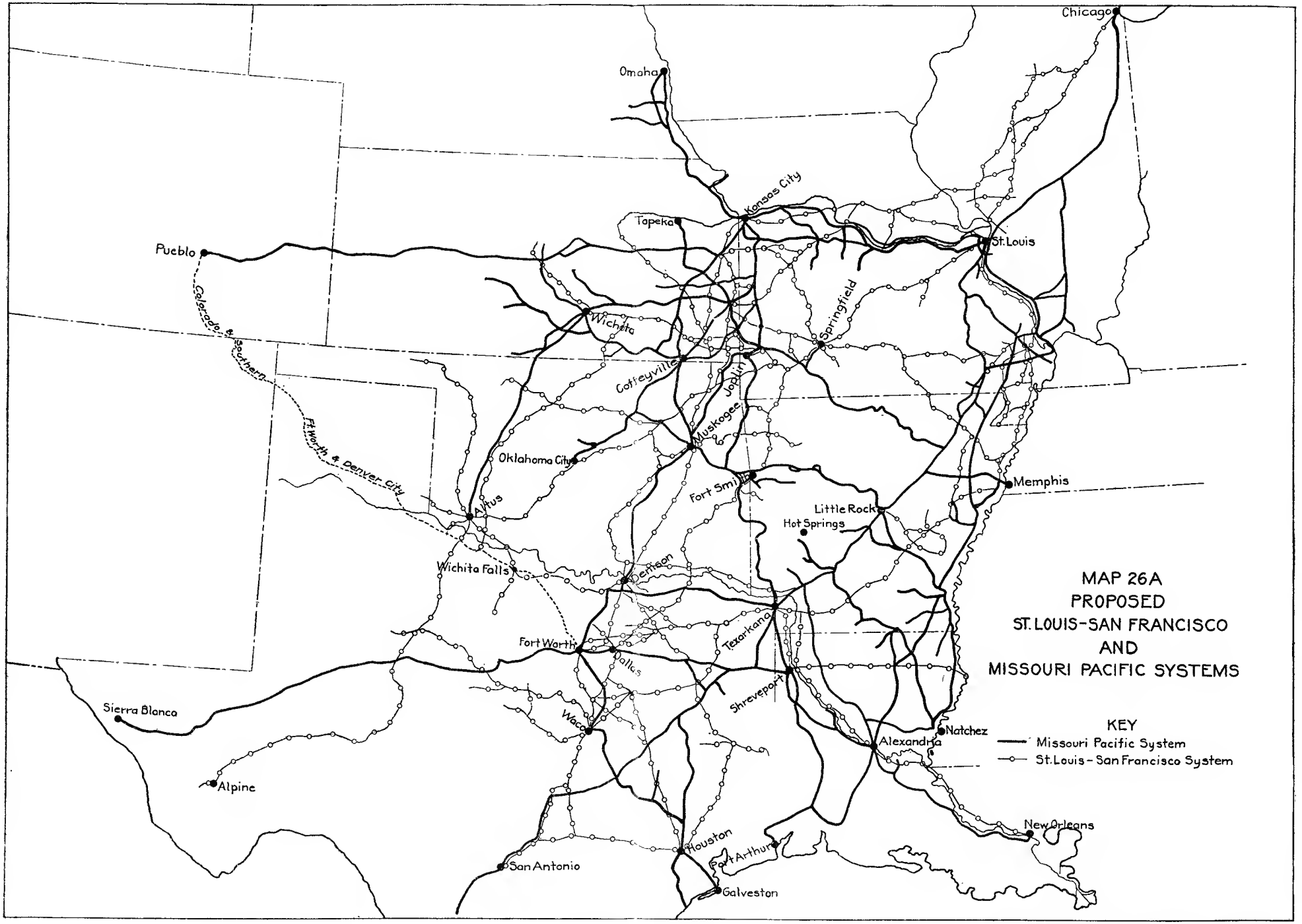

Seattle
Portland
Eugene
Weed
Tehama
Sacramento
San Francisco
Fresno
Los Angeles
Tucson
Guaymas
El Paso
Sa. Pac.
Watertown
St. Paul
Sioux Falls
Chicago
Omaha
Des Moines
Peoria
Burlington
Hastings
Denver
Colorado Springs
Pueblo
Kansas City
St. Louis
Wichita
Illmo.
Dawson
Colorado & Southern System
Tucumcari
Brinkley
Memphis
Little Rock
Paris
Ft. Worth
Shreveport
Vicksburg
New Orleans
Houston
San Antonio
Galveston
Laredo
KEY
Chicago, Rock Island & Pacific.
Southern Pacific.
El Paso & Southwestern.
St Louis Southwestern.
San Antonio & Aransas Pass.
Vicksburg, Shreveport & Pacific
Texas-Mexican.
Midland Valley.
Missouri Pacific.
Texas Midland.
MAP 23
ROCK ISLAND – SOUTHERN PACIFIC SYSTEM

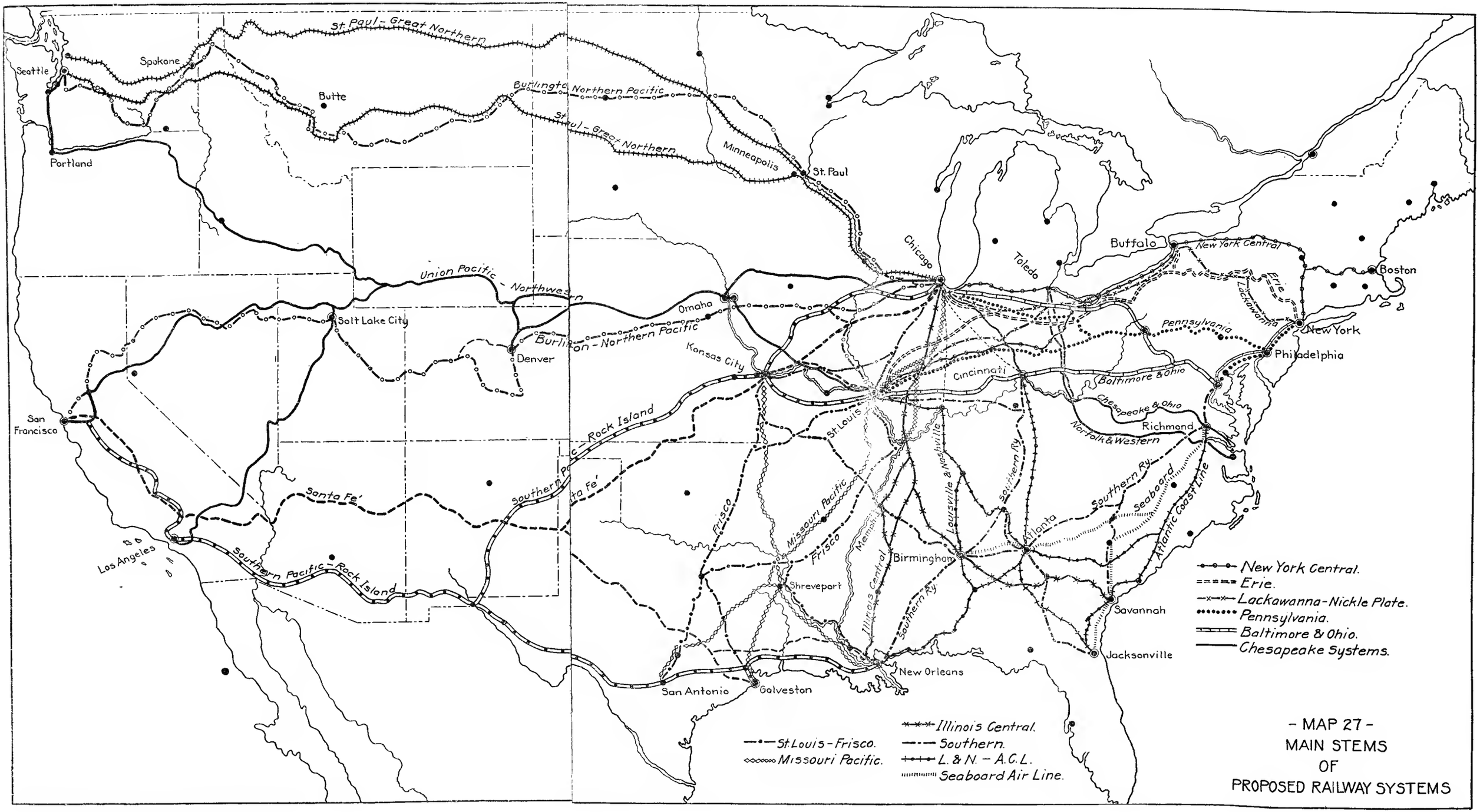

Portland
St. Paul
Chicago
Des Moines
Omaha
Denver
Pueblo
Kansas City
St. Louis
Wichita
San Francisco
Santa Fe
Oklahoma City
Memphis
Los Angeles
Phoenix
Paris
Fort Worth
Shreveport
Vicksburg
El Paso
Waco
Houston
New Orleans
San Antonio
Galveston
KEY
Rock Island–Southern Pacific.
Atchison, Topeka & Santa Fe.
MAP 24
PROPOSED
ROCK ISLAND - SOUTHERN PACIFIC
AND
SANTA FE SYSTEMS


KEY
St. Louis & San Francisco
St. Louis Southwestern.
Missouri, Kansas & Texas.
Kansas City, Mexico & Orient
Chicago & Alton.
Louisiana Ry. & Navigation Co.
Trinity & Brazos Valley
Vicksburg, Shreveport & Pacific
Chicago
Hannibal
Higbee
Kansas City
New Franklin
Mexico
St. Louis
Fort Scott
Springfield
Illmo
Joppa
Forgan
Vinita
Paragould
Guthrie
Oklahoma City
Muskogee
Fort Smith
Memphis
Brinkley
Little Rock
Altus
Atoka
Wichita Falls
Denison
Texarkana
Birmingham
Fort Worth
Dallas
Shreveport
Vicksburg
Waco
Alpine
Houston
San Antonio
Galveston
New Orleans
MAP 25
ST. LOUIS & SAN FRANCISCO SYSTEM
COMPRISING
FRISCO (PART); ST. LOUIS-SOUTHWESTERN
(PART); LA. RY. & NAV. CO.; CHICAGO & ALTON
M. K. & T.; AND K. C. M. & O. (PART)



63763—21. (To face page 660.) No. 26.


Chicago
Omaha
Kansas City
Topeka
St. Louis
Pueblo
Springfield
Wichita
Coffeyville
Joplin
Muskogee
Oklahoma City
Fort Smith
Memphis
Little Rock
Hot Springs
Altus
Wichita Falls
Denison
Texarkana
Fort Worth
Dallas
Shreveport
Waco
Natchez
Alexandria
Sierra Blanca
Alpine
New Orleans
Houston
Fort Arthur
San Antonio
Galveston
Colorado & Southern
Ft. Worth & Denver City
MAP 26A
PROPOSED
ST. LOUIS-SAN FRANCISCO
AND
MISSOURI PACIFIC SYSTEMS
KEY
Missouri Pacific System
St. Louis - San Francisco System



- MAP 27 -
MAIN STEMS
OF
PROPOSED RAILWAY SYSTEMS

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1921

63763—21. (To face page 660.) No. 27.