

Coordination of motor transportation

INTERSTATE COMMERCE COMMISSION

No. 23400

COORDINATION OF MOTOR TRANSPORTATION

Submitted March 2, 1932. Decided April 6, 1932

Upon investigation, found:

1. That transportation by motor vehicles, busses, and trucks, over the public highways is within certain distances and in certain respects a superior service, and that the rail and water lines should be encouraged in the use of this instrumentality of commerce wherever such use will promote more efficient operation or improve the public service;
2. That there is substantial competition between rail and water carriers on the one hand and motor carriers on the other for the transportation of both passengers and freight and that this competition is increasing;
3. That such competition is conducted under conditions of inequality, particularly in regard to regulation;
4. That a contributing cause, aside from the general business conditions, of the present unsatisfactory financial condition of the railroads is the existence of unrestrained competition by rival transportation agencies;
5. That there is to-day, and probably would be under normal conditions, an excess of carrying capacity of existing transportation facilities;
6. That unrestrained competition is an impossible solution of the present transportation problem and is incompatible with the aim of coordination under regulation;
7. That Federal legislation relating to the regulation of motor vehicles operating upon the public highways and engaged in interstate commerce is desirable in the public interest.

Legislation recommended.

A table of contents is set forth in Appendix H.

Albert E. Stephan for Interstate Commerce Commission.
Alfred P. Thom, Alfred P. Thom, jr., and C. S. Duncan for Association of Railway Executives; *Ben B. Cain, Ben B. Cain, jr., E. W. Dozier, Clarence A. Miller, Shirley Seward, and John A. Streyer* for American Short Line Railroad Association; *Robert N. Collyer* for Trunk Line Association; *Walter McFarland, Nye F. Morehouse, P. F. Gault, and O. G. Edwards* for Western Traffic Executives Committee; *J. E. Hannegan* for Southwestern Passenger Association; *David H. Howie* for New England Railroad Committee.

Charles T. Abeles for Seaboard Air Line Railway Company and receivers; *R. W. Barrett and E. H. Burgess* for Lehigh Valley Railroad Company; *J. R. Bell, J. E. Lyons, Paul P. Farrens, Alfred A. Hampson, E. J. Foulds, and R. M. Kerr* for Southern Pacific

Company; *Wm. G. Bierd* and *Guy A. Gladson* for Alton Railroad Company; *Charles H. Blatchford* and *George E. Fogg* for Maine Central Railroad Company; *G. E. Boulineau* for Georgia Highway Transport Company, Atlanta and West Point Rail Road Company, Western Railway of Alabama, and Georgia Railroad; *Clyde Brown*, *Thomas P. Healy*, *L. P. Day*, and *Charles A. Halpin* for New York Central Railroad Company; *L. N. Bradshaw* for Western Pacific Railroad Company, Sacramento Northern Railway, and Tidewater Southern Railway Company; *C. S. Burg*, *Harvey Allen*, *L. M. Stuart*, and *R. Daniels* for Missouri-Kansas-Texas Railroad Company; *F. G. Dorety*, *P. H. Purnham*, and *A. L. James* for Great Northern Railway Company; *W. T. Carroll* for Western Allegheny Railroad Company; *John W. Clark* for Cleveland, Cincinnati, Chicago and St. Louis Railway Company; *Lucian H. Cooke, jr.*, and *C. F. Keeley* for Norfolk and Western Railway Company; *W. A. Cole* for Boston and Maine Railroad; *John F. Connors* and *F. E. Webster* for Chicago and Eastern Illinois Railway Company; *T. M. Cunningham* for Central of Georgia Railway Company, Wrightsville and Tennille Railroad Company, Louisville and Wadley Railroad Company, and others; *W. F. Dickinson* and *Toll R. Ware* for Chicago, Rock Island and Pacific Railway Company; *John Q. Dier* for Colorado and Southern Railway Company; *H. H. Durston* and *Fred L. Wallace* for Fort Worth and Denver City Railway Company and Wichita Valley Railway Company; *C. W. Dynes*, *M. L. Bluhm*, *F. M. Dudley*, and *H. B. Earling* for Chicago, Milwaukee, St. Paul and Pacific Railroad Company; *W. J. Eccles* for Sumpter Valley Railway Company; *William T. Faricy*, *E. L. Pardee*, and *George F. Dames* for Chicago, Saint Paul, Minneapolis and Omaha Railway Company and Wilson Transportation Company; *John F. Finerty* for Brooklyn Eastern District Terminal; *Fitzgerald Hall* and *Earl Roach* for Nashville, Chattanooga & St. Louis Railway; *M. Carter Hall* for Chesapeake and Ohio Railway Company; *George N. Harder* for Escanaba and Lake Superior Railroad Company; *J. E. Harper* for Georgia Highway Transport Company and Georgia Railroad; *Pete Hedgpeth* for Rock Port, Langdon & Northern Railway Company; *C. C. Hine* for Chicago, Indianapolis and Louisville Railway Company; *Harper A. Holt* for Bush Terminal Railroad Company; *R. B. James*, *Walter McFarland*, and *Kenneth F. Burgess* for Chicago, Burlington & Quincy Railroad Company; *L. E. Jeffries*, *L. L. Oliver*, and *E. B. Farrell* for Mobile and Ohio Railroad Company; *L. E. Jeffries*, *L. L. Oliver*, and *L. E. Jenkins* for Southern Railway Company, Mobile and Ohio Railroad Company, and Southeastern Express Company; *George B. King* for Spokane International Railway Company; *W. L. Kinter*, *W. I. Woodcock, jr.*, and

C. T. Wolfe for Reading Company and Reading Transportation Company; *A. H. Kiskaddon* for St. Louis Southwestern Railway Company; *E. D. Kyle, J. F. Dalton,* and *Geo. B. Loyall* for Norfolk Southern Railroad Company; *J. L. Lancaster, J. B. Payne, R. S. Shapard,* and *T. E. Huffman* for Texas and Pacific Railway Company; *O. E. Langer* for Belfast and Moosehead Lake Railroad Company; *H. H. Larimore, George W. Holmes, W. M. Streetman,* and *Thomas T. Railey* for Missouri Pacific Railroad Company; *A. H. Lossow, C. G. Clark,* and *F. A. Waterhouse* for Minneapolis, St. Paul & Sault Ste. Marie Railway Company; *W. H. T. Loyall, John C. Donally,* and *Fred N. Oliver* for Virginian Railway Company; *R. G. Lucas* for Nevada Northern Railway Company; *H. Z. Maxwell* for Pennsylvania Railroad Company; *Frederic D. McCarthy* for Northern Pacific Railway Company; *E. McLean* for Manchester and Oneida Railway Company; *Seward L. Merriam,* and *William R. Seaton* for Pere Marquette Railway Company; *W. W. Meyer* and *B. I. Spock* for New York, New Haven and Hartford Railroad Company, New England Steamship Company, and Hartford and New York Transportation Company; *E. T. Miller, M. G. Roberts,* *John W. Murphy,* and *J. E. Hutchison* for St. Louis-San Francisco Railway Company; *James A. Monahan* for Narragansett Pier Railroad Company; *F. A. Moore* for Fonda, Johnstown and Gloversville Railroad Company; *Frank H. Moore* and *William E. Davis* for Kansas City Southern Railway Company and Texarkana and Fort Smith Railway Company; *Nye F. Morehouse* for Chicago and North Western Railway Company; *F. E. Murphy* for Virginia & Truckee Railway; *H. T. Newcomb, Thomas L. Ennis,* and *J. K. McNeillie* for Delaware and Hudson Railroad Corporation; *John C. Orlowski* for McCloud River Railroad Company; *R. S. Outlaw, Gerald E. Duffy, Berne Levy, W. F. Brooks,* and *H. C. Barron* for Atchison, Topeka & Santa Fe Railway Company; *Roy Pope* for Atlanta, Birmingham and Coast Railroad Company; *V. A. Roane* for Ashley, Drew & Northern Railway Company; *A. P. Rudowsky* for Dardanelle & Russellville Railroad Company; *J. L. Seager* for Delaware, Lackawanna and Western Railroad Company; *J. R. Skillman* for Louisville and Nashville Railroad Company; *Elmer A. Smith* for Illinois Central Railroad Company; *J. M. S. Boyd, E. E. Bennett,* and *A. S. Halsted* for Union Pacific Railroad Company; *Omar C. Spencer* for Spokane, Portland and Seattle Railway Company, Oregon Electric Railway Company, United Railways Company (Portland, Oreg.), and others; *L. H. Strass* for Wabash Railway Company and Ann Arbor Railroad Company; *G. M. Swannstrom* for Minneapolis & St. Louis Railroad Company and receiver; *J. H. Tallichet, F. L. Wallace, R. S. Shepard,* and *C. M.*

Spence for Fort Worth & Denver City Railway Company, Texas & New Orleans Railroad Company, and Texas and Pacific Railway Company; *D. W. Thomas* for Chesapeake Western Railway; *H. B. Thomas* for Central Railroad Company of New Jersey; *Henry Thurtell* for Atlantic Coast Line Railroad Company, Seaboard Air Line Railway Company and receivers, Central of Georgia Railway Company, and others; *W. M. Tiel* for New York, Ontario and Western Railway Company; *D. L. Tilly* for New York Dock Railway; *R. R. Valier* for LaCrosse and Southeastern Railway Company; *Toll R. Ware* for Chicago, Rock Island and Gulf Railway Company; *W. L. White* for Yosemite Valley Railroad Company; *D. Willard, jr.*, *E. C. Kramer*, and *J. D. Marney* for Baltimore and Ohio Railroad Company; *E. Randolph Williams* for Richmond, Fredericksburg and Potomac Railroad Company; *B. F. Woodard* for San Joaquin & Eastern Railroad Company; and *T. R. Woodrow* for Denver and Rio Grande Western Railroad Company.

C. D. Cass and *Adolf K. Barta* for American Electric Railway Association; *Ralph R. Bradley* and *Frederick E. Stout* for Chicago, North Shore and Milwaukee Railroad Company, Chicago, Aurora and Elgin Railroad Company, and Indiana Railroad; *J. H. Burke* for Chicago Tunnel Company and Chicago, Warehouse and Terminal Company; *R. B. Campbell* and *C. M. Morrison* for Arkansas Valley Interurban Railway Company; *C. D. Cass* and *Thomas Conway, jr.*, for Cincinnati & Lake Erie Railroad Company; *C. M. Cheney*, *J. B. Knowles*, and *H. A. Gee* for Waterloo, Cedar Falls and Northern Railway Company; *Harry T. Connolly* and *T. P. Littlepage* for Washington, Baltimore and Annapolis Electric Railroad Company and receiver; *W. G. Fitzpatrick* for Eastern Michigan Railways, Eastern Michigan Toledo Railroad and receiver, Eastern Michigan Motor Buses, and Eastern Michigan Trucking Company; *Horton Holt* for Bush Terminal Railroad Company and Bush Terminal Company; *F. D. Hunt* for Pacific Northwest Public Service Company; *Louis A. Johnson* for West Penn Electric Company, Wheeling Traction Company and receiver, and Potomac Edison Company; *Frank Karr* for Pacific Electric Railway Company; *A. E. Morris* for Texas Electric Railway and receiver; *Harry Rimelspach* and *F. K. Hartzell* for Lake Shore Electric Railway Company; *A. R. Swem* for Cedar Rapids and Iowa City Railway; *W. S. Tuley* for Kansas City, Clay County and St. Joseph Railway Company and receiver; *G. W. Welsh* for East St. Louis & Suburban Railway Company, East St. Louis Railway Company, and Blue Goose Motor Coach Company (Incorporated); and *George D. Yeomans* for South Brooklyn Railway Company.

H. S. Marx, J. H. Mooers, and E. Stern for Railway Express Agency, Incorporated; and *C. B. Williams* for Southeastern Express Company.

William H. Baxter and *C. V. LaFarge* for Puget Sound Navigation Company and Black Ball Freight Service; *Chas. A. Bland* for Long Beach Harbor Commission; *W. H. Callahan* for Norfolk & Washington (D. C.) Steamboat Company; *C. E. Dempsey* for Cleveland & Buffalo Transit Company; *John J. Esch* and *R. W. Woolley* for Colonial Navigation Company, Motor Terminals Company, and Cincinnati Motor Terminals Company; *C. F. Gebelein* for Hudson River Navigation Corporation; *J. C. Gillespie* for Nicholson Universal Steamship Company and Spokane Steamship Company; *J. P. Magill* for Maritime Association of the Port of New York; *Melville J. Mandell* for Port of New York Authority; *Harry Meyering* for Goodrich Transit Company; *Eric William Passmore* for Goodrich-Westports Steamship Company and Wisconsin and Michigan Transportation Company; *R. R. Richards* for Mackinac Transportation Company; and *George C. Wright* for Detroit & Cleveland Navigation Company.

Brice Edwards for Bureau of Agricultural Economics, United States Department of Agriculture; *Thomas H. MacDonald* for Bureau of Public Roads, United States Department of Agriculture; and *Brainerd Taylor* for Motor Transport Branch of Transport Division, Quartermaster Corps, United States Army.

Worth Allen, Otto Bock, Dan S. Jones, and Colin A. Smith for Public Utilities Commission of Colorado; *O. C. Bortzmeier, Hal D. Patton, and H. H. Corey* for Public Service Commission of Oregon; *Robert H. Dunn, R. A. Gorman, and Fred A. Bunnell* for Michigan Public Utilities Commission; *F. W. Matson, A. L. Flinn, and W. E. Hustleby* for Minnesota Railroad and Warehouse Commission; *W. P. Geary* and *E. T. McGettigan* for California Railroad Commission; *W. W. Goodman* for Railroad Commission of South Carolina; *E. D. Grigsby, Arthur L. Stone, and O. L. Browder* for Illinois Commerce Commission; *Fay Harding, E. M. Hendricks, Ben C. Larkin, and Charles F. Martin* for North Dakota Railroad Commission; *Earl Hatcher, Charles D. Shukers, J. W. Scott, and Helen E. Smith* for Kansas Public Service Commission; *Clay S. Henderson* for Railroad Commission of Arkansas; *B. R. Lewis* and *C. R. Lonergan* for Washington Department of Public Works; *Philip H. Porter* for Railroad Commission of Wisconsin; *R. E. Powell* for Nebraska State Railway Commission; *Herbert Qualls* for Tennessee Railroad & Public Utilities Commission; *C. V. Terrell* and *Lon A. Smith* for Railroad Commission of Texas; *Paul A. Walker* for Corporation Commission of Oklahoma; and *Fred P. Woodruff, J. H. Henderson, W. F. Parsons,*

and *Stephen Robinson* for Iowa Board of Railroad Commissioners; *John F. Benton* and *Clyde S. Bailey* for National Association of Railroad and Utility Commissioners.

Earl A. Bagby for Motor Carriers Association of California and Pacific Greyhound Lines; *H. E. Barber* for Egyptian Transportation system; *Jack Berman* for Service Stages, Incorporated; *Charles H. Blatchford* for Samoset Company; *J. W. Blood*, *D. E. Sauder*, and *A. H. Hall* for Southern Kansas Stage Lines Company; *Boutelle, Bowen & Flanagan* for Northland Greyhound Lines, Incorporated, and *Murphy Motor Freight Lines, Incorporated*; *Ivan Bowen* and *M. F. Lennon* for Greyhound Lines of Illinois; *Ivan Bowen* and *W. J. Gilwee* for Pickwick Greyhound Lines, Incorporated; *Preston Copell* for Dixie Highway Motor Service, Incorporated; *N. B. Dial* for Eastern Public Service Corporation; *Cyrus Erickson* and *J. G. Lynch* for Northern Transit Company; *Clarke McConnell* for Great Eastern Stages, Incorporated; *William M. Nevin* for Nevin Bus Lines, Incorporated; *C. W. Stocks* for Bus Transportation; *Bernard Wahle* for Southeastern Greyhound Lines; *Hance H. Cleland* for Motor Coach Association of Washington, North Coast Transportation Company, and Index Stages, Incorporated; *John M. Meighan* for National Association of Motor Bus Operators; *Chester G. Moore* for Illinois Bus Association; and *E. H. Thomas* for Motor Coach Association of Washington.

H. H. Allen for Red Star Transit Company; *R. A. Anderson* for Anderson Motor Service Company; *William S. Barranco* for Liberty Trucking Company; *Louis L. Beck* for Truck Terminal Company of St. Louis, Incorporated; *H. J. Bischoff* for Southern California Freight Lines, Limited, and Desert Express, Incorporated; *Rex W. Boston* for Motor Transportation Association of California, Asbury Truck Company, Belyea Truck Company, and Lang Transportation Company; *J. L. Bracklin* for Seattle Auto Freight Depot; *R. L. Brasfield* for Memphis Forwarding Company; *L. H. Corey* for New England Transportation Company; *A. L. Felder* and *G. W. Weathers* for Bowman Transportation Company; *Byron E. Finley* for Bryant Truck Lines; *Clarence L. Finot* for Finot Transfer Company, Incorporated; *H. H. Hiland* for Interstate Trucking Company; *W. H. Hogan* for Hogan Motor Service; *Ewald E. Kundtz* for Motor Express, Incorporated; *C. B. Ladd* for Golden Gate Motor Transport Company; *Frank A. McCarthy* for Keeshin Motor Express Company; *H. C. Mims* for Piedmont Motor Express, Incorporated; *Perry R. Moore* for Raymond Brothers Motor Transportation, Incorporated, and Ottertail Truck Lines, Incorporated; *Walter Mullady* for Decatur Cartage Company; *E. C. Richmond* for Furniture Corporation of America,

Harkins Transportation Company, Portland-Astoria-Seaside Auto Freight Company, and North Beach-Astoria Transit Company; *James R. Riley* for Suburban Motor Freight, Incorporated, and Columbus-Detroit Motor Freight; *H. L. Spring* for Georgia Highway Express, Incorporated; *Lawrence E. Stone* for White Line Transfer & Storage Company and White Line Motor Freight Company; *Samuel J. Townsend* for Baier Transfer & Storage Company; *Maurice Tucker* for Tucker Freight Line, Incorporated; *O. W. Verkler* for Peoria Cartage Company; *Charles H. Vincent* for Service Lines, Incorporated; *W. H. Walter* for Central Transfer Company; *Thomas F. Barry* for The Merchant Truckmen's Bureau; *R. H. Culbertson* and *James P. Neal* for Washington Motor Freight Association; *H. E. Engel* for association of Team & Truck Owners; *Harold W. Felton* for Nebraska Motor Transport Association; *Mike J. Galvin* for Chicago Truck Drivers & Chauffeurs' Union, Local 705; *J. H. Gilbody* for Master Truckmen's Association, Incorporated; *W. T. Grund* for National Team & Motor Truck Owners Association; *Joseph H. Hays* for Iowa Truckers Association; *Melvin D. Hildreth* for Motorized Circuses of the United States; *Phil Jacobson* for Motor Freight Carriers Association and Los Angeles & Phoenix Express; *H. C. Kelting* for Motor Truck Club of Kentucky, Incorporated, and Central Truck Depot, Incorporated; *J. D. Landis* for Ohio Truck Owners Association; *James P. Logan* and *Jack Garrett Scott* for Colorado Transfer & Warehousemen's Association and Motor Truck Common Carriers Association; *Robert Matthews* for Missouri Truckmen's Association, Incorporated; *Ira S. Nelson* for Expressmen's League; *Theodore Pratt* for Interstate Motor Carriers Association, Incorporated, and Motor Truck Association of America, Incorporated; *Frank H. Rawlings* for Texas Truck Owners Association, Sproles Motor Freight Lines, and Merchants Fast Motor Lines; *Frank C. Schmidt* and *E. J. Shover* for Ohio Association of Commercial Haulers; *David G. Shearer* and *C. S. McLenegan* for California Interurban Motor Transportation Association; *Charles J. Shelton* for Oregon Motor Freight Association, Incorporated; *Harold S. Shertz* for Interstate Motor Carriers' Association; *Tom Snyder* for Warehouse Distributing Corporation, Central Union Truck Terminal, and Motor Truck Association of Indiana, Incorporated; *Wallace H. Walker* for Motor Truck Club of Massachusetts, Incorporated; and *Warren E. Wright* for Central Motor Freight Association.

Luther M. Walter, *Nuel D. Belnap*, *John S. Burchmore*, and *C. E. Childe*, for National Industrial Traffic League; *Frank Brenckman* for National Grange; and *J. H. Lawrence* for Northwestern Cooperative Livestock Shippers' Association.

Donald R. Richberg for Railway Labor Executives Association, Brotherhood of Locomotive Engineers, Order of Railway Conductors, Brotherhood of Locomotive Firemen and Enginemen, Brotherhood of Railroad Trainmen, and Switchmen's Union of North America.

W. M. Clark for Order of Railway Conductors; and *J. A. Farguharson* for Chief Executives' Association of the Standard Railroad Labor Organizations.

Frank H. Baer for Cleveland Chamber of Commerce; *H. R. Brashear* for Los Angeles Chamber of Commerce; *LaRue Brown*, *Stuart N. Scott*, *T. R. Dahl*, *J. S. Marvin*, *R. S. Armstrong*, *Edward F. Loomis*, *K. A. Moore*, and *F. L. Starck* for National Automobile Chamber of Commerce; *G. C. Campbell* for Oshkosh Chamber of Commerce; *W. H. Chandler* for Merchants Association of New York Shippers' Conference of Greater New York, and Chain Store Traffic League of New York; *D. A. Cole* and *P. W. Coyle* for St. Louis Chamber of Commerce; *C. C. Crouse* for Des Moines Chamber of Commerce; *W. A. Curtin*, *William B. Adams*, and *William C. McCulloch* for Portland Traffic & Transportation Association and Portland Industrial Traffic Club; *John R. Davy* for Association of Commerce of Sheboygan, Wis.; *W. H. Day* and *Edward L. Hefron* for Boston Chamber of Commerce; *C. J. Fagg* for Newark, N. J., Chamber of Commerce; *A. H. Ferguson* for New Bedford Board of Commerce; *J. P. Haynes*, *C. E. Hochstedler*, *A. H. Schwiertert*, and *C. W. Stadell* for Chicago Association of Commerce; *Edward L. Hefron* and *C. L. Eyanson* for New England Traffic League and Boston Chamber of Commerce; *John J. Hickey* for Manufacturers' Association of Connecticut; *Joseph H. Lane* for Worcester Chamber of Commerce; *R. J. Laubenstein* for Green Bay Association of Commerce; *F. A. Leffingwell* for Texas Industrial Traffic League; *Charles A. Liggett* and *Herman Mueller* for St. Paul Association of Commerce; *L. E. Luth* for Winona Association of Commerce; *L. G. Macomber* and *L. V. Simms* for Detroit Board of Commerce; *L. S. McIntyre* and *S. J. Wettrick* for Seattle Chamber of Commerce; *P. W. Moore* for Queensboro Chamber of Commerce; *Edgar Moulton* for New Orleans Joint Traffic Bureau; *C. S. Nelson* for Merchants' Association of New York; *C. F. Real* for Chamber of Commerce of Topeka, Kans.; *Charles R. Seal* for Baltimore Association of Commerce; *J. H. Tedrow* for the Chamber of Commerce of Kansas City, Mo.; *Clara B. Tefft* for Toledo Chamber of Commerce; *A. C. Welsh* for Brooklyn Chamber of Commerce; *Edwin G. Wilcox* for Oakland Chamber of Commerce; *F. P. Willette* for Chamber of Commerce, Atchison, Kan., and *Fred E. Young* for South Bend, Ind., Chamber of Commerce.

W. E. Aebischer, *T. R. Phillips*, and *L. Z. Whitbeck* for Great Atlantic & Pacific Tea Company; *George T. Bell* for United States Trading Corporation; *Charles D. Blaine* for Iten Biscuit Company; *C. T. Bradford* for International Harvester Company; *M. K. Butler*, *H. M. Frazer*, *George R. Gonseth*, *L. B. Hamlin*, *S. C. Hunter*, and *Rollins White* for F. W. Woolworth Company; *George D. Cron* for Chevrolet Motor Company of California; *J. C. Cross* for Skinner Manufacturing Company; *T. R. Dahl* for White Motor Company; *M. M. Emmert* for Coca-Cola Company; *J. E. Farrow* for Brown Cracker & Candy Company; *Philip B. Fisher* and *J. J. Shuman* for Scudder, Stevens & Clark; *George F. Hichborn* for United States Rubber Company; *R. L. Holmes* for Southwestern Milling Company, Incorporated; *Spencer E. Hughes* for McLelland Stores Company and Chain Store Traffic League; *L. A. Keck* for M. K. Goetz Brewing Company and Goetz Sales Company; *G. F. Lavender* for Trimble Brothers Company; *William M. B. Lord* for York Utilities Company; *T. A. L. Loretz* for Consolidated Steel Corporation, Limited, and Los Angeles Traffic Managers Conference; *Irving F. Lyons* for California Packing Corporation; *T. W. Mackey* for Western Shade Cloth Company; *M. F. McCarty* for St. Louis Auto Dealers Association; *George R. Nuzum* for American Printing Company, J. B. Winward & Son, Green Brothers, Incorporated, and Green's, Incorporated; *Rudolph J. Olson* for Fred Olson & Son; *F. G. Robinson* for Lone Star Gas Company and Community Natural Gas Company; *J. Schatt* for United Paperboard Company; *E. B. Smith* for Sperry Flour Company; *J. J. Stack* for Remington Arms Company, Incorporated; *W. G. Stone* for Thomson-Diggs Company and Sacramento Wholesalers & Manufacturers Association; *Jess J. Williams* for Olds & Whipple, Incorporated; *John H. Williams* for Associated Dry Goods Corporation; and *R. A. Wodehouse* for Schulte-United, Incorporated.

F. F. Ball for Board of Public Utilities, City of Los Angeles; *Henry R. Bloss* for Illinois Manufacturers Association; *Louis Cohen* for National Poultry and Refrigerator Express; *H. A. Davis* for Boston Wool Trade Association; *Fayette B. Dow*, *Willis Crane*, and *E. H. Porter* for American Petroleum Institute, National Petroleum Association, and Western Petroleum Refiners Association; *Francis Dowd* and *James H. McCann* for Associated Industries of Massachusetts; *Herbert L. Fairfield* for Hearst's Newspapers; *H. E. Fairweather* for Fort Wayne Traffic Bureau; *John V. Hoey* for Textile Converters Association; *Martin Korb* for Pictorial Review Company and group of New York publishers; *William J. Mathey* for American Newspaper Publishers' Association, Publishers Association of New York City, and Shippers' Conference of Greater New York;

W. R. Moore for Eastern Confectioners Traffic Bureau; *R. S. Sawyer* for Associated Jobbers and Manufacturers Association of Los Angeles, Calif.; and *J. R. Van Arnum* for National League of Commission Merchants.

John R. Bingaman, Frank A. Britton, E. Smyth Gambrell, and F. C. Horner for themselves.

REPORT OF THE COMMISSION

BRAINERD, Commissioner:

This proceeding is an investigation undertaken for the purpose of securing needed information in regard to transportation by motor vehicles, the extent and character thereof, its relation to interstate commerce and particularly to transportation by railroad, and the extent of existing coordinated service, with consideration of further coordination; and for the purpose of determining the necessity, if any, for legislation regulating interstate transportation by motor vehicles, particularly trucks, and for coordinating the several agencies of transportation. All rail and water carriers subject to the interstate commerce act were made respondents.

As a preliminary to public hearings, we served a questionnaire on all respondents, which developed statistical information as to corporate and financial relationships between respondents and motor carriers, extent of their motor bus and motor truck operations, methods of filing and publishing rates, accounting methods, extent of intrastate regulation, and miscellaneous items. Summaries of the results of this questionnaire are contained in Appendix A.

Public hearings were begun at St. Louis November 17, 1930, and thereafter held at other convenient points.¹ At these hearings testimony was given by many witnesses, including Federal and State officials, steam and electric railroad executives, representatives of water lines, operators of motor busses and motor trucks, and representatives of associations of such operators, and of manufacturers and shippers, chambers of commerce, traffic associations, labor organizations, and the automotive industry. The Departments of Agriculture, Commerce, and War and the State commissions have cooperated with us in this investigation. On January 5, 1932, a tentative report,² proposed by one of our examiners, was served. Exceptions to this report, principally to the recommendations, were filed by various parties. The case was argued on March 1 and 2, 1932, and thereupon submitted for consideration. Certain of our conclusions differ from those proposed by the examiner.

¹ Kansas City, Mo., Dallas, Tex., New Orleans, La., Atlanta, Ga., Detroit, Mich., Boston, Mass., New York, N. Y., Chicago, Ill., St. Paul, Minn., Seattle, Wash., Portland, Oreg., San Francisco, Calif., Los Angeles, Calif., Denver, Colo., Omaha, Nebr., and Washington, D. C.

² This report was printed as Senate Document No. 48, Seventy-second Congress, first session.

It should be remembered that the problem with which we are here concerned is essentially an economic one; legislation and regulation are involved but only indirectly. The primary purpose sought is the more effectual coordination of rail, water, and motor transportation. The purpose of the inquiry and the economic problem involved are clearly outlined by counsel appearing for one of the respondents, as follows:

“ * * * Coordination of ” and not “ competition between ” rail and highway transportation is the primary theme of the inquiry. True, competition is involved, but only incidentally. It is admitted by all, we presume, that most traffic now moving by motor vehicle would, in the absence of the motor vehicle, be moved by rail if it moved at all. There is extensive evidence of record showing the effect motor vehicle transportation has had on the traffic and revenue of the railroads. But the essential purpose of this inquiry is constructive, and, as we take it, its aim is not so much to discover a means for the elimination of this competition between the old and the new form of transportation as it is to learn how the old form and the new form can best and lawfully be fitted into the general transportation scheme so that each may serve the public within its most economic sphere.

The process, as we see it, is essentially an economic one, and not a legislative or regulative one. Legislation and regulation may be, and we believe will be, to a certain extent helpful, but legislation and regulation should be availed of only to assist in the proper development of the economic process; not to protect or restrict unduly either form of transportation.

* * * the record contains recommendations and views even of those purporting to have a common cause, which combined together are difficult to reconcile. This result, however, is probably a necessary incident to the very nature of the diverse conditions earlier referred to as well as to the rather gradual realization of the true import of this proceeding, and while rendering more difficult the task of compiling the findings and report in this proceeding, make it all the more necessary for us to view the problem as broadly as possible, but limited as we are by our own experience. * * *

I. THE MOTOR TRANSPORT INDUSTRY

The past decade has witnessed the coming of a new transportation agency which has striven to find its place in the transportation field and to establish itself on a permanent basis of earning power in competition with rail and water lines. This agency has created difficult problems for the other carriers in the way of modernization of service and of adjustment to a changing and, as to many classes of traffic, a declining volume of business. It has also created problems for the public, which has been called upon to provide highway facilities, to choose between new and old forms of service, and to adjust the burden of maintaining an adequate railroad transportation system.

Operators over the highway may be classified according as they transport freight or passengers. In the case of freight service there are three major types, the common carrier, the contract (or private)

carrier for hire, and the private operator of his own trucks solely for his own goods. In the case of passenger service operators may be classified as common carriers over regular routes, and carriers engaged in miscellaneous services, such as school, sight-seeing, and charter party. Both truck and bus operators often engage in more than one type of service.

Extent of highway trucking operations.—Full information as to the highway-freight industry is not available. The number of trucks in all classes of service increased from 85,600 in 1914 to 1,006,082 in 1920, to 2,764,222 in 1926, and to 3,480,939 in 1930. A very large proportion of these vehicles are used in strictly urban and suburban activities or are farm owned.³ The number of trucks engaged in either commercial or private hauling over the highways is not definitely known and there are no comprehensive figures as to the volume of freight carried or the revenue derived therefrom.

We have carefully examined existing estimates of the volume of truck traffic and have made additional estimates as set forth in Appendix B. It is concluded that in 1929 the volume of highway trucking, expressed in ton-miles,⁴ was approximately 6 per cent of the volume of steam-railroad traffic⁵ and approximately 4 per cent of the volume of all inland traffic—rail, water, pipe line, and highway. In terms of revenue, these percentages may run a third to a half higher, becoming approximately 8 and 6 per cent, respectively. We have also estimated, as explained in Appendix B, that nearly 20 per cent of all truck traffic is interstate traffic. Applying this finding to the ratio of truck to total traffic, it is concluded that approximately 0.8 per cent of all inland traffic in 1929 was interstate truck traffic. While all forms of transportation have felt the effects of general business conditions, known developments in the trucking field in the past two years indicate that the percentage of truck traffic is greater to-day than in 1929. The figures given indicate, however, the general size of the industry.

It is estimated in Appendix B that nearly 20 per cent of the truck traffic, in terms of ton-miles, is handled by common-carrier trucks, 30 per cent by bona fide contract carriers and 50 per cent by private operators. This conclusion may overstate the importance of private operators and understate that of contract carriers.

The accompanying chart shows the ratio of truck to rail and to all inland traffic, the distribution of truck traffic in terms of ton-miles by class of operator, and between State and interstate movements.

³ In 1929 farm-owned trucks numbered 767,000.

⁴ Ton-miles equal the product of tons carried and the distance moved.

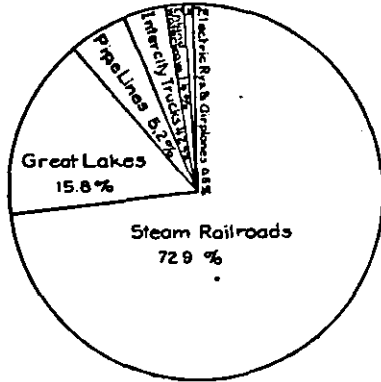
⁵ This figure does not, of course, measure the diversion of traffic from rail to highways, as motor service has created traffic as well as taken it from the railroads.

CHART NO. 1

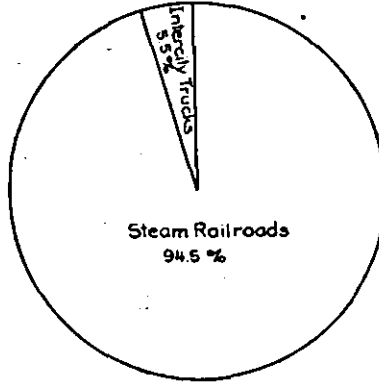
IMPORTANCE AND DISTRIBUTION OF TRUCK TRAFFIC, 1929.

(All items in terms of ton-miles)

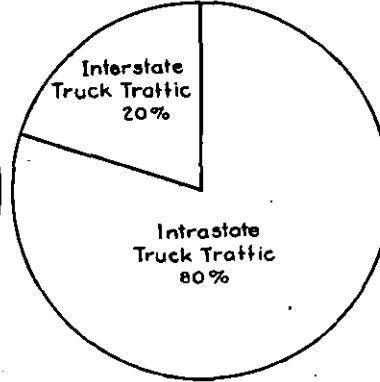
DISTRIBUTION OF INLAND TRAFFIC



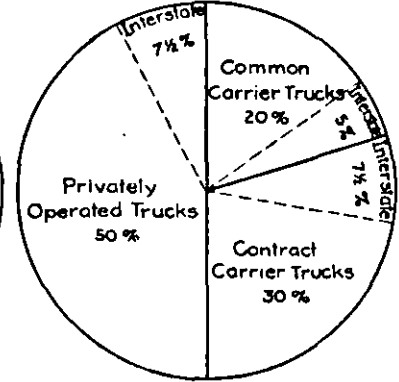
RATIO OF RAILROAD & TRUCK TRAFFIC



RATIO OF STATE & INTERSTATE TRUCK TRAFFIC



TRUCK TRAFFIC BY CLASS OF OPERATOR



The importance of truck traffic is not measured solely by its volume. The influence it exerts over railroad rates is probably equal in importance to the revenue effects of actual traffic diversions.

Organization of the trucking industry.—Highway trucking is organized on the basis of a large proportion of small and medium-sized operators and a small number of large ones.⁶ There are none of a size or territorial extent comparable with that of the largest bus operators, as discussed below. The tendency toward consolidation is far less noticeable in the case of truck than of bus lines.

The great volume of highway trucking is between the important centers of population and along routes which substantially parallel the routes of the railroads. In many instances, however, highway routes are shorter than those by rail. Large operators serve the more important routes and do not themselves perform extensive feeding or distributing operations. Smaller operators overlap these routes and also serve the less important points, which may or may not have rail service.⁷

Arrangements for the handling of interline business have been gradually developed by common-carrier motor operators. Such arrangements have been more fully and satisfactorily worked out in some sections, as on the north Pacific coast, than elsewhere. In many instances use is made of union truck depots, which also serve as clearing houses for collecting and "matching" inbound and outbound loads. In certain instances motor carriers join in published through rates. For traffic moving considerable distances, motor carriers also work in conjunction with freight forwarding companies.

There is a less extensive organization of State associations of truck than of bus operators, and no national association.

Included among truck operators who classify themselves as contract carriers are some who have been engaged in city and intercity trucking for a great many years and who have a regular line of

⁶ Thus of the 1,355 operators reporting in the State of Ohio in 1929, 66 per cent transported less than 1,000 tons each, 25.5 per cent from 1,000 to 5,000 tons, 7 per cent from 5,000 to 20,000, and 1.5 per cent over 20,000 tons. In this last group are two carrying over 50,000 tons and four carrying over 75,000 tons. In some cases the data may not cover a full year's operation. In Oregon the average size is greater, but only 4.2 per cent of the permit holders carried over 20,000 tons in 1930, including one carrying in excess of 75,000 tons. Only four carriers operated over 50 vehicles, while in Ohio four had 30 or more vehicles, two had 40 or more, one, 75 or more, and three, 100 or more. All of the foregoing data relate solely to common and contract operators. There are, of course, large fleets of trucks privately operated, in some cases running into the thousands, but a large part of these vehicles are used in urban and suburban service. Any generalization as to the size of contract operations is difficult from the data at hand. Some such operations are of considerable magnitude.

⁷ In *Motor Bus and Motor Truck Operation*, 140 I. C. C. 685, 718, it was stated that 45,000 of the approximately 125,000 communities of appreciable size either have no rail service or lack a freight station. Some 10 per cent of the population is found in such communities.

customers whom they serve with general or special equipment. Frequently the number of customers served is very extensive. One such operator in New England stated that he had contracts for doing all of the trucking of 60 concerns. Others have a limited clientele and specialize on certain types of traffic. Still others haul for a small number on the outbound trip and take any traffic offered as a return load, and others hold themselves out for general traffic in either direction.

Included among private operators are concerns such as packers, manufacturers, chain stores, and farmers, though contract carriers are also used by these. A large volume of traffic is handled by migratory and peddler operators who generally specialize on particular commodities, as fruit or cotton, going from place to place as the season advances or as business offers. They may buy direct from the producer for movement to wholesalers or retailers, or for local peddling, or they may transport for others. Cotton, for example, is generally trucked for the shipper, whereas fruits and vegetables are extensively peddled by truckmen-merchants. The rates charged by such operators are without a definite basis. Where the operation is of the peddler type, the transportation charge is incidental to the marketing of the produce.

Extent of highway bus operations.—The total number of busses on January 1, 1931, has been variously estimated as from 92,000 to 95,000 and as 98,900 on January 1, 1932. The marked increase in the number of busses which occurred between 1921 and 1926 was succeeded by a more moderate increase in the ensuing five years.

These totals, however, include busses used in city and school and other nonrevenue service. The following table traces the growth in the number of revenue busses in the past five years:

TABLE I.—Number of revenue busses, 1927-1931¹

Use	1927	1928	1929	1930	1931
Intrastate:					
City.....	(?)	(?)	12,750	13,350	14,050
Intercity.....	(?)	(?)	21,150	23,550	22,750
Total.....	30,600	33,150	33,900	36,000	36,800
Interstate.....	3,200	3,750	6,000	5,000	5,800
Sight-seeing and irregular for hire.....	2,750	2,750	2,750	2,750	3,000
Total.....	36,550	39,650	42,650	44,600	45,400

¹ From Bus Transportation. The figures are as of Dec 31 of the years indicated or Jan. 1 of the year following.

² Separate figures not available.

³ Includes about 4,000 school busses used part time in common-carrier service.

On December 31, 1931, there were, therefore, 28,350 busses engaged in intercity revenue service, plus an unknown number of the busses used in sightseeing and charter services. The number of in-

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terstate busses nearly doubled from 1927 to 1929, declined in 1930, and recovered a part of the loss in 1931. The number of intercity busses used in intrastate service declined slightly during 1931. However, there was an increase of 16 per cent in the seating capacity of busses constructed between 1927 and 1931.

The following table shows the volume of business done by intercity busses, other than those used in sightseeing and charter service, in the years 1926 to 1930:

TABLE II.—Volume of service rendered by intercity revenue busses, 1926-1930¹

Item	1926	1927	1928	1929	1930
Passengers carried (millions).....	377	403	440	497	504
Gross revenue (millions of dollars).....	205	227	255	285	290
Bus miles (millions).....	1,077	1,167	1,320	1,342	1,384

¹ Figures of National Association of Motor Bus Operators. The corresponding estimates of "bus transportation" are as follows: Passengers carried (in millions), 1928, 321; 1929, 422; 1930, 428; 1931, 395; gross revenue (in millions of dollars), 1928, 173; 1929, 201; 1930, 205; 1931, 191. An estimate of passenger-miles, also available from this source, is as follows (in millions): 1926, 4,375; 1927, 4,900; 1928, 5,535; 1929, 6,797; 1930, 7,080; 1931, 6,725.

The steam railroads in 1926 carried 875 million passengers and, in 1930, 708 million; passenger revenue was 1,049 million dollars in the earlier year and 731 million dollars in 1930; passenger-miles were 35.7 billion in 1926 and 26.9 billion in 1930. If the higher set of estimates of motor-bus operations is used, it follows that busses carried 43.2 per cent as many passengers as did the railroads in 1926 and 71.5 per cent as many in 1930. The average journey per rail passenger is considerably greater than that of the average journey per bus passenger. Bus revenue in 1926 was only 19.5 per cent of rail-passenger revenue, though it increased to 39.7 per cent of the rail figure in 1930. In terms of passenger-miles² the intercity busses performed 12.3 per cent as much service in 1926 as did the railroads and 26.3 per cent as much in 1930.

According to an estimate explained in Appendix B, 20 to 25 per cent of all intercity bus passenger-miles are interstate.

All bus service is not competitive with rail service. It is estimated later that 20 to 30 per cent of the loss of rail traffic is attributable to bus competition. The remarkable expansion of private-car ownership in the past decade largely accounts for the remainder. Registrations of such cars increased from about 460,000 in 1910 to 8,225,000 in 1920 and then to 23,000,000 at the close of 1930.

Organization of the bus industry.—The intercity bus industry is one of a few large units and many medium-sized and small ones, despite the operation of forces which have led to the consolidation.

² Using the only available estimates, those of Bus Transportation.

of small units into larger ones.⁹ A few companies serve major sections of the country and in one instance there is practically a nationwide organization.¹⁰ The fact that the number of busses per company increased from 5.6 in 1929 to 6.3 in 1930 and 7.4 in 1931 is illustrative of both the process of consolidation and the small average size of bus operations to-day. At the close of 1931, 24 companies in intercity service had 100 or more busses each. These companies do a large part of the aggregate business because their lines reach the important centers of population and traverse the important routes of travel. The smaller companies provide service over routes which in part overlap those of the larger companies; they also render service to suburban points, to points without rail service, and to points with rail service which are not on the routes of the large operators. Many of the small operators use private cars or converted equipment rather than standard makes of busses. Thus of the 637 busses operated in certain Western and Southwestern States in competition with the Chicago, Rock Island and Pacific Railroad, 71 or 11.1 per cent have a seating capacity of from 4 to 7 passengers, and 59 or 9.3 per cent have a seating capacity of from 8 to 12 passengers. Of the busses in intercity service on January 1, 1931, in the country at large, 11 per cent were classed as touring cars.

As the industry has developed and gained in experience, arrangements for through business, such as union bus depots and connecting schedules, have been worked out, though more fully and satisfactorily in some sections than in others. In some instances settlements between operators are still attended with friction and distrust, while such practices as "in lieuing"¹¹ subject the traveler to inconvenience and uncertainty. With the development of long-haul motor transportation of passengers there has grown up in many cities the practice of selling transportation by agencies which do not represent any regular bus line. The practices of these agencies have given rise to

⁹ Thus, of the 234 holders of certificates for motor-bus operation in Ohio in 1929, only 38 or 16.2 per cent had operating revenues in excess of \$100,000 and of these only three had revenue in excess of \$1,000,000. The largest operator had a revenue of \$4,300,000. Some 27 companies or 11.5 per cent had revenues of from \$50,000 to \$100,000, 78 or 33.3 per cent had revenues of from \$10,000 to \$50,000, and 91 or 38.9 per cent had revenues of less than \$10,000. In some instances these amounts may not be for a full year's operation.

Of the 46 operators holding intrastate and interstate permits from the State of Oregon in 1930, 8 or 17.4 per cent are reported to have carried 1,000 or fewer passengers during the year, 10 or 41.3 per cent from 1,000 to 5,000, 10 or 21.7 per cent from 5,000 to 50,000, and 9 or 19.6 per cent over 50,000. Of the last group 2 carried between 500,000 and 1,000,000 passengers in this year, 1 1,412,000 and 1 6,390,000.

¹⁰ See Appendix D, showing the units of the Greyhound Corporation bus system.

¹¹ That is, where coupons are not provided at point of origin for all portions of route, subsequent operators substitute their own tickets in lieu of the one held by the traveler.

many of the complaints registered by interstate bus passengers. The agencies advertise rates appreciably less than the fares of regular bus lines and then make arrangements with irregular operators, frequently the owners of private automobiles, to transport the passengers, the agency retaining a per cent of the fare collected as commission. The regulatory situation described in a later section has increased the difficulties of effecting satisfactory and stable interline arrangements.

In over half of the States bus operators have organized associations for the consideration of common problems. There is also a national association of bus operators.

As hitherto indicated, the great bulk of intercity revenue bus operations are conducted on a common-carrier basis. Charter service is a relatively minor factor. The general requirement of certificates for intrastate operations has lent a degree of stability to the bus industry. However, in 1925, the Supreme Court in *Buck v. Kykendall*, 267 U. S. 307, held that the States could not deny to interstate operators a permit to do an interstate business, and since that time the efforts of the States to regulate interstate transportation have necessarily been confined largely to police regulations. The extent of intrastate regulation is set forth below.

Financial responsibility of highway operators.—There is a considerable degree of financial irresponsibility present in the highway trucking industry owing to the small scale of most motor-truck operations, the ease of entering the industry, including the purchase of new or secondhand equipment with small down payments, the frequent lack of experience and knowledge of costs, and the presence of operators of the so-called wildcat or fly-by-night type. This is particularly true in the case of interstate and contract operators, who are not subject to as adequate control with respect to the provision of insurance as are common carriers generally, in most of the States. An offsetting consideration is the fact that interstate operators tend to be larger than intrastate, coupled with the fact that the larger the operator the greater the degree of responsibility.

There has, however, been marked improvement over earlier conditions. Many shippers testified that they were satisfied with the financial responsibility of truck operators and with their ability and willingness to observe the terms of contracts, but these shippers also stated that they carefully investigated the financial standing of operators before employing them. Some shippers carry their own insurance on goods in transit and some testified that they do not ship commodities of high value because of the risk of loss and the lower degree of responsibility of truck companies than of railway or express companies. Instances were cited in which operators avoided

the payment of loss and damage claims or did not return C. O. D. money or meet their bills, and instances in which drivers confiscated goods for wages owing to them.

Bus operators in keeping with their larger average size, the greater degree of regulation to which they are subject, and the nature of the business, show a greater degree of financial responsibility than do truck operators as a class. The present State requirements as to the carrying of insurance are more adequate. For example, insurance of all kinds is said to cost the Greyhound lines about 2 cents per bus-mile. The States have, however, found it difficult to apply the insurance provisions to interstate carriers, with the result that some of these lack full responsibility in the event of accidents and other contingencies. There are instances in which such carriers leave passengers stranded en route and in which interline arrangements are not satisfactorily conducted. While the greater portion of the intercity passenger business to-day is done by companies with a reasonable degree of responsibility, there are other operators who are sufficiently lacking in financial responsibility to constitute a real hazard.

Permanence of service.—Operators in an industry which is so easily entered and which uses a public highway lack the permanency required of railways. Such operators may abandon unprofitable service and enter more promising fields without the disastrous financial results which follow abandonment of the private rights of way owned by railroads. Under present conditions, highway operations distinctly lack the stability which characterizes rail service and which has been so important a factor in determining the location of industries and residences.

Maintenance of schedules.—Failure to maintain schedules is a threefold question according as it relates (1) to ability to operate under all weather conditions; (2) to maintain schedules en route and to destination; and (3) to the willingness of the operator to maintain schedules regardless of the volume of traffic offered at the time of departure. So far as trucks are concerned, these questions arise primarily in the case of common carriers. The nature of the business of contract carriers is such that the States do not require the maintenance of schedules.

There has been a marked improvement in ability to maintain schedules in the first and second aspects. The equipment is better and highways are kept open generally by the States. In certain mountainous sections of the West, however, a complete stoppage occurs during a few months of each year. Generally speaking, bus and truck service is less regular and dependable than railroad. The trains are better equipped to overcome adverse conditions and the

requirements of the mail put an additional duty on the railroads to maintain schedules. The railroads have greater dependability and resourcefulness in the event of floods, washouts, and other calamities and under such circumstances furnish relief service.

Ability to maintain schedules en route is a question on which there is little specific testimony. Obviously, much depends on the time allowed for a given run and on the attitude of the operator in permitting speeding to overcome loss of time. Public safety requires that careful operation take precedence over maintenance of schedules on public highways. Some operators fail to observe this principle.

The failure to maintain schedules because of light traffic depends on whether the carrier deems it better business to operate in the absence of a paying volume of traffic and to build up a reputation for dependable service, or to make the savings in operating expenses which would come from omitting the runs. State regulations frequently require common carriers to observe specified schedules and doubtless many would do so regardless of any legal duty. The less reliable interstate operators do not observe their schedules.

Employment conditions.—In several States common-carrier bus and truck operators observe hours-of-service rules. In California the maximum number of hours of work is 10, though the elapsed time may be longer if there are rest periods. Such rules, where present, apply only to common carriers. Employees of other types of operator sometimes work 12 or more hours a day, with danger to themselves and the public. Hours of service are often irregular and considerably in excess of those which the railroads are required by law to observe. Employment conditions are better among the large and responsible operators.

There is a considerable difference between the wage scales of employees of motor and rail carriers. In a specific instance in which a railroad operates bus service between the same points as are served by its rail line, the wage of its engineers in a period of one week early in 1931 averaged \$1.88 per hour and for firemen were \$1.43, conductors, \$1.51, baggagemen \$1.15, and brakemen \$1.08, a total of \$7.05. This railroad's bus drivers were paid 72 cents an hour, without allowance for overtime caused by delays en route. The relative number of passengers carried by train and bus was not stated, nor is the relative responsibility of the individual operator known. Similar data for the freight service are not available of record. However, in weighing any such figures consideration must be given to the relatively small output of service per truck employee. The wages of a crew manning a 700-ton train involve different considerations from those entering into the determination of the wages of drivers of 2-ton to 5-ton trucks.

A considerable part of those who engage in highway operations either have no hired employees or are of such small size that standardized employment conditions are not possible. Highway transportation, particularly truck, is quite different from rail and the same standards of service, responsibility, and employment are not applicable to both.

II. THE DIVERSION OF FREIGHT TRAFFIC FROM RAILWAYS TO HIGHWAYS

Testimony as to the diversion of traffic to the truck embraced a long list of items. Less-than-carload freight, livestock, fruits and vegetables, and cotton, are some of the more important classes of traffic. An appraisal of the situation requires separate consideration of the different types of traffic. It will be necessary in ascertaining the extent of the diversion, to distinguish any loss the railroads have suffered which may be attributable to other factors, and to ascertain the reasons for the loss in terms of the comparative service and rates.

Diversion of less-than-carload traffic.—The less-than-carload traffic of the railroads shows a more general loss than any other class. In 1929 Class I railroads carried 2,389,000,000 tons of carload traffic but only 62,000,000 tons of less-than-carload; in 1920, when less-than-carload traffic reached its peak, it represented only 4 per cent of the total traffic of Class I railroads. Though yielding considerably more revenue per ton than carload traffic, the expense which less-than-carload traffic entails is very much higher on a unit basis. In 1929, less-than-carload freight constituted 2.55 per cent of the tonnage carried but returned 10.36 per cent of the total freight revenue. The following table gives by districts the prewar, postwar, and more recent volume of less-than-carload traffic carried by Class I railroads:

TABLE III.—*Less-than-carload traffic carried by Class I railroads (average 1911-1915=100)*¹

District	Average, 1911-1915	1920	1923	1926	1929	1930
Eastern.....	100.0	133.7	108.9	97.2	90.3	73.4
Southern.....	100.0	133.0	122.4	121.8	106.1	89.4
Western.....	100.0	115.6	88.3	83.4	77.1	63.5
United States.....	100.0	127.8	104.6	97.0	88.7	72.9

¹ This average is based on figures which include Class II and III roads for 1911 and 1912 and Class II roads for 1913, the distribution of tonnage by districts for Class I roads not being available for years prior to 1914.

The forces operating to reduce less-than-carload traffic were active earlier and to a greater extent in the western district than elsewhere; such traffic in the southern district has been affected most tardily and to the least extent.

While most railroads have sustained a loss of less-than-carload traffic in recent years, some have held or increased their volume of such traffic. Roads having short hauls feel the loss in greatest degree. On some such lines and on branch lines of large systems the losses may run from 50 to nearly 100 per cent, depending on local conditions. The Chicago, Burlington and Quincy reports that of its less-than-carload traffic moving from Omaha from November 17 to 21, 1930, only 3 per cent moved within the 50-mile zone and 17 per cent from 51 to 100 miles, while 20 per cent moved from 100 to 150 miles and 60 per cent over 150 miles; the Atchison, Topeka and Santa Fe reports reductions in less-than-carload freight which tend to become less, though irregularly, as distance increases, with increases in volume generally for distances over 200 miles and in a few cases for shorter distances; other railroads report similar results, modified to some extent by variations in road conditions and amount of truck competition. In some States, as in Texas, where industrial expansion and growth of population have been large in recent years, the railroads show substantial gains in volume of less-than-carload traffic. The general experience is that competition for this traffic is most severe within 50 or 75 miles and that it continues of importance up to 150 miles and in some cases to 200 miles. Even where aggregate volume has been sustained, there has generally been a transformation of short-haul into long-haul movements.

From 1923 to 1929 the loss reflected in Table III was approximately 11,000,000 tons, without allowing for the natural increase which would follow from the increase of production and population or for the effects of small-scale buying. The exact diversion to trucks can not be accurately determined. It is greater in tons than in ton-miles, indicative of the substitution of long-haul for short-haul traffic.

Factors other than truck competition which explain reduction of less-than-carload traffic.—Truck competition is not wholly responsible for the diversion which has occurred. Changed distributing methods and the activities of forwarding or car-consolidating companies are also factors.

Such developments as chain-store distribution, central distributing warehouses, and direct dealing between manufacturer and local distributor have served to lessen the importance of the local jobber, whose outbound less-than-carload shipments formerly moved by rail. The chain store uses trucks for deliveries to stores within 25 to 50 miles of a central point where car lots are received. Supplies of fruits, vegetables, and other products are secured for return movements. Manufacturers ship a countless variety of commodities to warehousing agencies, from which distribution is made by trucks.

Forwarding or consolidating companies are an increasing factor in explaining the loss of less-than-carload traffic. However, less-than-carload losses were shown to be greatest in the case of local traffic moving for short distances, where such companies do not operate. Full details as to volume of forwarding company movements are not in the record. The Pennsylvania Railroad estimated the total over its lines at 250,000 tons a year, the Northern Pacific stated that about 6,000 tons a year moved over its lines from the Twin Cities, and the Chicago, Milwaukee, St. Paul and Pacific estimated such movements on its line out of Chicago at 875 tons a month in the year 1929. The forwarding company tonnage by all roads in and out of the Twin Cities was set at about one-fourth of the rail less-than-carload tonnage. While no aggregate figure can be given, the decline in the reported less-than-carload traffic which can be attributed to this factor is considerable. Forwarding companies have, in some instances, substituted truck for rail line-haul service, but in the main railroads move the business of the forwarding companies.

Other factors explaining the loss of less-than-carload traffic to 1929 are the decline in the purchasing power in some sections, changes in rates, and perhaps the make-up of traffic. The decline in less-than-carload business in 1930 and 1931 is attributable in major part to general conditions.

Effects of truck competition on express business.—The express business has also been adversely affected by motor competition. Its short-haul movements of bakery goods, packing-house products, ice cream, fresh fruits and vegetables, fish and other sea food, newspapers, and miscellaneous articles furnished an attractive field for the truck when it first appeared as a short-haul carrier. As trucking over longer distances developed, further inroads into the express business occurred. Intrastate revenue of the Railway Express Agency declined \$29,906,000, or 36.45 per cent from 1921 to 1929, while interstate revenue increased \$19,176,000, or 8.97 per cent. The net effect is a reduction of \$10,700,000, or only 3.6 per cent, in system revenue, indicating that a nation-wide organization, equipped to give pick-up and delivery service, is better able to cope with losses of short-haul business than are local railroads. Measured by number of shipments, the intrastate business declined 36.37 per cent and the interstate increased 16.25 per cent.

Diversion of railroad carload traffic.—The truck has made important inroads into the carload traffic of the railroads. It is steadily increasing its penetration into the field of carload traffic, including the movement of heavy commodities such as coal, oil, and sand and gravel. Often the effect of truck transportation is

the substitution of commodities available locally or near by for those involving long hauls. The competition of the truck has already caused some breakdown in established distinctions between carload and less-than-carload movements and in classification distinctions between commodities. The Atchison, Topeka, and Santa Fe places its loss of carload traffic above that of less than carload; others, facing less intensive competition, find the reverse to be true. Thus the Illinois Central placed its 1929 revenue loss on less-than-carload traffic at \$4,500,000 and its total loss to trucks at \$6,855,000. The extent of the diversion on typical grades of traffic will be examined after a brief survey of the course of traffic as a whole.

TABLE IV.—*Carload traffic carried by Class I railroads (average 1911-1915=100)*¹

District	Average, 1911-1915	1920	1923	1926	1929	1930
Eastern.....	100.0	114.0	118.8	120.5	119.4	97.3
Southern.....	100.0	141.5	150.0	190.0	177.3	158.5
Western.....	100.0	142.8	143.7	152.5	160.1	137.6
United States.....	100.0	125.0	130.2	138.1	137.6	115.9

¹ This average is based on figures which include Class II and III roads for 1911 and 1912 and Class II roads for 1913, the distribution of tonnage by districts for Class I roads not being available for years prior to 1914.

Carload traffic was one-fourth larger in the country as a whole in 1920 than for the average of the years 1911-1915, the increase being over 40 per cent in the southern and western districts and 14 per cent in the eastern. There was quick recovery from the 1921 decline, with the result that 1923 showed a further increase of about 5 per cent over the pre-war average. The advance was mostly in the southern district. A further increase of 8 per cent was shown by 1926, again primarily in the southern district but with a moderate increase in the western. A slight recession from the 1926 level is to be noted in 1929, the western district alone showing an increase. However, in that year Class I railroads carried 653 million more tons of freight than the pre-war average. Compared with this increase the decline of approximately 8 million tons in less-than-carload freight is a small factor. Nevertheless, revenue ton-miles increased only 8.8 per cent from 1920 to 1929 while from 1890 to 1900 the increase was 85.8 per cent, from 1900 to 1910, 80.1 per cent, and from 1910 to 1920, 62.2 per cent. Granting that some of the retardation is a result of Panama Canal, pipe-line, and other competition, the railroads attribute a large part of their loss to the trucks and call attention to the change which has occurred in their outlook with this reduction in the rate of growth of their traffic.

The following examination of the diversion of illustrative classes of carload traffic to which considerable attention was given on the record will contribute to an understanding of the problems faced by the rail carriers.

The trucking of livestock, meats, and dairy products.—The trucking of livestock has a longer record and accounts for a larger percentage of the total movement than does the trucking of any other single commodity. Short-haul movements began many years ago and, as roads have been improved and equipment of larger size and mechanical perfection has been developed, the zones of movement have been pushed farther back from the markets. The use of trailers and of special equipment has contributed to this development.

The following table shows the expansion of the trucking of livestock into 16 large markets between the years 1920 and 1929:

TABLE V.—*Trucked-in livestock (all classes) in per cent of total receipts at 16 markets*

	1920	1923	1926	1929
Indianapolis.....per cent..	26.74	31.74	39.05	60.32
Oklahoma City.....do.....	9.49	18.89	29.63	49.86
Sioux City.....do.....	4.93	11.10	27.44	49.36
Louisville.....do.....	29.51	27.09	37.08	48.60
Wichita.....do.....	12.68	14.00	24.05	35.08
St. Joseph.....do.....	7.35	9.37	15.53	35.02
Cincinnati.....do.....	17.81	20.52	24.01	35.01
Omaha.....do.....	3.94	8.62	12.59	27.16
Portland.....do.....	10.37	8.42	15.68	23.45
East St. Louis.....do.....	1.42	1.60	6.00	20.51
Milwaukee.....do.....	2.81	5.51	8.51	19.16
Fort Worth.....do.....	3.69	5.70	16.59	16.96
St. Paul.....do.....	1.50	3.81	14.43	16.72
Kansas City.....do.....	3.04	3.81	12.44	16.59
Denver.....do.....	3.10	5.24	7.02	8.24
Chicago.....do.....	.20	.48	2.95	4.02
16 markets, number trucked in.....head..	3, 149, 430	4, 883, 934	6, 593, 791	13, 775, 905
Total receipts.....head..	60, 396, 893	71, 265, 286	61, 515, 694	63, 039, 782
Proportion trucked receipts form of total.....per cent..	5.21	6.85	10.72	21.85

In 1929 approximately one-half or more of the livestock was trucked into 4 of the 16 markets, over one-third so moved into 3 other markets, and in only 2 of the remaining 9 markets was the truck movement less than one-sixth of the total. For all of the markets truck movements represented 5.21 per cent of the total receipts in 1920, 6.85 per cent in 1923, 10.72 per cent in 1926, and 21.85 per cent in 1929. By 1931 truck receipts at 17 markets had risen to a third of the total. The variation in the percentage trucked in from market to market is caused by differences in distance to the market, by the relative length of highway and rail routes, by traffic congestion conditions in the approaches to the markets, such as are shown at Chicago, and by differences in the proportions in which different kinds of livestock enter the various markets. Hogs and calves move relatively short distances, whatever the means of transportation, and therefore figure more prominently in truck re-

ceipts than do cattle and sheep. In 1929, 28.86 per cent of the hogs were trucked into the markets above, 28.61 per cent of the calves, 13.47 per cent of the cattle, and 12.79 per cent of the sheep. All classes of livestock, however, show progressive increases in truck movements.

Improved highways and larger and better equipment have increased the zones within which livestock can be trucked in competition with rail transportation. Information as to the length of truck haul of livestock does not go back far enough to give a true picture of the situation. From 1924 to 1929 the average haul into the South St. Paul market nearly doubled, it being 22 miles in the earlier year and 40.8 miles in the latter year. Of the 1927 truck receipts at Sioux City, 4.7 per cent came from distances of over 100 miles and in 1929, 8.7 per cent; in the intermediate 51-mile to 100-mile zone the increase was from 30.3 per cent to 36.2 per cent; in the 50-mile zone there was a decline from 64.9 per cent to 55.3 per cent. The average haul into South Omaha on January 5, 1931, was 72.6 miles and the maximum 265 miles. Further light on the average haul of livestock is furnished by the following table relative to movements into the South St. Paul markets in the first 11 months of 1930:

TABLE VI.—*Mileage zones from which livestock was trucked into South St. Paul, Minn., market, January to November, inclusive, 1930*

Zone (Miles)	Number of trucks	Per cent of trucks	Number of tons	Tons per truck
0-15.....	16,128	17.2	13,805.00	0.86
16-30.....	22,130	23.6	32,043.86	1.45
31-45.....	24,474	26.1	43,306.68	1.77
46-60.....	15,660	16.7	29,956.79	1.91
61-75.....	9,471	10.1	19,675.52	2.08
76-90.....	2,438	2.6	3,195.42	1.31
91-105.....	1,594	1.7	4,080.87	2.56
106-120.....	654	.7	1,443.40	2.20
121-135.....	583	.6	1,560.96	2.81
136-150.....	469	.5	1,098.66	2.27
151 and over.....	187	.2	628.82	3.36

It will be observed that 66.9 per cent of the trucks moved 45 miles or less, that 26.8 per cent moved between 46 and 75 miles, and 6.3 per cent over 75 miles. The increase in load per truck with increased distance is fourfold between the shortest zone and the longest one, indicative of the necessity of increasing the load to compensate for the greater time a truck is required to complete a longer haul. Some exceptionally large unit shipments are occurring. A load of hogs weighing 21,330 pounds is reported as moving into another market in a truck and trailer unit. The average haul into 17 markets in 1931 was 65 miles.

There are also extensive outbound truck movements consisting of livestock going to other markets or slaughtering points or of so-

called feeder stock, which is fattened for final sale. Rail shipments are a larger factor in the outbound than the inbound movements. Thus, in 1929 the Sioux City, Iowa, market received 48.8 per cent of its livestock by truck and shipped 26.5 per cent in that manner; Omaha received 30 per cent by truck and shipped 16.7 per cent; Sioux Falls, S. Dak., received 81.4 per cent by truck and shipped 49.4 per cent; and South St. Paul received 18.8 per cent and shipped 11.3 per cent by truck. The variations noted reflect differences in volume of short-haul feeder movement and differences in distances which the animals are sent for further marketing or for slaughter. There has been a marked increase in recent years in the aggregate outbound truck movement, though there is considerable variation from market to market and by kind of animal.

For the most part livestock trucking is done by contract carriers, including farmers who sometimes truck for others as well as for themselves.

The livestock trucks, being for the most part owned at the country end of the route, have large amounts of unused capacity on the return movements. They therefore bid for return loads of feeds, fertilizers, and general merchandise used on farms or in the communities through which the trucks pass. Sometimes orders are taken from the local merchant, the goods to be picked up at the jobber's door or taken from a union truck depot, and sometimes return loads are not obtained until after the trucks are emptied. The competition between truckers for this outbound traffic forces the rates down with the result that jobbers at local points have lost a large part of their business and the railroads a part of their less-than-carload traffic.

The trucking of livestock not only lessens the opportunities of the local shipping agencies, whether livestock cooperatives or individual buyers, whose primary function has been that of assembling small lots for carload movement, but also affects the competitive relationships of the markets themselves by introducing new cross-country movements and changing the spread in the cost of reaching various markets.

Trucking of livestock rests in part on the convenience and advantages in marketing which it affords the shipper and in part on a saving of certain of the marketing expenses. The haul from farm to local shipping point is eliminated, small lots can be disposed of without delaying until a carload is accumulated, speedier delivery can be effected on a majority of the movements, and advantage can be taken of daily price fluctuations. The difference in delivery time by truck and rail is generally that between delivery on the

same day and at the opening of market the following day. Conflicting testimony was offered as to the relative shrinkage en route, but the evidence appears to indicate that if there is less shrinkage by rail it is due in large part to the feed which the stock receives in transit. This feed is paid for by the shipper. Road conditions are a factor determining the amount of shrinkage. At South St. Paul the yardage charge is 5 cents greater per head in the case of cattle trucked in and 2 cents greater in the case of calves, hogs, and sheep.

Truck rates on livestock are generally materially higher than carload rail rates, though the difference varies with the level of the rail rates, with local competitive conditions, and with the kind of animal. Thus on shipments into the South Omaha market from representative Iowa and Nebraska points the rates on hogs range from 14 to 116 per cent higher than rail, those on cattle from 47 to 196 per cent higher, and those on sheep from 54 to 161 per cent higher. Rates on hogs into the St. Joseph, Mo., market from points up to 110 miles range from 54 to 180 per cent above the corresponding rail rates. Shipments by truck are in smaller lots than those by rail, though in some instances and increasingly of late truck loads approximate carloads in size. There are marked irregularities in livestock rates between adjacent points, some of which may be explained by differences in road conditions and volume of traffic offered.

Where convenience is not a controlling factor, all of the above cost and service factors are elements in determining the form of transportation used. With an average haul into all the markets of probably not much over 60 miles, with a practical maximum haul under most conditions of 150 miles, and only occasional or unusual movements for greater distances,¹² it is reasonable to conclude that livestock will continue to be less of a long-haul competitive factor for the railroads than is much other traffic of no higher grade.

There is also considerable trucking of fresh meats and packing-house products. The St. Louis-San Francisco, for example, reports a reduction in the number of peddler cars dispatched from seven points on its line from 6,729 in 1927 to 4,737 in 1930, or 29.6 per cent, of which reduction about 70 per cent is charged against the trucks and the remainder to reduced volume of business and the operation by the railroad of cooler cars. The refrigerator trucks have increased the radius over which fresh meats are distributed. Operations are conducted both by contract carriers serving the packing and distributing houses, reaching in some cases as far as 300 miles,

¹² Stock has moved into Sioux City from distances as great as 300 miles but the explanation appears to be the considerable distance of the ranches from rail shipping points. Occasional shipments are said to move from Omaha to Chicago, 525 miles.

and by common carriers, whose operations are generally over shorter distances.

Cream and butter are also being moved over the highways for increasing distances. The regularity of the cream movement and the possibility of securing butter for return loads make such traffic very desirable to the truck operator. Cream is commonly trucked for distances as great as 100 miles and sometimes to points 200 miles distant. Occasionally butter is trucked long distances, and it was said that experiments were being made in trucking butter from Omaha to Buffalo and even beyond.

Closely associated with the movement of cream and butter is that of live poultry and eggs. Practically all of such traffic from many local points is by truck. Buyers are making direct deliveries for increasing distances to hotels and other large consumers. In 1929, 29 per cent of the live poultry received at Chicago arrived by truck. Special types of equipment for transporting poultry are being operated over long distances. Advantages in marketing live poultry and eggs are similar to those in marketing livestock by truck. There is no trucking of dressed poultry.

The trucking of milk is a matter of long standing. Special equipment has been developed and the marketing organizations in many localities have adapted themselves to truck movements. The percentage of milk arriving by truck still varies greatly. Thus in 1930 Philadelphia received 56 per cent of its milk by truck and Boston only 6.8 per cent. The revenue of Class I railroads in 1929 from the transportation of milk was 156.7 per cent greater than in 1915 and 36.1 per cent greater than in 1920, but between 1926 and 1929 it declined 1.33 per cent.

Truck movements of fruits and vegetables.—Railroads in many sections of the country called attention to losses of traffic in fresh fruits and vegetables. Quantity movements of vegetables from New Jersey to large markets near-by were mentioned; heavy diversions, particularly of apples and peaches but also of grapes, strawberries, and vegetables in the Ozark regions and contiguous territory were cited by the St. Louis-San Francisco for which such traffic has been a primary source of revenue; middle western carriers referred to the loss of traffic in grapes and other small fruits; a northwestern carrier stressed its loss of traffic in apples, pears, and strawberries; California railroads mentioned the large tonnage of fresh fruits and vegetables moving both State and interstate the year around by truck; and an association of commission merchants stressed the disorganizing effects of long-distance truck movements on orderly and efficient marketing at the large markets. In the beginning hauls were short but with the improvement of highways and equipment the

lengths of hauls have steadily increased, approaching an average common maximum distance in the eastern half of the country of 200 miles and perhaps a little higher elsewhere. Some exceptionally long hauls are to be noted, as from northwestern Arkansas to Texas, 650 to 700 miles; from Colorado to Kansas City, 900 miles; to New York and Boston from the South Atlantic States, 600 and 800 miles; and from Texas to Colorado, 1,400 miles. Some of the movements, particularly the longer ones, are not for the transportation charges as such, but are peddler operations.

Truck shipments of fruits and vegetables for distances beyond 20 miles of place of production are estimated¹³ to have been the equivalent of 150,000 to 200,000 carloads, or between 12 and 16 per cent of the total movement in the composite year 1928-29. The following table showing the proportion of 1928 or 1929 crop-year truck movements from various areas to points beyond 20 miles indicates the effects of the conjunction of large producing and consuming regions and of differences in product:

	Per cent
Connecticut.....	92
New Jersey, central and southern.....	67
Hudson Valley of New York.....	67
Southwestern Michigan (1929).....	73
Long Island (1929).....	68
Southern Indiana.....	37
Southern Illinois.....	21
Western New York.....	19
Eastern shore of Maryland.....	24
Cumberland-Shenandoah sections of West Virginia.....	2
Western Massachusetts.....	7

Some cities depend on trucked supplies more than others. Thus Boston, Cincinnati, and New York received by truck 2, 5, and 8 per cent, respectively, of their fruit and vegetables coming from points beyond the market-garden area, or 20 miles. On the other hand, for Denver, Salt Lake City, and Los Angeles the corresponding figures are 28, 40, and 57 per cent, respectively.

There are also substantial outbound truck movements from the primary markets. Thus in 1930, 86 per cent of the movements from Baltimore and 81 per cent of the movements from Pittsburgh were by truck. The hauls were commonly less than 75 miles but with some up to 175 miles. Most of the trucks are owned by jobbers and retailers outside the market, though itinerant truckers engage in this traffic in some sections.

Of truck movements beyond 20 miles, 40 per cent on the average are by contract carriers, 40 per cent by so-called truckmen-merchants,

¹³The Marketing and Distribution of Fruits and Vegetables by Motor Truck, Department of Agriculture Technical Bulletin 272 (1931).

and 20 per cent by farmers themselves. The last group hauls for distances generally under 50 miles, the middle group, which predominates in the Middle West, for distances generally over 200 miles, and the first group for distances generally under 200 miles. Considerable moving about from time to time is required to keep the trucks in operation.

The above distances give an indication of the profitable length of haul. This varies also with the type of product. Contract truckmen find 40 miles about the limit of profitable operation for such low-revenue producers as potatoes, while on highly perishable products, which take high rail rates and require refrigeration for rail movement, trucking may occur for distances up to several hundred miles. Some long-distance trucking was abandoned after trial.

On hauls of the general lengths indicated, the time in transit is materially less by truck than by rail, and refrigeration is not required. Rates tend to be on a somewhat disorganized basis and, except for short distances, are higher than rail. Other cost and service considerations, therefore, lead to the use of trucks. As in the case of livestock, the produce is picked up at farm for either direct movement or for local concentration, and the farmer may also deliver at concentration point. The number of less-than-carload movements is reduced through the elimination of some loading points. Where the produce moves direct from farm or local shipping point to distributor's or dealer's door, with additional assistance in unloading, a completed service is rendered which the railroads do not provide. On the other hand, rail transportation has distinct advantages where the movement is to the large auction markets. The railroads offer other long-established and valuable advantages including certain transit, diversion, and rebilling privileges. There is also the advantage that lies in their greater responsibilities for service, and for injuries or damages. Truckers can give special attention to early movements or choice shipments and may return crates at a low charge, or free. They assist in disposing of off-quality produce, to the advantage of the farmer, and, if properly priced, to that of the consumer. New business is developed to the smaller communities which had lacked frequent fresh supplies. Highway development and trucks have opened up or made accessible to markets lands hitherto not available for truck gardening and have changed the competitive relationships of producers at different distances from the markets.

There is undoubtedly a substantial amount of trucking, especially of the peddler type, which is not remunerative to those who engage in it, but which nevertheless contributes to confusion of marketing and to the lowering of grades and prices.

Summarizing, it may be said that, assuming no pronounced change in rail rates, the trucking of fruits and vegetables will probably continue to be of a short-haul character for many classes of products, and that 200 miles, and in some sections a little more, may continue to represent the common maximum haul.

The trucking of cotton.—Although there have been trucking movements of cotton for a number of years, these did not become of importance until very recently. Movements are principally to the ports, with some to interior mills in the South and Southwest and to concentration centers. Only 1.9 per cent of the cotton reaching the ports of Houston, Galveston, and Texas City was by truck as late as 1928. In the next two years 3.9 and 5.1 per cent so moved, while in the six months beginning August 1, 1930, the percentage rose to 18.5. The number of bales trucked to the port of Savannah increased from 4,500 in 1928 to 45,000 in 1929.

In the period from August 1 to November 15, 1930, a total of 2,531,318 bales moved by rail to the three Texas ports named and Corpus Christi and 965,120 bales, or 27.6 per cent of the total, by truck. Of the movement to Houston from August 1, 1930, to January 31, 1931, 23.5 per cent was trucked, to Galveston 9 per cent, and to Texas City 12.9 per cent. Some 63.6 per cent of that moving to Corpus Christi from August 1 to November 15, 1930, was trucked. Rail movements to Galveston and Texas City have declined greatly. The Louisville and Nashville moved 46,488 bales to the ports of Mobile and Pensacola in the season ending August 1, 1930, and trucks 14,277 bales; from August 1 to September 30, 1930, this railroad carried 28,272 bales and the trucks 60,297, despite reductions in the rail rates. The Atchison, Topeka & Santa Fe reports a 23 per cent reduction in its movements from Blythe and Ripley, Calif., to Los Angeles. Reduced rates have increased the rail tonnage from the San Joaquin Valley of California and the Salt River Valley of Arizona, but without notable improvement of earnings.

Various attempts were made to measure the loss in revenue. The railroads' direct loss from August 1, 1930, to December 1, 1930, on cotton moving to the four Texas ports named above was estimated at \$3,043,743 at standard rail rates and \$1,770,460 at the reduced rates, to which is to be added the revenue loss on the cotton which moved by rail at the reduced rates. The Louisville and Nashville estimates its revenue loss during the five months ending December 31, 1930, at about \$300,000.

Movements of cotton are principally by contract carriers, some of which maintain fairly regular schedules during the cotton-moving season. In some cases the cotton is bought by the party who

does the trucking. The rates made do not bring the traffic within the reach of the common carrier. Most of the operators have only a few trucks, though one in Texas is said to have 250 trucks. Movements to the Gulf ports are from points as far distant as about 400 miles, but the bulk of the movement is for distances not exceeding 175 miles. Long-distance movements are increasing, however. The Southern Pacific reports movements from Calexico to San Pedro, Calif., 250 miles. To the interior mills in the South and Southwest the movements are generally 100 miles or less. Traffic for back hauls is frequently sought at rates which will yield something above gasoline, oil, and wage costs, and consists of bagging, ties, and miscellaneous merchandise, but, generally speaking, return loads are not obtainable. A little cotton moves as back-haul traffic for automobile truckaways. Trucks carry as high as 16 bales and sometimes 20 bales of compressed cotton; in some instances as high as 20 tons have been carried in a truck-and-trailer unit.

An explanation which has been offered of the recent sharp increase in trucking is the presence of trucks rendered idle by reason of reduced forest, petroleum, and other operations. Some importance may attach to the low price of cotton in recent years as emphasizing the importance of low rates.

Truck rates on cotton generally lack a firm basis and are frequently adjusted to what the carrier can charge. They are materially lower than the rail rates in effect at the time trucking became a factor in the situation. The Seaboard Air Line reports truck rates in North and South Carolina which range from 50 to 90 cents lower per bale than for single-line rail hauls and from 85 to 120 cents lower than for joint-line rail hauls. The truck rates in this instance range irregularly but generally upwardly from 35 per cent of the single-line rail rate at 10 miles to 75 per cent at 200 miles.

Trucks pick up the cotton at the compress point, warehouse, or railroad platform and not at the farm. To points reached by overnight service the trucks give quicker delivery than the railroads. Trucking has rendered certain local marketing points of less importance than heretofore. The use of railroad bills of lading for banking purposes is an advantage which the trucks do not afford.

Cottonseed also is very extensively trucked, moving from the gins to the oil mills at the larger places. A Texas railroad states that at least 90 per cent of the cottonseed in its territory moves from the gins by trucks; to Blytheville, Ark., 78 per cent is said to move by truck. Trucking is done by the gins, the individual owner of the seed, or the mills, and occasionally by contract carriers. Hauls are short compared with those on cotton.

Efforts to meet the situation by means of reduced rates have had beneficial results in the case of some railroads, negligible results in other cases, and adverse results in still others, as is pointed out in more detail below. There are no important service advantages in the trucking of cotton, and in fact certain distinct drawbacks. The recent rapid increase has been brought about by conditions attributable to the depression in the cotton and other industries. Economic forces will probably lead to continued and increased trucking of cotton. The situation is rendered particularly grave by reason of the large dependence of many southern and southwestern railroads on movements of cotton and its derivatives.

Truckaway movements of automobiles.—The practice of “driveaways,” that is, automobiles driven from manufacturing or assembly points to the dealer’s door, is one of long standing. Recently, a so-called “truckaway” unit has been developed consisting of a truck with a long trailer capable of carrying three or four of the smaller cars. And even more recently a double-deck truckaway having a capacity of six or seven vehicles has been placed in service. An increase of water movement of automobiles, principally on the Great Lakes, has also served to divert traffic from the rail lines. Comparing 1923 with 1929, the number of carloads moved by rail increased 21.4 per cent, by highway 71.5 per cent, and by boat 144.6 per cent. In 1929, 733,631 carloads of automobiles, or 63.0 per cent, moved by rail, the equivalent of 391,748 carloads, or 33.6 per cent, by highway, and 39,915 carloads, or 3.4 per cent, by water carriers. A separation of highway movement into driveaways and truckaways is not possible, but if, as was stated, the driveaways have not declined, it may be inferred that the trucking movement has been superimposed on the older highway movements. Automobiles are being trucked from southern Michigan to points as distant as Kansas City, about 650 miles, to western Nebraska, 1,000 to 1,200 miles, and occasionally even to Denver, approximately 1,300 miles. From St. Louis there are such movements as far as Oklahoma City, 542 miles by rail, and from assembly plants in California to points in Arizona up to distances of 575 miles. The decentralization of assembly operations has contributed to highway movement, as have certain movements by water. Of the cars received by water at Duluth in 1930, 18 per cent moved out by rail for long hauls, 22 per cent were trucked away, and 60 per cent were either driven away or delivered locally. Generally the movement by truckaway is one way, the only return movement being some automobiles for scrapping purposes, and some cotton and tobacco in the South.

The reasons for highway movements of assembled cars are found in part in savings in rates and in part in the more complete and

expeditious service rendered. From Flint, Mich., to Indianapolis the rail rate is 94 cents per hundred pounds and the truck rate is the equivalent of 72 cents, the saving being therefore about \$5 a car, plus delivery cost to dealer's door. From St. Louis to Malden, Mo., the saving is \$18.50 per car; from Kansas City and St. Louis to Oklahoma City it is \$10; from Kansas City, Mo., to Wichita, Kans., it is \$6; and from St. Louis to Tulsa, Okla., \$12. The railroads have made various reductions in their rates to meet this competition.

The drive-away or truck-away contractors in some cases inspect the cars at the plant before taking delivery and in all instances place the cars at dealer's door.¹⁴ No evidence was presented as to the comparative delivery time, but on short distances at least the highway movement would be more expeditious.

Occasionally testimony was offered as to the relationship between traffic brought to and that taken from the railroads by the automotive and related industries. Certain railroad witnesses conceded that there is a net gain to the railroads in terms of volume. The situation varies greatly from road to road, some railroads gaining much more tonnage than they lose while others have little opportunity to bid for automobile or derived traffic and yet suffer heavy diversions to the private car, bus, and truck.

The trucking of coal.—The carload commodities heretofore considered have been generally of high grade. Attention may now be turned to a kind of low-grade traffic for which the trucks have bid.

Short-haul wagon or truck movements of coal from mines or docks to near-by points of consumption have long occurred. Within the last two or three years movements over the highways for distances as great as 60 miles or more have caused concern to both rail carriers and local coal merchants. The truck movements which were described in the record occur in the anthracite region of the East, in various sections of the Middle West, and in Colorado, and from docks in New England to points inland a considerable distance.

The Reading system reports the movement by truck in 1929 of approximately 144,000 tons of anthracite coal to some 67 specified points, most of which are also served by that line. The rail movement to the points served was 601,147 tons. For 1930 the truck movement in the anthracite area is estimated at 500,000 tons and the distances are said to have increased from about 50 miles in 1929 to 75 and perhaps 100 miles. The Chicago, Burlington & Quincy estimates its loss of bituminous-coal traffic at 250,000 tons a year, most of which, however, moves over distances of only about 20 miles.

¹⁴ In some cases, of course, wholesalers and even dealers have railroad sidings.
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The movement is particularly heavy in the St. Louis and Denver areas. The Missouri Pacific reports a very large movement of coal by truck for distances up to 50 or 60 miles and the Chicago, Indianapolis & Louisville reports such movements in southern Indiana for distances up to 40 or 50 miles. A considerable amount of coal moves into Des Moines from mines 7 to 12 miles distant. The trucking of coal into Denver increased rapidly in 1930 and amounted in all to about 263,000 tons, representing about 20 per cent of the available business. From the Colorado mines 6,992,678 tons were moved by rail in 1930 and 974,513 tons or 12.2 per cent by truck or wagon. Highway movements take practically all of the production of 9 smaller mines and approximately half of that of 4 other of the 24 mines in the State.

For the relatively short distances indicated the trucks find it possible to undersell the local dealers, whose coal must be yarded before delivery to the consumer and who have overhead expenses which the trucker does not have. The latter may be a contract carrier, a peddler, or a migratory operator. He may solicit orders before buying the coal or he may bring the coal into town for peddling purposes. Prices are not fixed but depend on what can be obtained from the individual customer and the transportation cost is only an element in the entire transaction. Most of the vehicles entering St. Louis were found not to be regular coal trucks but an assortment of types. Trucks not otherwise engaged are sometimes dispatched for loads of coal. Complaints were made as to the overloading and unsafe condition of the vehicles and of short weighing, but no substantial evidence on these points was offered.

The unstable and somewhat irresponsible nature of the trucking operations described makes it difficult for the coal merchant to adapt himself to it or for railroads to cope with this competition by reducing their rates. The practice of making coal rates on a group basis contributes in this connection to the difficulties of the railroads, as does the fact that industrial coal moving in carload lots has not been materially affected by highway competition. The competitive problem of dealers and railroads is that of meeting a less responsible and less orderly and somewhat cheaper form of transportation. While the traffic lost is principally short haul and the problem is essentially a local one, the diversion is an important consideration for some carriers.

Other truck movements of carload traffic.—The items of carload traffic used for illustrative purposes include some which are no more important than others which are not discussed in detail. There is, for example, extensive diversion to highways of bulk movements of

gasoline, fuel oil, and other petroleum products. Attention was chiefly called to such movements in the State of California, where, it is said, 400 million gallons of gasoline are being trucked each year by for-hire carriers. It is not clear whether local delivery movements are included. Such movements began in 1924 and now engage the services of 300 trucks and 300 trailers, 15 of each of which are engaged in interstate movements. A truck and trailer unit is capable of carrying the equivalent of about a tank car of gasoline. Various eastern carriers report losses of such traffic, including that moved by truck from ship side or from barges.

Other commodities which customarily have moved by rail in carload lots and of which there is extensive diversion include sugar, sugar beets, rice, canned goods, automobile tires and accessories, building materials (brick, cement, stone, and gravel), logs and lumber, furniture, paper and pulp board, foundry products, machinery (including heavy machinery requiring special truck equipment), paints and varnishes, beverages, baled hay and straw, leaf tobacco, fertilizers, and household goods. The last may move over particularly long distances. Manufacturers who are able to move finished products by truck in one direction and raw materials in the other find trucking particularly advantageous.

The few important classes of traffic which have almost wholly escaped truck competition, such as iron ore, wheat, and other small grains, generally move in large bulk or predominantly over long distances or are held to the rails by marketing considerations. In the latter cases the originating movement is closely tied in with other stages in the marketing process. The point of effective bidding for carload traffic varies with the commodity. As has been indicated, the bulk of truck traffic lies in the shorter range of distances. Failure to give full weight to this fact may result in overstatements of the present volume and importance of truck traffic. To the effects of actual diversions of traffic must, of course, be added those of reductions in rail rates which have been made to meet the highway competition.

A special aspect of such reduced rates is illustrated by the California raisin traffic. The trucks have bid for large volumes of this traffic and the railroads have had to cut their rates to the ports, but in doing so they drive additional traffic to the Panama Canal route and deprive themselves of the transcontinental haul. Much freight is being trucked in connection with coastwise or intercoastal boat lines in competition with well-established rail routes.

The proportions of the loss of less-than-carload and carload traffic going to the three major types of truck operator vary considerably according to commodity and section. Thus, livestock, cotton,

and automobiles are handled largely or entirely by contract carriers, fruits and vegetables generally by contract carriers and private operators, and coal by operators generally of the peddler type. The contract carrier is extensively used in making deliveries from jobbing centers. An estimate has previously been given of the relative importance, in the aggregate, of the three types of operators.

Through water-line and truck service.—In the past few years through transportation by motor trucks in connection with water carriers has developed rapidly. Steamship lines operating between New York and New England ports in connection with truck service reach practically every point in southern New England within 50 miles from the ports and a considerable part of New Jersey and New York. There is also regular water-truck service between Philadelphia, Baltimore, and Washington. A chain-store system uses water lines from Baltimore and Philadelphia to Norfolk, Va., and trucks inland from that point at a saving of about 15 per cent under the all-rail rates. One large New England trucking concern gives coordinated truck-and-water service with store-door service at approximately the rail rates except in New York where local truckmen, accustomed to giving service in New York congested districts, can perform the store-door service more economically. The water-truck service of this company is faster than rail service. The company has nearly 2,000 regular customers and carries general merchandise.

Joint routes are maintained from Norfolk, Va., Baltimore, Md., and Philadelphia, Pa., by water carriers to North Carolina ports and thence by truck lines to inland points. These joint routes extend as far west as Raleigh, N. C., about 120 miles from the coast. The rates are less than those by rail between the same points by rail. The Detroit & Cleveland Navigation Company operating on Lake Erie has had through rates with trucks for four or five years from Cleveland and Buffalo, N. Y., to points in Michigan, from Detroit to and points in New York, and from points in Ohio to Detroit. The water line has joint rates with rail carriers which are competitive with its boat-truck rates. The all-rail and boat-truck rates are 2 cents per 100 pounds higher than the water-rail rates. The boat-truck rates apply to towns 100 to 125 miles from the ports. Similar arrangements for joint motor and truck routes and rates exist between Pacific coast points and at certain points along the inland waterways.

Basis of competition between railroads and trucks—(1) service.—Having considered the extent and illustrated the character of the diversions of rail traffic to highway carriers, we will determine the reasons for such losses in order to find the basis of the competition

between the two agencies of transportation. Many of the pertinent factors have been mentioned in connection with the analyses of particular types of traffic and need only be summarized here. The competition of one transportation agency with another turns on the twofold question of service and rates.

Advantages of truck service.—The advantages of truck transportation from a service standpoint are to be found mainly in the speed, the completeness, and the flexibility of the service rendered. The area in which the truck has most effectively supplanted rail traffic is that which can be served one or more times during the day; the area within which overnight delivery can be made is a fertile field for the truck; to points more distant the service advantages of the truck are lessened until a zone of indifference or disadvantage is reached. Coupled with this phase of service is the ability or willingness of truck operators to take shipments at a later hour than the railroads ordinarily do and yet make earlier morning delivery.

In the case of some shippers an even greater advantage of truck transportation is the completed service it renders. Only one transportation agency needs to be dealt with for given shipments and pick-up and delivery service is usually provided. There is also more flexibility about truck than rail service in moving emergency and irregular shipments. Special efforts are made to meet any unusual requirements of an industry or a shipper. Secondary factors favoring truck transportation are the more personal contacts between shipper and truck representatives than prevail between shipper and railroad, the less formal procedure, and, in some cases, the possibility of combining selling with transportation functions.

Disadvantages of truck service.—There are disadvantages in using trucks. Their inability to take all classes of traffic or traffic going to all distances makes it necessary for shippers to deal with both trucks and railroads, though some prefer such an arrangement. Many shippers prefer to do all of their local hauling, some because they have their own trucking equipment and some because they find that trucks break into their routine, make too frequent calls, and cause congestion at loading docks. At Sioux Falls, S. Dak., 90 per cent of the outbound truck tonnage of the principal truck operator, the Wilson Transportation Company, is delivered to its depot by the jobbers and manufacturers. Others mention the lack of a known basis of rates, making it necessary to guess at what competitors are paying and to indulge in bidding for rates, particularly those for back-haul movements. Truck schedules are less adequately maintained than rail, though there has been considerable improvement. There is less complaint than formerly about the lack of responsibility of truck operator and collection of loss and damage

payments has improved. Trucks do not issue bills of lading which command the prestige of railroad bills of lading for banking purposes; and reconsignment, storage in transit, and similar privileges accorded rail shipments are largely lacking. Articles requiring refrigeration and heat are generally less carefully protected by truck than where the movement is by rail, though improvement as to refrigeration has been made of late.

The foregoing advantages and disadvantages of truck service are partially reflected in the rates which shippers will pay for using trucks rather than some alternative service. Truck rates also reflect competition between the operators themselves.

Basis of competition between railroads and trucks—(2) Rates.—Comparison of truck with rail rates is rendered difficult by reason of the several types of truck operator, the wide range of conditions under which service is rendered and the obscurity which surrounds the rates actually being charged. A small proportion of the operators publish their actual going rates. Few States have fixed rates and none has done so for all classes of operator. In those States where the rates of common carriers are required to be filed there are exceptions, bewildering changes, and often departures from the tariffs.

Truck transportation has tended to break down the distinction between carload and less-than-carload traffic. Nevertheless, a broad division may be made between the rates of common carriers, which more commonly apply to less-than-carload traffic, and those of the contract carriers, which apply more generally to movements of the kind which would have been in carload quantities had they been made by rail. Rates of the latter type have been considered briefly in connection with the specific analyses which have gone before. An analysis of the rates of common carriers is desirable.

Common-carrier truck rates.—There are relatively few large common carriers, more moderate-sized ones, and many small ones. The large and responsible operators generally publish and adhere to tariffs for use individually or join with other large and small operators in the publication of a tariff, as in the State of Washington. However, such operators generally have special rates for volume or regular shipments and frequent changes in their rates testify to the difficulties experienced in meeting the competition of interstate or contract carriers and in adjusting to back-haul traffic.

The rates of common carriers vary from simple flat amounts with a rudimentary classification or practically no classification to those which use the railroad classifications or the elaborate classifications of associations of truck carriers, as in Washington and California.

Rates of the more complex type appear to be related to those of the railroads, though commonly with pick-up and delivery in addition to the service which is covered in the rail rate.¹⁵ There is, however, a considerable variation in the level and relationship of rates in different territories, and, in differing degrees, a failure to observe the published tariffs in every particular.

The common-carrier rates in Kansas, on the first four classes of traffic, generally equal the rail rate plus 5 cents, but these rates include pick-up and delivery; in Oklahoma and between Kansas and Oklahoma the truck rates equal the rail rates. The western classification is used. In Missouri the relationship is different. Thus on a tariff between St. Louis and Oklahoma City, the truck rate of one operator to various points up to about 200 miles is lower than the first, second, and, with few exceptions, the third-class rail rates and is both above and below the fourth-class rail rate at different points within this distance. For points beyond 200 miles the truck rate is equal to the first-class rail rate. In this instance, the truck operator does not attempt to meet the second and lower class rail rates at points in excess of about 200 miles. There are irregularities as between adjacent points.

On the other hand, rates of common carriers between Kansas City, Mo., and Kansas points are either equal to or greater than the rail rates. They are, for example, greatly above rail rates at Topeka and Valley Falls, considerably above at a number of other points, slightly above at points such as Wichita, Hutchison, and Emporia, and equal to rail rates at Fort Scott, Manhattan, Pittsburg, and other points. The rates average 4.1 per cent above the corresponding rail rates.

A large carrier in the Chicago territory maintains rates identical with those of the railroads except that reduced rates apply to traffic handled for forwarding companies and higher rates apply for certain special expedited movements. Another important truck carrier in this territory charges rail rates on the first, second, and third class traffic and higher than rail rates on the fourth. From a point where this company's greatest volume of business is done its rates are said to average 18 to 20 per cent higher than rail and from Indiana points to the Iowa line, 30 per cent higher. Exceptions are made for particular types of traffic and for that of forwarding companies. Smaller operators in this territory may also charge rail rates or slightly less, again with exceptions for certain traffic. There

¹⁵ Some common carriers, however, provide no pick-up and delivery service; some give pick-up or delivery; in the larger cities pick-up and delivery may be provided in a defined zone, with an additional charge for such service in outer zones. Contract carriers sometimes make deliveries of a shipment at a number of points and some are known to pile or distribute shipments, such as pipe, along a road or street.

are, however, many small operators who have only flat rates. From Chicago to Quincy, Ill., for example, where the rail rates are 79, 67, 53, and 39.5 cents, a flat rate of 50 cents on all commodities accepted is available by truck. Illustrative rates from Quincy to Illinois and interstate destinations may be cited.

TABLE VII.—Rates (in cents per 100 pounds) from Quincy, Ill., to points named

To—	Rail				Truck	Remarks
	1	2	3	4		
Macomb, Ill.	47.5	40.5	32	24	25	Except potatoes, beans, sugar, etc., 20 cents.
Rushville, Ill.	56.5	48	38	28.5	35	
Keokuk, Iowa.	41.5	35.5	28	21	35	
Loraine, Ill.	36.5	31	24.5	18.5	25	
Hannibal, Mo.	34.5	29.5	23	17.5	20	
Edina, Mo.	53.5	39.5	30.5	23	25	

The above truck rates tend to fall between third and fourth class rail rates, though in one case approximating second class and in another third class. From Burlington, Iowa, to Dallas City, Ill., where the rail rates are 34.5, 29.5, 23, and 17.5 cents, the truck rate is 10 cents. From St. Louis, Mo., to Quincy the rail rates are 61.5, 52.5, 41, and 31, while the truck rate is 31 cents except for a single shipper, who pays 15 cents.

A comparison of an average of rail class rates and truck rates in North Dakota shows a general parity except where there are considerable differences in the distances by highway and railway.¹⁶ An average of truck rates from Seattle, Wash., is consistently above the composite of first to fourth class rail rates, the difference being greatest at the short distances and less than 10 per cent at Walla Walla. Between Seattle and Portland and in the reverse direction the average was about 20 per cent above the standard rail rate.¹⁷ From Portland east to Spokane the rates equal the rail rates. What is true of the rates as a whole is also true of the individual class rates.

On the other hand, in another section of the country, between Norfolk and Portsmouth, Va., and Virginia and North Carolina points, the truck rates of two lines are, with minor exceptions, considerably below the rail rates. There is, however, little consistency in the relationship of truck and rail rates as between the different classes and there is no marked tendency for the relationship to

¹⁶ The ability of trucks in this section to cut across country is illustrated in an extreme degree by the distance between Bismarck and Turtles Creek, which is 230 miles by rail and 71 by highway, and by the distance between Stanley and Sanish, 215 miles by rail and 36 by highway. In some instances the highway mileage is greater than the rail, as between Rolla and Devils Lake, where the distance is 66 miles by rail and 95 by highway.

¹⁷ Subsequently, reduced rail rates on merchandise traffic have precipitated reductions of truck rates between these points, as discussed elsewhere.

change as the distance increases. Between New York and Philadelphia the average less-than-carload rail rate, plus the cost of pick-up and delivery, is about 57 cents per 100 pounds, while the average truck rate, presumably on comparable traffic, is 42 cents.

A few States—principally South Carolina, Arkansas, Texas, and Wisconsin—have prescribed by law that the class rates of common-carrier truck operators shall not be less than rail rates, or not less than a given differential in excess of rail rates.¹⁸ These rates, as the illustration last given shows, are subject to the effects of interstate competition, including rail competition, as are the rates of common carriers who endeavor to maintain rates equal to or in excess of the rail rates. Some such operators succeed better than others in meeting this competition, depending on their geographic location with reference to State boundary lines, amount of trucking in the area, and other factors.¹⁹ Other operators find it necessary to establish commodity rates or to make exceptions to the classification. Particularly difficult to contend with are the back-haul rates of livestock truckers, whose great amount of unused capacity leads to extremely low rates on outbound merchandise, feed, and other commodities. Such competition, as well as the competition of interstate operators, is said in some instances to have demoralized the rate structures from jobbing centers, particularly from those points on or near State boundaries.

Contract-carrier truck rates.—The common carriers whose rates have been examined do not, as a general rule, account for the greater part of the trucking between given points. The contract carrier and private operator are important factors. The private operator comes into this survey of rates only in so far as the rates of contract and common carriers are a consideration in choosing between hiring trucking done and doing it privately.

The rates on several major classes of contract traffic, such as livestock, cotton, coal, automobiles, etc., have been considered heretofore. Attention will be directed at this point to the rates on commodities, such as those carried for wholesalers, packers, manufacturers, etc., for which common carriers also make bids, particu-

¹⁸ Iowa has prescribed truck rates on livestock for its class of "irregular route common carriers" for application between 18 counties in the northwestern part of the State and Sioux City. These rates, which are said to have been based solely on the cost of truck operation and not on rail rates, are lower than rail to 15 miles and increasingly higher above that distance. On stockers and feeders there is a commodity rate, affected by rail rates, of about three-fourths the fat cattle rate.

¹⁹ An operator in North and South Carolina charges 25 per cent more than rail rates on all traffic carried except cotton piece goods, on which the rail rate is charged. The latter traffic constitutes about one-half of the volume of business done and is generally backload traffic. The additional charge is found to be necessary to cover the cost of furnishing pick-up and delivery service. This operator does not take bulky or low-valued commodities.

larly in the form of commodity rates or exceptions to the classification, and to certain general practices which characterize the making of contract rates.

Subject to no regulation in most jurisdictions, and limited regulation in others, contract carriers have a free hand in making their charges; they can make changes readily and can freely discriminate between shippers, types of traffic, and communities. For the distances covered, their rates are generally considerably less than rail and are less stable than common-carrier rates. They sometimes are based on known costs and are reflected in definite mileage, tonnage, and hourly or other rates, and sometimes on what can be obtained. The former basis prevails more generally in the case of regular contract carriers and the latter in the case of contract operators of less experience and of the so-called wildcat operator. In some cases, the more responsible contract carriers handle out-bound for a few customers and are known to take what they can get on the return trip. Empty or partially filled trucks returning to their headquarters everywhere contribute to disorderly contract rates and indirectly to disorderly common-carrier rates. Shippers under such conditions frequently wait or shop around for advantageous rates and return-load bureaus have arisen in some cities to gather and pool information about available business. In some cases shipper's weights and descriptions are accepted, and there are cases in which low rates are quoted for delivery of carload quantities at the trucker's convenience, the deliveries being spread out over a number of days. Where shipments are seasonal, as in the fruit and cotton industry, wildcat competition is a further disorganizing factor. Truckers of limited financial backing are sometimes driven to quoting extremely low rates to meet their immediate cash requirements.

In the previous analyses it was shown that the rates on livestock, and generally those on fruit and vegetables, are considerably higher than rail rates, and that those on cotton, assembled automobiles, and coal are lower. Little specific information was offered as to the relative rates on such items as sugar, canned goods, lumber, tobacco, fertilizer, building materials, and the many other commodities which move by truck in substantial quantities, but these rates also are generally below the standard rail rates. Of great importance is the lower truck-load than carload minimum weight or the absence of any minimum requirement.

Contract hauling at rates in excess of the rail rate is of traffic which generally requires a highly expeditious or specialized service. To be profitable, contract rates on other traffic moving long distances have had to be raised to a level approximating the rail rate. Thus

the rate on rubber tires from a Detroit factory to Kansas City, 650 miles, was at one time 96 cents and since has been increased to \$1.15, while the rail rate is \$1.20; to Atlanta the rate from Detroit is \$1.30 by truck and \$1.34 by rail. On the return trip from Atlanta cotton piece goods are taken at rail rates. Second-afternoon delivery to Kansas City is given by truck and fourth-morning delivery, siding to siding, by rail; to Atlanta third-day truck delivery is furnished compared with fifth-day rail delivery. Such hauls are stated to be experimental; most of this company's output moves by rail in car-loads to distributing points and thence by truck.

A type of special contract service is the trucking of household goods and furniture. A representative of the largest operator in this field states that his rates are from two to four or five times greater than rail and are based on mileage with broad gradations according to size of shipment. His competitors, however, charge lower rates and do not adhere so closely to a defined tariff. The view was expressed that such operators attempt to extend their operations to distances beyond a profitable range.

Packing requirements.—There remains as an aspect of the relative cost of using truck and rail service the question of how far trucks derive an advantage from lower packing requirements. Packing is done in order to protect goods from loss or damage or pilferage or to put an article up in a unit size desired by the trade. However, many commodities for which trucks are bidding, such as canned goods, sugar, dried fruit, soap, lumber, cotton, wool, certain fresh fruits and vegetables, gasoline and refined oil, hay, and cement, either require the same packing, however they move, or require no packing at all. As to these commodities, the truck has no advantage. Also, some large trucking companies observe the packing requirements of the governing railroad classification, except where special arrangements are made. In other cases, as in the movement of confectionery goods, special truck bodies are necessary if packing is to be dispensed with. As to all such movements trucks have no advantage.

However, the trucks undoubtedly have an advantage in case of many commodities in being able, at least for shorter distances, to transport goods which are more lightly packed and less completely marked than for rail movement, and to take a small unit which for rail movement would ordinarily be assembled with similar units or other articles for transportation in a single large container. For longer distances the greater jolting and jarring of highway movement is a factor, but so also is the generally greater number of handlings by rail. Trucks frequently effect a saving for the shipper through prompt and regular return of containers.

A related consideration is the fact that in some instances commodities, such as automobiles and machinery, can move set up by truck which require being knocked down for rail movement.

Conclusions as to the basis of competition between rail and truck transportation.—While the foregoing analysis indicates there are classes of traffic which the trucks command solely on the basis of service, it also makes clear that preponderantly the competition is on the basis of total cost to the shipper. Truck rates therefore reflect both rail rates and trucking costs, but are subject to substantial downward pressure owing to the competition existing between truck operators and to inadequate knowledge of trucking costs. There is a strong urge to cut rates to build up a volume of business. However, responsible common carriers, recognizing that their costs are higher and that their opportunities to select the most profitable and reject the less profitable traffic are fewer than are those of contract carriers, and also that their service is more complete than rail service, tend to set their rates as near to or, where possible, as much above the rail level as rail and other competition permits.²⁰ The more the common carrier by motor vehicle can select his traffic, the higher he can maintain his average rates.

The experience of a large common carrier in Kansas and Oklahoma illustrates the present situation. This truck operator, whose experience is said to have been typical of that of other such operators in that locality, started out in 1927 with rates 50 per cent in excess of the rail level. These rates commanded no business and were cut to about 10 per cent in excess of the rail rates. No headway was made, however, until the truck rates were cut to a level 5 cents over the rail. Since the cost of pick-up is set by this company at 4 to 7 cents per 100 pounds, and that of delivery at 9 cents, it follows that the business could be developed only on the basis of rates which represented an actual saving when compared with what rail service would cost. Also, some commodity rates have been established by this carrier to meet the competition of interstate contract carriers. The company now handles about 250,000 pounds of less-than-carload freight daily in an overnight service. The experience of other substantial truck common carriers has been that profitable operations require the charging of rates about equal to or in some cases considerably above the rail rates, however difficult the maintenance of such rates in the face of uncontrolled highway competition may be. Rates prescribed by the States for class traffic also appear to recognize this intimate relationship of rail and highway costs. Aside from such operators as lack

²⁰ Express rates, covering a service comparable in many respects to that of the trucks, are far in excess of truck rates.

experience in transportation matters and knowledge of their costs, the difference between rail and truck rates on less-than-carload general-merchandise traffic is one of minor degree and not one of kind. Except for short distances and for operations which are conducted in ignorance of costs, the railroads' problems of competition and coordination as to such traffic are not of exceptional difficulty. Their proposals and experience looking to the more effective meeting of this competition are examined in a subsequent section.

The situation is different in the case of traffic which in the absence of truck service would move in carload lots and which is generally handled by so-called contract carriers. Eliminating such contract carriers as approach very closely to the common-carrier type, there are left operators who specialize on certain commodities, such as cotton, canned goods, automobiles, and coal. Assuming fewer of the obligations as to safety and financial responsibility than the common carrier, freer to move about in search for profitable traffic, specializing and concentrating on certain traffic and rejecting other classes, frequently using inferior equipment and observing low employment standards, these operators have undercut rail rates by varying and often wide margins. Some railroads have expressed their belief that it is futile to attempt to meet rates of such carriers;²¹ others have made successive cuts, with varying results, which are discussed later. There is also private trucking which has distinct advantages in many instances where movements are regular and substantial, as where selling is combined with transportation. On many classes of carload traffic as distinct from less than carload the spread between rail and truck rates is at present so great as to make effective competition by the railroads difficult. How far economic forces will lessen this gap and how far the railroads themselves can close it up are questions considered later.

The analysis to this point has been strictly on the basis of present conditions. It reflects experience to date, including the results of excessive competition among truck operators and lack of a knowledge of costs.

III. THE DIVERSION OF PASSENGER TRAFFIC FROM RAILWAYS TO HIGHWAYS

The decline in railroad passenger travel in the past decade has assumed large proportions. For aid in understanding how far the

²¹ As a concrete example there may be cited a shipment of ordinary face brick from Upper Sandusky, Ohio, to Birmingham, Mich., 141 miles, which moved by truck at \$5.50 per 1,000 against a rail rate of \$5.40 plus the cost of trucking to the job, estimated at \$2.50. A 54 per cent reduction in the rail rate would be necessary to equal that of the truck. See also analysis of cotton traffic, above.

loss is permanent, whether it may grow still greater in the near future, and what coordination of rail and motor facilities can achieve in the way of checking it or ameliorating its effects, attention must first be given to the class of traffic which has gone to other forms of transportation and why such traffic has left the rails.

Decline in railroad passenger travel.—The accompanying table shows the change in volume of travel by railroad for a considerable span of years. Commuter travel is included.

TABLE VIII.—*Passenger traffic, Class I railroads; (Average 1911–1915=100)*

Item	Average, 1911–1915	1920	1923	1926	1929	1930
Passengers carried.....	100.0	128.5	102.7	89.7	81.2	73.2
Passenger-miles.....	100.0	142.0	115.1	107.6	94.2	81.3

Annual statistics indicate that between 1917 and 1920 railroad passenger travel grew very considerably above the trend of increase shown in the immediately preceding years. In 1920 the number of passengers was 28.5 per cent greater than the 1911–1915 average and the number of passenger-miles 42 per cent greater. Had the 1910–1916 trend continued to 1929, the passenger business of that year, measured in passenger-miles, would, in fact, have about equaled that of 1917.

The foregoing observations are made in order to give a truer measure of the decline which has occurred in the past few years. Since 1923, however, rail travel has undergone a distinct decline until in 1929 passengers carried were 20.9 per cent fewer than in 1923 and passenger-miles were 18.1 per cent fewer. Comparing 1929 with 1911–1915, the reductions in passengers carried and passenger-miles were 18.8 and 5.8 per cent, respectively. The further decline in 1930 carried the reductions to 26.8 and 18.7 per cent below the 1911–1915 average, but general conditions obscure the picture.

Changes in character of railroad passenger traffic.—The reduction in short-haul and coach travel relative to long-haul and Pullman travel is well known and requires only brief mention. Indication of the marked changes which have occurred in the first respect is provided by the smaller decline in passenger-miles than in passengers, as shown by Table VIII, and by the figures as to average journey per passenger. Omitting commuter passengers, this average increased from 54.68 miles in 1922, the first year in which a separation of commuter travel was made, to 75.22 miles in 1929, or approxi-

mately one-third.²² Other evidence of the relatively greater decline in short-haul traffic is furnished by figures submitted by numerous witnesses as to local and interline business²³ and as to intrastate and interstate business.²⁴ The loss of rail passenger traffic is greatest within the short-haul area, which may be defined as approximately 100 miles. Such diversion works its severest effects on short-line and interurban railroads and on the branch lines and minor subsidiaries of large railroad systems. On many such properties passenger travel has largely or entirely disappeared. Some large systems have felt a relatively minor reduction of passenger travel, while other such systems, more dependent on the short-haul traveler, have suffered seriously. Long-haul travel has also been affected in recent years, as shown later.

The effects of the forces which have driven short-haul traffic from the rails are also seen in the changes in coach travel compared with other travel. On the Chicago and North Western, for example, the number of coach passengers (excluding commuter) declined 46.34 per cent from 1923 to 1929, the passenger-miles declined 35.88 per cent, and the revenue 41.17 per cent, whereas its sleeping and parlor car passengers declined 5.88 per cent in number, increased 5.88 per cent in passenger-miles, and declined 1.18 per cent in revenue. On the Nashville, Chattanooga and St. Louis, Pullman surcharge earnings were 4.3 per cent greater in 1929 than in 1921, though total passenger revenue was 43.12 per cent less. These illustrations are confirmed by general observations. The increased operation of excursions in recent years has helped toward maintaining the volume of travel, but general statistics as to such business are lacking.

Pullman travel has not been as adversely affected. Considerable long-distance travel, including some transcontinental, has been diverted to the highways, and forces which operate to reduce short-haul rail travel themselves reduce the volume of Pullman-car travel.

²² Commuter traffic in 1922 accounted for approximately 17 per cent of the total passenger miles of the railroads and in 1929 for approximately 22 per cent. This travel increased 12.5 per cent from 1922 to 1929, while other passenger miles declined 17.7 per cent.

²³ Thus on the Maine Central local passengers declined 64.67 per cent from 1921 to 1929 while interline passengers declined 26.75 per cent; from 1923 to 1929 the local business of the Chesapeake and Ohio declined 55.3 per cent and its through business 37.8 per cent; on the Burlington revenue from through traffic between important cities declined 11.6 per cent from 1925 to 1929 compared with a 27 per cent decline in total passenger revenue.

²⁴ For example, the Chicago and North Western reports a 56.43 per cent decline in intrastate passenger miles (exclusive of Illinois commuter traffic) from 1921 to 1929 compared with a decline of 8.10 per cent in interstate travel. Similarly, the Rock Island reports a reduction of 42.6 per cent in intrastate passengers carried from 1925 to 1929 and a 14.1 per cent decline in interstate passengers; revenue from the two groups declined 35.8 and 11.41 per cent, respectively.

The following statistics afford a picture of the general course of Pullman travel over a period of 20 years:

TABLE IX.—*Pullman Company; number of revenue passengers*

Year	Berth	Seat	Total
1911 (June 30).....	12,435,000	9,220,000	21,655,000
1916 (Dec. 31).....	15,671,000	12,195,000	27,866,000
1920.....	25,178,000	14,078,000	39,256,000
1921.....	19,471,000	11,754,000	31,225,000
1922.....	19,725,000	12,024,000	31,749,000
1923.....	21,490,000	12,759,000	34,249,000
1924.....	21,420,000	12,659,000	34,086,000
1925.....	22,471,000	13,055,000	35,526,000
1926.....	22,658,000	13,415,000	36,073,000
1927.....	22,042,000	13,155,000	35,197,000
1928.....	21,311,000	12,613,000	33,925,000
1929.....	21,009,000	12,420,000	33,435,000
1930.....	18,498,000	10,861,000	29,360,000

Pullman travel increased 81.3 per cent from 1911 to 1920, compared with an increase of 27.3 per cent in all passengers carried. In the years 1921 and 1922 it slumped and then rose to a practically stationary level from 1925 to 1927, some 26.5 per cent above the 1916 volume of business. A noticeable reduction occurred in the next two years, followed by a sharp decline in 1930. From 1923, the year shown to be the best base to use in tracing the course of railroad travel, to 1929 the number of Pullman travelers declined 2.3 per cent, compared with a decline of 22.2 per cent in the number of all travelers by railroad. During the years 1923 to 1927 Pullman travel showed at least a normal increase over pre-war, and its subsequent decline, barring 1930, leaves it still one-fifth higher than its 1916 volume.²⁵

Where railroad passenger business has gone.—There is general agreement that the private car rather than the bus is the principal cause of diversion.²⁶ The number of passenger cars increased by 9,270,000, or over 100 per cent from 1920 to 1925, during which years the number of rail passengers carried fell by 29 per cent. Bus travel was just beginning to establish itself in a large way in these years. This general evidence is supported by illustrations from the experience of individual railroads. The Burlington is the only railroad between Peoria and Galesburg, Ill. In 1921, at a time when the connecting highway was not in a satisfactory condition, the

²⁵ Baggage revenue of Class I railroads, always a minor item, increased 37.4 per cent from 1915 to 1920 but by 1929 had declined 40.1 per cent from the 1920 and 17.6 per cent from the 1915 level. Such revenue amounted to \$5,203,028 in 1929.

²⁶ Reduced railroad train service is a minor factor. Thus the Nashville, Chattanooga and St. Louis Railroad ascribes one-twelfth of its loss to this cause. Another factor which helps explain the particularly heavy losses of some railroads is the reduction of population and business activity incident to the exhaustion of timber, ore, or other operations on their lines.

railroad carried 46,037 passengers; by 1926, with improvement of the highway, there had been a decline of 26.5 per cent in rail travel; in 1927 the highway was finally completed and thereafter the Burlington rail business declined rapidly to a level in 1929 a little over one-fourth of its 1921 volume. During the 12-month period from November, 1929, to October, 1930, the Burlington carried 22 per cent of the passengers between these points, its own bus subsidiary 16 per cent, and private cars 62 per cent. The Wabash reports an 85 per cent loss in station-to-station business on a line in Missouri on which there was no competitive bus operation. These and other illustrations²⁷ show that the private car is the principal factor in the diversion of the railroads' short-haul business.

Nevertheless, the bus itself has become a serious competitor of the railroad. Bus operations took on a broader scope as the industry developed. Lines connecting distant cities superseded local lines serving only near-by communities. More and more has the railroads' intermediate and long-haul traffic, in addition to the short haul, been affected by commercial highway operation. The Denver and Rio Grande Western ascribes about one-sixth of its loss to busses; figures submitted by the Northwestern Pacific indicate a 30 per cent loss to such carriers; the Missouri Pacific ascribes to bus competition not over \$3,000,000 out of a total loss in passenger revenue of \$10,000,000 from 1920 to 1930; the Southern Pacific sets the figures at 25 per cent on both short-haul and long-haul business; the Louisville and Nashville states that its loss to busses ranges from 35 to 40 per cent of the total; the Norfolk and Southern on its electric division sets the loss at 30 per cent.

On the basis of the foregoing evidence it is reasonable to conclude that generally speaking from about 20 to 30 per cent of the loss in passenger business has been to organized highway operations.

In addition to the loss of traffic there has been the loss which results from charging a lower average rate of fare for the passengers who do travel by rail. The average revenue per passenger-mile declined from 3.093 cents in 1921, the first full year in which the present basic 3.6 cents per mile fare was in effect, to 2.811 cents in 1929, or 9.1 per cent. Stated in another way, passenger-miles declined 16.9 per cent from 1921 to 1929 and passenger revenue 24.9 per cent. This reduction reflects efforts to hold travel by various

²⁷ Between Fargo and Jamestown, N. Dak., the combined rail and bus revenue declined from \$144,164 in 1926 to \$107,273 in 1929 and the number of passengers carried by the two agencies fell from 94,742 to 70,172. The Denver and Rio Grande Western suffered a decline in annual passenger revenue of \$2,000,764 between 1922 and 1930, but its own bus subsidiary, which supplied practically all of the regular commercial highway service in the territory, earned \$404,647 per year in the years 1928 to 1930, or approximately one-sixth of the 1928 rail loss.

excursion and other low fares. In so far as such rates develop new business, their depressing effect on the average revenue is nominal. The loss in average fare per mile is, in fact, greater than these figures indicate, inasmuch as there is to-day a greater proportion of Pullman travel, with its higher average basic fare per mile. Long-haul bus travel, which is less vulnerable to the effects of the private car, has increased in recent years, owing to active solicitation and advertising and to the low level of rates relative to the standard rates charged by the railroads. Short-haul bus travel of the commuter type has also substantially increased in recent years.

Basis of competition between railroads, private car, and bus—(1) Service.—Local rail service on branch lines and main lines was rendered obsolete many years ago wherever it came in competition with the superior interurban service. The trains were infrequent then and have become even less frequent in recent years; they were not always timed for the traveler's convenience and required one or more changes to reach points not near at hand; the equipment was not inviting; stations frequently were in out-of-the-way places. Such conditions of local travel were inherent in the nature of the railroad business. Exceptions to the foregoing characterization of local rail service occurred where local points were so situated and large enough to command the service of through trains. The latter, which have given good service for a great many years, have improved greatly in recent years and until 1929 had shown some increase in numbers.

In those places where the interurban had not already done so, the private car when it came into common use and later the bus severely affected the railroads' short-haul business and increasingly diverted their intermediate and long-haul traffic. The private car offers the advantages of flexibility of routing, convenience as to departure and movement en route, and the intangible values attaching to car ownership and to independence of organized transportation agencies, and, where three or more travel together, costs which do not exceed those of travel at standard rail rates. Frequently the private car can cut across country, making better time than is possible by rail. With so many factors entering in it is impossible to state the terms of competition on a purely cost basis. There are potential travelers who do not care to own cars or assume the responsibility of driving, particularly in congested sections, and some who prefer to utilize the time spent in travel for some business or other purpose. The private car has both increased and changed the Nation's travel habits and its competition with rail carriers is commonly on a convenience rather than cost basis.

The bus offers advantages which in many respects equal those of the private car. There is, to be sure, less flexibility of routing and of schedules. There is generally greater convenience as to points of departure and arrival than in the case of rail travel, although there is no advantage in this respect over interurbans and a disadvantage with respect to the private car; schedules are generally more frequent than by rail and are more easily understood through being spaced at regular intervals; the scenic advantages of the highways are brought within reach; and off-rail points are served, though of course such points are relatively few compared with those which can be reached by the private car. The novelty of bus travel for many people also continues to be a factor. On the other hand, railroads exceed motor-bus carriers in safety and responsibility; there are opportunities to read and work on trains which are generally lacking on busses; dining and sleeping facilities on busses have proved unsatisfactory; and lavatory accommodations are generally lacking. The time in transit is frequently materially greater than by rail, though this depends on the distance, the sections served, and the relative mileage by rail and highway. Busses carry less baggage than do trains. Much rail equipment, except that used in solely local service, has been modernized to a degree comparable with and in some respects superior to the facilities offered by the modern parlor coach.

Basis of competition between railroads, private car, and bus—(2) Rates.—For reasons indicated earlier, a comparison of bus fares with the cost of operating a private car is of no more avail than a comparison of the cost of travel by rail and private car. A comparison of bus and rail fares should, however, throw light on the nature of the competition of these two agencies of transportation.

The level of bus rates can be understood best if consideration is given first to the basic rates established by the regular independent operators for both State and interstate service; second, to the modifications of such rates which result from so-called wildcat competition; and third, to the rates of companies subsidiary to or associated with steam or electric railroads.

Basic scales of fares.—The basic scale of bus fares is set at a point which will develop the largest volume of paying business. The operators' competitors are the steam and electric railroads and the private car; the possibility of creating new business from groups which ordinarily do not travel is also a consideration. It may be inferred from the fact that a large proportion of those who travel by bus are owners of cars that bus fares for short and medium length hauls are set more in relation to the cost and convenience of operating private cars than they are in relation to rail fares.

Bus fares per mile for the short and medium distances therefore show no well-defined relationship to rail rates, being sometimes above but more generally below, though proportionately not so much below rail rates as are long-haul bus rates. Round-trip local bus rates tend to be less, frequently 10 per cent less, than double the one-way fare. Factors helping to explain the apparently erratic character of the short-haul bus rates, when compared with rail, are differences between the highway and rail mileage, the volume of traffic or size of termini cities, and sometimes topographic and road conditions.²⁸ In some States efforts have been made by public authorities to keep bus rates in a defined relationship to rail, as in Illinois at a level not less than 10 cents above the corresponding rail rates, but the competition of interstate bus operators has largely defeated such efforts.²⁹

Long-haul bus rates, on the other hand, are usually below the level of the standard rail rates and the spread tends to increase with distance, although there is some irregularity and beyond certain distances further reductions of the rate per mile do not occur. The illustrations given below show the comparative level of standard rail and bus rates per mile between Los Angeles and Portland, Oreg., Los Angeles and Boston, and Tampa and Boston and Chicago.

TABLE X.—Comparison of bus with standard rail rate per mile, Los Angeles, Calif., to Portland, Oreg.

	Approximate rail mileage	Bus fare in cents per mile	Per cent bus fare of standard rail fare per mile
From Los Angeles, Calif., to—			
Bakersfield, Calif.	160	3.1	86.1
Fresno, Calif.	280	2.9	80.6
Santa Cruz, Calif.	400	2.6	69.4
San Jose, Calif.	430	2.3	63.9
San Francisco, Calif.	475	2.1	58.3
Portland, Oreg.	1,140	2.1	58.3

Here the bus rate ranges from 86 per cent of the rail rate at a distance of about 160 miles to 58 per cent at distances from 475 to 1,140 miles.

²⁸ Rates tend to be higher for service in sections where traffic is light or where operation must be over mountains or over unimproved roads.

²⁹ Thus the \$7 rate between St. Louis and Kansas City, Mo., found reasonable by the Missouri Public Service Commission, has been reduced by the competition of interstate operators, including some who resort to operation over the State boundary to secure an interstate status.

TABLE XI.—Comparison of bus with standard rail rate per mile, Los Angeles, Calif., to Boston, Mass.

	Approximate rail mileage	Bus fare in cents per mile	Per cent bus fare of standard rail fare per mile
From Los Angeles, Calif., to—			
Phoenix, Ariz.....	350	3.1	86.1
El Paso, Tex.....	840	2.9	80.6
Amarillo, Tex.....	1,200	2.7	75.0
St. Louis, Mo.....	2,050	2.3	63.9
Chicago, Ill.....	2,220	2.3	63.9
Cleveland, Ohio.....	2,525	2.3	63.9
Pittsburgh, Pa.....	2,650	2.2	61.1
Washington, D. C.....	2,860	2.3	63.9
Baltimore, Md.....	2,860	2.3	63.9
New York, N. Y.....	3,025	2.3	63.9
Boston, Mass.....	3,150	2.3	63.9

Here the bus rates range from 86 per cent of the rail at a distance of about 350 miles down to a little over three-fifths at distances in excess of about 2,000 miles. Except for the drop at Pittsburgh, the rate per mile is constant beyond St. Louis.

TABLE XII.—Comparison of bus with standard rail rate per mile, Tampa, Fla., to Boston, Mass., and to Chicago, Ill.

	Approximate rail mileage	Bus fare in cents per mile	Per cent bus fare of standard rail fare per mile
From Tampa, Fla., to—			
Gainesville, Fla.....	170	2.8	77.8
Jacksonville, Fla.....	210	2.8	77.8
Richmond, Va.....	880	2.7	75.0
Washington, D. C.....	1,000	2.6	72.2
Philadelphia, Pa.....	1,150	2.6	72.2
New York, N. Y.....	1,225	2.5	69.4
Boston, Mass.....	1,460	2.4	66.7
or			
Jacksonville, Fla.....	210	2.8	77.8
Atlanta, Ga.....	500	2.0	72.2
Cincinnati, Ohio.....	980	2.5	69.4
Chicago, Ill.....	1,240	2.5	69.4

Here the rates per mile are generally a little closer to rail than in the preceding illustrations, but they show a well-defined tendency to decline as the distance increases.

In contrast to the situation found in the case of short-haul traffic, these long-distance bus rates appear to be adjusted primarily in relation to the rail rates. The rail rate used in the comparisons is the standard 3.6 cents per mile. For long-distance travel Pullman or tourist accommodations are a general requirement and are an additional item of cost. On the other hand, there are many forms of reduced rail rates, available particularly for transcontinental travel and in the form of excursion rates. The explanation of the

general tendency for the spread between bus and standard rail rates to increase with distance is doubtless found in either the increasing loss of time which the traveler by bus suffers or in reduced rail rates which are not available for shorter distances. While some travelers do not object to the longer time consumed in bus travel, this is an important factor in the case of most travelers.³⁰

On the other hand, the explanation of the constancy of the rate per mile for long distances in the illustrations given above, is to be found in the bus operator's costs. Presumably, rates below these levels would not be compensatory. Long-haul bus rates are therefore placed at a level between cost of operation and what can be obtained from travelers who generally put a saving in costs above comfort and a saving in time.³¹ As was said by a representative of one of the country's largest bus operators, " * * * The railroad is the definitely high-grade, fast form of transportation." Such a statement, so far as it relates to speed, is quite generally true at any distance, but, local main-line and branch-line rail service generally does not compare in frequency or convenience with what the busses offer. On long trips, particularly transcontinental, the flexibility allowed the travelers in the matter of making frequent stopovers is an advantage which the bus offers, and bus travel generally provides scenic advantages which make this service attractive.

Modifications of basic scales due to wildcat competition.—The foregoing analysis indicates that there is more system and order in bus rates than is generally apparent from an examination of bus fares. While differences in highway and rail mileage, volume of business, topographic and other physical conditions, and the amount of railroad competition produce irregularities in the basic bus rates, a more striking disturbing element is the presence, especially since 1925, of unregulated interstate operators. A few illustrations will show the character of this competition. Between New York and Boston, 242 miles, where the standard bus fare is \$4, some companies will take \$3 and even \$2, the latter fare yielding about three-fourths of a cent.

³⁰ Between Los Angeles and Chicago the time by coach exceeds that by train by two days. The fastest limited train makes the run from Portland to San Francisco in 21 hours, while the time by Greyhound bus is 20 hours 30 minutes. Between San Francisco and Los Angeles the fastest train time is 11 hours 45 minutes, by coach train 14 hours 40 minutes, by bus 15 hours 59 minutes. From Los Angeles to El Paso the respective times are 22 hours 45 minutes, 24 hours 20 minutes, and 34 hours 20 minutes.

³¹ No one bus company operates a coast-to-coast service. In this service and quite generally the country over bus companies have interline arrangements which call for prorates on a mileage basis. The rates cited in the illustrations are average through rates. An operator in the Southwest states that his long-haul rates are approximately 2.5 cents a mile, though this amount is based to some extent on 3 cents for the first 100 miles, 2.75 cents for the next 100 miles, 2.5 cents for the third 100 miles, and 2.25 cents for the remaining distance. The gradation presumably reflects the same disadvantages of bus travel with increased distances as was pictured in the transcontinental and other rates set forth above.

per passenger mile. Between Detroit and Chicago, 277 miles, the normal bus fare is \$5, but wildcat operators have forced the rate to \$2 and at times even lower; the standard rail fare is \$9.81. Between Chicago and St. Louis a \$3 bus fare yields 0.97 cent a mile. In addition, business is solicited for private cars at very low rates. Between San Francisco and Los Angeles, where the rail fare is \$17.04, rates as low as \$6 or \$7 prevail. The economic soundness of such competition is considered elsewhere, as are the responsibility of the operators, the safety of their equipment, and the profitableness of their operations. From the present standpoint such operations are of interest because of their unsettling effects on standard bus fares and their important effects on rail travel. There are practices which if indulged in by railroads would be stamped as discriminatory, such as departures from the provisions of the long-and-short-haul clause, and the cutting of bus rates, just before departure, to fill the bus.

Rates of rail subsidiaries.—Subsidiaries or affiliates of many steam or electric railroads operate busses in substitution for train service or in an auxiliary feeder or distributor capacity, and some engage in service which is independent of rail operations.

Rates for substitute or auxiliary service are generally the same as the rail rates and tickets are generally interchangeable. In some instances there are minor variations which result from differences in highway and railway mileage or from rounding off the bus fare for convenience in collection. The rail rates with which these rates compare may be the standard rates or special commutation rates. These bus rates are a symmetrical part of the general rail-rate structure.

On the other hand, when a railroad subsidiary engages in independent highway operations the rates and charges must be substantially the same for the same service as those of other bus operators. Thus the Boston and Maine Transportation Company and its three bus competitors charge \$2.50 one way, and, except for one line, \$4 for the round trip between Boston and Portland, Me., 110 miles, while the rail rate is \$3.92 one way and \$7.84 round trip. There is a case of record in which a railroad controls or has an interest in two bus lines, one of which charges the standard bus fare and the other a lower fare.

Charter rates.—Charter busses are operated in all sections of the country, generally at a party rate for a defined trip or on the basis of mileage or the time the bus is in use. Railroad bus subsidiaries provide such service as well as the independent operators. Substantial savings below regular rates are provided. Considerable complaint was made by representatives of certain rail carriers against the rate practices of operators of chartered busses on the ground that

such operators practice discriminations and are free to change their rates and to make any rate they see fit, while the railroads are required to publish their rates on statutory notice before they may make reduced rates for a party. In some instances the bus operators delay making a bid until that of the railroads is known and it is too late for the railroads to obtain authorization to make a lower rate. In volume, charter business is not an important factor.

Conclusions as to rail passenger travel.—The foregoing analysis has brought out certain conditions and trends which can be summarized to advantage. (1) The railroads' branch-line and most of their short and intermediate length main-line travel, other than commutation and that between the largest population centers, appears to be gone; (2) the same observation would apply to the different types of service rendered by interurbans were it not that aggressive management and speedy and comfortable equipment have demonstrated the possibility, at least in some sections, of holding and even increasing the volume of travel; (3) for long hauls and many hauls of intermediate length train service has inherent advantages for travelers other than those of low incomes or who discount the importance of rapid movement; as to such lengths of haul the rail business should hold its own; (4) while busses are still creating new business among those who would not ordinarily travel and while there is still novelty in bus travel for many people, the railroads may benefit in the future from this encouragement of travel and from the loss of novelty attaching to riding on the highways; (5) there has been a diminishing rate of increase in the ownership of the private passenger car;³⁰ and (6) increased highway congestion may tend to discourage travel by both private car and bus, especially in the approaches to the largest cities³¹

There is, therefore, reason to conclude that, after such adjustments are made, travel by railroad will show considerable stability and slow growth. Such a conclusion should not, however, be permitted to minimize the cost of effecting the adjustment, a subject considered in the ensuing section. Nor should it detract from the importance of a survey of what the railroads have done and propose to do by way of meeting the new competition. These efforts are the subject matter of the second section beyond.

IV. EFFECTS OF TRAFFIC DIVERSIONS ON THE OPERATING AND FINANCIAL PROBLEMS OF RAILROADS

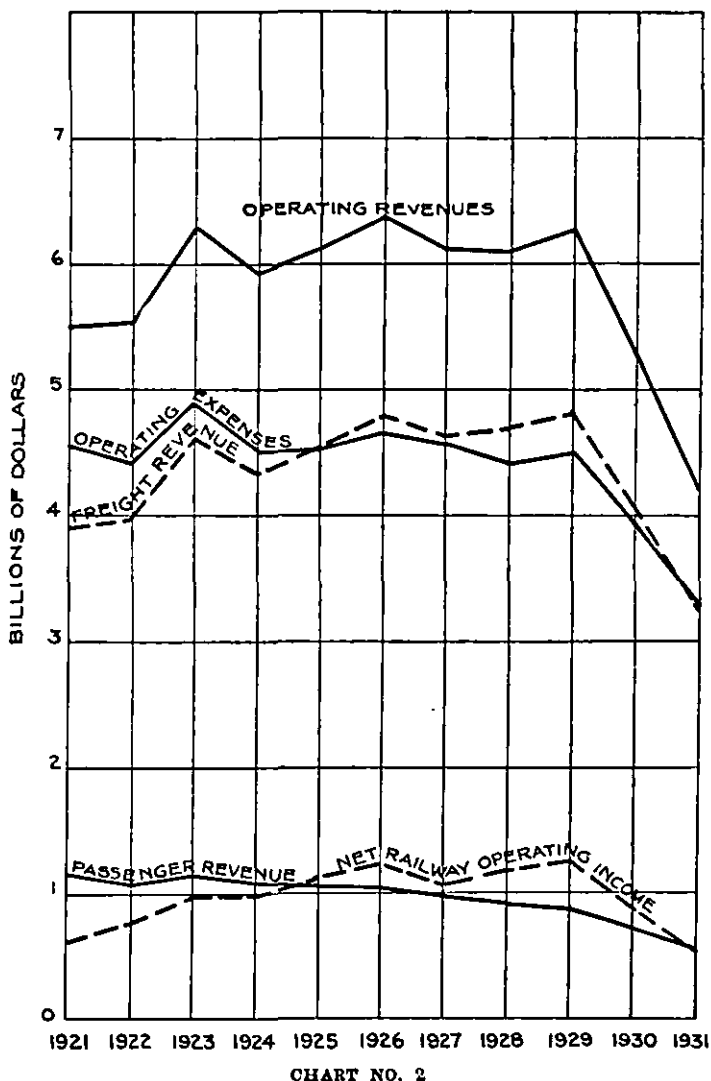
Whatever the viewpoint or objective adopted in determining the kind of regulation, if any, to be imposed on highway carriers, a

³⁰ The increase of private-car registrations was at the rate of about 1,545,000 per annum from 1920 to 1925 and of 925,000 from 1925 to 1930.

³¹ The effects of air transportation on rail travel were not developed on the record.

complete statement of facts pertinent to an understanding of the rail-motor problem to-day is essential. Traffic diversions from Class I railroads have resulted, without allowing for the expected

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CLASS I RAILROADS
1921-1931



customary increase, in a loss of gross passenger revenue of \$274,000,000, comparing 1929 with 1923, or of \$418,000,000, comparing 1930 with 1923, and in a loss of gross freight revenue which also runs into the hundreds of millions, aside from the effects of rate reductions made to meet motor competition.

The accompanying chart shows the trend of railroad revenues and expenses in the period 1921 to 1931. Total operating revenues reached their peak in 1926, though the earnings of that year were closely approximated in 1929. The trend of operating revenues reflects, in general, an increasing volume of freight traffic to 1929 and a declining volume of passenger traffic dating back to 1921. Operating expenses showed a general downward trend from 1923 to 1929 and net railway operating income increased irregularly to a peak in 1929. All of the items show a precipitous decline in 1930 and 1931. This decline is attributable in greater part to general business conditions, but increased competition of highway, waterway, and pipe-line carriers is also a factor.

To this group of facts are now to be added certain less apparent ones which also bear directly on the problems of coordination and regulation. These facts relate to the inability of rail carriers to adjust their expenses proportionately to reductions in the volume of traffic. Carriers by water, as, for example, those operating on Long Island Sound or on Lake Michigan, have similar losses and difficulties.

Difficulties in adjusting rail passenger service to reduced volume of travel.—It has been difficult for the railroads to adjust their passenger service to reductions in the volume of travel. Charter and other statutory obligations for the continued maintenance of service, local opposition to abandonments, the requirements of the mail and express traffic, and other factors have required the continued operation of trains which increasingly do not earn operating expenses and sometimes not even crew expense. Thus the Chicago and North Western reports the operation in 1930 of 22 trains which did not return out-of-pocket expenses. The St. Louis-San Francisco reports an 81 per cent decline in passengers carried and a 58 per cent decline in passenger revenue from 1920 to 1929, but only an 8.1 per cent decline in passenger-train miles and a 1.7 per cent decline in passenger-car miles; on the Chicago, St. Paul, Minneapolis and Omaha in the same period passenger revenue declined 51.52 per cent, passenger-train revenue 44.94 per cent, passenger-train miles 1.51 per cent, and passenger-train car-miles 5.37 per cent. The Rock Island increased its steam and rail-motor train mileage 1.75 per cent from 1919 to 1929, while the number of passengers carried intrastate declined 79.02 per cent and interstate 53.2 per cent. Certain other roads have been more successful in effecting reductions. Thus the New York, New Haven and Hartford reduced its train-miles 14.6 per cent from 1920 to 1929 in the face of a 23.2 per cent decline in passenger-miles, but it has substituted bus service in many cases. The Delaware and Hudson reports a reduction in train-miles of branch-

line and short-run and turn-around main-line trains proportionate to the reduction of all passengers carried.

Turning to the Class I railroads, it may first be noted that the war and postwar period was one of intensive utilization of rail-passenger service. In 1920, 42.03 per cent more passenger-miles of service were rendered with 0.35 per cent fewer train-miles than on the average of the years 1911-1915. To a less degree, the same was true of 1923, when passenger-miles were 15.08 per cent greater than in 1911-1915 and train-miles were 0.53 per cent less. However, between 1923 and 1926 train-miles expanded slightly over pre-war (1.77 per cent), though passenger-miles declined 6.53 per cent and passengers carried 12.66 per cent. Between 1923 and 1929 passengers carried declined 20.92 per cent and passenger-miles 18.13 per cent, but the number of train-miles remained unchanged.² Between 1923 and 1930 the decline in passengers carried reached 28.71 per cent and in passenger-miles 29.35 per cent, while train-miles declined only 3.92 per cent. Passengers per train declined from 67 in 1923 to 55 in 1929 and 49 in 1930 and per car from 16.3 to 12.5 and 11.3.

The foregoing changes, which show how difficult it has been to effect reductions in operations proportionate to reductions in patronage, are translated into general terms in the following ratios of operating expenses to operating revenues.

TABLE XIII.—*Passenger service operating ratio, Class I railroads, 1922-1930*¹

Year	United States	Eastern district	Southern district	Western district
1930.....	101.22	90.23	116.05	112.19
1920.....	90.14	81.70	99.87	98.79
1928.....	91.69	82.24	99.81	102.27
1927.....	89.69	82.08	95.71	98.16
1926.....	85.14	78.31	86.18	93.03
1925.....	83.52	78.50	80.56	91.27
1924.....	83.19	80.37	80.96	87.82
1923.....	82.15	81.05	78.15	85.21
1922.....	83.79	82.54	81.07	86.39

¹ Ratio of operating expenses allocated to passenger-train service to passenger service operating revenues, including revenues from express, mail, baggage, milk, and miscellaneous sources. Recent changes in express, baggage, and milk revenue have been set forth above.

In 1929, the railroads of two major divisions of the country expended practically all of their passenger-service revenue in meeting passenger-service expenses; in 1930 these two districts actually expended one-sixth and one-eighth more than they took in. Only

² There was, however, in this period a 200 per cent increase in the operation of rail-motor cars, at a considerable saving over the expense of operating trains. Deducting the mileage of such cars, the train mileage of Class I railroads declined 8.3 per cent from 1928 to 1929, compared with a decline of 18.13 per cent in all passenger-miles. The use of rail-motor cars is largely confined to a few roads rather than general. Mixed freight and passenger train-miles, not included in the foregoing, increased 7.69 per cent between 1926 and 1929, but these constitute less than 5 per cent of the total mileage.

in the eastern district has the ratio been kept within bounds, and even there it rose to 90.23 per cent in 1930. Allowing for the unusual circumstances of 1930, it still remains true that passenger service in the southern and western districts is chronically conducted below a profitable level, considering operating expenses only. If consideration is also given to the failure to make a return on investment in stations, equipment, and other facilities, the loss is magnified.³³

The problem of adjusting local-train schedules and of finding employment for equipment and stations used in local and coach service was eased for a number of years by reason of the increase of Pullman travel. Delays in effecting adjustment were general, and to date some roads have advanced the process much further than others.³⁴ However, Pullman travel began to decline after 1926 and took an abrupt fall in 1930. Thus new problems of adjustment have been added to the earlier ones.

Adjustment of rail freight service to reduced volume or changed character of traffic.—Barring recent declines attributable in major part to general business conditions, freight traffic as a whole has shown a tendency to increase, though at a much lower rate than formerly. However, general figures conceal internal changes which involve costly adjustments. The problems raised by the loss of less-than-carload traffic are similar to those faced in the case of local passenger service. Trains must continue to be operated, though perhaps on altered schedules, in order to prevent further diversions of traffic and to take care of carload traffic, long-haul less-than-carload traffic, and switching operations at the smaller local points. Any reduction of service tends to make the remaining service less attractive and to multiply the difficulties of holding business to the rails. This inability to reduce train-service expense in proportion to reduction in business done means that costs per unit of service increase rapidly. Less efficient utilization of car supply also results.³⁵ The effect is greater by reason of the fact that the traffic lost generally pays higher rates than that retained. The combined effect, while by no means

³³ Thus the number of passenger-miles per unit of passenger-carrying equipment, including Pullman cars, was 1,127,769 in 1920, 914,088 in 1923, 848,460 in 1926, and 789,766 in 1929. The reduction in intensity of use was 30 per cent for 1920 to 1929.

³⁴ For example, the Southern Pacific in 1930 operated 54 per cent less branch-line train-mileage than it did in 1921. However, its main-line mileage increased 18 per cent, leaving only a 2 per cent reduction of total mileage compared with a 29 per cent reduction in revenue.

³⁵ Thus the average loading of less-than-carload freight at its Wayne Junction transfer is reported by the Reading to have declined from 13,081 pounds in 1924 to 11,337 pounds in the first 10 months of 1930; at its Newberry Junction the decline was from 12,402 to 9,724 pounds. The loading of Santa Fe merchandise cars at San Francisco for 10,635 in 1928 and 8,817 in 1930. Not all of the reduction is attributable to truck competition.

confined to less-than-carload traffic, explains the concern over the loss of less-than-carload traffic.

Carload traffic also has recently undergone greater transformations than at any time heretofore. Thus the loss of livestock traffic, reaching in 1931 to 33 per cent of the inbound movement, leaves idle many local loading and switching facilities. Increased highway movements of assembled automobiles leaves box cars of the automobile type unused. The loss of cotton to the trucks takes away a basic item of rail traffic and runs up the cost of rendering the remaining service. The movement of perishables, such as fruits and vegetables, for which a prompt and dependable rail service has been developed, is rendered more costly with the sporadic appearance of trucks, both by reason of the reduced volume of traffic and the added uncertainties as to the required car supply.

There may, of course, be some compensating advantages. The schedules of livestock trains, for example, may be improved where local shipments have fallen away, and other advantageous adjustments of train service may be effected. Generalizations are difficult, however, though there is ample reason for concluding that the operating disadvantages caused by losses of traffic far outweigh any resulting advantages.

The foregoing discussion of changes in passenger and freight service in relation to changes in volume and character of business done draws attention to considerations which are frequently overlooked. It may also help to clarify the ensuing discussion of what the railroads have done or propose to do to meet highway competition.³⁰

A further consideration is the fact that in the period 1922 to 1930 Class I and Class II railroads increased their net investment in transportation facilities by \$5,314,500,000. In the same period, \$5,600,000,000 was expended in highway construction. An estimate explained later places the total investment in motor facilities, including all vehicles, garages, and highways, but not city streets, at the close of 1929, at about \$25,000,000,000, or only slightly less than the recorded book value of all steam railroads. However, a very large proportion of the vehicles, garages, and other facilities included in the above figure are privately owned and used by persons for pleasure and business purposes, not in competition with the railroads. As noted, diversions of rail traffic to highway carriers, pipe lines, carriers by water, or otherwise, have rendered idle a part of the railroads' facilities. Thus, it was testified that on January 1, 1930,

³⁰ For example, any operating advantages to be derived from the loss of local merchandise traffic may not be realizable until highway service has been tied in with an altered rail service. See page 336 for accomplishment of various railroads in this direction.

6,213 locomotives and 476,234 cars were stored. However, the reasons for this idle equipment can not be definitely assigned between traffic diversions, increased efficiency in the use of equipment, and general business conditions. There were nearly 300,000 surplus cars in January, 1926, a year when rail traffic was practically at its peak and before intercity trucking had reached its present proportions. In the week of peak traffic of the same year serviceable surplus cars totaled 81,000. Much of the idle rail equipment has been superseded by more efficient types. Barring the effects of present business conditions, the surplus of facilities will be found principally in branch and secondary lines and the less efficient types of equipment. However, the pronounced decline of passenger traffic has lessened the use of all types of passenger equipment.

Inasmuch as the analysis to this point has been mainly in terms of the experience of Class I railroads, a brief summary of what has transpired in the case of the smaller steam railroads and the inter-urban railways is desirable.

Vulnerability of short lines and electric railways to motor competition.—The average distance of truck or bus operation compared with the length of the so-called short lines is generally such as to make such railroads particularly vulnerable to highway competition. Where such lines have not been seriously affected by truck competition it has been because of their having some basic source of traffic, such as coal or other mine products, or of their benefiting from increased production, as of agricultural products in some localities. Having commonly a traffic which lacks a broad diversity and little or no inbound through or overhead traffic, many short lines have suffered with the decline in business activity in the section served, as illustrated by reduced mining, lumbering, or agricultural operations. Very severe losses of traffic have been experienced by some such lines.

The following table shows the trend of traffic of Class II and Class III railroads for a period of years:

TABLE XIV.—Tons of freight carried, Class II and Class III railroads

Period	Tons	Per cent increase over			
		1911-1915	1920	1923	1926
Average, 1911-1915	1 167, 867, 007				
1920	167, 638, 980	0.20			
1923	169, 516, 307	7.39	1.12		
1926	162, 123, 165	2.70	1 3.20	1 4.36	
1929	132, 732, 142	1 15.02	1 20.82	1 21.70	1 18.1
1930	115, 937, 272	1 26.56	1 30.82	1 31.61	1 28.4

1 Figures for 1912 used in estimating traffic of Class III railroads in 1913.

1 Decrease.

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The increase in 1920 was only 6.20 per cent compared with the 27.79 per cent increase of less-than-carload and 25 per cent increase of carload freight of Class I railroads shown in Tables III and IV. The 1929 volume of freight is 18.13 per cent below the pre-war average, while Class I railroads' less-than-carload traffic is 11.26 per cent below and carload freight 37.62 per cent above. Further heavy losses occurred in 1930. The table does not reveal the extent to which well-sustained or increased traffic of some lines has offset the decreases suffered by other lines, or the adjustments required to be made to meet changes in the character of the traffic of individual lines.

The passenger traffic of the short-line railroads, which for many years has been at a low ebb, has in many cases practically disappeared.

TABLE XV.—*Passenger traffic, Class II and III railroads*

Period	Passengers carried		Passenger-miles	
	Number	Per cent decrease under 1911-1915	Number	Per cent decrease under 1911-1915
Average:				
1911-1915.....	57,737,000		783,834,000	
1920.....	35,051,000	39.29	521,238,000	33.50
1923.....	21,625,000	62.55	337,583,000	56.93
1926.....	12,227,000	78.82	195,204,000	75.10
1929.....	5,964,000	89.67	90,604,000	88.44
1930.....	4,389,000	92.40	60,817,000	92.24

A heavy reduction had occurred by 1920; by 1923 about 60 per cent of the prewar business was gone; by 1930 all but 7.60 per cent. While passenger-miles decreased slightly less than the number of passengers carried, by 1929 this minor compensating factor had become practically inoperative.

Many abandonments of short-line railroads and of branch lines of large systems have occurred. Motor competition increasingly accounts for such abandonments. In the last five years nearly 75 per cent of all applications for certificates to abandon rail operations have mentioned motor competition as a factor.

The interurban railways generally have suffered severely from the competition of the private passenger car and the bus. Their package freight has also been severely affected by highway competition, though their carload business appears to have suffered less. A very considerable mileage of interurban lines has been abandoned. The results of the aggressive efforts of some such carriers to hold their traffic are described later.

V. EFFORTS OF RAILROADS TO COPE WITH HIGHWAY COMPETITION

It is desirable next to determine what the railroads have done to meet the situation created by the diversions of traffic indicated in Sections II and III and with the operating problems described in Section IV.

Changing railroad attitudes toward motor competition.—The record is silent as to the railroads making any use of or taking any definite attitude toward motor transportation prior to the period of traffic congestion incident to the World War.²⁷ At that time the roads, mainly in the East, which faced congestion in its worst forms, were not unwilling and in some cases urged that traffic be diverted to the highways. With the passing of congestion came a period of renewed indifference to highway transportation, explained, it is stated by some railroad witnesses, by the large and serious problems the railroads faced in the way of physical, operating, and financial rehabilitation.

As highway transportation grew in importance in the post-war period, some railroads foresaw its potentialities as a competitive and complementary facility more clearly and acted with greater promptness than did others. Their responses may be grouped under two major heads: (1) Efforts of a directly competitive character, and (2) efforts in the direction of utilizing motor transportation in coordination or conjunction with rail. Competitive efforts have taken the form of improved rail service, reduced rates, and motor operations independent of rail service. Brief attention will be given to each of these subjects.

Any completed adjustment of competitive agencies to one another represents coordination. However, we shall give the term the more specific meaning of combining two or more forms of transportation in the interest of better service or economy. Such combination may be effected by a single transportation agency or by the cooperative efforts of different agencies.

Efforts to meet highway freight transportation through improved service.—By improved rail service is meant the provision of better equipment, faster and more convenient schedules, and similar advances in the standard of service without the use of other than rail facilities. Illustrations are the use of trucks in assembling and distributing freight moved between terminals by railroad and the use,

²⁷ Store-door delivery was for many years furnished at Baltimore and Washington on higher-class shipments from New England, New York, and Philadelphia, but this service was instituted in 1883 in the case of Washington and earlier in the case of Baltimore. It was in every respect unique and was abolished by the carriers in 1913 on a finding by the commission that withdrawal of the service in one place and its retention in the other was unduly discriminatory, 27 I. C. C. 347.

in conjunction with main-line train service, of busses or trucks to reach off-rail points or points which can be more efficiently served by motor vehicles than by local trains.

An important fact to be noted in connection with freight service is that the undisputed improvement of efficiency and service standards which got under way in 1923 and has shown itself so generally in the furnishing of faster and more dependable service in the years following, had its basis primarily and for some time almost exclusively in considerations which had no reference to highway competition. With these general advances in service and efficiency there is no occasion to deal here. On the other hand, it is to be noted that declining traffic has required the elimination during this period of many local trains, the abandonment of stations, and other changes which leave certain shippers with less or poorer service than was enjoyed before.

Efforts made by the railroads specifically to meet the competition of highway carriers have taken the form principally of faster schedules and changes in the leaving time of trains to accommodate the shipper and to give earlier morning delivery. In a few instances stations are kept open later for the receipt of shipments. Such efforts are directed mainly at less-than-carload traffic moving over short and intermediate distances. There is evidence of widespread study of what changes of this character could accomplish in relation to their cost. The evidence also indicates that the results, so far as holding or regaining traffic is concerned, have been of minor importance in most cases. The reason lies in the generally limited opportunities which are available. Thus, where trucks give overnight service from door to door, the ability of the railroads to effect equally or even more prompt movement between cities does not overcome the handicap they are under in not giving store-door delivery.⁸⁸ This handicap is present except in those instances where receivers prefer to do their own draying. Another important limitation comes from differences in rates, particularly where the railroad faces heavy competition with contract carriers. Improved service will not sell itself if price differentials are appreciable. Some interurban railroads, by improved facilities and increased speed, by joining connecting lines to give service over considerable distances, and by aggressive solicitation, have held their own.

⁸⁸ Some experimenting has been done with loading merchandise freight on passenger trains. The results at Fort Wayne are said not to have been satisfactory, but a similar effort by the Missouri Pacific between Wichita and Kansas City, 254 miles, is said by a highway operator to have been a real threat to the motor carriers until the plan was withdrawn at the request of competing railroads. The possibilities of engaging in this practice are rather limited, however.

Efforts to meet highway passenger transportation through improved service.—Improved passenger service has taken a variety of forms, including faster schedules, made possible by increased running speed or by the elimination of local stops, new and often de luxe equipment, better roadbed, electrification, new or improved stations, better dining service, added trains, and the substitution of rail-motor cars for the less attractive local steam trains. These efforts have been directed at both Pullman and local and long-haul coach travel. They reflect in part the effects of motor competition, including in some instances air travel, and in part the competition of rail carriers with one another.

Improvements of the kind indicated have not yet had any appreciable effects in checking the most severe losses, that is, of travel over short and intermediate distances. A heavy passenger-carrying road in the East reports that good equipment, expedited service, fewer stops, and additional trains have proved profitable and have retained most of its long-haul business, while others report slight or no improvement. Variations in conditions help to explain the differences reported. Thus railroads having little long-haul or through passenger traffic and therefore facing serious highway competition on nearly all their business, would report less success than would carriers otherwise situated. In fact, some such roads have already practically ceased to be passenger carriers. Again, railroads serving regions where private-car ownership is high would have fewer opportunities to draw traffic with such improvements than would carriers serving large population centers where the ratio of car ownership to population is lower and where traffic conditions may render bus travel less attractive than elsewhere. There are, however, important advantages as to convenience which make short-haul bus travel a factor which improvements of the kind indicated do not overcome. For longer distances, rail service must compete with lower bus rates intended to draw predominantly the traffic of persons attracted primarily by the cheaper service, though there are some who travel long distances by bus for other reasons.

It is difficult to draw any definite general conclusions from the experience related of record. New factors, such as added private-car registrations, travel by air, and general business conditions, may explain the diversions which occurred after the improvements were instituted. Nevertheless, improved service doubtless has caused the declines to be less than they otherwise would have been. Whether the traffic retained or regained is sufficient to offset any added cost of providing superior service is a question which could be determined only upon detailed analysis. The answer is seriously complicated by

interrailway competition. The improvements indicated may have cumulatively beneficial effects when the processes of readjustment indicated elsewhere have been completed.

Several interurban railways have found that speeded-up service and better equipment had no important beneficial effects as business continued to decline. On the other hand, the experience of a carrier in the Middle West is that speed and improved equipment, together with competitive fares and extensive advertising, lead to material increases in revenue. The differences in the results reported by the several carriers may reflect differences in location, in the time at which the efforts were put forth, and in the competitive bus situation.

Efforts to meet highway transportation through reduced rates.—In the preceding pages attention has repeatedly been called to the influence which highway carriers exert over rail rates as a factor approximating in importance the diversions of traffic actually effected. At this point consideration will be given to the efforts of the railroads to hold or regain traffic by reductions of their rates, with indication of the results reported by the carriers.

Experience with reduced freight rates.—On no commodity have rate cuts been so general as they have in the case of cotton. Large losses of this traffic have prompted rate reductions of considerable magnitude. Railroads serving the Texas ports instituted such cuts in the latter part of 1928; reduced rates were offered as early as 1926 on certain movements to the lower California ports; in the South the first reductions occurred for the most part in August or September, 1930.³⁹ The cuts in some cases have been to the existing truck level and in other cases have been held above this level. In many instances the experience has been that trucks have met the reductions by further cuts.

Several roads regard the experiment as a success. It appears that the reduced rates have enabled many of the railroads to regain considerable amounts of cotton from the trucks and to check the growing tide of truck movements, though without putting an end to such movements. In other cases such rates have failed even to check the increase of truck movements. The reductions were necessary, however, if the railroads were to continue in competition for this traffic for distances up to 200 miles or more. While no carrier regarded the reduced rates as fully compensatory, many thought them reasonably so in view of the fact that little additional expense attaches to the movement of this traffic where train service and other facilities are available whether it moves or not. Such a basis of rates for a

³⁹ See *Rate Structure Investigation, Part 3, Cotton*, 165 I. C. C. 595, and supplements thereto (174 I. C. C. 9, 174 I. C. C. 240).

commodity which has been a major source of revenue of many of the affected carriers raises serious difficulties.⁴⁰ At the present time the terms of competition for this class of traffic appear to be distinctly unfavorable for most of the railroads.

Reductions on various other commodities have been held back by reason of the lack of stability of truck rates and the general expectation that reduced rail rates would be followed by reduced truck rates;⁴¹ by reason of the fear that reduced rates where competition is felt would jeopardize the whole of an interrelated rate structure; and by reason of the belief that standard rail rates on some commodities are so low that reductions would be impossible or that truck rates, especially back-haul rates, are so low that rail competition is practically out of the question.⁴² The railroads also call attention to the difficulty of accomplishing anything by reduced rates in those instances where the shipper desires pick-up and delivery service or attaches importance to the smaller lots in which he can purchase shipments which move on truck rates or to the special services attending truck movements.

However, there have been numerous reductions, other than those on cotton, as on assembled automobiles, fresh fruits and vegetables, cocoa beans, chocolate and confectionery, raisins and dried fruits, gasoline, sugar, lumber, sand and gravel, and various other commodities. Less-than-carload rates have generally been maintained, except where so-called commodity rates on mixed carloads have been established or where the terms under which some carriers render store-door service result in giving added service at prevailing rates. The latter development is considered presently. Illustrative of the former are rates established on November 7, 1931, by the Delaware, Lackawanna & Western, Central Railroad of New Jersey, Lehigh Valley, and the Reading on all freight except certain bulky, hazardous, perishable, or valuable articles, in mixed carloads, loaded in box cars, subject to a minimum weight of 30,000 pounds. These rates apply between Jersey City and Philadelphia on the one hand and Allentown, Bethlehem, Easton, Scranton, and Wilkes-Barre, Pa., on the other, and also between Jersey City and Philadelphia. They are on a basis slightly higher than the fifth-class rates prescribed in

⁴⁰ A minor consideration is the fact that any curtailment of truck movements helps to reduce the volume of back-haul movements of bagging, ties, and general merchandise.

⁴¹ Of the members of the American Short Line Railroad Association who reported on this question, only 15 per cent believed that the reduction of rates would help to regain traffic. As hitherto indicated, the problems of such carriers are particularly acute.

⁴² The Santa Fe reports attempts to meet back-haul rates on sugar, soap, lumber, and canned goods from San Francisco Bay points and Los Angeles Harbor to various points in the interior. Comparing the 12 months ending Oct. 31, 1930, with the calendar year 1927, the volume of such traffic moved by rail fell over a range of 20 to 84 per cent and the revenue over a range of 69 to 92 per cent.

Eastern Class-Rate Investigation, 164 I. C. C. 314. The tariffs provide that all freight is to be loaded into the car by the shipper and unloaded by the consignee. The rates are available only when the freight is shipped from one station in one car in one day by one shipper for delivery to one consignee at one destination. The rates are published to expire May 7, 1932. Such commodity rates have also been established by other carriers.

Reduced rates appear to have been particularly numerous in the State of California. The experience with rate reductions of carriers throughout the country has, of course, been far from uniform. Some report a moderate degree of success while others report no beneficial results. The Santa Fe states that by means of successive cuts in its rates it has recaptured some carload traffic but that it has failed to do so in other cases.⁴³ To hold or regain traffic is one thing, while to make a profit at the reduced rates is another. How far the latter has been possible is not definitely ascertainable. The result would depend on the commodity and on the level of truck and existing rail rates. The Railway Express Agency, for example, reports the putting in of a good many commodity rates on the Pacific coast and that these have held the traffic, at least in part, but it further states that in all cases there has been a reduction of revenues owing to failure to develop a compensating volume of traffic. Such seems frequently to have been the experience of railroads.

In view of the conditions attending truck movements, it seems reasonable to conclude from the experience to date that there is much traffic of the type sought by trucks which railroads can not hold or regain by reduced rates; that there is some such traffic which, under favorable conditions as to truck competition, especially the absence of wildcat, peddler, or back-haul movements, they can recapture in part; and that in the case of less-than-carload traffic, where the margin between rail and truck rates is not great, the railroads have more opportunity to compete, although as to many shippers effective competition is out of the question in the absence of pick-up and delivery and other services which railroads do not commonly afford. Meeting truck competition for at least less-than-carload traffic appears to require a change in the methods of rail service as a prerequisite to any other efforts toward recapturing the business.

In all respects the possibilities of competing increase as distance increases. The eastern carriers therefore suggested at the hearings a revision of the theories on which rates have been made in the past

⁴³ This carrier called attention to the increased diversion of traffic to the Panama Canal route as the results of reduced rates to the California ports, but, of course, such diversion would have occurred had the trucks rather than the railroad carried the traffic.

so as to make it possible for the railroads to compete with the truck in the area in which the latter is most effective.

While many schedules containing reduced rates have been filed, there are certain deterrents to efforts to lower rates. The railroad rate structure has been built up through long years of experience and is predicated upon a just, reasonable, and nonprejudicial basis. If a rail carrier undertakes to meet short-haul competitive rates there is the possibility of disturbing the general relationship of rates, thereby affecting movements unconnected with the local situation where competition is faced and numberless adjustments in other rates are likely to be necessary to prevent claims of undue discrimination. The revenue losses sustained not only by the carrier publishing the reduced rates, but by other carriers forced by competitive conditions to meet such reduced rates, often outweigh any revenue advantages in the traffic recovered. The railroads also fear that a reduction in rates to meet motor competition will be used by shippers as a means of measuring the reasonableness of other rates which have not been depressed by such competition.

Another incident of regulation which is necessary, and yet which imposes burdens on the railroads in their efforts to compete with motor trucks, is the requirement that rates be filed and published before they can be legally applied. The result of this requirement is that no matter what efforts the railroads make to meet competition, they are under the necessity of filing and publishing their rates, and, having done this, the motor trucks can repeatedly cut below whatever rate the railroads propose.

Experience with reduced passenger fares.—Reduced passenger fares take a variety of forms, including excursion fares, lowered regular 1-way fares, reduced round-trip tickets good within a defined period, and reduced rates for conventions and other large movements to and from given points. It is particularly to be noted that such reductions are made only in part to meet bus competition or to draw traffic from the private car, many being for the express purpose of stimulating travel which would not otherwise occur.

There is general agreement that excursion fares, if not available too often, create new business, and despite the low rates per mile which frequently are offered, are a revenue producer.⁴⁴ Some importance was attached to the fact that excursions tend to maintain the habit of traveling by rail.

The experience of individual carriers with various other forms of reduced fares varies greatly. Some report that such fares are a

⁴⁴ The Chicago, Minneapolis, St. Paul, and Omaha sets its excursion revenue per train-mile at \$3.72 in 1928, \$4.70 in 1929, and \$3.72 in 1930, compared with out-of-pocket cost per train-mile of \$1.10.

complete failure as a device for increasing travel and revenue; some find that they increase travel but do not increase revenue sufficiently to overcome the loss on the business which would have been done had the reduced rates not been in effect;⁴⁵ some report negligible improvement in net revenue; some have had their reduced rates in for too short a period to draw conclusions; and some are cautious or doubtful without recent experimentation. The St. Louis-San Francisco experimented with a 2-cent coach fare in the forepart of 1931, but withdrew it on July 1. In many instances reduced rail fares have been met by reduced bus fares. Between points where wildcat bus competition is rampant the opportunity to build up travel in this manner is limited, and there is little or no opportunity on local or branch lines where travel has quite generally left the rails.

On the other hand, there are cases in which considerable success has been had with reduced fares, as by the Southern Pacific between San Francisco and Portland, where the regular fare is \$26.96 and the reduced fare is \$15, and between San Francisco and Los Angeles, where the regular fare is \$17.04, and the reduced fare, \$13. The busses also reduced their rates between those points and both rail and bus have drawn from the private-car owner and the traveler by boat. The Santa Fe reports noticeable stimulation of travel over its line between Missouri River and Colorado points as the result of reductions in fares, but these reductions were met by lower bus fares and later both rail and bus fares were restored. The evidence supports only the conclusion that under some conditions, principally where distances are considerable, where large population centers are connected, and where there is no large amount of wildcat bus competition, reduced fares furnish an opportunity to increase revenue as well as volume of travel.

Special interest attaches to the so-called 3-class transcontinental rates, put into effect by the railroads generally in January, 1931. To the standard rate of 3.6 cents per mile were added "tourist class"⁴⁶ or intermediate rates and "second class" rates good only in day coaches. These rates are respectively about 80 and 50 per cent of the standard rates. At the time of the adoption of these rates opinion among the railroads as to their likely success was divided. Some stated that they would only redistribute the travel between the three classes mentioned without increasing the volume, while others stated that though such fares might justify themselves

⁴⁵ For example, it takes an 80 per cent increase in travel to offset the effects of a reduction from the standard rate of 3.6 cents per mile to 2 cents.

⁴⁶ Not to be confused with "tourist season" rates, which are excursion rates with deferred expiration date.

during the seasons of heavy travel, during the off seasons they would have seriously depressing effects on revenue. The running time of trains was also reduced at about this time. The experiment had not been under way long enough at the time of the hearings to enable any conclusions to be drawn.

Motor freight transportation by rail carriers.—A distinction has elsewhere been made between losses of carload and less-than-carload traffic to highway carriers. The principal efforts put forth by the railroads to hold or recapture carload traffic have been in the direction of reduced rates, though improved service has also been a factor. These means have also been employed in meeting losses of less-than-carload traffic. To hold or regain the latter class of traffic the railroads in addition have engaged in various forms of line-haul and terminal trucking. While such trucking is undertaken primarily in an effort to lower costs, expedite movements, and, in some instances, to give a more complete service to the shipper, it also embraces the servicing of off-rail points and, in some cases, the provision of highway trucking service on a basis largely independent of rail operation and directly competitive with other highway trucking. Provision has also been made for the use of containers, demountable truck bodies, and other special devices intended to tie pick-up and delivery service in with intercity rail movements.

(a) *Substitution of trucks for way trains and terminal switching.*—It is generally recognized that peddler or way-freight operations, as to many points, consume much more time than do trucking movements and that they are costly because of the number of transfers required and the light loading of cars. In many instances the roundabout character of railroad lines adds to the difficulty. With increased highway competition, these drawbacks have become more and more serious. For several years, therefore, a number of railroads⁴⁷ have been substituting truck for rail movements of less-than-carload traffic from designated transfer points, including some points specifically set up for the purpose of concentrating freight by rail for truck delivery to outlying stations. In the reverse direction the trucks collect freight for concentration at such transfer points. The distances covered are commonly 15 to 20 miles in either direction from the concentrating point. Regular rail rates apply and store-door service is not furnished, but frequently the substitution of truck for rail movement is not shown in the tariff. The time of way-freight trains, which commonly carry a crew of five or six men, is thereby considerably reduced or the length of runs increased,

⁴⁷ For example, the Pennsylvania, the New York, New Haven and Hartford, the Boston and Maine, the New York Central, and the St. Louis-Southwestern.

deliveries are frequently made one to two days earlier,⁴⁸ a more flexible service is made available, and the number of lightly loaded cars is reduced.⁴⁹ By taking care of traffic requiring expedited movement, it is further possible in some cases to reduce train service on unimportant lines from a daily basis to a 2-day basis, and in other cases, by eliminating less-than-carload movements, through trains have been able to take over the carload movement of way trains, eliminating the latter. The requirements of carload traffic and the divergence of highways from the routes of rail lines render it impossible to abandon all local freight-train service.

Some railroads are also using trucks for making transfers between outlying stations in large terminal areas, as Chicago. Important operating economies and relief of congested conditions are thereby achieved. In Cincinnati and the St. Louis terminal area motor transfers of less-than-carload freight between railroad stations are practically universal. Trucks are also being used by railroads in lieu of trap or ferry car service and in making deliveries to or from ports and lake and barge terminals.⁵⁰

A great many railroads have not undertaken to use motor facilities along the lines indicated. Some urge that such methods are adapted to the requirements of manufacturing rather than to those of agricultural sections. However, the railroads which have used these types of operation report a recovery of less-than-carload traffic as well as substantial operating savings. The New York, New Haven and Hartford, for example, reports a net reduction of 350,000 train-miles per year, representing a saving, at \$1.80 in out-of-pocket cost per train-mile, of \$630,000 per year, against which are to be set some 130,000 truck-miles per month costing \$440,000 per year, leaving a net saving of approximately \$190,000 plus a saving in car hire which in normal times would run as a net figure close to \$150,000 per annum. The Pennsylvania Railroad, by contract, operates trucks in lieu of peddler or way-freight operations over 49 routes and 1,770 route-miles daily, at an annual saving in wages, repairs, supplies, and interest and depreciation on the class of engine discontinued of \$1,335,000 a year, plus an indefinite amount to represent

⁴⁸ The New York, New Haven and Hartford estimates that at least 70 per cent of the freight handled in this manner receives at least 24 hours better service than before. The New York Central, whose use of trucking has not involved as much adjustment as have the methods of some of the other roads, estimates that 38.5 per cent of the traffic handled receives better delivery and 6.6 per cent poorer.

⁴⁹ In congested terminals, as in the vicinity of New York City, the trucking of less-than-carload freight makes possible a very essential relief of way-freight operations.

⁵⁰ The Boston & Maine has provided ferry-car service where there is a minimum of 8,000 pounds of less-than-carload merchandise from a consignor within a 2-day period. It now renders this service by truck with a limitation of one day.

the saving from reduced interference with trains in dense traffic areas.⁵¹

Operations of the character sketched are generally by contract or through a subsidiary company, which may perform the service itself or contract with outsiders. Payment to contractors is made on a per trip or per 100 pounds basis with a minimum guaranty.

Illustration of a rather special situation is provided by the experience of the Chicago, St. Paul, Minneapolis & Omaha Railroad in operating trucks out of Sioux Falls, S. Dak., to points in that and adjacent States. The jobbing centers on this and other roads in its territory are principally on east-and-west lines, requiring frequently very roundabout hauls to reach consuming points in the territory. Independent truck operators found a field here for very effective competition with the railroads. The Omaha Railroad, in order that it might take advantage of this situation, acquired the property and franchises of the principal operator as well as those of various other truckers and has succeeded in doing much the greater part of the trucking of this class of traffic from Sioux Falls. The city and the railroad have both benefited as the result of the combination of rail carload movements in and less-than-carload truck movements out. While the trucking operations are not able to carry themselves fully, the added carload business to Sioux Falls is said to suffice to carry the overhead expense of the trucking operation if the latter is able to meet operating expenses and taxes from its own revenues.

(b) *Truck operations supplementary to rail.*—Operations of a strictly supplementary type are rather limited. Trucks used primarily in a substitutional capacity may provide additional service after the leaving of way-freight trains or where through-train schedules do not fully meet the requirements of certain distributing points. There are operations to off-rail points, partly by choice and partly by reason of the fact that highways diverge from the routes followed by rail lines. The points so served are necessarily small and the service is frequently on a seasonal basis. Independent truckers do not as a rule serve as feeders to rail lines; they frequently have interline arrangements of their own, facilitated in some cases by means of union truck depots. Representatives of several railroads expressed the view, however, that joint rates with lines operating in territory where there are no rail lines would be advantageous.

(c) *Meeting the demand for pick-up and delivery service.*—The services heretofore discussed have been from station to station at rail rates, and are essentially rail services. While such operations have effected operating economies, they have not been effective in retaining

⁵¹ Some of its contractors also provide store-door service as an independent operation of their own.

short-haul traffic which is lost because of the more direct, complete, and expeditious service of trucks. For such traffic, some railroads have developed the so-called express freight type of operation, comprising truck pick-up and delivery with rail-line haul. The arrangements for effecting such service are very much of a type. Lines adopting this general plan include the Texas and Pacific Railroad, the St. Louis-Southwestern, the Missouri Pacific in Arkansas and Texas, the Missouri-Kansas-Texas of Texas, the Spokane, Portland & Seattle, the Pacific Electric, the Southern Pacific lines in Texas, the Pacific lines of the Southern Pacific, and the Yazoo & Mississippi Valley, a subsidiary of the Illinois Central.⁵²

There is general acceptance by the railroads of the view that many shipments require pick-up and delivery service. The need would vary with local conditions. Some shippers must have drayage facilities of their own for local transfer work and prefer to do their own hauling to and from railroad stations;⁵³ for others, pick-up and delivery service means a saving of expense and a substantial convenience. The railroads, however, have generally stated that they should give pick-up and delivery service only at points where truck competition necessitates doing so, and fear that provision of such service at only defined points would give rise to charges of discrimination with the possibility that the service would have to be extended to entire systems. The "express freight" arrangement has therefore been developed to localize the application of store-door service.

The usual arrangement is for the railroad to organize a subsidiary trucking company which, in turn, contracts with local draymen for pick-up and delivery service. Rates are quoted and bills of lading issued by the trucking subsidiary. The rates are generally equal to the standard rail station-to-station rates, though in some cases they are made equal to those of the certificated highway competitors. The rates of the latter generally do not, however, depart widely from the rail level. The trucking subsidiary remunerates the local draymen, pays the railroad for the line haul, and, after the deduction of a percentage for contingencies and another percentage for return on its investment, pays over the remainder of its gross receipts to the railroad. Provision is generally made for the sharing of joint expenses. Pick-up and delivery is city wide in the case of the smaller communities and within a defined zone in the larger ones, with additional charges for movements to and from other zones. The railroads have found that in this way a very large part,

⁵² A number of generally similar arrangements were pending at the time of the hearings.

⁵³ The Chicago, St. Paul, Minneapolis & Omaha Railroad, mentioned above, reports that 90 per cent of the freight trucked out of Sioux Falls by its subsidiary is delivered to the station by the local jobbers and manufacturers.

generally 65 to 70 per cent, of the traffic carried has been recovered from highway trucks. The evidence is not detailed enough and does not cover a sufficient period to make possible conclusions as to how profitable such arrangements are to the rail carriers. It is urged that the railroads are put to little additional expense as the result of recapturing this business and that therefore any return means a substantial gain in net earnings.

On the North Pacific coast between Portland, Tacoma, and Seattle the foregoing arrangement has been carried a step further.⁶⁴ Here the local draymen cooperating with the several railroad companies have organized Interstate Freight Lines, Incorporated, for the purpose of acting much as a car-consolidating company. The local operators pick up the freight within defined zones in the cities named, load it into carload lots, and unload and deliver it at destination. The rates charged were at first equivalent to less-than-carload rail rates, but were soon reduced to 30 cents per 100 pounds regardless of classification.⁶⁵ This reduction was to meet unregulated highway competition. Other truckers in the territory have found it necessary to reduce their rates and one at least has gone to a yet lower level. It is alleged that the local draymen are operating on an unremunerative basis, and that, frequently being unable to consolidate a carload, they are required to pay the railroad its regular less-than-carload rate or to move the traffic by highway truck.

Arrangements of the general type first indicated have been adopted by several electric railroads. One, the Texas Electric Railway Co., serves all points on its line in this manner and interlines with the Missouri Pacific Transportation Co. The Arkansas Valley Interurban Railroad furnishes this type of service both intrastate and interstate. Both report favorable results.

After experimenting along the lines indicated, all railroads furnishing service in the Southwest agreed to an arrangement,⁶⁶ which was made effective November 16, 1931, whereby pick-up and delivery service is provided at the regular rail rates to distances in certain instances up to about 300 miles and at a charge of 20 cents per 100 pounds to points at a greater distance.⁶⁷ Trucking is contracted for with local draymen. This arrangement will be simpler than that

⁶⁴ This does not refer to the practices of the Northwest Freight Transportation Company (a subsidiary of the Spokane, Portland & Seattle Railroad and indirectly of the Great Northern and Northern Pacific Railroads) and the Pacific Motor Transport Company (a subsidiary of the Southern Pacific lines) which perform a pick-up and delivery service of the general type indicated above.

⁶⁵ The railroads concurrently filed an all-commodity rate of 30 cents.

⁶⁶ Johanson's tariff, I. C. C. 2318.

⁶⁷ The inability of so-called cartage service in Canada, which dates back to 1882, to stem the tide of motor competition illustrates the necessity of meeting truck rates as well as truck service. Pick-up and delivery service in this instance is paid for by the shippers or consignee.

previously described, as it eliminates the necessity for any subsidiary trucking company. The former represented, in effect, a transitional stage. The railroads expect a 75 per cent recovery of less-than-carload traffic, or approximately the percentage of recovery indicated by experience to date. It is anticipated by these carriers that railroads in other sections will join in a similar arrangement.

(d) *Highway truck operations by railroads independent of rail operations.*—It is frequently urged that the railroads can meet their problems by going into highway trucking on a broad scale in either a common or contract carrier capacity and at going truck rates. Though agreeing that there may be some advantages in the direction of keeping overhead costs down and in using the transportation experience of railroads, the general view which railroads have taken is that such operations would for the most part merely duplicate present facilities, adding to the existing competition and confusion. In fact, independent operations of this character appear to be rather closely confined to the New York, New Haven & Hartford; the Boston & Maine; the St. Louis-Southwestern; and the Chicago, St. Paul, Minneapolis & Omaha Railway. The trucking subsidiaries of these companies, in addition to operating for account of the railroads, operate for their own account and take traffic at any rates (above what is said to be a compensatory level) necessary to secure traffic to fill up their trucks. Store-door service is provided and, as in the case of much other highway trucking, discrimination between shippers is sometimes claimed. Highway operators meeting this competition allege that such trucking is subsidized in part by the parent companies. The responses to the questionnaire were not in sufficient detail to provide a check on such statements.

(e) *The less-than-carload container.*—The container is intended to provide means of conveyance of considerably smaller proportions than the box car, yet capable of taking sizable lots of less-than-carload freight as unit shipments. Its primary purpose is to give the shipper a more expeditious and a cheaper service; the container has also come to be used by the railroads themselves in the interest of economy and expedition.

The standard container has a maximum capacity of 10,000 pounds, but experience has demonstrated that 7,500 pounds represents a high average loading. The container is placed at shipper's or consignee's door for loading or unloading. Trucking is done by or for the user of this service, who must also provide facilities for transferring the container to and from the truck. The shipper's packing and wrapping costs are reduced or entirely eliminated, loss and damage is practically eliminated, and service is faster; the advantages to the railroad are simplification of billing operations, reduction of light

loading and increasingly expensive merchandise car movements, and fewer transfers. This device¹⁸ first came into use between Cleveland and Chicago in 1921 and was introduced between Buffalo and New York in 1922, since when it has become available between a large number of cities in the eastern part of the country. Rates at the time of the hearings were 5 cents per mile for 4,000 pounds and 0.25 cent a mile for each additional 500 pounds. The sharp reduction made after the 4,000-pound minimum is satisfied is to induce heavy loading. With four containers (out of the battery of six which the cars are capable of handling) loaded at the minimum weight the car-mile revenue is 20 cents and at the average loading (7,500 pounds) 27 cents.

The New York Central reports an increase in the number of containers handled from 278 in 1922 to 10,217 in 1927 and 47,886 in 1930. The large increase after 1927 is attributed to the adoption of the container plan by a large forwarding company. The Pennsylvania Railroad reports the handling of 63,084 containers between June 20, 1928, and January 3, 1931, again largely for forwarding companies. All but 7 per cent of the movements were of loaded containers. Some shippers have indicated that profitable use of the container requires a unit size of shipment which they can not meet and that there is also involved the expense of hauling the container to and from the station. Other shippers find it possible to use the container successfully, frequently in combination with truck movements from a break-bulk point. Certain carriers in the South and West specifically testified that conditions in their territory are not favorable for the use of containers. Increased use by truckers to displace highway movements is anticipated by sponsors of the container plan. Adjustments and wider application of rates are regarded as essential. The creation of container-concentrating points from and to which containers would be trucked 25 to 30 miles has been suggested in the interest of economy of time and expense and of meeting truck competition. This service might include a pick-up and delivery of container contents. Such service is stated to be feasible for distances as low as 25 to 75 miles.

Use of containers by the railroads themselves to replace box cars in station-to-station service makes for a reduction of sortings of less-than-carload freight and of expensive, lightly loaded car movements, as well as for a speedier service. A drop-side container, of lighter weight, has been developed, for use especially to smaller communities. Extensive development of container-concentrating points for use with highway trucking has been suggested. In some

¹⁸ The investigation in the *Container case* is reported in 173 I. C. C. 877.

instances where such use is made the containers themselves are trucked to these points and in other cases the contents are trucked for loading there. Rates are the rail station-to-station rates. The Pennsylvania Railroad makes use of containers in lieu of box cars between a considerable number of eastern and middle-western stations.

(f) *Devices for line-haul movement of truck bodies.*—The demountable truck body was first used in 1917 in the Cincinnati terminal area and since 1919 has been in use by all railroads at that terminal. It is used in effecting a more rapid and a cheaper transfer of less-than-carload freight between main stations and in distributing and assembling freight between the main stations and substations of each road. Its use in lieu of trap-car service has been limited.

The line hauling of truck bodies was discussed at considerable length on the record. The purpose of such movements would be to save rehandling of unit loads and to obviate the necessity of expensive highway hauls. Ohio interurban railroads are cooperating with a builder of such bodies in building up this class of service. The saving to the trucker is set at the difference between 15 and 17.5 cents, the cost per mile of line hauling for 15,000 and 20,000 pound loads, respectively, and the 30 to 35 cents which it is said to cost the trucker for loaded or empty highway hauls in heavy-duty trucks. The participating railroads, where two bodies are loaded to a car, secure a car-mile revenue of 30 to 35 cents, without incurring the usual terminal expense. This revenue, which is somewhat above the average car-mile revenue in the country at large, is subject to a deduction of \$1 per body for crane service and \$1 per day as rental of the body.

Several railroads expressed a belief in the possibilities of the demountable truck body as a device for holding traffic to the rails. A vice president of the Pennsylvania Railroad testified that his company expected soon to inaugurate such service between Philadelphia and New York City, a distance of 100 miles. The average less-than-carload rail charge between these points, plus pick-up and delivery expense is said to be 56.9 cents per 100 pounds and the average truck charge 42 cents. Truck competition is stated to be severest within distances of 100 miles and to lose its effectiveness at distances greater than 250 miles. Rates for truck-body movements within these distances are to be such as to make it profitable to the trucker to dispense with his line hauls and at the same time effect as quick service as he can over the highways, and in some cases quicker service. The railroad, in turn, is saved heavy station expense. For example, at
182 I. C. C.

the rates and weights suggested for application between New York and Philadelphia it is said this saving and the heavier car loading achieved would increase the gross revenue per car-mile, after deducting all costs except terminal switching and line haul, from 2.17 cents to 41.67 cents. A more general application of the plan is anticipated.⁵⁹

The demountable truck body is a larger unit than the less-than-carload container and, not being a part of railroad equipment, is assessed freight charges whether loaded or empty. It has merits similar to those of the container with respect to the saving of packing, marking, sorting, and individual billing of items, but is subject to equal or perhaps greater limitations with respect to the volume of freight the shipper must have to use it effectively. It also is not adapted, as is the container, to solely railroad work at rail rates. Its peculiar virtue is its providing a means of linking the existing facilities of rail carriers with the facilities and services of trucking organizations.

There are still other devices for combining a truck pick-up and delivery service with a rail-line haul which do not permit of easy classification. One is the so-called Bonner rail wagon. This device dates back to 1898, in which year use was made of it in the United States and England. Further experiments with the device were undertaken in 1914, but the rapid growth of highway traffic is said to have held back its application. Since September 15, 1930, an electric railway has used the rail wagon between Cleveland and Toledo. The device differs from the container and the demountable truck-body plan in that the entire unit, which is the equivalent of a trailer, is run on to a specially constructed undercar for intercity movement. This feature is said to facilitate the making up and breaking down of trains, to effect quicker collections and deliveries, and to save railroad station and terminal expense. No lifting devices are required, an inexpensive cement ramp being said to suffice to place the body on the car. However, special flat cars are required. The wagons can be in the form of box cars, gondolas, tank cars, refrigerator cars, or other desired form, and can be equipped with subcontainers. Special rates for their use are available. The device has not been sufficiently used to have had its possibilities and limitations made apparent.

⁵⁹ Truck-body tariffs, effective November 5, 1931, were filed by the Pennsylvania, the Baltimore and Ohio, the Reading, the Central of New Jersey, and the Lackawanna for application between Baltimore, Md., and Jersey City, Baltimore and the Lackawanna for Philadelphia and Jersey City. These were permitted to take effect without suspension by the commission. Rates vary with size of truck body. The earliest experimentation has been between Baltimore and points on the eastern shore of Maryland.

Another arrangement is that of the Chicago, North Shore and Milwaukee Railroad, an electric railway, in connection with its ferry truck service. This service consists of closed trailers or truck bodies loaded and sealed by shippers at store door, transported to the rail heads by tractors, there loaded on specially constructed flat cars, shipped to rail destinations, unloaded and towed to store door by tractor. This service has been separately considered by us and approved in Docket 21723, decided March 21, 1932. The company also moves trucks and trailers, where loaded full, on ordinary rail flat cars for line movements. This practice was inaugurated in 1926 to effect operating economies.

(g) *Forwarding companies and other methods of coordination.*—Forwarding companies effect a degree of coordination of rail and truck service. They consolidate miscellaneous shipments of less-than-carload freight into carload shipments, dividing with the shipper the difference between the carload and less-than-carload rate. In recent years such companies have developed a pick-up and delivery service through the use of motor trucks under their control. In this way a completely coordinated rail-motor service is effected. Several of the larger companies have come under railroad control. In some instances independently operated trucks are used to effect distribution from rail lines to near-by cities, whereby a more expeditious service can be rendered the shipper. These trucks also collect freight for forwarding-company movements. Because they handle this traffic in such large quantities, and so regularly, they frequently provide their service at lower rates than are generally available to their other patrons.

Another form of coordination is that effected through merchandise warehouses, to which goods move by rail in carload or substantial lots and from which the warehouseman provides, directly or by contract, a distribution service to local dealers or to near-by communities. Here again quicker service is provided than is available by rail.

Summary of railroad motor operations reported in returns to questionnaire.—Information was furnished by respondents as to the arrangements under which they conduct motor operations, and as to the volume of traffic handled. On June 30, 1930, there were 551 trucks and 115 trailers operated by 18 Class I railroads directly or through a subsidiary, and over 8,865 miles of intrastate and 1,547 miles of interstate routes. From January 1 to June 30, 1930, 13 roads carried 413,259 tons of freight for revenue of \$1,580,862. The total investment in motor facilities, both truck and bus, as of December 31, 1929, was \$46,114,891. Motor operations performed under contract are not included. See Appendix A.

It is not possible to make a segregation between the various types of rail-motor coordination described above. The aggregate volume of traffic and intercorporate relationships are set forth in detail and summary form in Appendix A.

Short-line railroads, whose problems are particularly acute, have not as a rule attempted to use trucks in highway service. On June 30, 1930, 14 such railroads used motor trucks. Operations have been partly of a protective character and have also served to effect more direct cross-country movements, to replace trains, to serve off-rail points, and to take care of local seasonal traffic requirements. Some such operations are reported to be successful. The various efforts of electric railroads to effect coordination have already been described.

Carriers serving territory in the vicinity of seaboards report that trucks do a considerable, in some cases a large, volume of business in conjunction with boat lines. Shippers report savings achieved by use of such service. Operations of this character on the Great Lakes and Puget Sound were also described. Few of such water carriers are subject to our jurisdiction. A long-established lake carrier reports its entrance into the field of trucking to hold its traffic in the off season. It furnishes pick-up and delivery service between Detroit and Cleveland by means of contract trucks employed on the basis of a division of revenue.

Attitudes of independent operators toward rail operation of motor facilities.—The general view of independent truck operators as to the respective spheres of the railroad and the truck and as to the possibilities of coordination is that, for cost and service considerations, the railroads can not furnish effective rail competition with the truck for less-than-carload traffic moving to distances 150 or even 250 miles. For perishables and freight requiring special types of equipment, the mileage limitation would be set considerably higher. Truckers also stress their ability to furnish rush or emergency service which the railroads are unable to render. Some truck operators express the view that local railroad service is a needless duplication of truck service. Others stress the traffic which the trucks have created.

There is a general fear among truck operators that the railroads will be able to encroach on the field of highway trucking with loss of flexibility of service and of prevailing rate levels. Some operators allege that the railroads have certain unfair competitive advantages, as in the control of docks and terminals and in being able to recoup from other traffic losses incurred by cutting rates to meet truck competition. Protection from additional rail competition is asked by some trucking organizations. Others stress the possibilities of

coordination at the natural junction point where carload movements are broken up for local distribution in less-than-carload lots. Operators of warehouse facilities especially urge the advantages of such arrangements, stressing the possibility of saving time and warehousing expense and the advantages to distant shippers in reaching a distribution territory by fast rail movements of carload quantities and well-planned trucking movements beyond.⁶⁰ Forwarding companies as a related means of coordination are stressed.

A large household and office-furniture warehousing and transportation agency stressed the likelihood that trucks have attempted to cover too great distances in handling this character of freight and points to successful experiments in the way of coordination of rail and highway service through the use of containers. No truck operator expressed a belief in the possibility of coordinating rail and truck movements of livestock, cotton, and other freight which would ordinarily move by rail in carload lots.

Conclusions as to use of motor-freight facilities by railroads.—The foregoing analysis has indicated that trucks have been successfully used by a considerable number of railroads in various forms of substitutional service, though a great many other railroads have attempted little or nothing in this direction; that the use of trucks in a supplementary capacity is limited; and that little has been done in the way of furnishing highway service independent of rail service. The analysis further indicates that several railroads, mostly in the western district, engaged in rather extensive experimentation with pick-up and delivery service through the so-called "express freight" type of operation and that this experiment had led the roads of a large section of the West to perfect and put into operation plans for extensive pick-up and delivery service. Experiments have also been made with special devices such as the container, the demountable truck body and the rail wagon. A considerable measure of coordination has also been effected through forwarding companies. All of the foregoing efforts are directed primarily at retaining or recapturing less-than-carload traffic and to some extent at devising units of carriage adapted to meeting the truck-load competition of highway operators. The special devices mentioned illustrate the difficulty in continuing to maintain, as to the traffic affected, a distinction between carload and less-than-carload traffic. The distinctive opportunities of the two types of carriers for long distance compared with local traffic have also become clearer

⁶⁰ Such an instance of warehousing has been developed in Indianapolis and 13 other Indiana cities, largely on the basis of forwarding company operations. Properly tied in with rail and electric railway operations, this system is said to be capable of great expansion.

in recent years. Purely local less-than-carload and much carload traffic, i. e., traffic originated at and destined to points within a considerable local area, seems to be given a complete and satisfactory service by trucks without the intervention of other means of transportation, while much long-distance traffic is susceptible of successful handling by coordinated means of transportation. Opportunities for coordination emerge wherever there are breaks in transportation, as in changing from carload to less-than-carload quantities or from main to branch line. Delays are more likely to occur and costs to mount up at such break-bulk or transfer points if rail facilities alone are used.

Railroad trucking has not reached any considerable proportions and the special devices described are largely in an experimental stage as their advantages and limitations for general uses have not been fully developed. The general position of the railroads is that practical difficulties, particularly the presence of unregulated interstate trucking for hire, impede experimentation and the adoption of trucking in its various forms.

Coordination through Railway Express Companies.—The Railway Express Agency has an investment of \$9,500,000 in motor-vehicle property owned and operated by it. It operates 8,846 motor trucks and 444 trailers in city service.

Express is an expedited service rendered on passenger trains and the traffic handled consists largely of property of higher value than ordinary freight, of perishables that require quick transportation, and of articles that because of their nature demand and can afford to pay for express service. Express service includes a pick-up and delivery at terminals except at small points where the volume of business does not justify the maintenance of such facilities. Competition for traffic between railway express and the motor truck is considered by the express agency to be largely one of rates, because the express service includes pick-up and delivery service. But trucks frequently are able to render more expeditious service.

Railway management is giving consideration to the practicability of extending the operations of the Railway Express Agency to include the handling of all less-than-carload freight of rail carriers and water lines subject to the act. It would seem that this would result in economies and expedition in service.

Highway passenger transportation by rail carriers.—Railroad operations of busses over the highways fall under three heads according as they are of a substitutional, supplementary, or independent character.

(a) *Use of busses in substitutional operations.*—The operation of busses in place of branch and local main-line train service which the

railroads have not found it possible or advantageous to abandon without providing a substitute service is very common. In many cases these are the only bus operations undertaken. The New York, New Haven & Hartford, the Boston & Maine, the Pennsylvania, and the St. Louis Southwestern Railroads are some of the lines which have done a great deal with this type of operation, though each operates busses in other services. Substantial operating economies are achieved and at the same time communities are given a more frequent service. Assurance of continued and responsible service is also given.

Such motor operations generally have been substituted where train service was least profitable. With few exceptions, these operations are not profitable in themselves but are generally regarded as advantageous when consideration is given to the costs which would otherwise be incurred in meeting the public's requirements for transportation service.⁶¹ The schedules are coordinated with those of connecting trains as were those of the displaced trains. As an incidental result, such operations may reduce the number of stops which through trains must make to meet the requirements of smaller communities. Operations are usually performed through a subsidiary company, but in some instances by contract with independent operators for the furnishing of this service.⁶² The fares charged are generally the same as by rail.

While operations of the character indicated are quite general, the requirements on certain lines⁶³ of the head-end traffic (mail, express, milk, baggage) are believed to make such substitutional oper-

⁶¹A few examples of such savings, generally expressed as the difference between direct out-of-pocket train expense and the net income or loss from motor operations, may be offered. The Pennsylvania Railroad, which undertook such operations in 1924, has found it possible to eliminate approximately 800,000 unprofitable train-miles per annum, representing an estimated saving of \$478,000. The Reading estimates its savings in this direction at more than \$400,000 per annum. The Chicago, Milwaukee, St. Paul & Pacific, directly or by contract, operates 11 highway routes. Such operations displace 286,903 train-miles costing 67 cents per mile and producing a revenue of 20.5 cents; some 288,111 bus-miles are operated at a cost of 24 cents and revenue of 10.5 cents. The net loss on the trains was \$96,217, whereas the net loss by bus is \$38,295, resulting in a saving of \$57,922 a year. The Pacific Lines of the Southern Pacific report a net saving on rail operations of \$441,441 a year.

⁶²The independent operator may merely rearrange his schedules to meet specified trains or his schedule may be augmented. Special service, such as seasonal, may be performed in this manner. The contracts may be with small local operators or with the large bus systems. Thus the Southern Pacific Lines in Texas and Louisiana can ask the Southland-Greyhound Lines, Incorporated, in which the railroad has a 35.21 per cent interest, to provide service on a guarantee basis; the Pacific Lines of the Southern Pacific have used the services of the Pacific Greyhound, in which there is a third interest, on a guarantee of 2 cents a mile profit. The Pennsylvania Railroad began with independent operations but later purchased outright the facilities and certificates of 11 such operators. Rail tickets or bus coupons may be used, or the independent operator may collect all fares and effect a settlement with the railroad at stated intervals.

⁶³For example, the Atchison, Topeka and Santa Fe, the Chesapeake and Ohio, the Chicago, Rock Island and Pacific, and the Chicago, St. Paul, Minneapolis and Omaha.

ations inadvisable. One road, for example, states that the cost of operating a bus plus that of operating a truck to handle the head-end traffic would equal the cost of operating a rail-motor car. Some roads are deterred from substituting busses by reason of the capital outlay required.

(b) *Use of busses in supplementary operations.*—Operations of a supplementary character are considerably less numerous than those considered above. They include the furnishing of service to off-rail points, including some seasonal service to parks and resorts; the furnishing of more frequent service between points which continue to be served by trains, such service being given in order to render a more complete service by filling in the intervals between train schedules; and operations to serve the requirements of local traffic which make possible the elimination of stops of through trains by carrying passengers to and from necessary stops. Such operations have been undertaken to hold traffic to the rails by serving in a feeder capacity and by keeping the public in the habit of dealing with rail organizations; to achieve higher speeds in through-train operation; and to take advantage of station, shop, and other facilities and the trained personnel of the railroads. It is difficult to distinguish operations of this kind, especially those over the longer distances, from those which carriers conduct independently of their rail service. A possible basis of distinction is provided by the rates charged, since these operations tend to be at regular rail rates while independent operations are generally at competitive rates. Operations are sometimes through a wholly owned subsidiary and sometimes through the holding of a substantial interest in an independent bus line.

The operation of busses in a supplementary capacity is limited, owing to rate complications, the difficulty of articulating train and bus schedules, the limited opportunities for reducing train stops, and the difficulty of securing certificates. There have been instances of the abandonment of supplementary service actually undertaken because of these attendant difficulties. The lack of interstate regulation in the field of highway transportation has also been a deterrent.

(c) *Highway bus operations by railroads independent of rail operations.*—The third group of operations, designated as those which are independent of rail service, being neither in substitution for nor for the most part supplementary to such service, generally occur between points where a substantial volume of traffic is being handled over the highways by independent operators. Prominent instances of railroads entering into this field are the joint operations of Union Pacific and the Chicago and North Western through the Interstate Transit Lines between Chicago and Los Angeles, St. Louis, and

Kansas City, and Omaha and the Twin Cities; the Union Pacific operation from Salt Lake City to Portland, Spokane, and Butte; the St. Louis Southwestern operation from Dallas, Tex., and Las Cruces, N. Mex., to Memphis and St. Louis; the New Haven operation between Boston and New York; the Boston and Maine operation between Boston and Portland; and the Reading and Central of New Jersey operation between Philadelphia and New York. In addition, there are the operations conducted by companies in which the railroads have a substantial interest, such as those of the Pacific-Greyhound along the Pacific coast and east to Salt Lake City and El Paso, in which the Southern Pacific has one-third stock interest; the Southland-Greyhound Lines operating in Texas, in which the Southern Pacific has 35 per cent stock interest; the Richmond-Greyhound Company, operating between Richmond and Washington, D. C., in which the Richmond, Fredericksburg and Potomac has 49 per cent stock interest; the Pennsylvania-Greyhound Lines and its subsidiaries, in which the Pennsylvania Railroad has a half interest; and the Northland-Greyhound Lines, in which the Great Northern has 30 per cent stock interest. Operations are generally parallel to the rail lines. In some instances, illustrated by the St. Louis Southwestern, railroads have been led to reach out into the territories of their rail competitors. Operations of the above general character are explained by the carriers as a means of recouping lost rail revenues occasioned by the diversion of travel from rail to bus. While such operations add to the investment in transportation facilities, the railroads urge that the service would be rendered anyway and that they should share in it.

Evidence as to the profitableness of these operations is not conclusive.⁶⁴ Some operations have succeeded while others have been unable to do so. The Boston & Maine Transportation Company, for example, reports that its Boston-Portland operation is consistently profitable but that its Boston-Manchester operation is not. The Pennsylvania finds its investment in Pennsylvania-Greyhound stock profitable. The Southland-Greyhound reports a very small return on its investment in 1929 while the Pacific-Greyhound reports a substantial return in that year. The Chicago and North Western states that its joint operation with the Union Pacific as a whole pays its way except for depreciation,⁶⁵ but the Union Pacific finds that its bus operations have not been profitable in themselves as yet.

⁶⁴ Responses to the questionnaire frequently apply to a railroad's entire motor operations, making it impossible to determine the profitableness of operations of an independent character.

⁶⁵ For the year 1929 Interstate Transit Lines shows an operating deficit of \$127,570.76. There has, however, been a considerable reduction in train-miles.

The Norfolk Southern has operated bus service for four or five years to seashore points at a loss. The Burlington reports a disbelief in the profitableness of long-distance operations, stressing the need for effective hook-ups with other lines at the termini. Most of the railroads have not entered this field of transportation.

A generally minor type of operation but one which some railroads have found profitable is that of charter busses. Such operations may take a railroad outside the territory served by its rail lines. Being of an erratic character, such operations do not permit of discussion from the point of view of coordination.

Efforts of short lines and electric railways to use motor-bus facilities.—Indication has been given elsewhere of the vulnerability of short lines to highway competition. Their passenger traffic had all but disappeared by 1930, and their freight traffic was more than 25 per cent lower than it was on the average of the years 1911 to 1915. These lines are doubtful of the likelihood that highway operations would be successful. On June 30, 1930, 23 such carriers operated busses. One such railroad succeeded for a while in protecting itself by operating busses over its route and beyond to a populous city, but later found its efforts largely nullified by the growth of interstate bus operations. Short-line railroads in isolated territories, particularly in mountainous sections of the West, where little or no organized highway competition is met, have found it possible to fit in bus operations in such a manner as to save on train expense and to furnish a better service. In some instances operations are extended to points beyond the rail line.

Intercity operations of busses by electric railways have been of a parallel, substitutional, and feeder character. Communities on abandoned rail lines have been served with the less-expensive bus service, and feeder lines have been instituted or arrangements effected with independent bus operators to serve as feeders. The parallel operations are supplementary to the rail, with arrangements to stagger rail and bus schedules to give a more varied and possibly less expensive service. Owing to the greater frequency and regularity of interurban schedules than of those of steam railroads, there are more opportunities to coordinate interurban service with bus service than there are in the steam-railroad field, though difficulties are experienced in articulating the schedules, owing to the better time which busses make in urban areas and the slower time they make beyond city limits, and to the divergence of rail lines and highways. Opportunities to use stations and personnel in the interurban stations are generally better prompting bus operations. Interurban stations are generally better situated for this purpose than are those of steam railroads.

Some operations were undertaken to protect the revenues of inter-urban lines by obtaining certificates to operate over specified routes before others did so. As operations of the independent lines grew in scope, particularly in the interstate field, the electric railways were required to extend their own operations for the protection of their existing bus services. In this way and for other reasons operations have in some cases extended considerably beyond the termini of the rail lines.

No electric railway expressed itself as satisfied with the results achieved, particularly where the operations were interstate or were affected by interstate competition. One Ohio electric road found that a large proportion of its rail patrons would not use its supplementary bus service; lines in Michigan found they were furnishing more frequent service as the result of bus operations rather than effecting a saving in expenses; a railroad operating busses between Chicago and Milwaukee concluded that there is no opportunity to conduct profitable bus operations at regular fares and fixed schedules between points served by high-grade rail service where there is also extensive independent competition; a large operator in the East and Middle West, which began its bus operations for the protection of its rail business and found it necessary to operate bus service extensively on its own account, faces an annual deficit of considerable proportions.⁶⁶ Other lines report operating losses. Some lines have found feeder service profitable and others have not.

Conclusions as to highway passenger transportation by railroads.—The foregoing discussion has attempted to show what the railroads have done by way of furnishing highway-passenger service and the purposes which have prompted such activities on their part. The experience gained requires appraisal from the point of view of what has been accomplished in the direction of coordination.

For the purpose of this proceeding, the term "coordination" has been used to signify the use of two or more forms of transportation in an effort to provide a better and cheaper service than can be rendered by one alone. Concretely, it suggests questions as to the possibility of linking new motor facilities with old rail ones in the interest of economy or added service.

The first or substitutional type of bus operation is, in part, an illustration of coordination. It has been found advantageous

⁶⁶ This company operates about 600 miles of electric railway and 2,000 miles of bus lines, the latter extending from Washington and Baltimore on the east to Detroit on the west. Its investment in its rail properties is approximately \$50,000,000 and in bus lines \$3,000,000. The consolidated balance sheet of its bus subsidiaries as of December 31, 1930, shows a deficit of \$490,419.09. For no year except 1926 was a profit shown, the loss in 1929 being \$4,090.66 and in 1930 \$250,427.63. Only two of the lines which this company operates show a credit balance in profit and loss account.

in those situations where the railroads are required by public authority or desire, for reasons of their own, to continue service to communities which are generally unable at the rates charged to support any form of organized passenger transportation. Such operations effect a reduction of losses, a betterment of service, and in many instances an assurance of permanent service. They maintain the railroads in a field of service which they have long occupied and, illustrating coordination, may hold traffic to the rail lines by making direct connections with through trains. In some instances, operations of this character are rendered more unprofitable than would otherwise be the case by reason of independent local operations and long-haul operations where a local business is also done. Difficulties of coordinating rail-bus service and independent-bus service in order to stop these losses arise from the divergence of routes and of highways from rail lines.

Operations of the second or supplementary type present many opportunities for coordination. The practical operating difficulties of effecting such coordination and obstacles created by the lack of regulation in the interstate field have already been indicated. In addition to the purposes now served by such operations, there appear to be opportunities for tying rail and bus service together to save time where either rail or highway route is roundabout, to vary the means of travel on long trips, to give wider choice of routes, and in other ways. Through tickets and carefully adjusted schedules are prerequisites to any such coordination. Regulation of interstate busses is essential to achieving complete coordination in this field.

Railroad operation of busses in service independent of rail service for the most part falls outside the field of coordinated rail-motor operation. There are certain indirect advantages accruing to the railroads from such operations, as in the use of railroad stations and personnel, the speeding up of through service with the elimination of local stops, and by way of maintaining the railroads as an active factor in all forms of passenger transportation.

Considerable attention was given on the record to the problems of bus operators apart from those arising from the coexistence of rail and bus service. It is the experience of long-haul operators that in many instances local business must be done in order to render the operations profitable as a whole. Such long-haul operators generally confine their activities to runs between populous cities and do not serve lateral points. Local operations along main-line routes are frequently destroyed by the practice of long-haul operators over the same routes in serving these local hauls as well. The loss to local operators of this business frequently makes it impossible for them to continue to perform the less profitable feeder service to the lateral

points, not otherwise reached by any agency. Paying business on heavily traveled runs, therefore, does not contribute to the maintenance of unprofitable runs. There is here further illustration of the need for comprehensive detailed planning if the requirements of coordinated service are to be met.

VI. ASPECTS OF THE PUBLIC INTEREST IN HIGHWAY TRANSPORTATION

To this point attention has been confined to the purely business aspects of highway transportation: The service and rates it offers, its competition with other agencies of transportation, and the efforts of the latter to adjust to this competition. There remain certain considerations of a more general public character which also are of great importance in the determination of the questions of coordination and regulation which are before us.

1. *Financing the motor carriers' right of way.*—While questions of taxation are clearly outside our province, the problems which confront us are rendered more difficult of solution by reason of allegations that various of the competitors of rail carriers benefit disproportionately from public provision of rights of way and other transportation facilities. We accordingly, in our 45th Annual Report, dated December 1, 1931, recommended:

That Congress provide for an impartial and authoritative investigation for the purpose of determining whether and to what extent motor, water, and air carriers operating in competition with the railroads are receiving direct or indirect Government aid amounting, in effect, to a subsidy; and if so, what steps, if any, are necessary to correct this situation, with a view to placing competition on a just and equitable basis.

Much evidence bearing on this subject was offered during the hearings in this proceeding. An analysis of this evidence is given in Appendix G. This analysis sums up and appraises the facts made available, indicates what further facts are required for a conclusive answer, and draws attention to the essential questions of public policy involved.

2. *Traffic congestion and highway safety.*—Complaints were made on this record that trucks and busses, especially those of large dimensions, are a cause of highway congestion, and a source of annoyance and danger to other users of the highways and to persons residing in the vicinity of the streets and highways used. This complaint, like the one examined above, raises questions which are now primarily subject to State control. It also raises important questions as to highway financing, inasmuch as the alternative to congestion and dangerous conditions is the provision of wider or additional highways. The problem also bears on that of coordination, as wit-

ness the stress laid on the relief of highways which would result from the railroads furnishing a completed terminal and line-haul service and from the use of containers, demountable truck bodies, and similar devices.

A large part of the truck operations occur at night, when other traffic is of small volume, but driving conditions may be more dangerous than during the day. On many highways conditions are serious day or night. Intensive operation of large trucks and busses is confined for the most part to about a third of the total State highway mileage of the United States, as distinguished from county and local roads.⁶⁷ As to both types of vehicle the complaint would rest more against through operations between the larger communities than against operations to and from local points served by the same highways. In other words, the objection lies mainly against regular use of the highways by large vehicles, perhaps in trains, operated in through service.

Definite determination of the issues can not be made in the absence of expressions of public policy with respect to the purposes which highway systems and related city streets are to serve. It is for the public to determine the relative importance of pleasure and commercial use of specific highways and to weigh the attendant advantages and disadvantages. No general answer is possible. Measures already taken by the States, such as limiting the size, length, and width of vehicles and requiring the use of various safety devices, afford a partial solution of the problem.

Responsible bus operators are stressing measures for the protection of their own riders and of others using the highway. One such company demonstrated on the record what can be accomplished by careful selection and training of its employees and by good operating rules. The great majority of bus and truck operators are considerably less advanced in these respects.

3. *The economic soundness of the motor-transport industry.*—It was frequently urged on this record that motor operations for hire are not, for the most part, conducted at a profit, and that they, therefore, represent an uneconomic development, to which the public has contributed through the provision of highways. It is further urged that this development has succeeded only in dissipating the traffic of the existing carriers without conferring commensurate advantage on the public generally.

Motor operations are said by some to be unprofitable⁶⁸ when the true costs of operation under present conditions of regulation and

⁶⁷ See Appendix G.

⁶⁸ Definitions of what constitutes profitableness vary. It may be assumed that an operation is profitable if it yields revenue sufficient to meet all expenses and taxes, including an adequate allowance for depreciation and for the operator's own services, and to pro-

taxation are considered and by others are so regarded only if certain costs, principally a proper contribution to highway costs and the maintenance of proper employment standards, which the industry is said now to escape, are brought into the picture. It is impossible with the information now available to determine whether or not there is a subsidy received by motor operators for hire. An analysis of available information is contained in Appendix G.

The marked growth in the past decade of motor operations for hire, whether measured by number of vehicles employed, business done, or increasing lengths of haul, as well as the years of steady performance and expansion of some operators, may be taken to indicate that the industry has in many instances been profitable.

However, the operators who appeared during these hearings were generally of the larger and more skillful type. Moreover, certain complaints were made by operators who testified, and in the aggregate these complaints are impressive as to the difficulties the industry is now experiencing. Thus there were complaints against the overservicing of routes; against wildcat operations and destructive rate cutting; against competitive practice of certain railroads and of carloading companies; against competitors who pirate rate sheets; against shippers who shop around for bargain rates, especially on return loads; against inexperienced operators who are a menace to the industry as a whole; against transportation brokers; against dealers who encourage entrance into the industry in order to dispose of motor equipment and who are too liberal in granting credit for the purchase of such equipment; and particularly of common-carrier operators against so-called contract operators. Evidence supporting many of these complaints has previously been reviewed.

In part, the foregoing conditions reflect the newness of the industry and the fact that, as it has taken in added territory, it has become increasingly subject to internal competitive strains. The complaints listed also show that lack of regulation is an important factor in determining the present level of earnings. The ease of entering the industry and the small size of the majority of the operations result in an unsettled situation which may not be representative of what conditions will be when regulation becomes more comprehensive than it is at present and when operators have

vide both a return on investment commensurate with the risks of the business and funds for the creation of reserves from which to meet unusual conditions or the effects of poor seasons or poor years. It is, of course, impossible to obtain statistics which permit of applying this definition in detail. The unsatisfactory financial statements of the operators themselves must be accepted and publication of these is limited. Good accounting is the exception rather than the rule, and inadequate allowances for the operator's own services and for depreciation are common.

learned what tasks are peculiarly within their province and have dispensed with others.

Profitableness of common-carrier truck operations.—Common-carrier truck operators reporting in a special investigation made by the Michigan Public Service Commission⁶⁶ operated as a whole at a loss in 1929, though nonoperating income made it possible to show a return of 5.4 per cent on investment. In the same year this class of operators earned 11.5 per cent in Minnesota, 28 per cent in Iowa (fixed termini common carriers only), 4 per cent in North Dakota, and 8.6 per cent in Oregon. Operations as a whole in a number of other States, including Kansas, Ohio, Wisconsin, Washington, and Colorado, showed a fair return. The marked range in the rate of return earned doubtless is attributable in considerable part to differences in the manner and accuracy of the reporting. In passing on the figures cited a great deal depends on how much is included in the statement of expenses for the operator's own services. The average investment in facilities is so small that even a liberal percentage return on such a base would yield only a small amount in dollars, not enough to enable the operator to take out earnings which would suffice for living expenses. While useful for some purposes and in fact the only basis now available, statements of percentages earned on investment are inadequate evidence of the profitableness of motor operations for hire.

In six States⁷⁰ for which published information is available, from about a fifth to a third of the common-carrier freight operators or operators conducting both a freight and passenger business showed no return on investment in the year 1928 or 1929. Thus in Oregon in 1928, solely freight carriers earned as a class 7.05 per cent on investment, 72 per cent of such operators earning a return on investment averaging 12.9 per cent and 28 per cent incurring a loss averaging 8.46 per cent on the investment. In Ohio in 1929, 17.9 per cent of the freight operators showed no return on investment; such operators had 37.8 per cent of the total operating revenues of the group. In California in 1928, all common-carrier freight operators earned 6.34 per cent on investment. Those showing a profit earned 11.07 per cent on investment and averaged 8,704 tons per annum per operator, while those suffering a loss, 29 per cent of the total, carried 5,373 tons per operator.

Conclusive answers to the question of how far common-carrier truck operations are profitable would require, aside from more adequate financial statements, taking account of different types of situ-

⁶⁶ Docket D-2525 and D-2542, *Ex Parte Investigation of Intrastate Rates, for Transportation by Motor Vehicle Operators*, decided February 6, 1931.

⁷⁰ See Appendix C.

ations, as whether operations are in a highly competitive, overserviced territory, with contract and wildcat operations, or in light-traffic territory where there is less competition but also a much smaller volume of business. Consideration should also be given to the effects of differences in size of operator to determine whether, if the average size were greater than it is at present, conditions would be more favorable, and to the effects of differences in lengths of haul, on the assumption that the unprofitableness of some operations may result, as was testified, from attempting to cover too much territory.

Profitableness of contract-carrier truck operations.—Further, the statistics cited relate almost solely to holders of certificates or permits. The profitableness of purely private operations is a matter of which only the individual operator can judge on the basis of his own transportation set-up. Stable contract operations, on the other hand, appear to be in general more profitable than common-carrier operations. Common-carrier obligations, namely, the maintenance of schedules, readiness to serve all who have freight to offer, observance of published rates, etc., and higher fees and other costs place these operators at a disadvantage and cause many to surrender certificates and engage in the contract type of operation. Stated otherwise, contract carriers can seek out profitable lines of work and quickly abandon unprofitable ones, while certificate holders bear greater costs in providing service and also can not abandon their certificates without forfeiting the right to engage again in such operations.

The figures for a given year, however, do not reveal the turnover which occurs, especially among the smaller operators. The loss from and the extent of such turnovers are of record only in the form of general statements. There is doubtless a tendency for equipment to go through successive hands, each time presumably at a reduced figure and with a corresponding reduction of the financial status of the operator. There are cases, as in the trucking of cotton, where an admittedly low rate of return is accepted in order to utilize trucks which business conditions have rendered idle.

Trucking costs compared with rail costs.—A searching appraisal of the economic soundness of the motor-truck industry would rest on a scientific study of its costs compared with those of competing forms of transportation. The present record lacks information required in making such a study. Various references were made to costs per truck-mile, but great variation is to be noted, due in part to lack of comparability in methods of drawing up cost statements or to failure to specify the conditions under which given

results are obtained. To be significant, a statement of costs should relate to a defined section of the country; in order to eliminate differences in wage scales, gasoline prices, and other cost items, should specify the size of equipment, and should be for defined lengths of haul. Depreciation charges should be adequate and their basis specified; adequate allowance should be made for the operator's own services; and there should be included, as a separate item, a charge for return on investment, with indication of the rate used.

Responsible operators having satisfactory accounting systems reported costs per truck-mile as follows: 21 cents for trucks carrying 3 tons of high-grade merchandise; 30 to 35 cents for 2.5-ton trucks; 18.14 cents (including taxes and insurance but not a return on investment) plus 4 to 7 cents per hundred pounds for pick-up and 9 cents for delivery for trucks whose capacity is not specified; 20 cents for a 5-ton to 6-ton combined load (not including overhead, averaging 12 per cent of gross revenue) plus 16 cents per hundred pounds for pick-up and delivery; and 30 to 35 cents for heavy duty trucks for highway movement only. One railroad operating motor trucks reports costs of 23.5 cents, not including taxes or return on investment. Considerable variation occurs according to the season of the year and type of highway used.

Reduced to a ton-mile basis, these costs are manifestly far in excess of ton-mile costs by rail. Operating expenses per ton-mile by rail averaged 0.745 cent in 1929, including all terminal expense, and the total cost, expressed roughly as the revenue per ton-mile, was 1.076 cents, with which may be compared costs of several cents per ton-mile by truck. To both figures would have to be added pick-up and delivery expenses. However, the rail figure is for an average haul of about 175 miles,⁷¹ while truck hauls are more commonly in the area in which terminal operations count heavily in rail costs. Fundamentally, it may be said that the truck industry must look to short-haul traffic in the main and to service considerations as a factor justifying operations of more of a long-haul character. This conclusion is substantiated by the experience of several common-carrier truck operators who had extensive cost information and who are operating on a well-planned basis. These operators stated that their business could not be conducted at a profit unless the rates charged averaged considerably above those charged by their rail competitors. This position becomes more significant when it is considered that the operators in question limit themselves for the most part to the higher classes of traffic.

⁷¹No figures are available as to average length of haul from origin to destination. This figure is made up in part of portions of through hauls.

It appears reasonable to conclude, particularly in view of the inadequacy of the financial statements of groups of truck operators, that under present conditions a very considerable part of common-carrier operations are conducted at a loss or at less than a reasonable profit and that this branch of the motor-transport industry is characterized by an instability which renders it difficult for it to adjust itself to basic competitive conditions and to demonstrate its particular capabilities. Stable contract operations appear to be conducted at a more profitable level than common-carrier operations, and presumably private operations represent in every case a net saving over the cost of employing outside service. Comparisons of rail and truck costs indicate the need for a division of the field of transportation on the basis of the relative costs of different agencies of transaction.

Profitableness of bus operations.—Bus operations appear to be conducted more generally without reasonable profit than responsible truck operations as a whole. This condition is attributable to the overservicing of routes, the presence of wildcat operators who are said to skim off the cream of the traffic and to dissipate the volume of traffic required for successful year-around operation, the necessity, as competitors' operations extend, to expand operations beyond a known profitable limit in order to protect existing business, the cutting of rates by both bus and rail carriers, alleged unethical practices of certain bus operators, and the lack of regulation in the interstate field. While the foregoing factors are mainly operative in the interstate field, their repercussions on intrastate operations are very serious in some States. A more basic force explaining the results of bus operation at this time is the increase in the number of privately owned vehicles.

Many bus operators find it desirable to hold certificates as common carriers and so find retreat from the industry difficult. Some doubtless hold on in the expectation that regulation will render the certificates held of greater value than they are at present.

The statistical information of record relates generally to the years 1928 and 1929, before conditions became most difficult. It is, of course, subject to the usual limitations as to comprehensiveness and accuracy. Operations as a whole in Colorado in 1928 are said to have returned 10 per cent on investment and nearly 13 per cent in 1929; bus operators in Michigan report returns equivalent to 11 per cent on investment in 1929; in North Dakota the return was about 6.5 per cent in 1928 and 1929; and in Washington a net income of \$283,409 was reported in 1929 on a gross business of \$5,279,000. On the other hand, the larger operators in Oregon reported a net corporate deficit of \$95,565.17 for the year 1929 on a gross business of

about \$12,980,000 and an investment of \$15,983,000; there was an operating deficit of \$335,340 in Kansas for 1929; Class I bus operators in Iowa incurred a deficit of \$139,346 in 1929 while Class II operators reported a net revenue of \$15,731; in Ohio in 1929, 43.4 per cent of the operators, who carried 36.6 per cent of the passengers and to whom 21.5 per cent of the revenue accrued, operated at a deficit; a large operator in the East reports a cumulative deficit from bus operations of \$490,419, its loss of \$4,697 in 1929 jumping to \$256,428 in 1930; and a large operator in the West states that "generally speaking, over the entire system, business has been unprofitable." Differences in competitive conditions and the lack of uniform accounting help to explain the very noticeable divergence of results shown.⁷²

For reasons indicated in connection with trucks, it is impossible to base conclusions as to the earning power of the bus industry on comparisons of bus operating costs with the costs of competing agencies of transportation, whether steam or electric train or private car. The type of service is different and considerations other than costs enter largely into the choice between private-car operation and the use of some form of organized transportation.⁷³ The costs of responsible bus operators appear to range from about 15 to 24 cents per mile for busses up to 25-passenger capacity and from 27 to 32.5 cents for busses up to 33-passenger capacity. The out-of-pocket cost of passenger-train operation is set at about 70 cents a mile and that of rail-motor-car operation at 40 to 45 cents. The bus costs average in the neighborhood of 1 cent per passenger-mile, assuming full loading. Railroads would have to do very large volume of business to meet such a cost. Operating expenses per passenger-train car-mile in 1929 totaled 30.271 cents, including expenses attributable to allied services, while the average number of passengers per car (passenger-miles per car-mile) was 12.5.

Conclusions as to profitableness of truck and bus operations.—By way of general conclusion, it may be said that, while there are many kinds of transportation which highway operators can perform more advantageously than any other agency and therefore at a profit, the newness of the industry and ease of entering it, the lack of adequate regulation, and inadequate knowledge of costs of the majority of operators cause the industry to be chronically subject to the depressing effects of excessive competition or of attempts to engage in operations beyond the economic capabilities of the truck or bus in competition with other forms of transportation. The public has per-

⁷² See Appendix C.

⁷³ Any such comparison would have to be on a passenger-mile basis, as the size of vehicle varies greatly between the different forms of transportation.

mitted uneconomic developments to occur within an industry capable of great public service. It is therefore likely that adequate regulation would strengthen and stabilize the industry to the extent that it controls the number of operators and the amount, kind, and extent of service. Coordination, under regulation, of motor and rail transportation may have the same effect.

The future of the railroad rate level also has a bearing on the profitableness of competing highway operations. An increase of rail rates would increase the opportunities of highway operators and a reduction of rail rates would lessen them.

4. *The declining unity of transportation service.*—Historically speaking, the railroads have brought into being over a span of 100 years a transportation system which was calculated to develop and serve every essential need for land transportation. Their systems reach into practically every county of the Nation and embrace a network of interdependent main, subsidiary, and feeder lines. The cost of serving many points which neither originated nor received traffic in sufficient volume to make the service rendered profitable was borne from the returns of the system as a whole. Communities developed which were solely dependent on a permanent year-around rail transportation service. Furthermore, some low-grade traffic drew support from the greater rate-paying ability of high-grade traffic. Highway and other transportation tends to destroy this unity.

Motor carriers are generally said to seek the more desirable traffic, whether as to commodities or as to points of service. They have tended to concentrate their activities on routes lying between points where the volume of developed traffic was large. In many instances the truck and bus operators serving the larger communities do not serve the smaller places along their routes and many operations, particularly those of contract-freight carriers, are strictly from terminus to terminus. Local and feeder operations tend to be rendered by small operators.

The truck is not adapted, from a cost standpoint, to handle every class of traffic. The common-carrier truck, to develop paying loads, must carry fairly compact commodities of higher than average rate-paying ability. One such operator stated, "There is any quantity of light and bulky merchandise and such commodities as coal, pig iron, long rails, and lengthy lumber and everything of that kind, that a truck can not possibly handle." Special charges frequently are applied for light and bulky articles. The common carrier, in turn, finds more and more of its traffic being taken by the underbidding of contract carriers, especially where individual shipments are of substantial volume. Under such circumstances, the contract carrier

becomes even more selective than the common carrier. However, contract carriers are of many types and a considerable proportion of them take relatively low-grade freight. Instances of record are coal, brick, road building materials, uncompressed cotton, logs, and fertilizer materials. The Atlantic Coast Line reports that of its 1930 loss to trucks, 59 per cent in terms of tonnage was to contract trucks, 12 per cent to common carrier, and 29 per cent to privately operated trucks, compared with losses of revenue of 39, 23, and 38 per cent, respectively.

Comparisons limited to losses in tons and revenue are partially invalidated by reason of the differences in the average lengths of haul of various commodities and by reason of the fact that trucks tend to divert traffic mainly in the short-haul area, where rail rates are relatively the highest. The greater the distance, the more the truck operators select the class of traffic that they will carry. A study made by the Atlantic Coast Line Railroad indicates that in three of the States served the loss in revenue was greater than the loss in tonnage and that in three other States the reverse was true. On the system as a whole, the definitely ascertained loss in 1930 was 7.95 per cent in tonnage and 10.60 per cent in revenue, or 33 per cent more in revenue than in tons. On the Nashville, Chattanooga & St. Louis Railway the loss in less-than-carload traffic, comparing September, 1925, and September, 1929, was, as a whole, only slightly greater in terms of revenue than in terms of tonnage. Other evidence is provided by the actual lading of merchandise cars, which is said to have become increasingly that of light, bulky, oversize, or other traffic which is expensive or difficult to handle.

It is substantially true that traffic paying the greater revenue has been lost but the difference between the loss in tonnage and the loss in revenue is less than is generally estimated. A further consideration is the fact that much of the high-grade traffic lost was expensive to handle and therefore yielded relatively low net returns. This fact would have greater significance if the rail carriers could reduce their costs proportionately and if they could find other uses for the facilities rendered idle in this manner. This problem takes on particularly difficult aspects where rail traffic is necessarily light.

The diversion of traffic may be viewed in another way. The railroads are equipped with track, rolling stock, stations, and other facilities for handling all traffic offered. They furnish a year-around and dependable service, are prepared to handle peak loads of traffic, and go to great expense to have cars ready at points where required for loading. While the diversion of any traffic may mean severe loss, especially where the traffic yields more than average returns, diversion becomes especially serious where trucks take a large part

of the volume traffic, leaving the railroads to prepare for the peak business as well as to care for the lower volume of year-around business. This condition is most true of agricultural commodities, especially perishable, whose movement is characterized by a high seasonal peak. Volume of traffic is lost, and plans can not be executed. It is probably in this sense that railroad men advance the argument that trucks take the "cream of the traffic." In these instances the trucks are mainly of the contract or wildcat type and are able to shift about as opportunities offer. The effects of this kind of competition must be dealt with as one of the costs of having two forms of transportation where one would be adequate.

The same general problem is present in the case of passenger traffic.

Since in general the railroads can not reduce their expenses and overhead costs in proportion to declines in volume of business done, either the traffic remaining after diversions have occurred will have to pay increased rates or the railroads will fail to earn a fair return. Where railroad property has been rendered obsolescent, it becomes necessary to determine how far the public shares the responsibility and what part, if any, of the cost of carrying such property in the future should be borne by rate payers. Where, however, there is simply a reduction in volume of business, there are increased unit costs which the railroads must shift to the public if the return on such property is to be kept at a level recognized to be essential. Those who must use the railroads—and these would be essentially long-distance shippers and shippers of low-grade commodities—face an increase of their rate burdens. Shippers will endeavor to escape the effects of increased rates, thus giving added incentive to territorial decentralization of production. Such decentralization in turn adds to the railroads' competitive difficulties and may set forces in motion which they will find increasingly difficult.

There are also certain local considerations which arise from the fact that diversions of traffic are working curtailment of rail service and abandonment of rail lines. Smaller places may lose rail service that is essential to community life and development. No community beyond the smallest can easily do without rail carload-freight service for incoming raw materials and fuel and out-going manufactured or agricultural products, especially products which must move considerable distances to market. In many instances a further redistribution of community strength is occurring because of changes in the competitive position of jobbers and even retailers, who have been the mainstay of the business life of numerous small communities. Changed transportation methods have contributed to this situation. While small communities and countless off-rail points have benefited from the coming of a more frequent and attractive passenger service

and from much of the truck service they now receive, these advantages must be contrasted with the substantial possibility that in the long run rail service may be entirely lost to such communities. Particularly vulnerable are points on branch lines, or on short, independent railroads. Many abandonments of service attributable to diversion of traffic already have occurred. Farm values are affected to the extent that improved highways do not offset the effects of abandonment of rail lines.

5. *Military considerations.*—A final group of considerations are those which arise from the need that the means of transportation be adequate at all times for the national defense. A representative of the War Department, testifying in this proceeding, stressed the importance of coordination and of increased Federal responsibility for transportation in all its branches. Primary reliance, in his opinion, must always be on trunk-line railways, coordinated with overseas transportation by means of regulating stations some 200 miles in the rear of the seaboard by means of which traffic can be coordinated with vessel movements. He said: "Our arterial railway system is the backbone of our national and international commerce and of our national defense, and all other forms of transport are for us but extensions and auxiliary services, none of which should be permitted in any way, shape or manner to weaken or retard the development of a national system of arterial railways."

This witness stated that highway transportation has an important and apparently increasing part to play but, in the interest of orderly functioning, should be coordinated with rail transportation on a collection and delivery basis; preferably such coordination should be under railroad auspices. Legal obstacles should not stand in the way of such coordination. "The creation of conditions that will permit of correct solution of this problem is a Federal responsibility. This should not be left to forty-eight different states, any more than the standardization and coordination of railway transportation has been left to state regulation. The actual solution of the problem of competition and coordination of rail and motor transportation is a technical problem that can be solved only by broad transportation operation under centralized control of far-reaching transportation executives."

On the cost side, requirements of military transport for large, fast-moving units may necessitate more costly highways than are otherwise required, or cause the breakdown of many present highways. The 5-ton truck, with 9,000-pound wheel load, regarded as absolutely essential, does not exceed the specifications which the Bureau of Public Roads recommends for us in building Federal

aid highways. But much heavier trucks are in use.⁷⁴ Provision of highways adequate for such facilities would entail enormous costs.

VII. PRESENT REGULATION OF MOTOR TRANSPORTATION

(a) *Under the interstate commerce act.*—A final problem is the extent to which we now regulate, under the present interstate commerce act, the motor-vehicle operations of carriers subject to our jurisdiction; and the extent of intrastate motor regulation.

Terminal service may include store-door collection and delivery of freight and carriers may establish such service and collect their published charges therefor, provided no undue discrimination is practiced. *Washington, D. C. Store Door Delivery*, 27 I. C. C. 347; *Merchants & Mfrs. Assn. v. B. & O. R. R. Co.*, 30 I. C. C. 388. But we have expressed the view that we are without power to require carriers to establish store-door pick-up and delivery. *Constructive and Off-Track Freight Stations*, 156 I. C. C. 205, 235.

Terminal trucking service performed by railroads, particularly in lieu of lighterage within the lighterage limits of New York Harbor was considered in *Constructive and Off-Track Freight Stations, supra*, where we said:

It is no longer open to question that terminal trucking as a service is subject to our jurisdiction when voluntarily established and maintained by the carriers. *Tariffs Embracing Motor Truck or Wagon Transfer Service*, 91 I. C. C. 539, 546. Section 1 (4) of the interstate commerce act makes it the duty of carriers, subject to the act, to provide and furnish transportation as defined in paragraph (3) of the same section, upon reasonable request.

* * * * *

Under all of these circumstances, it can not be fairly said that the respondents should abandon all forms of truck coordination, except that used by the three lines maintaining inland stations, and that in respect of interchange freight. The record is convincing that the carriers should make every effort to avail themselves of truck transportation and coordination, properly policed, on Manhattan Island to the end that the expensive pier stations may gradually be discontinued.

It was urged on brief that section 1, paragraphs 18 to 20, which requires a certificate of convenience and necessity before a railroad can extend or abandon its line, is applicable to railroad operation of motor trucks in terminal service. This question was considered in *Constructive and Off-Track Freight Stations, supra*, but was not determined. It would appear, however, that the section is inapplicable to motor-vehicle operations in terminal districts.

⁷⁴ Orders have recently been placed for a number of units of 6-wheel, 170 h. p. trucks, said to be capable of making a heavy grade with a 10-ton load and having a top speed of over 60 miles per hour. These trucks are to be used by the Field Artillery.

It is a practice of many railroads to provide substituted motor service for line-haul station-to-station rail service under its applicable rail tariffs. Such transportation is not, in our opinion, subject to the provisions of the interstate commerce act, but should be brought within our jurisdiction.

Recently in a number of cases, the commission has authorized the abandonment of lines or service provided motor-carrier service be substituted. *Abandonment by York Harbor & Beach R. R.*, 117 I. C. C. 695, 698; *Abandonment of Ferry by New York, N. H. and H. R. Co.*, 150 I. C. C. 413, 415; *Long Island R. Co. Abandonment*, 162 I. C. C. 363, 376; 166 I. C. C. 671, 678; 175 I. C. C. 163, 166; *Transit Commission v. U. S.*, 248 U. S. 360.

Our decision in *Tariff Embracing Motor Truck or Transfer Service*, 91 I. C. C. 539, that *motor-truck* operations in terminal service for the transfer of property are part of the transportation service, over which we have jurisdiction, applies with like force to *motor-bus* operations in terminal service for the transfer of persons.

In *Jaloff v. Spokane, P. & S. Ry. Co.*, 152 I. C. C. 758, we dealt with the matter of allowances to motor subsidiaries. The railway company sold round-trip tickets between certain points, which gave the passenger the privilege of using the subsidiary's motor-bus service over a part of the route on the return trip if he so desired. There was no reference in the railway company's tariff to this service by the motor-bus subsidiary. The evidence did not show what allowances were made to the subsidiary for service rendered by it to passengers traveling on tickets sold by the railway company. We said, *ibid.* 760:

If the allowance is such that the amount accruing to the railway company for the actual rail service rendered by it independent of any transportation by the transportation company's motor-bus line is less than the published fare for such rail transportation there is a violation of the act. The act requires that all charges for transportation subject to the act be filed with us and that such charges be collected without deviation. Carriers must file with us tariffs showing clearly and specifically charges for service subject to the act independent of charges for service by motor bus. The charges for service subject to the act must be collected and retained entirely by the railway company. It is not a compliance with section 6 of the act to publish a through fare which covers rail service performed by it and service by motor bus performed by the transportation company without separately stating the charge for the rail service.

The question of the application of revenue provisions of section 15 (a) to motor operations through a subsidiary was considered in *Jaloff v. Spokane, P. & S. Ry. Co.*, *supra*, and we said:

Complainant also contends that the investment of the railway company's funds in the transportation company and advances made to the latter without first obtaining our authority was a diversion of the railway company's funds

contrary to the provisions of section 15 (a) of the act relating to the recapture by the Government of excess earnings of common carriers. The investment of the railway company's funds in the stock of the transportation company and loans made to the latter are charged on the railway company's books to the account of investment in affiliated companies. The advances made to the transportation company have not been charged to railway operating expenses. It does not appear that the books of the railway company are not kept in compliance with the commission's accounting regulations. No violation of the provisions of the act relating to the recapture by the Government of excess earnings is disclosed.

Where motor service is rendered by or for a railroad in lieu of train service the results are taken into the rail operating accounts. Where the operation is conducted directly by the railroads or by a subsidiary under the condition that the railroad assumes the actual cost of operation, the revenue and expenses accruing are respectively includible in railroad operating revenues and expenses. Where the operation is performed by a subsidiary company at a specified charge per ton or trip or by contract with an independent company on a similar basis, the amount paid for such service is deductible from rail operating revenues. In all such cases, the results of motor operations are reflected in net railway operating income. Any return to the railroad in the form of interest or dividends on the securities of a subsidiary is includible in nonoperating income accounts and does not affect net railway operating income.

Motor operations of railroads other than those in lieu of rail service may be performed by subsidiaries or by other companies in which the railroad has a financial interest. In such cases the results of operations are not reflected in rail operating accounts but are treated as nonoperating income or deficit. Net railway operating income is not affected.

Examination of the returns filed by respondents in this proceeding indicates that, in general, the foregoing requirements are observed.

With reference to the question raised in the *Jaloff case, supra*, that the railway company's charter powers did not authorize it to organize a subsidiary to engage in motor transportation, we held that we did not have jurisdiction to determine whether or not such action by the railway company was *ultra vires*.

The interstate commerce act prohibits any common carrier subject to its provisions directly or indirectly, to issue any interstate free ticket, free pass, or free transportation for passengers, except to its officers, employees, and their families, and other persons specified. It also provides that the provision shall not be construed to prohibit the interchange of passes for the officers, agents, and em-

ployees of common carriers, and their families. The record shows that some carriers subject to the act have issued passes to officials of independent and railroad-subsidary motor common-carrier companies. This may not be unlawful under the principle announced by the Supreme Court in *United States v. Erie Railroad*, 236 U. S. 259.

Reports by carriers subject to our jurisdiction show a number of grade crossing accidents with motor trucks used for the transportation of explosives and inflammable liquids. During the years 1929, 1930, and the first quarter of 1931, a total of 52 accidents of this kind were reported. Accidents of the class under consideration are peculiarly serious because of the hazard to which all persons on the train involved and in the immediate vicinity are subject because of an explosion or the spread and ignition of quantities of highly inflammable liquids. The transportation of explosives act, United States Code title 18, chapter 9, provides for the proper marking of shipments of explosives and inflammables and for penalties for violation of the act; the language of the act is broad enough to include common carriers by motor vehicle engaged in interstate commerce, but requires modification to apply to private or contract carriers.

In our annual report for 1930, we made recommendations concerning freight forwarding companies and discussed generally the situation with respect thereto. Forwarding companies are not now subject to the interstate commerce act. We pointed out that an investigation disclosed an urgent need for legislation to subject freight forwarding companies to the regulatory provisions of the interstate commerce act.

The relation of the so-called "express freight companies" to the railroads is similar to that of the forwarding companies. Both should be made subject to the provisions of the interstate commerce act.

Regulation of rail carriers was begun when motor-vehicle transportation was unknown, and amendatory legislation since that time has taken no cognizance of motor transportation as a major transportation agency. The transportation act, 1920, the last general legislation relating to national transportation, was enacted before motor transportation had reached any considerable proportions. Important and radical changes have taken place in transportation and distribution since 1920. With changed and changing conditions laws regulating transportation of interstate commerce should be revised to meet existing conditions and future needs. See our 45th Annual Report to Congress (1931), page 114 et seq.

(b) *Intrastate motor regulation.*—To determine the scope of a program of effective interstate regulation it is necessary to ascertain the extent of intrastate regulation.

All of the States, except Delaware, have laws regulating the operation of motor vehicles as common carriers of passengers; 39 States have laws regulating the operation of such vehicles as common carriers of property, and 34 States have enacted laws dealing with the operation of truck contract carriers. This fact is evidence of the need for regulation.

In the States where there is a density of population that promotes an extensive use of motor vehicles, State boundaries become insignificant and the interstate character of the operations vitiates effective State regulations.

Appendix F shows separately the name of the State, the date the first law regulating motor carriers was enacted, the date of the present law, the classes of carriers regulated, and a brief resume of the extent of such regulation.

These regulations cover a variety of fields, which can be classified under the following heads: (1) Certificates of public convenience and necessity authorizing the operation; (2) regulation of rates, fares, and charges; (3) prescription of uniform accounting system; (4) regulation of security issues; (5) prescription of compulsory insurance; and (6) regulation of safety devices, size, weight, and speed of vehicles.

As to the interstate carrier the State is limited in its action to matters coming within its general police powers, as, for example, matters of size of equipment, weight, speed, safety, and congestion of highways.

Taxation of motor vehicles is a problem which has been dealt with by all the States, and there is wide variance in the bases upon which the tax has been levied. This problem is not directly involved in this investigation but is discussed briefly in Appendix G.

Regulatory control of motor carriers is usually achieved by means of a certificate or permit issued by a regulatory body for particular motor operations after it has been determined that such operation is in the interest of public convenience and necessity. Certificates or permits for carrying passengers are required in 44 States and for carrying property for hire in 37 States. See Appendix F.

The laws of some States provide that a motor carrier actually in operation on a certain date and continuously between that date and the date of application is entitled to a certificate of convenience and necessity upon filing an application and showing that the operation was in good faith. Other States have no such provision, and all

applicants for certificates, whether they have been in operation over a stated period prior to the enactment of legislation or have not yet commenced operation, are placed on the same footing.

The fact of continuous bona fide operation for a reasonable period prior to the enactment of regulatory legislation and at the time of the application for a certificate is considered evidence, conclusive or prima facie, as the case may be, as to the existence of public convenience and necessity.

The requirement that a certificate of public convenience and necessity shall be obtained before operations are begun prevents duplication and wasteful service where existing facilities are adequate to meet the needs of the public, protects the public from irresponsible operations, and stabilizes the industry and protects it against destructive competition. See *Texas & Pac. Ry. v. Gulf, etc., Ry.*, 270 U. S. 266, 277.

Most States require that the intrastate rates for common carriers of passengers and property be filed, published, and observed, and that they be reasonable and nondiscriminatory. Regulation of the contract-carrier rates has been undertaken in only a few States.

Generally, only the larger and better organized companies have adequate accounting systems. The great majority of operators are of small size and keep inadequate records as to the cost and results of their operations.

Forty-four States require the filing of annual reports but, lacking a uniform basis in the accounts, these reports are of little value. Seventeen States have prescribed the classification of accounts to be observed. These classifications are of limited extent in some of the States, but in others are worked out rather fully. Among the latter there is a large degree of uniformity, owing to the fact that the classifications have been based largely on those prescribed for electric railways. In the treatment of certain subjects, however, as taxes and depreciation, there is disagreement in detail among these classifications. Most of the 17 States have classified the operators by size and have prescribed less complete accounting for the smaller operator.

Stock issues of the operating motor transportation companies are under the regulation of public-utility or other boards in States where such regulation is imposed by law. Securities in the form of equipment-trust certificates are sold to the public and are subject to regulation by commissions in one or more States in which the equipment is operated.

In 13 States common carriers of passengers by motor vehicle and in 28 States carriers of property are required to carry liability insurance. Fourteen States require cargo insurance.

The requirements as to insurance vary in the different States; generally there is a provision fixing liability insurance in a certain amount, as in Louisiana, \$5,000 to \$30,000 per bus according to passenger capacity covering personal injury and \$1,000 covering property damage; common-carrier truck operators must carry liability insurance or give bond for \$10,000 covering personal injury or property damage.

In some States, bus companies with a certain cash capital, as \$500,000 in New Jersey, need not file indemnity bond. The matter of prescribing liability insurance or indemnity bonds is left to the discretion of the regulatory body in some States. In certain instances a bond to insure the payment of fees and taxes is required.

The States can not require a motor carrier operating exclusively in interstate commerce to carry insurance covering interstate passengers or insurance against loss or damage to cargoes. *Sprout v. South Bend*, 277 U. S. 163; *Clark v. Poor*, 274 U. S. 554.

The necessity for requiring interstate operators to carry liability insurance is perhaps greater than in the case of intrastate operators because the former are operating without any showing of public convenience and necessity and without any showing of financial responsibility and some of them are of the fly-by-night types. Well-organized, interstate carriers as a rule carry liability and indemnity insurance.

The desirability of having uniform rules and regulations as to widths, heights, lengths, weights, speed, lights, and safety devices of motor vehicles operating for hire over the public highways is generally recognized.

It is a common practice to transport explosives and inflammables by motor truck. In some States motor vehicles carrying passengers are prohibited from carrying explosives or inflammables. Other States have no regulations relative to the transportation of hazardous articles by motor carriers.

During 1930 the Michigan Public Utilities Commission made an investigation in the matter of motor-vehicle operations in Michigan. In its report it stated that more complaints from all sources had come to it regarding interstate bus carriers than were received concerning intrastate operations.

State regulation is more or less demoralized by the presence of interstate motor carriers, and it is believed that this difficulty would be to some extent at least removed by Federal regulations similar in some respects to that adopted in the several States.

SUMMARY OF EVIDENCE

At the expense of some possible repetition of matters which have already been stated, it is believed that the following summary of evidence will be useful.

TRUCKS

Highway trucking is a comparatively new industry made up of generally small-scale operators who lack the effective organization and full service and financial responsibility generally required of public service agencies; the industry is, however, functioning with increased effectiveness and is of sufficient age to have demonstrated its inherent aptitudes and limitations.

The trucking industry in 1929 carried approximately 6 per cent as much freight, measured in ton-miles, as the railroads and 4 per cent as much as all agencies of inland transportation (rail, water, pipe line, highway, and air); in terms of tonnage originated, and disregarding the distance transported, it is estimated that trucks originated for intercity movement 14.2 per cent as much traffic as did the railroads in 1929; there are no comparative figures of the ratio of gross earnings of motor trucks to railroads; trucks serve for the most part points between which large volumes of traffic are carried and usually over routes which more or less parallel those of the railroads; of the traffic carried by truck the greater part would in all probability have moved by rail; truck competition exerts a large influence over rail rates and in the aggregate accounts for losses in rail revenue of several hundred millions of dollars per year; the movement of some traffic has been due to the advent of the trucks and many small points heretofore without rail service are now served by motor; truck service for many classes of traffic is more complete, more flexible, and more expeditious than rail service and frequently at lower rates; the type of service desired is determined on a basis of relative costs; ⁷⁸ the nearer the cost of truck service approaches that of rail, the greater the degree of duplication of service.

Where rail traffic is light, diversions necessarily greatly increase unit costs and imperil the continuance of established service; rail carriers face the difficulties of curtailing operations, reducing employment, and of effecting other adjustments; many railroads are incurring substantial revenue losses and are of necessity in many cases lowering former standards of maintenance and service; the alternative is increased transportation charges on traffic not within the effective reach of trucks, namely, heavy loading and generally

⁷⁸ The more complete service rendered by trucks, while generally listed as a convenience, is in essence a form of reduced cost.

low-value commodities, such as coal and iron ore, commodities tied to the rails by marketing considerations, as grain, and all classes of traffic moving long distances; any increase in railroad transportation charges renders truck competition with railroads more potent and consequently more destructive.

The growing use of trucks necessitates extensive financing of highway construction and maintenance; their operation is attended by danger to persons and property on or in the vicinity of the highways and is hazardous to the public.

Efforts to meet truck competition by reduced rail rates or improved rail service have generally been unsuccessful in recouping sufficient traffic to improve net earnings; effective competition for many classes of traffic, particularly less than carload, can occur only where both truck rates and service are substantially equaled by the railroads; rates on certain truck traffic, especially return-trip and other traffic subject to excessive truck competition, are so unremunerative that rail carriers can not meet them at compensatory rates.

The railroads have undertaken to test the possibilities of trucks and other new facilities for use in conjunction with rail service; their use of trucks in substitution for train service in areas of light traffic has been uniformly beneficial in reducing costs and improving service; many railroads now furnish pick-up and delivery service on less-than-carload freight over considerable distances; highway trucking by rail carriers conducted entirely independent of their rail service is limited. The preponderance of railroad truck operations are through the means of wholly owned subsidiaries. These operations fall into three general classes: (1) The all-highway movement, such as that of the Wilson Line owned by Chicago, St. Paul, Minneapolis & Omaha Railway (subsidiary of the Chicago & North Western); (2) both all highway and part highway and part rail. The Southwestern Transportation Company (Cotton Belt) is extensively engaged in this form. Other examples are those of the Boston & Maine, and the New England (N. Y., N. H. & H. R. R.) Transportation Companies; (3) part highway and part rail, confined to pick-up and delivery service at the terminals, with the line haul by rail. This form was initiated by the Pacific Electric Company (Southern Pacific), and has been adopted among others by the Texas & Pacific, the Missouri Pacific, and the Missouri-Kansas-Texas. This has often been referred to as the "express freight" type, but the operations of carriers under Class (2) also involve in part the "express freight" principle of operation. There is also a substantial amount of truck operation under contracts with independent truckers. For example, the station-to-station service in lieu of local

freight trains is quite extensively in use by the New York Central and Pennsylvania, as well as rather extensive terminal operations, such as those at New York and St. Louis.

In addition to these truck operations, there is also the container service in which the motor truck is employed in the terminal work. Chief users of the container are the New York Central, Pennsylvania, and Lehigh Valley. Another form of coordination is the truck-body and the truck-trailer service of the Cincinnati & Lake Erie, and the Chicago, North Shore & Milwaukee, respectively, and the proposed truck-body operation of the Pennsylvania. The container, demountable truck body, rail wagon and other devices for meeting truckload competition have not yet fully disclosed their possibilities, but are helping to coordinate rail and truck service. The possibility of the further use of the Railway Express Agency is also being considered by the railroads. Some coordination has been effected by forwarding companies.

The importance of speed and flexibility of truck service, barring special types of traffic, judged from the broad public standpoint, may be overestimated, but, on the other hand, rail-service standards may be too rigid and certain practices with respect to classification of freight and the publication of rates may require modification. To achieve the maximum benefits of the new facility consistent with a minimum degree of duplication of service, it is necessary that rail and motor competition be conducted under an equality of opportunity and that service which, upon comparison of delivery time and rates, is found to be a duplication should be limited within proper bounds. A considerable part of the highway trucking service is rendered at less than compensatory rates and is therefore more or less self-destructive. Such competitive conditions may temporarily benefit some shippers but, if continued unchecked, are bound to result in permanent injury.

For less-than-carload and for much carload traffic, other than bulk movements on a siding-to-siding basis, truck service is so much superior to rail service and truck costs are so far below those of railroads or any combination of rail and motor facilities that as to such traffic for distances up to about 150 miles, but averaging not more than 75 miles, trucks have a distinct advantage; in an intermediate zone up to approximately 300 miles, truck service can equal or excel rail service on the foregoing classes of traffic, but the line-haul costs of trucks within this zone are greater, so that there are here large possibilities for effecting coordination; in the zone beyond, the inherent advantages of the rail carriers with respect to costs and speed make truck competition generally of less concern.

The trucking industry is subject to internal competition induced by the ease of entering the industry, the small scale of most operations, and by the fact that only about 15 per cent of the operators are common carriers and 20 and 65 per cent contract carriers and private operators, respectively. No plan of rate regulation which does not include within its provisions the contract carrier, is thought feasible. While practically no demand has been made by patrons for the removal of alleged discriminatory practices, it is shown that some such practices exist. About 20 per cent of intercity truck traffic represents interstate movements; State and interstate traffic are so closely related that successful State regulation is said to depend on concurrent Federal regulation; existing rail and water facilities in which a large amount of permanent capital is invested should be used to the greatest possible extent in developing a coordinated transportation service. Participation of railroad and water lines on an equal basis with independent operators in the transportation of freight by motor truck is desirable.

BUSSES

The bus industry has attained a greater degree of permanency and a more effective organization than the trucking industry; consolidation of lines has brought about a considerable number of companies of large scope and one, The Greyhound Lines, which has practically a nation-wide organization; the industry as a whole lacks the full service and financial responsibility desired; substantial improvement in these respects has been made.

Busses do a larger amount of business relative to that of rail carriers than do trucks; measured in passenger-miles, busses did approximately 26 per cent as much business as did the railroads in 1930, and they carried, disregarding the distance transported, 71 per cent as many passengers as did Class I railroads and earned 40 per cent as much gross passenger revenue. A comparison of 1929 with 1923 shows that the railroads have lost 274 million dollars of passenger revenue, and, compared with 1930, 418 million dollars; from 20 to 30 per cent of this loss is attributable to busses and the remainder mainly to the increased use of private cars; to early losses of short-haul business have been added increasing losses of intermediate and to some extent long-haul business; some railroads have ceased altogether to be passenger carriers.

The effects on unit costs of diversion of passenger traffic are more marked than in the case of diversions of freight traffic, owing to the greater inflexibility of passenger-train service; railroad passenger traffic as a whole is now conducted at a loss; the problem of throwing

the burden of current losses on other passenger traffic, especially the long-haul traffic, is a very difficult, if not an impossible one; this loss is a large factor in the failure during the past several years of rail carriers to earn a fair rate of return on the value of their properties devoted to public service.⁷⁶

Improved rail service and reduced railroad fares have been induced by bus and interrailway competition, and by a desire to stimulate travel; improved service has failed to check severe losses of travel, particularly over short and intermediate distances, though some carriers are so situated as to have benefited from such efforts; reduced fares of the excursion type have in some instances proven profitable; a great variety of other reduced fares have been and are being experimented with but the general indication is that, barring certain instances, they do not improve net revenue; a requirement that interstate bus fares be filed, published, and observed would aid in equalizing competitive conditions.

A number of railroads have for several years used busses in substitution for train service and have accomplished substantial savings thereby and at the same time have benefited the communities served; schedules are coordinated with those of connecting trains and rail fares generally prevail; long-haul bus operations paralleling rail service, as illustrated by the Union Pacific-Chicago and North Western operations from Chicago to points on the West Coast, by those of the St. Louis-Southwestern, the Boston and Maine, the New York, New Haven and Hartford, and the Greyhound operations in which railroads have a large interest, have been undertaken to prevent or recoup losses in revenues; some have been successful and others have shared in the general unprofitableness of bus operations under present conditions. Coordination of bus with rail service offers several advantages, both in economy and in service not usually available to the independent operator, at least in the same degree: (1) Use of railroad facilities on behalf of bus passengers, such as station facilities, responsible ticketing agencies, advertising facilities, extensive and convenient telephone and telegraph facilities, financial responsibility, and conservation of capital resulting therefrom; (2) availability of rail facilities, organized rail personnel, and responsible local agents throughout the whole route mileage of rail-bus operation for use either customarily or in emergency as in the case of break-downs, blocked highways, storms, and the like.

Experience to date indicates that the field of passenger transportation has been divided between bus and steam railroad carriers about

⁷⁶ See our 45th Annual Report to the Congress, December 1, 1931, page 117.

as follows: On local main and branch lines busses and the private car have almost completely superseded rail service; for moderate distances up to about 150 miles bus service has strong competitive powers even where rail service is frequent and otherwise adequate to meet the public's requirements; for intermediate distances up to about 250 miles the marked difference in elapsed time en route and in comforts are only partially overcome by lower bus charges and possibly greater convenience of schedules and points of arrival and departure; in this field the railroad has an advantage; for long distances rail service is so decidedly superior to bus service for most travelers that even substantially lower bus rates do not create a large volume of traffic; in short, the railroads' branch and local main-line train business has been superseded by motor vehicles; their moderate-haul, main-line traffic must be divided in substantial proportions with other means of conveyance; high-class train service must be continued in the intermediate field if the railroads are to sustain their leadership there; in the long-haul field they have a decidedly advantageous position.

Approximately 25 per cent of intercity bus travel is interstate. Many routes are excessively served. Substantially all bus service is of the common-carrier type and coordination with service by rail would be more easily effected under regulation than without it. There are a less number of bus than of truck operators and the bus business is better adapted to large-scale operations.

CONCLUSIONS

Upon consideration we conclude:

1. That transportation by motor vehicles, busses, and trucks, over the public highways is, within certain distances, and in certain respects a superior service, and that the rail and water lines should be encouraged in the use of this instrumentality of commerce wherever such use will promote more efficient operation or improve the public service;
2. That there is substantial competition between rail and water carriers on the one hand and motor carriers on the other for the transportation of both passengers and freight and that this competition is increasing;
3. That such competition is conducted under conditions of inequality, particularly in regard to regulation;
4. That a contributing cause, aside from the general business conditions, of the present unsatisfactory financial condition of the railroads is the existence of unrestrained competition by rival transportation agencies;

5. That there is today, and probably would be under normal conditions, an excess of carrying capacity of existing transportation facilities;

6. That unrestrained competition is an impossible solution of the present transportation problem and is incompatible with the aim of coordination under regulation;

7. That Federal legislation relating to the regulation of motor vehicles operating upon the public highways and engaged in interstate commerce is desirable in the public interest.

THE REMEDY TO BE APPLIED

In arriving at a solution of the problems presented, it is desirable to summarize the situation as we see it.

Interested parties agree that the transportation of passengers in interstate commerce by motor busses over regular routes or between fixed termini should be regulated. This opinion appears to be unanimous. In our annual report to the Congress for 1931, we said:

Motor Bus and Motor Truck Operation, 140 I. C. C. 635, decided April 10, 1923, was an investigation upon our own motion into motor-vehicle operations in interstate commerce by, or in connection or competition with, carriers subject to the interstate commerce act. Our conclusions were summarized on pages 745-748 in 26 numbered paragraphs. Without restating these conclusions in detail, it may be said briefly that we found that * * * there should be * * * regulation of the interstate transportation of passengers by common-carrier motor busses operating over regular routes or between fixed termini. * * * The regulation recommended embraced the usual jurisdiction over rates and charges, the granting of certificates of convenience and necessity, provision for liability insurance or indemnity bonds, establishment of uniform accounting, supervision of service, free pass regulation, and certain other matters.

Since this report was issued, the matter has received much consideration by Congress, although no legislation has yet resulted. There seems, however, to be quite general agreement that some such interstate regulation of motor busses should be established. The bills which have been considered have not, in general, incorporated all of our recommendations. While we adhere to those recommendations, the thing of essential importance is to make provision for some regulation. Once a start is made, experience will then show the need for amplifying or extending it. (Pp. 111-112)

We renewed our recommendations that interstate transportation of passengers by common-carrier motor busses operating over regular routes or between fixed termini should be regulated in the manner and to the extent indicated in our report above referred to. These conclusions and recommendations are affirmed on this record.

The motor-truck business is carried on for the most part by many persons and in rather small units, and to a considerable extent by the shippers themselves. The fixed investments are comparatively small. Depots and expensive terminals in congested districts are

not required. The proportion of fixed to variable expenses of operation is small. Many trucks move if and when business is offered at remunerative rates. Schedules of movements are frequently not maintained. Because of the far larger number of persons or companies engaged in motor trucking for hire, the motor-truck industry tends to be less monopolistic than the motor-bus industry.

Regulation to be effective should include both contract and common carriers. They should be treated separately because it is no longer open to doubt that, consistent with due process of law, a contract carrier can not be converted against his will into a common carrier by mere legislative command, or be regulated as such.

Those opposed to Federal regulation of motor vehicles contend that regulation under the police powers represents the limit of any valid regulation of contract carriers, since the business of those carriers is said not to be affected with a public interest, and that any attempt to regulate the *business* of contract carriers as distinguished from their *use of the highways* infringes on the prohibitions of the fifth and fourteenth amendments.⁷⁷ This would depend, we understand, upon whether the particular regulation was considered arbitrary or capricious, or whether it was deemed justly related to a matter of public concern and was reasonably necessary and appropriate to correct the evil sought to be remedied; in each case a judicial question and one which, in regard to the contentions here made, has not been authoritatively decided.⁷⁸

The Supreme Court decisions do not go to the extent of holding that a State can not regulate contract motor carriers doing business on the public highways. And in *Frost Trucking Co. v. Railroad Commission*, 271 U. S. 583, the court said:

* * * the case presented is not that of a private carrier who, in order to have the privilege of using the highways, is required merely to secure a certificate of public convenience and become subject to regulations appropriate to that kind of a carrier; but it is that of a private carrier who, in order to

⁷⁷ For discussion of the legal problems involved, see "State Regulation of Motor Vehicles Operating in Interstate Commerce," by Mac Asbill, American Bar Association Journal, Vol. XVII, page 87, and "Regulation of the Contract Motor Carrier Under The Constitution," by LaRue Brown and Stuart N. Scott, Harvard Law Review, Vol. XLIV, page 530. See also the following Supreme Court decisions: *Mich. P. U. Com. v. Duke (Mich.)*, 268 U. S. 570; *Frost Trucking Co. v. R. R. Com. of Cal.*, 271 U. S. 583; *Smith v. Oahoon (Fla.)*, 283 U. S. 553; *Buck v. Kuykendall (Wash.)*, 267 U. S. 307; *Bush Co. v. Maloy (Md.)*, 267 U. S. 317; *Brooks v. U. S. (So. Dak.)*, 267 U. S. 432; *Int. Busses Corp. v. Holyoke Ry. (Mass.)*, 273 U. S. 45; *Morris v. Duby (Oreg.)*, 274 U. S. 135; *Clark v. Poor (Ohio)*, 274 U. S. 564; *Hammond v. Schappi Bus Line (Ind.)*, 275 U. S. 164; *Hammond v. Farina Bus Line (Ind.)*, 275 U. S. 173; *Interstate Busses Corp. v. Blodgett (Conn.)*, 276 U. S. 245; *Sprout v. South Bend (Ind.)*, 277 U. S. 163; *Carley & Hamilton v. Snook (Cal.)*, 281 U. S. 66; and *Interstate Transit v. Lindsey (Tenn.)*, 283 U. S. 183.

⁷⁸ See *New State Ice Company v. Ernest A. Liebmann* (March 21, 1932), — U. S. —; also *Hodge Drive-It-Yourself Company et al. v. City of Cincinnati et al.* (January 4, 1932), — U. S. —, 52 Sup. Ct. Rep. 190, adv. sheets 78 L. Ed. 190.

enjoy the use of the highways, must submit to the condition of becoming a common carrier and of being regulated as such by the railroad commission.

From this expression it can be inferred that the State may, where circumstances justify, regulate a contract motor carrier doing business on the public highways, at least to the extent of requiring "a certificate of public convenience."¹⁹

The authority of the State of Texas, which authorized its Board of Railway Commissioners to fix minimum rates to be charged by contract carriers in no event less than those charged by common carriers and forbade the making of contract charges less than those fixed by the commission, was upheld by a 3-judge statutory court in *Stephenson v. Binford et al.*, 53 F. (2) 509. This case, we are advised, will be appealed to the Supreme Court.

It is, however, well settled that the power over commerce among the States conferred upon Congress by the Constitution is complete in itself, extends incidentally to every instrument and agent by which such commerce is carried on, may be exerted to its utmost extent over every part of such commerce, and is subject to no limitations save such as are prescribed in the Constitution; and it is sufficient for our purpose to state that the remedies we propose are, in our opinion, not only appropriate, but clearly within the constitutional power of Congress to prescribe.

So far as this record shows, the demand for Federal regulation of the transportation of property by motor truck comes mainly from the railroads. There is little present demand by shippers for such regulation.

The fact that shippers do not now generally recognize the need for Federal regulation of motor-truck operations does not prove that such regulation is not required in the public interest. The immediate advantages of unrestrained competition in transportation are easy to perceive; but the more remote consequences, which may be most injurious to all concerned, are not so easily foreseen and recognized. This has uniformly been the experience with such competition in the public services, of which transportation is the most important.

The evidence in this investigation shows very clearly that such injurious consequences may be expected from, and to some extent have already been produced by, the unrestrained competition of

¹⁹ The Supreme Court has noted probable jurisdiction in No. 557, *Ogden & Moffett et al. v. Michigan Public Utilities Commission*. That will bring before the court, for review, litigation concerning the validity of Michigan legislation requiring contract motor carriers to obtain certificates or permits from the Michigan commission and to comply with the rules and regulations issued by the commission under the statute, the validity of which is under question.

motor vehicles with the railroads and with each other. Some of these consequences may thus be summarized:

1. An instability in charges for transportation affected by the competition, resulting in widespread and unjust discrimination between shippers and uncertainty as to the basis upon which business may be done.
2. The loss of much capital invested in both the railroads and the motor vehicles.
3. Radical changes in the railroad rate structure which, in the final analysis, may result in loading the traffic which is not affected by the competition with the utmost charges that it is able to bear.
4. A tendency to break down wages and conditions of employment in the transportation industry.
5. Increase in the hazard of use of the highways.

It is not our thought that anything should be done to suppress new means of transportation, such as those supplied by motor vehicles, which augment and improve the service furnished to the public. It is our thought that regulation should be provided which will minimize injurious consequences by restraining competition within reasonable limits, encouraging desirable coordination between the rival forms of transportation, and stabilizing rates and financial conditions.

Public regulation may be of three distinct general forms. One is regulation through taxation. Another is regulation through the police power in the interest of public safety and convenience. The third is regulation of rates, charges, practices, service, and other matters, such as this commission exercises in the case of the railroads.

Taxation is a most important matter, if conditions of competition are to be fair. Whether they now are fair in this respect is as yet far from clear. The evidence on this point, summarized in Appendix G, is incomplete and unsatisfactory. We have recommended to Congress a special and intensive investigation of this question by a body armed with appropriate authority and means of research.

The States are exercising their police power extensively for the protection of public safety and convenience in the use of highways by motor vehicles. This, also, is a most important matter. Congress has not as yet attempted to occupy the field so far as interstate commerce is concerned. Uniformity in such regulations seems highly desirable. It may be well for Congress to take action to that end. This is a matter beyond our purview, but we have recommended that it be made the subject of a special and intensive investigation under authority of Congress.

The need for regulation of the third form has been shown. Special and unusual difficulties, however, surround such regulation. One is a practical difficulty. It has been found impossible in this investigation to determine the number of motor vehicles operating as common carriers or contract carriers of property, or transporting the goods of their owners, in interstate commerce. Nor is it known how many concerns or individuals operate such trucks. The indications are that the number of operators is very large, and that the operations are mostly on a small scale. If this is a fact, as it appears to be, the practical difficulties of regulation are vastly increased. Regulation which is appropriate and practicable in the case of a comparatively few large, well-organized companies may be quite impracticable in the case of a multitude of individuals or small concerns.

Another difficulty is legal in its nature, but has important practical consequences. It is as yet uncertain how far regulation may lawfully be extended to contract carriers which do not operate as common carriers. Yet the common-carrier trucks are in competition with the contract trucks, to say nothing of the trucks which are owned by those whose goods they transport. An attempt to regulate common-carrier trucks without similar regulation of competing trucks may not only be unfair but may have the result of driving the common carriers into the contract field. It is the common-carrier trucks, also, which now largely serve the smaller shipper. In equality in regulation may, therefore, result in discrimination as between the larger and the smaller shippers. The States are now providing a field of experimentation the results of which are likely to throw light on the underlying legal question. Indeed, certain cases are now pending in the courts, the decisions in which may be very illuminating.

A further consideration is that the Federal Government is wholly inexperienced in this field of regulation. Under these circumstances we deem it wise to make haste slowly. Our recommendation is, therefore, that Congress provide at once to put Federal regulation to the test so far as the transportation of passengers by motor busses is concerned. This would provide an organization which would serve as a nucleus for such further steps in motor-vehicle regulation as experience and added information may show to be desirable and practicable. We also recommend that immediate authority be exercised over motor trucks, of both the common-carrier and contract type, to the extent necessary to locate those which are operating in interstate commerce and obtain from them such information in regard to their operations as the commission may reasonably require. In this way data will be secured which, as the legal situa-

tion clarifies, will be of great aid in pointing the way to further regulation in the public interest.

Our recommendations, therefore, must be regarded in the light of a progress report. They do not cover the utmost which we believe will ultimately prove necessary and desirable in the way of Federal regulation of motor vehicles. They represent merely the first step which we believe it is wise and practicable to take under existing conditions.

RECOMMENDATIONS

1. In docket No. 18300, *Motor Bus and Motor Truck Operation*, 140 I. C. C. 685, we made certain recommendations for legislation. Specifically those recommendations which we renew in original or modified form are:

That Federal legislation relating to the regulation of *motor busses* engaged in the transportation of persons on the public highways in interstate commerce is necessary and desirable in the public interest.

That jurisdiction to administer such regulations be vested in the commission with authority to delegate specific matters to joint boards composed of members of State regulatory bodies charged with the administration of State laws relating to transportation by motor vehicle.

That there should be required as a prerequisite to operations (a) certificates of convenience and necessity, and (b) liability insurance or indemnity bond.

That certificates should be issued as a matter of course to bona fide operators who have been in business for a stated length of time prior to the effective date of the regulatory act, provided they comply with all other applicable provisions of the act.

That certificates should be assignable with the approval of the commission and revocable for cause.

That fares and charges should be just, reasonable, and non-prejudicial; and that schedules of fares should be published, filed, and observed.

That complaints against unlawful charges, practices, and service may be made.

That participation in joint fares between common-carrier motor busses and railroads and water carriers should be permitted but not required, and that such transportation should thereafter be subject to the provisions of the interstate commerce act.

That a uniform system of accounts should be required and provision made for the filing of such reports as the commission may deem necessary.

That brokerage in transportation of passengers for hire by a person not holding a certificate of convenience and necessity should be prohibited.

That the issuance and exchange of free passes should be prohibited except to the extent permitted under the interstate commerce act.

That railroads, whether steam or electric, and water carriers, subject to the act, should be specifically authorized to engage in the transportation of *both persons and property* by motor vehicles in interstate commerce over the public highways and that thereafter such service, when directly engaged in by any such rail or water carrier, should be subject to the provisions of the interstate commerce act and legislation supplemental thereto; and that to the extent that a certificate of public convenience and necessity is an antecedent to the operation of other common-carrier motor vehicles, common carriers subject to the act should be required to obtain a certificate of public convenience and necessity.

2. Transportation of property for hire by *motor-trucks* operating over the public highways in interstate commerce should be subjected by law to reasonable public regulation. Carriers should be divided into two general classes, common carriers and contract (private) carriers. The first should include all carriers who undertake for hire to transport from place to place, over the public highways, by motor vehicle in interstate commerce, the property of those who may choose to employ them. The second should include all carriers not within the description of common carriers.⁸⁰

3. No person should be permitted to operate a motor vehicle for the transportation of property for hire either as a common-carrier or a contract carrier, over the public highways in interstate commerce, without first having secured a permit as hereinafter provided.

4. All motor carriers for hire should be required to apply to the commission for a permit to operate and upon compliance with all the applicable provisions of the act should be entitled to such permit, which should be issued for a definite period, should be assignable with the approval of the commission, and revocable by it for good cause shown.

5. There should be required as prerequisites to the commencement of operations: (1) If by common carriers, (a) a permit, and (b) liability insurance that will assure adequate protection for loss or damage to cargo, and for personal injuries and property damage; and

⁸⁰The terms "common carrier," "contract carrier," "private carrier for hire," and "privately owned or operated trucks" refer largely to a practical classification of truck operation. Legally speaking, there are only two classifications of motor-truck operations for hire, namely, common carrier and private carrier.

(2) if by contract carriers, (a) a permit, and (b) liability insurance to secure the public in case of personal injury or property damage.

6. All motor carriers for hire should be required to keep such records of operations performed by them and make such reports as the commission may reasonably prescribe.

7. Freight-forwarding companies and express-freight companies should be made subject to the provisions of the interstate commerce act.

8. Participation in through routes and through rates between common carriers by motor truck and common carriers by railroad and by water should be authorized but not required, and such transportation, whether rail-and-highway, rail-water-and-highway, or water-and-highway, and such carriers which may or do engage in the same should be subjected to the jurisdiction of the commission to the extent now provided by law in the case of through transportation by rail-and-water lines, except, however, the provisions as to the compulsory establishment of such through routes.

9. Jurisdiction to administer these regulations should be vested in the commission with directions or authority to refer specific matters to joint boards composed of members of State regulatory bodies, following substantially the plan outlined in Docket No. 18300, *supra*.

10. The commission should be authorized to confer or hold joint hearings with representatives of the State regulatory bodies, and should be authorized to avail itself of the cooperation, services, records, and facilities of any State.

11. For the present no requirements should be made regarding the qualifications of drivers, hours of service of employees, and the size, length, weight of load, and speed of motor vehicles operating for hire on the public highways in interstate commerce.

This for the reasons that the States now have a clear right to protect the public safety under their police powers; that, in the absence of legislation by Congress, State regulations of this character, if reasonable, are lawful even though they may indirectly affect interstate commerce; that legislation by Congress would manifest an intention to occupy this field of regulation and the effect would be to immediately exclude all State legislation upon the subject and to cast upon the Government the duty and burden of enforcement. The States have also very generally exercised their right to regulate in these respects, and Federal regulation is not as yet shown to be necessary. In order to obtain desirable uniformity in such regulations so far as they affect interstate commerce, it may eventually become necessary for Congress to occupy this field.

12. As recommended in our annual report, 1931, Congress should provide for an impartial and authoritative investigation for the
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purpose of determining whether and to what extent motor, water, and air carriers operating in competition with the railroads are receiving direct or indirect Government aid amounting, in effect, to a subsidy; and, if so, what steps, if any, are necessary to correct this situation, with a view to placing competition on a just and equitable basis; and that such investigation, if instituted, be extended to cover also the question of whether it is desirable in the public interest that regulations affecting public safety and convenience in the operation of motor carriers be made uniform throughout the country, and, if so, how such uniformity may best be brought about.

LEWIS, Commissioner, concurring in part:

I am convinced on the record in this investigation and the evidence in *Ex parte* 103, a nation-wide proceeding, that just as quickly as it can properly be developed, there must be put into effect to the extent that public rather than any special interest requires, adequate regulation of the commercial motor bus and motor truck, extending to and including rates, fares, charges, and practices, and requiring that they be just, reasonable, and nondiscriminatory; that unregulated competition would in time not only destroy such an adequate and necessary railroad system as contemplated and declared for by Congress, but also be detrimental to the development of proper interstate and intrastate motor transport; that the repercussion of unregulated truck competition in the field of transportation would detrimentally affect the general financial, commercial, economic, and social structure; that coordination of rail, highway, and other transportation facilities must come as quickly as it can intelligently be developed. What is now needed is exact knowledge, not now available, of the complicated problems of motor transport that confront us.

Therefore, I would go further than the conclusions or recommendations of the report. The thought of the commission is that, having presented to Congress its broad views as to regulation, it should stop there; that matters of detail are to be evolved by that body. The conclusions or recommendations, however, reach beyond the agencies of the Federal Government; they include the States. Neither the Federal Government nor the States will just now welcome recommendations that call for new, additional drains on the public treasury. Of what avail will it be if there is a requirement that interstate truckers take out permits and do certain other things if there is no provision for adequate administration. That costs money. It seems to me that the surest way to cover the cost is to provide that, in addition to the certificate or permit, the operator

shall obtain an interstate-commerce vehicle-license plate which shall be displayed on the vehicle when operating in interstate commerce. A charge can be made for this plate, the revenues so realized to be paid to the Treasurer of the United States. This would provide a fund against which appropriations could be drawn to cover the cost of administration.

Such a licensing system should produce several highly desirable results. First, it would provide an adequate staff of inspectors and policing officials. Second, it would effectuate and tremendously simplify policing. Third, it would quickly produce a complete register of all motor trucks operating for hire in interstate commerce. Fourth, the Federal regulatory body, with the cooperating State regulatory bodies, would be placed directly in line to get that definite knowledge of extent and character of highway transportation, taxation, cost, and all other information and data now largely lacking but necessary to evolve a proper regulatory system and promote such coordination of transportation facilities as may be in the public interest.

A very nominal charge for the license, at least in the beginning, might be productive of the maximum desirable results. What is wanted now is definite data and information. If that be the objective, then revenues beyond the cost of administration become wholly a secondary consideration. Assuming, for the purpose of calculation, that there are 300,000 to 500,000 trucks operating in interstate commerce, a license-plate charge of \$10 per truck would produce a fund of \$3,000,000 to \$5,000,000 against which appropriations could lie for administration. A flat charge might not be as fair between the large and small trucker as a charge graduated according to size, weight, and possibly the use of the vehicle.

I am favorably impressed with requirement 6 which would leave it to the regulatory body to prescribe such records and reports as could reasonably be required. The certified common-carrier truck operator is probably in a position to make fairly adequate reports. It is not so certain that very extended reports could be obtained from a large portion of the contract truckers. It should take time and observation to determine just what is the practical thing to do in bringing this varied lot of "common carriers" under regulation.

The conclusions or recommendations in the report do not include a requirement that truckers file either (1) minimum rates and charges or (2) their tariffs. I favor requiring filing. If filed, there would come to the regulatory body almost immediately another vast amount of data and information that is necessary in developing a proper regulatory system. There would soon be

revealed the extent to which competition is within legitimate bounds. There should be made available guides which would enable regulatory bodies to determine whether such rates and charges are compensatory and afford additional guides to determination of what are reasonable rates and charges. There should also be brought to light rebating, favoritism, and other obnoxious practices if they exist

With the complete listing of motor trucks, as well as busses, there would soon be shed light on the question of whether the motor carrier is bearing its fair share of the initial and maintenance cost of the highway, its roadbed. Until some such specific data are available, there will continue to be long, fruitless discussion on this subject. The record in this case reveals wide variation of taxes as between various States or sections of the country, varying as widely as from \$18 in one State to \$900 in another on a 3-ton common-carrier truck and from \$9.60 to \$134 on a "privately used," including "contract," truck. It should be added that the variance above noted is increased by the gasoline tax in the two States cited. For the same mileage the State imposing the \$900 tax would collect \$250 on gasoline while the State imposing the \$18 tax would collect only \$100. Therefore, there is urgent need for full information, not only on behalf of the Federal regulation of interstate carriers but also to provide States proper guidance in the matter of just taxation. In the determination of the question of taxation there should be developed the extra cost imposed on road-building units in building heavier and wider roads for trucks than would otherwise be necessary; and likewise accurate data as to extra maintenance costs attributable to heavy uses.

I am in hearty accord with the decision that, at least in the beginning, policing regulation covering qualifications of drivers, hours of service, size, weight and length of load, and speed of motor vehicles be left to the States; also that while the jurisdiction is vested in the Federal regulatory body, it be given authority and direction to refer specific matters to boards composed of members of State regulatory bodies. But if such burden is placed on the States, certainly provision should be made for covering all expenses connected with the administration of interstate regulation.

MCMANAMY, Commissioner, concurring in part:

I agree that common-carrier busses engaged in interstate commerce serving regular routes should for the protection of the traveling public be subject to appropriate Federal regulation, and I believe this regulation should include the safety of the design and maintenance of the equipment used, and the number, qualifications, and hours of service of employees on such vehicles. That

motor vehicles for the transportation of property over the public highways should also be adequately regulated is, in my opinion, not open to argument, but I am not at all convinced that under the conditions which prevail in the industry such regulation should be undertaken by the Federal Government or that it can be effectively accomplished if so undertaken.

This record shows that there were approximately 3,500,000 motor trucks in use in 1930. Of these one-half were privately operated and probably not subject to Federal regulation; 30 per cent were contract carriers and 20 per cent common carriers. Five per cent of the total, or approximately 175,000 vehicles, are common carriers engaged in interstate commerce and clearly subject to Federal regulation. Seven and one-half per cent of the total, or about 260,000 of the contract-carrier trucks are also engaged in interstate commerce but the right of the Federal Government to regulate contract carriers has never been definitely established. Assuming, however, that this right exists, Federal regulation if established will apply to not more than 12.5 per cent, or about 435,000 vehicles. We will then have on the highways about 435,000 motor trucks subject to Federal regulation and something over 3,000,000 subject only to regulation by the States. That I submit will in no way improve the present situation.

Forty-seven States and the District of Columbia now have laws and regulations governing the use of motor vehicles and more or less effective organizations for the administration of such laws. The laws of many of the States are comprehensive and well administered. Federal laws less comprehensive and complete than the State laws will harm rather than help the situation. It is well settled by decisions of the highest courts that when the Federal Government enters a field of regulation its authority is supreme and its regulations supersede State regulations in the same field. Under such conditions I doubt the advisability of the Federal Government attempting to enter the field, particularly when at most it is proposed to regulate not more than 12.5 per cent of the traffic. If, however, the Federal Government does enter the field, the regulations established should be far more comprehensive than what is here proposed and should cover the safety of the design and maintenance of the vehicle used and the number, qualifications, and hours of service of the employees who operate such vehicles. To do less would simply confuse the situation and render ineffective more complete and efficient State regulations.

It is urged that the railroads are entitled to relief from the unfair competition of unregulated highway traffic. With that I agree.

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Such relief, however, should be afforded by relieving the railroads from restrictions which may exist over their right to use the highways on exactly the same terms as motor-truck or motor-bus operators. Railroads should be permitted to extend or supplement their service by the use of motor trucks or busses and to establish through rates for such service so that motor vehicles could be freely used as feeders for the railroads. Regulation of motor vehicles should be established only for the benefit of the public and the protection of travelers and employees. It should never be established for the purpose of imposing burdens on one instrumentality of commerce so that another could successfully compete. Such use of the power to regulate is destructive and is an abuse of that power.

It is suggested that regulation by the Federal Government would promote coordination of the different forms of transportation. Just how Federal regulation will bring that about has not been explained. Effective coordination of rail and motor transportation can only come from a desire to render adequate public service. If railroads are given the right to supplement their service by the use of motor vehicles and the desire to render complete service exists, coordination will follow as the day follows night. It can not be brought about by imposing on owners of motor vehicles the burden of obtaining Federal permits and on the Government the expense of issuing them. Unless the Federal Government is prepared to fully and adequately regulate motor vehicles for the transportation of property for hire over the public highways, it should not cloud the right of the States to do so by establishing halfway measures. What is here proposed will, in my opinion, serve no good purpose.

I am authorized to state that COMMISSIONER LEE joins in this expression.

COMMISSIONER TATE did not participate in the consideration and disposition of this case.

GEORGE B. MCGINTY,
Secretary.

By the Commission.

APPENDIX A

TRUCK AND BUS OPERATIONS OF RAILROADS, ELECTRIC RAILWAYS, AND CARRIERS BY WATER AS REPORTED IN QUESTIONNAIRE

(a) Intercorporate relationships of rail and motor carriers

There are four ways in which carriers subject to the act engage or participate in motor-vehicle operations, (1) directly as part of their other operations, (2) through subsidiary companies, organized for the purpose or acquired by purchase of existing operations, (3) through acquiring a stock interest in independent companies, and (4) by means of contracts with independent operators.

Direct operations are limited in number and are illustrated by certain minor operations of the Monongahela Railway and Chicago, Milwaukee, St. Paul and Pacific Railroad. Here the investment in motor-vehicle facilities and the results of operations are merged with and made a part of the rail operations.

The second type is the most common. Examples are Boston and Maine Transportation Company of the Boston and Maine Railroad, New England Transportation Company of the New York, New Haven and Hartford Railroad, Southwestern Transportation Company, subsidiary of the St. Louis Southwestern Railroad, and Interstate Transit Lines, jointly owned by the Union Pacific and the Chicago and North Western. In this case the general practice is to maintain separate investment and operating accounts for the subsidiary, only the final results being taken into the books of the parent company. However, as indicated by part (d) below, there are instances in which the accounting is merged with that of the rail carrier. Provisions for the distribution of joint expenses and for intercompany payments for services rendered vary considerably. In some cases the subsidiary itself enters into contracts with independent operators.

The third type is illustrated by the interests which railroads have acquired in various of the Greyhound companies, as set forth in Appendix D. In some instances the interest is held through the agency of a holding company. Thus through Pennsylvania Greyhound Lines, Incorporated, the Pennsylvania Railroad has a half-interest in eight bus lines whose property investment totals \$5,935,067, and through American Contract and Trust Company it has substantial interests in seven trucking companies.

Operations by contract with independent truck companies are especially numerous on the New York Central and the Pennsylvania. The expense incurred is entered in the operating accounts of the railroads.

Descriptions of the types of operation conducted under the foregoing arrangements are found in Section V of text of report.

(b) Extent of truck operations of Class I¹ railroads, January 1 to June 30, 1930

During the period January 1 to June 30, 1930, 18 Class I railroads engaged in intercity or terminal motor trucking operations on one or more of the three

¹ Class I companies are those having annual operating revenues above \$1,000,000; Class II companies are those having annual operating revenues from \$100,000 to \$1,000,000; and Class III companies are those having annual operating revenues below \$100,000.

bases first indicated in (a) above. Operations were over about 8,865 miles of intrastate and 1,547 miles of interstate route. Some 551 trucks and 115 trailers were used.³ The traffic reported by 13 of these companies totaled 413,259 tons, on which revenue of \$1,385,369 was earned. Complete separation between State and interstate traffic is not possible from the information at hand. The details by companies are shown in the accompanying table. In addition, there are contract operations of the character previously indicated.

TABLE I.—Motor-truck operating data of Class I railroads for period January 1 to June 30, 1930

Carrier	Number of trucks	Number of trailers	Miles of route:		Tons		Freight revenue	
			Intra-state	Inter-state	Total	Inter-state	Total	Inter-state
New England region:								
Boston & Maine R. R.	131	44	1,779	178	177,859	2,500	\$409,865	(1)
Maine Central R. R.	3		50		375		4,334	
New York, New Haven & Hartford R. R.	109		1,364	537	96,363	(1)	128,686	(1)
Total	243	44	3,193	715	274,597		672,885	
Central-eastern region:								
Baltimore & Ohio R. R.	25		21	18	12,078	1,279	24,067	(1)
Central R. R. Co. of New Jersey	2	1	65		1,029	(1)	10,104	
Pennsylvania R. R. system	158	40	2,484	513	97,236	15,658	498,081	\$64,020
Reading Co. and Atlantic City R. R.	2		56					
Total	187	41	2,627	531	110,343		532,252	
Great Lakes region:								
Monongahela Ry.	3		43			2,206		3,922
Southern region:								
Central of Georgia Ry.	4		111			2,642		7,757
Northwestern region:								
Chicago, St. Paul, Minneapolis & Omaha Ry.	38	1	953	225	13,888	3,531	92,933	24,291
Great Northern Ry.	1		74		54		37	
Total	39	1	1,027	225	13,942	3,531	92,970	24,291
Central-western region:								
Chicago, Rock Island & Pacific Ry. (Including Chicago, Rock Island & Gulf Ry.)					3,897		5,449	
Denver & Rio Grande Western R. R.	16		541		5,056		64,943	
Southern Pacific Co.	16		135		476		5,191	
Total	32		676		9,529		75,583	
Southwestern region:								
St. Louis Southwestern Ry.	42	29	1,179	76		(1)	195,403	(1)
Texas & Pacific Ry.	1		9					
Total	43	29	1,188	76			195,403	
Total United States	551	115	8,865	1,547	413,259		1,580,802	

¹ Information not reported.

² Excludes \$14,305 compensation received on mail contracts.

(c) *Extent of bus operations of Class I railroads, January 1 to June 30, 1930*

During the above period 34 Class I railroads conducted bus operations, directly, through subsidiary companies or through companies in which a financial interest is held. Some 3,105 busses were used and operations were over 38,169 miles of intrastate and 27,632 miles of interstate route compared with

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³ In 1927, 114 trucks and 34 trailers were in use.

745 busses operated over 2,856 miles of intrastate and 1,051 miles of interstate route in 1927. In all, 35,931,000 passengers were carried^a or, excluding city operations, 20,007,554. The total passenger revenue accrued, including that from city service, was \$16,182,029.^b Complete separation between State and interstate traffic is not possible from the information at hand. The details by companies are given in the accompanying table. In addition, there are operations conducted under contract with independent companies.

TABLE II.—Motor-bus operating data of Class I railroads for period January 1 to June 30, 1930

Carrier	Number of busses	Miles of route		Passengers		Passenger revenue	
		Intra-state	Inter-state	Total	Interstate	Total	Interstate
New England region:							
Boston and Maine R. R.....	95	338	598	715,338	246,315	\$229,611	\$183,415
Maine Central R. R.....	5	39	-----	12,130	-----	7,184	-----
New York, New Haven and Hartford.....	638	1,788	2,175	22,329,569	3,782,269	3,156,013	1,149,830
Rutland R. R.....	2	-----	67	4,439	-----	1,215	1,101
Total.....	740	2,145	2,840	23,061,276	4,032,866	3,394,023	1,334,346
Central-eastern region:							
Baltimore & Ohio R. R.....	27	603	60	153,813	653	102,496	788
Central R. R. Co. of New Jersey.....	9	44	287	59,918	(¹)	30,239	(¹)
Pennsylvania R. R. system.....	430	4,501	3,328	3,325,524	447,512	2,954,611	633,014
Reading Co. and Atlantic City R. R.....	73	504	275	448,311	101,250	215,861	111,853
Total.....	539	5,652	3,950	4,017,566	-----	3,303,207	-----
Poconantas region:							
Richmond, Fredericksburg & Potomac R. R.....	16	53	113	99,809	61,997	127,559	122,317
Southern region:							
Atlanta & West Point R. R.....	4	136	-----	26,065	57	9,720	56
Central of Georgia Ry.....	5	145	-----	7,612	-----	3,803	-----
Georgia R. R., Lessee Organization.....	4	136	-----	26,065	57	9,720	56
Illinois Central R. R.....	1	99	-----	5,096	-----	7,901	-----
Nashville, Chattanooga & St. Louis Ry.....	3	27	-----	5,432	-----	3,664	-----
Norfolk Southern R. R.....	8	36	-----	101,211	-----	24,347	-----
Seaboard Air Line Ry.....	7	166	-----	14,251	-----	24,202	-----
Southern Ry.....	3	131	-----	6,187	-----	5,585	-----
Total.....	31	740	-----	165,806	57	79,223	56
Northwestern region:							
Chicago and North Western Ry.....	198	1,356	4,674	493,360	(¹)	1,006,537	(¹)
Chicago, Milwaukee, St. Paul & Pacific R. R.....	4	107	-----	11,354	-----	5,457	-----
Great Northern.....	218	4,981	4,593	1,817,450	(¹)	1,568,018	-----
Spokane, Portland & Seattle Ry.....	34	209	-----	83,338	-----	78,857	-----
Total.....	250	5,297	4,563	1,912,178	-----	1,652,332	-----
Central-western region:							
Chicago and Alton R. R.....	10	114	-----	23,251	-----	14,140	-----
Chicago, Burlington and Quincy R. R.....	38	623	193	119,958	23,054	121,713	27,458
Colorado and Southern Ry.....	23	269	-----	77,625	-----	93,011	-----

See footnotes at end of table.

^a Excluding Southwestern Transportation Company, which did not report the number of passengers carried.

TABLE II.—Continued.

Carrier	Number of busses	Miles of route		Passengers		Passenger revenue	
		Intra-state	Inter-state	Total	Interstate	Total	Interstate
Central-western region.—Cont.							
Denver and Rio Grande Western R. R.	39	1,151	.....	45,068	.....	120,872	.....
Southern Pacific Co.	648	13,153	6,443	4,383,250	335,761	4,007,634	1,056,637
Union Pacific system:							
Los Angeles and Salt Lake R. R.	73	534	105	9,115	(¹)	45,041	(¹)
Oregon Short Line R. R.	87	1,554	1,703	276,943	(¹)	447,374	(¹)
Union Pacific R. R.	188	1,356	4,574	493,360	(¹)	1,006,537	(¹)
Total	1,106	18,754	13,408	5,428,600	.....	8,946,331	.....
Southwestern region:							
Missouri Pacific R. R.	192	2,341	1,488	605,408	76,495	557,772	68,048
St. Louis Southwestern Ry.	74	995	1,195	.....	(¹)	177,423	(¹)
Texas and New Orleans R. R.	147	2,192	35	505,313	10,916	940,680	16,874
Texas and Pacific Ry.	4	.....	.....	44,891	.....	3,450	.....
Total	417	5,528	2,728	1,245,612	.....	1,679,355	.....
Total United States	3,105	38,160	27,632	35,930,847	.....	16,182,029	.....

¹ Includes 15,923,203, representing fares collected in city service.

² Includes 130,305 representing fares collected.

³ Information not reported.

⁴ Returns duplicated in report of Georgia R. R. Lessee Organization; eliminated from totals.

⁵ Returns duplicated in report of Union Pacific R. R.; eliminated from totals.

(d) *Financial results of truck and bus operations of Class I railroads, year ended December 31, 1929*

Returns of the carriers to our questionnaire do not in all cases make it possible to show separately the results of their freight and passenger operations. The accompanying table gives the names of the operating companies, their investment in motor facilities, the extent of the railroad's interest in each, the net operating income, and the net income. The total investment on December 31, 1929, was \$46,114,891. Of the companies for which complete information was returned 20 reported operating incomes ranging from \$457 to \$866,356 and aggregating \$2,036,054, while 27 reported operating deficits ranging from \$672 to \$264,285 and aggregating \$868,185. After making various corporate adjustments, 21 companies had net income totaling \$1,547,967, and 26 had net deficits totaling \$942,268. Offsetting many of the deficits shown are savings resulting from the removal of unprofitable train service.

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TABLE III.—Investment in property and results of operations of motor companies controlled in whole or in part through stock ownership by Class I railroads (year ended December 1, 1929)¹

Name of railroad and motor company (1)	Property investment (2)	Extent of control (3)	Operating revenues (4)	Operating expenses (5)	Taxes (6)	Equipments (7)	Net operating income ² (8)	Other income items ³ (9)	Net income ⁴ (10)
Atlanta & West Point R. R.:		<i>Per cent</i>							
Georgia Highway Transp. Co.-----	\$24,769	50	\$8,813	\$9,863	\$508	\$22	\$1,580	\$139	\$1,441
Baltimore & Ohio R. R.:									
Blue Line Transfer Co. ¹ -----	63,596	100	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Public Service Coordinated Trans. ¹ -----	19,956	100	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
West Virginia Transportation Co.-----	387,316	100	135,966	150,820	10,389	(⁵)	25,243	10,158	35,401
Boston & Maine R. R.:									
B. & M. Transportation Co. ¹ -----	728,921	100	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	\$ 25,006
Central of Ga. Ry.:									
C. of Ga. Motor Transport.-----	42,929	92	25,043	33,244	1,890	(⁵)	10,091	1,588	11,679
Central R. R. of N. J.:									
Jersey Central Transp. Co.-----	35,632	100	30,693	25,383	1,030	52	4,228	68	4,296
Chicago & Alton R. R.:									
Alton Transp. Co.-----	90,000	100	36,604	47,748	2,112	12	15,228	9	13,259
Gadberry Transp. Co.-----	6,485	100	7,309	11,151	260	6	4,108		4,108
Ritter Motor Bus Co.-----	6,443	100	9,951	14,815	569	16	5,449		5,449
Chicago & North Western Ry.:									
Interstate Transit Lines (see Union Pacific R. R.)-----									
Chicago, Burlington & Quincy:									
Burlington Transp. Co.-----	299,109	100	89,425	156,592	6,237	(⁵)	73,404	5,816	67,588
Chicago, Milw. St. P. & Pac. R. R.:									
C. M. St. P. & Pac. (rail operations)-----	44,305	100	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Chicago, St. P. M. & O. Ry.:									
Wilson Transp. Co.-----	257,837	100	65,443	64,647	1,980	156	1,540		1,540
Colorado & Southern Ry.:									
Denver & Interurban Co.-----	115,293	100	108,004	80,565	5,939	766	14,724	2,960	17,694
Denver, Col. Springs, Pueblo Motor Way (see Denver & R. G. Western)		25							
Denver & Rio Grande Western:									
Denver, Col. Springs, Pueblo Motor Way-----	94,596	50	95,394	80,084	4,458	(⁵)	10,852		10,852
Rio Grande Motor Way-----	39,615	80	58,632	41,771	2,523	(⁵)	14,338		14,338
Rio Grande, Motor Way of Utah-----	62,185	80	7,695	9,187	246	(⁵)	1,728		1,728
Western Slope Motor Way-----	69,276	(⁵)	108,298	80,970	5,560	(⁵)	21,768		21,768
Georgia Railroad:									
Georgia Highway Transp. Co. (see Atlanta & West Point R. R.)-----		50							
Great Northern Ry.:									
Northland Transportation Co. ¹ -----	3,707,164	30	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Northland Greyhound Lines, Inc. of Ill. ¹ -----	1,650,646	30	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Great Northern Ry. ¹ -----	2,273	100	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Illinois Central R. R.:									
Central Transp. Co. (Iowa)-----	11,466	100	10,524	8,126	(⁵)	3,070	678		678

See footnotes at end of table.

TABLE III.—Investment in property and results of operations of motor companies controlled in whole or in part through stock ownership by Class I railroads (year ended December 1, 1929)¹—Continued

Name of railroad and motor company (1)	Property investment (2)	Extent of control (3)	Operating revenues (4)	Operating expenses (5)	Taxes (6)	Equipment rents (7)	Net operating income ² (8)	Other income items ³ (9)	Net income ⁴ (10)
Maine Central R. R.: The SamOset Co. ¹	49,703	100	30,700	40,583	512	(9)	10,395	.....	10,395
Missouri Pacific R. R.: Mo. Pac. Transp. Co.....	1,491,505	100	1,011,607	1,031,520	74,745	(9)	94,658	2,103	96,568
Monongahela Ry.: Monongahela Ry. Trucks ¹	7,490	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Nashville, Chattanooga & St. L.: M. C. & St. L. Motor Transit.....	42,949	100	10,996	23,651	2,309	174	16,138	.....	16,138
New York, New Haven & Hartford R. R.: Berkshire Street Ry. ¹	69,107	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)
County Transp. Co. (Inc.).....	509,384	100	949,675	468,164	33,359	(9)	148,152	131,602	16,350
Connecticut Co. ¹	1,538,219	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)
New England Transp. Co.....	4,822,584	100	3,257,581	2,958,870	207,328	(9)	91,383	171,269	79,886
Soundview Transp. Co. ¹	803	99.6	81,067	32,142	2,255	54,014	7,344	693	8,037
Springfield St. Ry. ¹	592,635	99.9	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Worcester Consol. St. Ry. ¹	864,435	61.7	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Norfolk Southern R. R.: Norfolk Southern Bus Corporation ¹	41,226	100	48,511	51,403	2,122	(9)	8,014	142	8,156
Pennsylvania R. R. ¹ : Buffalo Interurban Bus Lines.....	97,353	50	108,156	87,747	4,078	(9)	14,331	747	13,584
Buffalo Storage & Carting Co. (Inc. Keystone Trans. Co.).....	287,627	84.9	240,223	213,629	3,902	(9)	22,692	.....	22,692
Cambria Bus Co.....	71,038	(9)	35,721	35,459	3,701	(9)	3,489	5,692	2,233
Greyhound Lines, Inc.....	2,400,322	50	4,287,189	3,735,838	(9)	(9)	551,351	282,648	268,703
Interstate Highway Limited.....	163,547	50	336,378	280,434	(9)	(9)	58,940	11,458	44,505
Kane, Mt. Jewett Transit Co.....	25,025	(9)	15,142	14,224	461	(9)	457	1,008	1,465
Merchants Trucking Co. (Norfolk).....	18,136	69.1	7,863	6,235	(9)	(9)	1,628	.....	1,628
Montgomery Bus Co., Inc.....	252,622	50	244,707	207,430	10,627	(9)	26,650	6,777	19,873
Penna. General Transit Co.....	374,149	50	118,288	119,302	6,781	(9)	7,793	10,537	2,742
Penna. Indiana General Trans.....	7,124	50	5,529	10,776	106	(9)	5,353	5,977	624
Penna. Illinois Gen. Trans.....	54	60	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Penn. Transfer Co. of Pgh.....	240,194	59.2	225,582	230,701	802	(9)	4,079	1,454	5,537
Peoples Rapid Transit Co.....	1,567,949	50	1,339,992	1,161,747	51,457	(9)	126,788	78,258	48,530
Phila. Suburban Transit Co.....	139,024	50	83,320	121,000	4,569	(9)	48,249	2,594	44,643
Penna. Virginia Transit Co.....	97	50	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Del. Mar. Va. Transport Co.....	277	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Reading Co.: Reading Transp. Co.....	744,739	100	434,287	492,202	(9)	(9)	32,085	2,443	34,628
Rich. Fred. & Potomac R. R.: R. F. & P. Transp. Co.....	125,000	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Richmond-Greyhound Lines.....	105,000	49	(9)	(9)	(9)	(9)	(9)	(9)	(9)

Rutland R. R.:										
Rutland Transp. Corp.....	15, 110	100	2, 781	9, 685	433	(9)	7, 337	303	7, 034	
St. Louis Southwestern Ry.:										
Southwestern Transp. Co.....	1, 048, 558	100	722, 674	952, 140	34, 819	(9)	264, 285		264, 285	
Seaboard Air Line Ry.:										
Motor Transp. Co. of the South.....	55, 191	100	59, 195	65, 490	665	425	7, 375	5, 898	13, 271	
Southern Pacific Co.:										
Pacific Greyhound Corp. and subsidiaries ¹ ¹¹	10, 390, 867	(10)	9, 336, 894	7, 981, 081	539, 457	(9)	866, 356	124, 685	991, 041	
San Jose Railroads ¹ ¹¹	5, 693	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
Stockton Electric R. R. ¹ ¹¹	11, 139	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
Pacific Electric Ry. ¹	1, 890, 301	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
Pacific Motor Transp. Co. ¹	2, 214	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
Motor Transit Co. ¹	2, 497, 379	66.7	567, 533	611, 445	(9)	(9)	45, 918	5, 174	38, 738	
Los Angeles Motor Coach Co. ¹¹	(9)	50	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
Spokane, Portland & Seattle Ry.:										
S. P. & S. Transp. Co.	274, 464	100	239, 472	210, 014	20, 567	(9)	8, 891	9, 405	514	
Texas & New Orleans R. R.:										
Southland Greyhound Lines, Inc.	2, 158, 102	35.21	1, 023, 187	1, 001, 136	¹¹ 2, 700	(9)	19, 351	14, 687	4, 824	
Texas & Pacific Ry.:										
Hollywood Transp. Co.	5, 343	50	3, 844	8, 341	297	(9)	4, 774		4, 774	
Texas-Pacific Coaches, Inc.	26, 473	100	1, 839	7, 244	324	100	5, 829		5, 829	
Union Pacific system:										
Interstate Transit Lines ¹¹	1, 745, 373	78	650, 195	718, 186	41, 697	(19)	100, 688	1, 668	102, 350	
Union Pacific Stage, Inc.	1, 016, 577	100	558, 892	606, 317	47, 922	10, 360	105, 717	1, 081	106, 798	
Union Pacific Stage Co. ¹	118, 140	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
Utah Parks Co. ¹¹	438, 935	100	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
Total, United States.....	46, 114, 891									

¹ Includes direct operations of motor vehicles by Chicago, Milwaukee, St. Paul & Pacific R. R., Great Northern Ry., and Monongahela Ry.

¹¹ Italics indicates deficit.

¹ Investment as of June 30, 1930.

¹ Investment included in railroad company's accounts.

¹ Data not available.

¹ Not segregated in income statement.

⁷ Includes \$717,287 carried in miscellaneous physical property accounts of Boston & Maine Railroad Company.

¹ Results of operations of B. & M. Transportation Co. as reported by Boston & Maine R. R. Co. in annual report to Interstate Commerce Commission.

¹ Motor-coach service is operated jointly as a part of regular street-car service; investment figures represent motor-coach proportion of total property investment.

¹¹ Investment figures represent owned property only; practically all equipment in use is rented.

¹¹ In addition to the investments in motor transportation companies shown above as controlled by the Pennsylvania R. R. the carrier through the American Contract & Trust Co. owns stock in the following-named motor companies: Baltimore Transfer Co. of Baltimore, 36.7 per cent; Cleveland Cartage Co., 45 per cent; Edwards Transfer Co., 40 per cent; Moreton Truck Co., 40 per cent; Scott Bros., Inc., 25 per cent; Union Transfer Co., 30 per cent; Willett Co., 33.3 per cent; Greyhound Corporation (common), 8.6 per cent; and (preferred) 10.9 per cent. Investment figures, revenues, and expenses of these motor companies not available.

¹¹ No operations.

¹¹ Operating companies as of June 30, 1930, were Pacific Greyhound Lines, Inc., California Parlor Tours Co., and Union Transportation Co.

¹¹ From Jan. 1, 1929, to Apr. 1, 1930, holding company was styled "Pacific Transportation Securities, Inc.;" name changed Apr. 1, 1930, to Pacific Greyhound Corporation. Southern Pacific Company, Pickwick Corp., and Greyhound Corp., each own 33½ per cent of stock of Pacific Greyhound Corporation.

¹¹ Investment in motor vehicles only.

¹¹ Not a corporation, but an agency operating coaches for the Pacific Electric Ry. and Los Angeles Ry. Corporation; each railway owns one-half interest in equipment.

¹¹ Federal taxes only; other taxes not segregated in income statement.

¹¹ Operating figures applicable to the six months ended Dec. 31, 1929.

(e) Summary of motor operations of Class II and Class III steam railroads, electric railways, and carriers by water

The information returned by these carriers was incomplete in many particulars. The following summary gives the number of companies conducting truck and bus operations under one or more of the arrangements indicated in (a) above:

Class of carrier	Truck operations		Bus operations	
	Dec. 31, 1927	June 30, 1930	Dec. 31, 1927	June 30, 1930
Class II railroads.....	0	8	5	12
Class III railroads.....	1	6	6	11
Electric railways.....	4	10	43	47
Carriers by water.....	6	9	2	2

APPENDIX B

ESTIMATES OF VOLUME AND DISTRIBUTION OF TRUCK TRAFFIC

(a) Estimates of volume of intercity truck traffic

In the absence of comprehensive information as to the volume of highway trucking, resort must be had to estimates. The earliest estimate appears to have been that of a representative of the Bureau of Public Roads, according to which all trucks in 1925 performed 10,356,000,000 ton-miles of service. In making this estimate it was assumed, according to the information then available, that trucks made an average of 10,000 miles per year, that their average capacity was 1.25 tons, that they moved under load two-thirds of the time, and that their average loading was 80 per cent of capacity. As it was further estimated that one-half of the truck mileage was made in local service, to obtain the volume of intercity trucking the above amount would have to be reduced by one-half or to 8,178,000,000 ton-miles. The latter figure is 1.96 per cent of the revenue ton-miles of all railroads in the same year.

This estimate has frequently been extended to more recent dates by allowing for the increase in the number of trucks. Thus the total for 1928 has been set at 10,276,000,000 ton-miles. This figure has been used along with other information to obtain the following distribution of traffic between the various agencies of transportation in that year. Corresponding figures for 1929 are also given.

Agency	1928 ¹	1929 ²
Steam railroads.....	Per cent 77.55	Per cent 75.8
Great Lakes.....	14.17	15.0
Pipelines.....	4.87	4.9
Inland waterways (rivers and canals).....	1.52	1.8
Motor trucks (intercity).....	1.87	2.5
Electric railways and airplanes.....	.21	.5
Total.....	100.00	100.00

¹ From Bureau of Railway Economics, "An Economic Survey of Inland Waterway Transportation in the United States," 1930, page 28.

² From article by J. H. Parmelee in Mechanical Engineering, March, 1931.

³ Represents revenue and nonrevenue freight. For the purpose in hand, nonrevenue freight should be excluded.

These estimates understate the present volume of truck traffic. (a) The average capacity of trucks engaged in intercity operations is greater than the 1.25 tons assumed. A survey of traffic on the main highways of 11 western States, made in 1929 and 1930 by the Bureau of Public Roads in cooperation with the State highway departments, indicates a weighted-average capacity of 1.82 tons. The States embraced in the survey are predominantly agricultural in character and use, for the most part, trucks of smaller capacity than are required in industrial sections. In California, whose traffic is more nearly akin to that of highly populated eastern States, the average capacity is 2.20 tons. For more general information, use may be made of the average capacity of trucks produced. In 1924 this average was 1.45 tons, in 1927, 1.44, and in 1930, 1.64; for the three years the average is 1.52 tons. Assuming that all trucks of 0.75 ton capacity and one-half of those of 1 to less than 1.5 tons capacity are used in city service exclusively, the average capacity of the remaining trucks produced in 1927 and 1930 is 1.88 tons. A survey of traffic in 42 States being made jointly by the Department of Commerce and the Bureau of Public Roads and confined to common and contract-carrier trucks indicates much higher average capacities. Only 11 per cent of the 2,909 trucks surveyed were of 1.5 to 3 tons capacity, 60 per cent being from 3.5 to 5 tons capacity, and 29 per cent of over 5 tons capacity. Had privately operated trucks and trucks used on the less important highways and by smaller operators been included, the average would have been considerably less. In view of all the foregoing, it is reasonable to assume that the average truck of every class used in intercity service has a capacity of 2.25 tons. To allow for the operation of trailers, this figure will be increased to 2.50 tons.

(b) Capacity does not measure actual loading. Loading beyond rated capacity is characteristic of many truck operations. Data available for a group of trucks indicate an average overloading in this sense of 22 per cent. Overloading was found to occur principally as to the intermediate sizes of trucks, being absent in the case of the smallest and largest vehicles. The sample is not, however, representative of general conditions and, in any event, the overloading would tend to occur at points of departure and to diminish progressively to the extent that deliveries are made en route. Further, it is a matter of general observation that truck operators commonly experience difficulty in securing full loads, particularly on return trips. Increased truck operations in recent years have added to this difficulty. It therefore is reasonable to continue the assumption of the 1925 estimate that trucks under load average an 80 per cent loading in terms of capacity.

(c) Closely related to the foregoing is the amount of empty mileage. Much truck traffic (as cotton, coal, petroleum products, assembled automobiles, and sand, gravel, and other deliveries direct to job) is practically one-way traffic, and much other traffic (as livestock and fruits and vegetables) is poorly balanced as to outbound and return loads. In the absence of any convincing proof to the contrary, the assumption of the earlier estimate that one-third of all intercity truck mileage is empty mileage will be continued.

(d) The improvement of highways and trucks and particularly the increased use of pneumatic tires in recent years indicate that the assumption of 10,000 miles of operation per annum is low under present conditions. In the Department of Commerce and Bureau of Public Roads survey referred to above the annual mileage of 66 trucks in common and contract-carrier service ranged

from 4,200 to 61,930 miles and averaged 27,044 miles.¹ The average would be considerably lowered if privately operated trucks were included. A statement of record places the average mileage of private trucks at 5,000 miles per annum, of contract trucks at 15,000, and of common-carrier trucks at 20,000. These figures were stated to be conservative. Allowing for idle equipment, particularly that held in reserve for peak loads, and for other factors, such as time lost for repairs, which decrease the period of effective utilization, 15,000 miles per annum appears to be a high average mileage for every class of truck used in intercity operations.

(c) A final factor is the proportion of all trucks which are used in intercity service, excluding suburban operations in those instances where trucks simply displace team deliveries. In the 1925 estimate it was assumed that 50 per cent of all trucks were engaged in intercity work. No competent information on this point is of record in this proceeding. Considering, however, the large use of trucks in making city and suburban deliveries and in terminal work, as well as the considerable number of farm trucks which are used exclusively in farm and local-delivery work, it seems reasonable to conclude that not over 40 per cent of all trucks should be embraced in this estimate.

Gathering the foregoing findings together, the truck traffic of the year 1929, the last year of normal rail traffic, is about 25,975,000,000 ton-miles, derived as follows: 15,000 miles per truck per annum by 2.50 tons per truck equals 37,500 capacity ton-miles per annum. Reduced by one-third for empty mileage this figure becomes 25,000, and again reduced by 20 per cent for light loading, it becomes 20,000. The latter figure multiplied by two-fifths of the number of trucks owned at the middle of 1929 (obtained by averaging truck registrations for December 31, 1928, and December 31, 1929) or 1,298,770 gives 25,975,400,000 ton-miles. This figure is equivalent to 5.8 per cent of the rail traffic of that year.

A different basis on which an estimate of the volume of truck traffic could be made is by using the information available of record as to the extent of trucking of particular commodities. Thus the percentage of livestock, fruits, and vegetables, cotton, and assembled automobiles which are trucked is fairly definitely known² and it is equally known that in the case of some commodities, as iron ore, there is no trucking, and in the case of certain other commodities, as coal, trucking is of minor extent. To the relative amounts of truck and rail traffic obtained from existing data of this kind may be added the results of estimates of the volume of trucking of other classes of traffic. Such estimates, to be satisfactory, must be based on broad information as to the trucking industry. So far as this method of analysis could be carried for the purpose of this report, it appeared to yield about the same results as those obtained by the first method.

A third method of estimating the volume of highway truck traffic starts with information available in this record as to the volume of trucking by certificated highway carriers in various States and may be explained in detail as follows:

¹ The average mileage of 39 trucks of 1.5 to 3 tons capacity was 20,847 miles, of 19 trucks of 3.5 to 5 tons capacity, 27,214 miles, and of 8 trucks of over 5 tons capacity, 32,547 miles.

² See analysis beginning at page 287.

In the five States of Ohio, Minnesota, Washington, California, and Texas certificated (common-carrier) trucks carried in 1929^a approximately 5,378,000 tons of traffic. These States, which have been so chosen as to avoid duplications, are predominantly agricultural in character. On the assumption that certificated carriers handle, in terms of tons and miles, 15 per cent of the total truck traffic,^b the total truck traffic of these States amounted to 35,853,000 tons in 1929. The population of these States in 1929 was 17.8 per cent of the total population of the country. Assuming that truck traffic is proportionate to population, the total becomes 201,303,000 tons, equal to 14.2 per cent of the revenue freight tonnage originated by all steam railroads in 1929. The average haul of truck traffic is probably in the vicinity of 100 miles, or approximately 32 per cent of the average haul of steam railroads treated as a system. Therefore, in ton-miles, truck traffic in 1929 was 32 per cent of 14.2 per cent, or practically 4.5 per cent of rail traffic.^c As the railroads in 1929 carried three-fourths of all inland traffic, the proportion of the total carried by trucks was about 3.4 per cent.

Using the higher estimate derived above, omitting nonrevenue railroad freight, and continuing the estimates of the traffic of other carriers mentioned at page 101, the following distribution of inland traffic in 1929 is obtained:

	Per cent
Steam railroads.....	72.9
Great Lakes.....	15.8
Pipe lines.....	5.2
Inter-city trucks.....	4.2
Inland waterways.....	1.4
Electric railways and airplanes.....	0.5
Total.....	100.0

While all forms of transportation have felt the effects of the business depression, known developments in the trucking field in the past two years indicate that the percentage of truck traffic is greater to-day than it was in 1929.

The percentages of truck traffic given heretofore are in terms of volume. In terms of revenue they would run from a third to a half higher,^d becoming therefore about 8 per cent in terms of rail traffic and about 6 per cent in terms of all inland traffic.

(b) *Derivation of proportion of interstate to total freight and passenger highway traffic*

Any estimate of the ratio of interstate to total highway traffic is necessarily subject to qualification, owing to the elements of judgment which must enter into making it. A beginning may be made with respect to truck traffic by using the finding of the Bureau of Public Roads that in 11 western States in 1930 interstate common-carrier trucks constituted 19.6 per cent of the total common-

^a Year 1930 in case of Texas.

^b Use of a lower ratio than that indicated at page 407 is due to the lesser proportion of common-carrier operations in agricultural than in industrial sections.

^c An estimate submitted in the proceedings leading to our decision in the *Fifteen Per Cent Case, 1931*, Ex parte No. 103, 178 I. C. C. 539, puts the volume of truck traffic in 1930 at from 15 to 20 billion ton-miles, the equivalent of 3.9 to 5.2 per cent of rail traffic.

^d See page 303.

carrier trucks enumerated. The range in the individual States was from 7 to 50 per cent, as follows:

	Per cent		Per cent
Nebraska -----	7	Washington, ¹ Wyoming-----	83
Oregon -----	14	New Mexico-----	40
Colorado-----	17	Idaho-----	43
California-----	20	Nevada, Utah-----	50
Arizona-----	25		

In using the average percentage indicated above for purposes of generalization, it is necessary to determine (1) whether the survey was representative of actual conditions in the States covered; (2) how far the proportion of interstate tonnage varies with the class of truck (i. e., whether used in common carrier, contract, or private service); (3) whether there is a difference in the average loading of the trucks used in the three types of service; and (4) how far traffic conditions vary in the different sections of the country.

(1) *How far did the traffic checks used in this survey represent actual conditions in the States covered?*—The checks were made on the Federal-aid highways and to a less extent on other important State highways. None were made on county and local roads. The percentage of intrastate traffic on the latter class of road would be very much higher than on the more important highways. Therefore, in terms of total traffic, the percentage given above is overstated. However, for the purpose of this analysis, less interest attaches to local traffic and in any event the great bulk of all traffic occurs on the more important State and Federal highways.

(2) *Is the proportion of interstate to total traffic the same in the case of contract and private trucks as in the case of common-carrier trucks?*—The only way of attacking this question is to reason from the relative average haul of the three types of truck, on the assumption that the greater the haul the greater the percentage of interstate traffic. Classification of operations was by self-declaration and therefore is likely in some cases to have been erroneously made. Many so-called contract truckers are actually engaged in common-carrier operations and should be treated as such. Trucks used in bona fide contract service probably have a less extensive range of operation than do common-carrier trucks, though there are important exceptions. Private opera-

¹ A check on the figures of the Bureau of Public Roads is provided by data relating to certificated operators in Washington supplied from other sources. In 1929 about 28 per cent of all such operators were engaged in interstate transportation and one-sixth of the trucks and one-fourth of the trailers were so used. The equipment used in interstate movements is larger than average size, as is indicated by the fact that from 1926 to 1929 the interstate tonnage carried by the same operators averaged 30.7 per cent of the total, being 31.7 per cent in 1929. In terms of revenue, interstate traffic averaged 38.3 per cent of the total for the years 1928 to 1931. The higher percentage of revenue than of tons reflects the greater average haul of interstate traffic and the greater selectivity of traffic as distance increases. The data cited support the finding of the Bureau of Public Roads.

In Colorado, on the other hand, judged by receipts from the ton-mile tax, the ratio of interstate to total tonnage was 2.6 per cent in 1929, a figure very much less than the 17 per cent found by the Bureau of Public Roads. The total would include, however, all local movements in the State. The tax is computed on the maximum capacity of trucks, and, as interstate trucks would tend to load more heavily than intrastate trucks, owing to the greater distances involved, the ratio of interstate to total tonnage would be higher than that indicated by the percentage shown. A reconciliation of the two figures is probably possible.

tions would generally be over shorter distances than the other two types.⁸ Bearing in mind that common-carrier trucks represented 16.4 per cent of the truck usage of the highways of these States, contract trucks 19.5 per cent, and private trucks 64.1 per cent,⁹ it is concluded that in this respect the percentage of interstate to total truck movements is somewhat less in the aggregate than is indicated by the 19.6 per cent shown above.

(3) *What difference is there in the average loading of the three types of truck?*—The contract truck engaged in interstate traffic has the heaviest average loading, followed by the common-carrier and the private truck. Again bearing in mind the proportions of the different classes of truck, it is reasonable to conclude that the figure given above, 19.6 per cent, requires reduction, though of moderate degree.

(4) *How far are the results found in the 11 western States typical of conditions in other sections of the country?*—The witness who presented the data was not clear on this point. The States included in the survey were all of above average size. The normal expectation that the smaller the State the larger the percentage of interstate traffic is not supported by the findings of the survey. Some of the States, as Idaho, Nevada, and Utah, show high ratios of interstate traffic because of their small populations and their commercial dependence on neighboring States. California is largely self-contained. The fact that Washington has nearly double the percentage of interstate traffic of Oregon probably reflects in part the greater opportunities in eastern Washington than in eastern Oregon for traffic interchange with bordering States. There is a very large volume of traffic exchanged between the coast States by combined boat-truck movements, but the trucks so used doubtless were classified as intrastate.

Most of the great cities in the territory east of that embraced in the Bureau of Public Roads' survey are on or near State boundaries (New York, Philadelphia, Cleveland, Toledo, Detroit, Chicago, Cincinnati, Louisville, Memphis, St. Louis, Kansas City, Omaha, and the Twin Cities), and many other large cities are on or near the sea coast, where junction of rail and motor transportation is occurring in increasing degree. Also, the average size of these States is considerably below that of the 11 western States. It is likely that in official-classification territory the percentage of interstate tonnage runs higher than in the West and that in the South and Southwest, including movements to and from the ports, it runs somewhere between the percentages for the other two.¹⁰

Bearing in mind the reductions of the original 19.6 per cent indicated under items 1, 2, and 3, and the increase required under item 4, it is concluded that approximately 20 per cent of the total truck traffic of the country, expressed in ton-miles, is interstate traffic. The percentage of interstate traffic has increased considerably in the last few years and is still increasing. In reaching the foregoing conclusion tonnage moving by truck to or from ports has been

⁸ This assumption is apparently supported by the bureau's testimony that 20,000, 10,000, and 5,000 are the respective annual mileages of common-carrier, contract, and privately operated vehicles.

⁹ Page 407.

¹⁰ Random bits of information are that of the Norfolk Southern's loss of freight revenue to trucks, 54 per cent was to interstate trucks; and that of the certificated highway express operators who are members of the Massachusetts Club, 29.3 per cent are engaged in interstate operations.

treated as interstate; purely local traffic (that which would have moved by wagon if trucks has not been available) has been disregarded; through shipments by rail and truck under forwarding company auspices have been treated solely in terms of the originating or distributing truck haul; and traffic moving under interline arrangements between two or more truck operators has been considered to be in continuous movement.

All truck traffic is represented in the above percentage. If private trucks with their shorter average hauls are excluded, the percentage of interstate to total truck traffic would rise to and possibly a little above 25 per cent.

The percentage last indicated is confirmed by a review of the movements of the principal items of truck traffic, some of which, as cotton and livestock, probably run considerably higher in percentage of total movement that is interstate, and some, as brick and cement, considerably lower. Less-than-car-load traffic probably runs nearly as high as the average shown.

Data supplied us by Class I railroads relative to trucking under railroad auspices may seem to disqualify the conclusions which have been reached. Of the route-miles of rail operations on June 30, 1930, 14.9 per cent were interstate, of the truck-miles 14.3 per cent, of the tons carried 7.3 per cent, and of the revenue 12.7 per cent.¹¹ However, as indicated elsewhere, a large part of the trucking under rail auspices is in substitution for local trains or in terminal services and in these respects is not representative of general conditions.

The information required in estimating the proportion of interstate to total common-carrier bus traffic is somewhat more adequate than that which has just been reviewed. The Bureau of Public Roads survey used above indicates that in 1929 and 1930 some 36.8 per cent of the busses in the States surveyed were engaged in interstate carriage. The range is marked, as the following figures show:

	Per cent		Per cent
California	10.9	New Mexico.....	42.3
Nevada	25.2	Utah.....	50.0
Oregon.....	26.4	Arizona	51.6
Colorado	29.4	Wyoming.....	59.4
Nebraska	34.8	Idaho.....	69.7
Washington.....	41.4		

There doubtless is duplication between States in the above figures.

Class I railroads reported as of June 30, 1930, that 47 per cent of the route-miles covered by their bus operations were interstate, 28 per cent of the bus-miles, 15.5 per cent of the passengers carried, and 26.1 per cent of the passenger revenue.¹² These figures show that interstate routes are relatively lightly serviced by rail busses and that the passengers per bus are relatively fewer than those carried per intrastate bus of all descriptions other than intracity. Revenue per passenger is, of course, higher, owing to the greater distances traveled, but undoubtedly is lower per passenger-mile than intrastate revenue except commutation. Density of intrastate traffic also tends to pull down the percentage that is interstate, as witness California above.

Weighing the above factors and geographic considerations similar to those previously mentioned, it is concluded that from 20 to 25 per cent of the total intercity common carrier bus travel is interstate.

¹¹ In deriving these percentages incomplete returns were eliminated.

¹² Only complete returns were used in these calculations.

(c) *Estimate of the proportions of common-carrier, contract, and private trucking*

Much confusion exists as to the proportions in which common-carrier, contract, and private operations figure in the intercity transportation of freight. This confusion will persist until there is adequate reporting of truck operations or until official classification according to some accepted principle takes the place of self-declaration of status.

The most comprehensive survey of this subject is that of the Bureau of Public Roads, which in 1929 and 1930, in cooperation with the respective State highway departments, made traffic counts on the principal highways of 11 western States. Some 180,000 different trucks were inventoried, of which 85.8 per cent were stated to be privately operated, 8.7 per cent operated under contract, and 5.5 per cent operated in common-carrier service. The accuracy of the classification can not be tested but it is substantially certain that a considerable portion of the so-called contract operators were in reality common carriers operating without appropriate certificate or permit.¹³ In any event, a factor of correction must be applied for the relative use made of the highways by the different classes of operator. The only basis for such correction is the relative annual mileage made by each type of truck.¹⁴ The bureau conservatively estimates that common-carrier trucks in these States average 20,000 miles per annum, contract trucks 15,000 miles, and private trucks 5,000 miles. The ratio is 4:3:1. Weighting on this basis, common-carrier trucks account for 16.4 per cent of the use of the highways in terms of truck mileage, contract trucks for 19.5 per cent, and private trucks for 64.1 per cent. These percentages would reflect the relative volume of traffic actually handled over the highways only if the various types of truck carry equal loadings. The evidence indicates, however, that on outbound trips contract trucks load most heavily, followed by common-carrier and private trucks. The relative amount of back hauling which is achieved by the three classes of truck operator is not known. Since data necessary for full correction are not available, it will be conservatively estimated that nearly 20 per cent of the truck traffic, in terms of ton-miles, is handled by common-carrier operators, 30 per cent by bona fide contract operators, and 50 per cent by privately operated trucks. This conclusion probably overstates the proportion of private trucking and understates the proportion of contract trucking.

¹³ "When load and truck were owned by the same agency, it was classified as owner operated. Trucks operating for hire over a fixed route, on regular schedule and at published rates, were classified as common carriers. Those operating essentially as common carriers but not over fixed routes or upon fixed schedules, and those operating under a hauling agreement with a few agencies, were termed contract haulers." Report of a Survey of Traffic on Federal-Aid Highway Systems of Eleven Western States, 1930, by the Bureau of Public Roads, page 29.

¹⁴ The bureau estimated on the basis of the ratio of common-carrier to all truck registrations in 8 of the 11 States that common-carrier trucks used the highways 3.52 times as much as the remaining trucks. This finding, while helpful, does not make the desired separation between contract and private operations.

APPENDIX C

Data relative to financial operations of independent motor-vehicle operators compiled from official reports of certain States which publish statistics reported to them by certificated motor-vehicle operators

State	Total carriers reporting	Profitable operations			Operations with deficit		
		Number	Investment	Net operating income	Number	Investment	Deficit
California: ¹							
Bus.....	141	87	\$6,193,500	\$739,577	54	\$1,094,000	\$1,070,212
Truck.....	270	192	8,233,500	911,525	78	2,633,800	222,130
Connecticut: ¹							
Bus.....	37	17	\$ 8,903,253	426,581	20	\$ 771,900	799,417
Truck ⁴							
Iowa: ¹							
Bus.....	43	25	4,537,775	268,578	18	1,133,278	110,304
Truck.....	85	79		144,643	6		1,565
Minnesota: ¹							
Bus.....	25	15	4,471,500	425,704	10	1,753,100	72,802
Truck.....	63		686,986	123,382			
New Hampshire: ¹							
Bus.....	30	22	89,432	15,244	8	170,599	29,244
Truck ⁴							
Ohio: ¹							
Bus.....	234	108	(⁵)	744,702	126	(⁵)	869,757
Truck.....	1,350	1,108	(⁵)	1,464,766	242	(⁵)	416,971
Oregon: ¹							
Bus.....	45	25	5,564,226	672,253	20	4,139,954	186,107
Truck.....	97	70	1,574,792	202,338	27	588,444	49,837
Utah: ¹							
Bus.....	22	12	599,920	43,120	10	5,603,222	273,301
Truck.....	15	11	134,899	27,165	4	61,211	19,704
Vermont: ¹							
Bus.....	67	46	\$ 180,300	64,959	21	\$ 858,600	91,360
Truck ⁴							
Wisconsin: ²							
Bus.....	59		\$ 6,696,538	\$ 4,561			
Truck.....	140		\$ 1,149,170	\$ 157,238			

¹ For year 1928.

² For year 1929.

³ Incomplete.

⁴ Data not available.

⁵ No separation between "Profit" and "Deficit" carriers.

APPENDIX D

CONTROL OF COMPANIES COMPRISING GREYHOUND LINES SYSTEM AS OF MARCH 16, 1931

The Greyhound Lines system has been built up since 1927 largely through the purchase of existing lines. The original unit was Safety Motor Couch Lines of Michigan. At the head of the system is:

(1) Greyhound Corporation, a holding company. Its 620,000 shares of outstanding common stock are largely held by the men who developed the system and by Twin Cities and Duluth financiers. The Pennsylvania Railroad, through American Contract and Trust Company, holds 53,193 shares, the Chicago, Aurora & Elgin Corporation 22,400 shares, and the Southern Pacific Railroad, through Southern Pacific Land Company, holds 12,000 shares. There is also preferred stock outstanding.

(2) Eastern Greyhound Lines, 65 per cent of whose stock is held by Greyhound Corporation, controls (3) Eastern Greyhound Lines of Michigan, (4) Eastern Greyhound Lines of Ohio, and (5) Eastern Greyhound Lines of New York.

(6) Pennsylvania Greyhound Lines, whose stock is owned equally by Greyhound Corporation and Pennsylvania Railroad (through American Contract

& Trust Company), controls (7) Greyhound Lines of Indiana, (8) Pennsylvania General Transit Company, and (9) Peoples Rapid Transit Company. Operations of the Pennsylvania Greyhound Lines are conducted by the Greyhound organization. All lines in this group are in Pennsylvania Railroad territory.

(10) Central Greyhound Lines, owned by Greyhound Corporation, operates south from Detroit, having taken over operations of Greyhound Lines of Indiana not adjacent to Pennsylvania Railroad.

(11) Capital Greyhound Lines, owned jointly by Greyhound Corporation and Blue and Gray Transit Company, operates east from St. Louis through Cincinnati to Washington, D. C.

(12) Richmond-Greyhound Lines, owned by Greyhound Corporation, 51 per cent, and Richmond, Fredericksburg & Potomac Railroad 49 per cent, operates between Washington, D. C., and Richmond, Va.

(13) Illinois Greyhound Lines, owned by Greyhound Corporation, operates between Chicago and St. Louis.

(14) Northland Greyhound Lines, 30 per cent of whose stock is held by Greyhound Corporation, 30 per cent by Great Northern Railroad, and 40 per cent by individuals, operates northwest from Chicago through Wisconsin and Minnesota.

(15) Pickwick-Greyhound Lines, controlled by Greyhound Corporation and owned jointly with Pickwick Corporation, operates west of Chicago and south of St. Louis.

(16) Southland Greyhound Lines, Incorporated, of Texas, controlled by (17) Southland Greyhound Lines, Incorporated, of Delaware, in which Greyhound Corporation has a large interest and Southern Pacific Railroad a 35.21 per cent interest, operates in the State of Texas.

(18) Pacific Greyhound Lines, whose stock is owned one-third by Greyhound Corporation, one-third by Southern Pacific Railroad, and the remainder by Twin Cities interests, operates along the Pacific coast and East to Salt Lake City and El Paso.

(19) Canadian Greyhound Lines, controlled within Canada with remainder of stock held by Greyhound Corporation, operates between Detroit and Buffalo through Ontario, Canada.

South of Richmond, Va., Washington, D. C., and Covington and Louisville, Ky., traffic of Greyhound Lines is handled through connecting companies, among them Camel City Coach Lines of Winston-Salem, N. C., Blue and Grey Transit Company of Charleston, W. Va., and Consolidated Coach Corporation of Lexington, Ky.

Greyhound Management Company, whose 500 shares of common stock are owned by Greyhound Corporation, acts in an auditing, traffic, advertising, and maintenance capacity and attends to legal and safety work. Its activities are limited to the lines east of the Mississippi River.

APPENDIX E

Investment, operating revenues and operating expenses, and net railway operating income, Class I Railroads, 1921-1931, stated in thousands

	Investment in road and equipment (book value)	Freight revenue	Passenger revenue	Operating revenues	Operating expenses	Net railway operating income
Year 1921.....	\$19,842,576	\$3,911,277	\$1,151,771	\$5,516,568	\$4,562,695	\$953,873
Year 1922.....	20,170,093	3,992,441	1,074,105	5,559,063	4,414,823	760,187
Year 1923.....	21,114,594	4,005,730	1,143,099	5,299,580	4,803,167	961,955
Year 1924.....	21,964,425	4,333,585	1,075,039	5,921,496	4,507,893	973,577
Year 1925.....	22,543,653	4,541,646	1,050,395	6,122,510	4,534,980	1,121,078
Year 1926.....	23,204,182	4,797,780	1,041,816	5,592,940	4,669,337	1,213,000
Year 1927.....	23,789,733	4,632,321	974,951	6,136,300	4,874,178	1,067,966
Year 1928.....	24,259,639	4,680,456	901,019	6,111,735	4,477,995	1,172,864
Year 1929.....	24,884,675	4,815,448	872,466	6,279,530	4,508,066	1,251,666
Year 1930.....	25,485,623	4,073,698	729,438	5,291,197	3,930,929	869,879
Year 1931.....	(1)	3,254,809	1,551,060	4,188,505	3,239,791	1,619,829

¹ Not available.

² Preliminary.

APPENDIX F

SUMMARY OF STATE REGULATION OF COMMON AND CONTRACT CARRIERS BY MOTOR VEHICLE

A survey of the statutes of the 48 States (excepting Delaware, which has no regulatory body nor regulatory act dealing with carriers) reveals that 47 States and the District of Columbia have laws regulating the operation of motor vehicles as common carriers of passengers, 39 States and the District of Columbia have laws regulating the operation of common carriers of property, and 34 States have enacted laws dealing with the operation of contract carriers. Concerning this last group, 23 States have laws dealing with the operation of contract carriers which are in effect, 4 States have made attempts which have been declared invalid by the courts chiefly because of an attempt to subject the contract carrier to the same type of regulation applicable to the common carrier, and 7 States have laws which, though not yet attacked in the courts, seem to fall into the same errors as the other voided legislation.

The following table shows separately the name of the State, the date of the first law regulating motor carriers, the date of the present law, and the classes of common carriers regulated (i. e., whether passenger or property, or both, and whether over regular or irregular routes, or both); and a brief résumé of the extent of regulation over the contract carrier:

State	First law in effect	Present law	Classes of common carriers regulated	Remarks as to regulation of contract or private carrier
Alabama.....	1927	1927	Passenger, property, over regular or irregular routes.	Section 11 provides any motor vehicle operating over regular route in competition with certified common carrier may be required to apply for certificate and subjected to regulation. See <i>Smith v. State</i> , 120 Sou. 471 (1928).
Arizona.....	1919	1928	.....do.....	Section 737 requires private carrier to obtain permission to compete with common carrier.
Arkansas.....	1927	1929	.....do.....	Act No. 62 applies to "every motor vehicle carrier" but State court held it applies only to common carriers. <i>Jones v. Ferguson</i> , 27 S. W. (2d) 96 (1929).

State	First law in effect	Present law	Classes of common carriers regulated	Remarks as to regulation of contract or private carrier
California.....	1917	1930	Passenger, property, regular route only.	Earlier act applying to private carriers construed to force them to become common carriers and held unconstitutional. <i>Frost v. R. R. Comm.</i> , 271 U. S. 583 (1926).
Colorado.....	1915	1928	Passenger, property, over regular or irregular routes.	Rule 1 (a) G. O. 39 (1928) of Colorado Public Utilities Comm. holds act applies to all "who indiscriminately carry or hold themselves by advertising or otherwise."
Connecticut.....	1921	1927	Passenger, over regular route only.	
Delaware.....				
District of Columbia.....	1913	1913	Passenger, property, over regular or irregular routes.	"Common carrier" as used in this act, paragraph 2 section 8, 37 Stat. 974, construed in <i>Bell v. Harlan</i> , 20 F. (2) 271 not to include a for-hire car where owner made individual contracts for its use, citing <i>Terminal Cab Co. v. D. C.</i> , 241 U. S. 252.
Florida.....	1929	1931	Passenger, property, over regular routes only.	Regulation of contract carriers held unconstitutional for (1) failure to separate sections applicable to common and contract carriers and (2) discriminatory in relieving carriers of agricultural products from scheme of regulation. <i>Smith v. Cahoon</i> , 283 U. S. 553 (1931).
Georgia.....	1929	1931	Passenger, property, over regular or irregular routes.	State and Federal courts have divided on whether the provision regulating contract carriers is unconstitutional. <i>Ga. P. U. Com. v. Saye</i> , 154 S. E. 439,506 (1931), held regulation valid. <i>McIntyre v. Harrison</i> , 157 S. E. 499 held regulation invalid by 3-to-2 decision, one judge not participating in judgment but dissenting in opinion. Federal courts have held act requiring private carrier to get certificate of public convenience and necessity is valid, <i>Johnson v. Perry</i> , 47 Fed. (2d) 900, 902 (1931); <i>So. Motor Ways v. Perry</i> , 39 Fed. (2d) 145 (1931).
Idaho.....	1925	1929	Passenger, property, over regular routes only.	Contract carriers over regular routes, <i>Smallwood v. Jester</i> , 244 Pac. 149 (1926); <i>Sanger v. Lukens</i> 26 Fed. (2d) 855 (1927).
Illinois.....	1921	1924	Passenger, property, over regular or irregular routes.	Section 55 (a) defines common carrier as one "indiscriminately accepting and discharging such persons (freight) as may be offered."
Indiana.....	1925	1923	do.....	Contract carriers are specifically exempt from regulation but a subsequent provision declares to be common carriers all motor vehicles transporting persons or property for a railroad.
Iowa.....	1923	1929	Passenger over regular routes only, property over regular or irregular routes.	Chapter 129 provides that contract carriers must get a permit but are not required to show public convenience and necessity and subjects them to all regulations except as to rates and service.
Kansas.....	1925	1931	Passenger, property, over regular routes only.	Chap. 236 (1931), section 5, provides commission vested with power to license, supervise, and regulate contract carrier, to prescribe accounting and require reports. <i>Louis v. Boynton</i> , 53 F (2) 471, held a tax on gross ton mileage valid and as to contract carriers said: "Section 5 undertakes to vest the public service commission with broad powers and duties with respect to the regulation of the several carriers defined in section 1. It may be that contract carriers and private carriers are not subject to regulation to the full extent provided by the section, as for example, regulations as to service. However, the regulations * * * have not yet been promulgated. Plaintiffs can not complain until regulations * * * invalidate their constitutional rights." <i>Continental Baking Co. v. Woodring</i> , 55 F (2) 347 held act valid as to attacks on interstate private carriers (2-to-1 decision). Regarding regulation court said: "As far as private carriers are concerned this power is limited to such regulations as will protect other travelers and shippers on the highways."
Kentucky.....	1924	1930	Passenger, over regular or irregular routes.	Language broad enough to cover contract carriers.
Louisiana.....	1926	1926	Passenger, property, over regular or irregular routes.	

State	First law in effect	Present law	Classes of common carriers regulated	Remarks as to regulation of contract or private carrier
Maine.....	1921	1923	Passenger, over regular routes only.	Chapter 211 gives jurisdiction to commission "over every person . . . operating any motor vehicle . . . for the carrying of persons for hire."
Maryland.....	1916	1927	Passenger, property, over regular or irregular routes.	Section 256 vests jurisdiction over "each owner of a motor vehicle used in the public transportation of merchandise or freight" (sec. 251 "of passengers for hire"). Construed in <i>Rutledge v. Heughmen</i> , 133 Atlantic 2d; 56 A. L. R. 1043 (1927) to apply to contract carriers. Held that the commission may determine that public convenience and necessity does not require operation and deny permission to contract carrier.
Massachusetts....	1919	1931	Passenger, over regular or irregular routes, property when operated by a railroad (acts 1931, chap. 159, sec. 3A).	
Michigan.....	1923	1931	Passenger, property, over regular routes only.	The earlier act applying to contract carriers was held unconstitutional in <i>Dutz v. P. U. Com.</i> , 246 U. S. 570. The 1931 act, chapter 212, requires private or contract carriers by truck to obtain permits from and conform to the rules and regulations of the commission. Federal court held regulation of contract carrier valid in <i>Ogden & Moffet Co. v. Com.</i> , 6 U. S. Daily 2014 (11-4-31) as a regulation of the highways, with a substantial classification between common and private carriers. On appeal to U. S. Supreme Court, 1931 term, docketed No. 357.
Minnesota.....	1925	1925	.....do.....	
Mississippi.....	1926	1930	.....do.....	
Missouri.....	1927	1931	.....do.....	Contract carriers subject to complete regulation of certificates, rates, service, accounting, and taxation.
Montana.....	1923	1931	Passenger, property, over regular or irregular routes.	Chapter 184, section 1 (h), divides the carriers into three classes and subjects the contract carrier to regulation. Regulation held valid by <i>Ed. e Ry. Com. of Montana in Doctrie 1101 and 1102</i> decided October 5, 1931. 6 U. S. Daily 1572 (10-17-31). Certificate of convenience denied to certain private carrier applicants.
Nebraska.....	1927	1931	Passenger and baggage, over regular or irregular routes.	Act of 1927 (H. R. 97) declares that any person or corporation engaged in the business of carrying or transporting persons and baggage for hire over any public streets between fixed terminals is a motor transportation company and is declared to be a common carrier.
Nevada.....	1923	1925	Passenger, property, over regular or irregular routes.	
New Hampshire...	1919	1926	Passenger, over regular routes only.	
New Jersey.....	1921	1926	.....do.....	
New Mexico.....	1926	1931	Passenger, property, over regular or irregular routes.	Act 1931, chapter 52, H. B. 205, sections 1 and 2, provide for the licensing of all persons engaged in the transportation of persons or property for hire under contract.
New York.....	1915	1930	.....do.....	
North Carolina...	1923	1929	.....do.....	Act of 1927, section 1 (k), "Transporting persons or property for compensation" is subject to regulation. Section 2 excepts "casual trips under contract" but prohibits contract carriers from picking up additional traffic en route or on return "other than that included on original trips."
North Dakota....	1923	1931	.....do.....	Act of 1931, chapter 183, section 1 (d) and (d-1) applies only to common carriers defined as any company "which offers to the public to carry persons and/or property for compensation."
Ohio.....	1921	1929	.....do.....	Act of 1929, sections 614 (84), provides "motor transportation company should include every corporation engaged in the business of transporting persons or property for hire."
Oklahoma.....	1923	1929	.....do.....	A classification is set up which includes contract carriers. <i>Barbour v. Walker</i> , 259 Pac. 552; 56 A. L. R. 1049 (1927) decided under an earlier act held a private carrier came within the provisions of the earlier act and is subject to control and regulation.

State	First law in effect	Present law	Classes of common carriers regulated	Remarks as to regulation of contract or private carrier
Oregon.....	1925	1929	Passenger, property, regular or irregular routes.	G. L. 1929, chapter 384, vests jurisdiction over contract carriers but does not regulate them.
Pennsylvania.....	1914	1920	Passenger, property, over regular or irregular routes.	P. L. 905, No. 403, section 102, and P. L. 1647, No. 513, section 1, provides for registration only but not regulation of all property carriers.
Rhode Island.....	1922	1923	Passenger, regular routes only.	
South Carolina.....	1925	1930	Passenger, property, over regular or irregular routes.	Act No. 170, amended in 1930, requires certificates for contract carriers and section 4 requires that they file proposed rates.
South Dakota.....	1925	1931	do.....	Act 1931, chapter 224, sections 1(f) and 2(a), provide that contract carriers must be registered.
Tennessee.....	1929	1929	do.....	Act 1929, chapter 58, section 1, extends full regulation over contract carriers.
Texas.....	1927	1931	do.....	Act 1931 extends complete regulation over contract carriers. Held valid by Federal court (2-1) in <i>Stephenson v. Binford</i> , 53 F. (2) 509.
Utah.....	1917	1927	do.....	Act 1927, section 1, provides a certificate must be obtained before transporting for compensation by contract or otherwise.
Vermont.....	1919	1925	Passenger, property, over regular routes only.	
Virginia.....	1923	1930	Passenger, property, over regular or irregular routes.	Chapter 419, sections 1, 2, 3, provide that any person transporting "for compensation" is "deemed to be a common carrier" and "must obtain a certificate."
Washington.....	1921	1929	Passenger, property, over regular routes only.	Comp. Stat. (Remington, 1922), §6387, as amended, 1927, §6390, is slightly ambiguous, but held to apply only to common carriers. <i>Big Bend Auto Freight v. Ogers</i> , 269 Pac. 802 (Wash. 1928).
West Virginia.....	1921	1931	Passenger, property, over regular or irregular routes.	Act of 1931 seems to cover contract carriers but in <i>Buckland v. State Road Com.</i> , 6 U. S. Daily 1873 (10-17-31), Federal 3-judge court held the statute does not require a certificate of public convenience and necessity of private carriers; that if there is ambiguity the same must be accorded a constitutional construction; and that if the statute is interpreted to require certificate of private carriers, complainants are not threatened with an injury on account of this unconstitutional provision, because officials of the State prior to institution of suit notified them that no such certificate would be required.
Wisconsin.....	1915	1930	Passenger, property, over regular routes only.	
Wyoming.....	1925	1931	Passenger, property, over regular or irregular routes.....	Act 1931, chapter 183, section 1, div. 3, sections 1-4, provide that contract carriers must obtain an annual permit.

APPENDIX G

FINANCING THE HIGHWAYS¹

Before the present period of extensive highway improvement, the funds used for road construction and maintenance were largely provided by the general property tax, directly or through contributions from this tax to funds required to meet interest and amortization charges on highway bonds. To finance expenditures of the magnitude known to-day, reliance has been increasingly placed on special taxes and fees paid by operators of motor vehicles, though the property tax, supplemented in some States by other general taxes, continues of importance, and Federal aid has been added as a large source of highway revenue.

It is urged by certain parties to this proceeding that the whole cost of providing highway facilities should fall on and be equitably distributed among the

¹ The discussion in this appendix is by C. S. Morgan, economist, Bureau of Statistics. 182 I. C. C.

users of the highways and that such a result can be achieved only by large increases in the payments made by those who use the highways for business purposes. It is further urged that those who use the highways for business purposes should pay a rental for the user value enjoyed and that highway carriers do not but should contribute equally with the railroads to the general expenses of Government. The railroads urge that they are and always have been among the country's largest taxpayers and that much of the money paid by them as taxes has found its way into rural highways. They stress the fact that in return for the taxes they pay they receive only the right to do business and general Government protection, and that even this protection has to be supplemented by private expenditures. It is, in fact, urged that the principal and even controlling advantage of their highway competitors lies in their use of a publicly provided right of way. More specifically, the railroads state that in 1929 they paid nearly \$400,000,000 in taxes or 6.31 cents of each dollar of revenue to secure Government protection and the right to do business, and approximately 25 cents of each dollar of revenue in providing and maintaining their right of way, while carriers by highway secure like benefits¹ in return for only \$250,000,000 of taxes, or 7 to 8 cents of each dollar of their revenue.

On the other hand, users of the highways are generally of the view that their taxes are adequate and some feel that they are excessive.

The issues stated present questions of both policy and fact. The former fall outside the limits of this discussion, which is aimed at stating the essential facts developed of record. These facts may be surveyed in three stages.

QUESTIONS OF FACT—FIRST OR GENERAL STAGE, DEVELOPMENT AND EXTENT OF HIGHWAY SYSTEMS

In this first stage of the inquiry the facts required relate essentially to the development and present extent of our highway systems and, in a general way, to the means used in procuring these facilities. For most purposes, the period covered will be that since 1921. It should be recognized, however, that parts of our present highways are of considerable age and that a very large part are built on earlier ones, making use of grading, cuts, fills, and materials in substructures. This survey of the facts will embrace county and local roads (of which there were 2,710,000 miles in 1929) as well as State highways (315,000 miles in 1929).² To confine the analysis to the latter would result in an incomplete picture of the present situation.

Development of highway systems.—The following table³ traces the development of rural highways as a whole in the past quarter of a century:

¹ It is further urged that highway operations for hire put the Government to added expenditures for purposes of protection.

² State roads are those highways designated by the States as making up their State highway systems and include Federal-aid highways. Rural highways are all public highways lying outside the limits of incorporated communities.

³ All tables are taken or adapted from publications of Bureau of Public Road, United States Department of Agriculture.

TABLE I.—Rural highway mileage, 1904-1930

Year	Total	Surfaced	High-type surface ¹	Year	Total	Surfaced	High-type surface ¹
1904.....	2,151,379	153,530	144	1925.....	3,006,083	521,260	76,342
1909.....	2,199,045	190,476	726	1926.....	3,000,190	550,064	82,987
1914.....	2,445,761	257,201	14,442	1927.....	3,013,584	588,721	91,935
1921.....	2,941,294	387,760	35,874	1928.....	3,016,281	626,137	102,559
1922.....	2,960,000	410,000	-----	1929.....	3,024,233	662,435	112,454
1923.....	2,995,727	439,341	54,217	1930.....	3,030,000	700,000	128,000
1924.....	3,004,411	471,668	63,707				

¹ Includes bituminous macadam by penetration, and higher types.

² Estimated.

Total mileage increased about 41 per cent from 1904 to 1930, the increase being greatest, 43,884 miles per year, from 1904 to 1921, compared with 8,900 miles per year thereafter. The mileage surfaced increased 356 per cent in this quarter of a century, and that highly surfaced increased from practically nothing in 1904 to about 128,000 miles in 1930. The surfaced highways increased 234,230 miles, or 152.6 per cent, from 1904 to 1921, and 312,240 miles, or 80.5 per cent, from 1921 to 1930. Highly surfaced highways increased 85,730 miles in the earlier period and about 93,000 miles in the latter. The surfaced mileage is about 63 per cent more than the mileage of tracks of every description, including some duplications, used by all railroads in 1929.

The above information is general. The following table shows the type of highway in service in 1929 and a comparison with 1921.

TABLE II.—Mileage of State, county, and local roads, 1921 and 1929, by type

Type	1921			1929		
	State	County and local	Total	State	County and local	Total
Surfaced:						
Sand clay, top soil.....	8,622	54,717	63,339	15,442	75,547	90,989
Gravel, chert, etc.....	36,458	163,441	199,899	97,838	292,463	390,301
Waterbound macadam.....	18,978	60,367	77,345	19,931	48,760	68,691
Bituminous macadam.....	6,749	3,515	10,264	14,043	16,692	30,735
Sheet asphalt.....	396	1,205	1,601	1,498	1,539	3,037
Bituminous concrete.....	2,444	2,534	4,978	5,722	4,057	9,779
Portland cement concrete.....	10,114	5,497	15,611	50,584	13,254	63,838
Brick and block.....	2,089	1,331	3,420	3,266	1,799	5,065
Miscellaneous.....	1,008	10,295	11,303	-----	-----	-----
	84,858	302,902	387,760	208,324	454,111	662,435
Nonsurfaced.....	¹ 124,384	2,420,150	2,553,534	² 105,612	² 2,255,986	2,361,798
Total.....	209,242	2,732,052	2,941,294	314,136	2,710,097	3,024,233

¹ Including 21,421 miles improved to grade.

² Including 28,553 miles improved to grade.

The mileage of State highways increased about 50 per cent from 1921 to 1929. A third of the mileage of such highways in the latter year was unsurfaced and more than another third was surfaced only with sand clay, top soil, gravel, chert, etc. Roads having such surfacing increased 151 per cent from 1921 to 1929 and those unsurfaced decreased 18 per cent. Of the total State highway mileage in 1929 less than one-sixth was Portland cement concrete. However, such surfacing increased 400 per cent in the period.

The mileage in county and local roads declined slightly from 1921 to 1929, representing in the latter year 89 per cent of the total compared with 93 per cent in the former year. Of such roads only 11.1 per cent were surfaced in 1921 and 16.8 per cent in 1929, and, of the surfaced mileage in 1929, 81 per cent consisted of the two lowest types of surfacing, approximately 11 per cent

of water-bound macadam, and less than 3 per cent of Portland cement concrete. The last type increased 141 per cent in the period, bituminous macadam increased 375 per cent, water-bound macadam mileage fell nearly 20 per cent, and surfacing of the two lowest types increased 69 per cent.

This inventory of highway facilities is still in very general terms. Definitive answers to the questions considered presently require that the highways of given States and their subdivisions be individually catalogued as to age, dimensions, and cost for purposes of comparison with the respective methods of financing observed.

Cost and present annual carrying charges of highway systems.—Next there is need for knowing the carrying charges which these highways represent. The total investment in highways to date could be determined only in the form of estimates and at best such a figure could not help much in answering questions now faced.⁵ The outlay for new construction from 1921 to 1930 was approximately \$6,227,000,000. For the single year 1929, disbursements for construction, maintenance, and other purposes totaled \$1,718,200,000, or \$1,444,670,000 if disbursements to retire bonds and certain transfers of funds are excluded, as shown in the accompanying table.

TABLE III.—State, county, and local road and bridge disbursements, 1929

Item	State	County and local	Total
Construction.....	\$557,401,000	\$256,582,000	\$813,983,000
Maintenance.....	173,060,000	260,478,000	433,538,000
Equipment, material, etc.....	19,057,000	.....	19,057,000
Miscellaneous.....	5,624,000	149,456,000	54,980,000
Interest on bonds.....	45,835,000	78,277,000	124,112,000
Total.....	799,877,000	644,793,000	1,444,670,000
Retirement of bonds.....	42,384,000	106,033,000	148,417,000
Transfers to counties.....	45,791,000	.....	45,791,000
Other obligations assumed.....	22,433,000	.....	22,433,000
Transfers to States.....	.....	56,899,000	56,899,000
	910,485,000	807,715,000	1,718,200,000

¹ Miscellaneous and overhead.

The true cost attaching to the use of highways in any year is not measured by that year's expenditures, but by that part of the interest, amortization, maintenance, and general expenses attributable to that period in comparison with preceding and succeeding ones. An exhibit of record partially meets the requirements of this more accurate type of analysis. It places the annual carrying

⁵ Using figures supplied by the Bureau of Public Roads, the Federal Trade Commission in its report entitled "National Wealth and Income" (1926) placed a value of 850 million dollars on the lands used for rural highway purposes in 1922. This value was estimated by pricing the areas used for highways at going farm-land values. To this sum was added an estimate of the value of improvements, \$6,000,000,000, found by applying average prevailing cost figures to the various types of road then in use. The total, \$6,850,000,000, is said to represent an undervaluation of the property in question. It is to be particularly noted that this figure does not reflect the cost of these highways. An exhibit of record attempts to bring this estimate down to date by adding thereto \$5,000,000,000 as the cost of "the annual additions since that time in the form of new construction." A "present investment" in rural highways of more than \$12,500,000,000 is thereby derived. It is not clear how far deductions for depreciation, changes in cost from period to period, and the inclusion of omitted items would modify this figure. This exhibit also places the investment in public and private garages and bus terminals at \$4,000,000,000 and that in 26,590,000 motor vehicles at \$300 per vehicle at \$7,950,000,000 in 1929. The grand total is about 25 billion dollars or approximately the same as the book value of all railroad property on December 31, 1929. In large part, however, this figure represents investment in facilities used for pleasure purposes.

charges of State highways in 1929 at \$433,836,739, consisting of amortization (on a 15-year life for superstructures and 100-year life for grading, drainage, etc.) of \$4,005,445,000 of State highway investment made in the years 1915-1929, \$191,361,020; interest payments during the year on State highway bonds, \$45,834,531; amortization of and interest on expenditures for equipment and machinery, \$18,056,509; and maintenance and miscellaneous, \$178,584,679. This analysis is not conclusive, however. It represents a combination of straight amortization charges and current outlays; it is confined to State highways, and it excludes interest charges on Federal-aid expenditures and on capital expenditures made from motor vehicle fees and gasoline taxes.

How 1921 and 1929 outlays were financed.—However, to indicate in a general way how highway expenditures are being financed and the changes which have occurred in recent years, the following table is introduced. All funds, including those used for the purpose of paying interest on and principal of highway bonds, are included.*

TABLE IV.—Sources of funds for State, county, and local roads, 1921 and 1929, not including balances at beginning of year (all amounts in thousands)

Item No.	Source	State roads		County and local roads		Total	
		Amount	Percent	Amount	Percent	Amount	Per cent
<i>Year 1921</i>							
1	General taxation and appropriations.....	\$45,262	11.2	\$347,633	46.7	\$392,895	34.2
2	Bond issues.....	113,304	27.9	322,614	43.4	435,918	37.9
3	Motor vehicle fees ¹	101,204	25.0	17,738	2.4	118,942	10.3
4	Gasoline tax receipts ²	3,354	.8	329	.1	3,683	.3
5	Federal-aid and forest funds.....	79,031	19.5	302	(³)	79,333	6.9
6	Transfers by counties:						
	Funds raised by bond issues.....	2,192	.5			2,192	.2
	Funds raised by county property tax.....	22,785	5.6			22,785	2.0
	Total.....	24,977	6.1			24,977	2.2
7	Transfers by States.....						
8	Not allocated as to source, and miscellaneous.....	38,510	9.5	55,179	7.4	93,689	8.2
	Total.....	405,642	100.0	743,795	100.0	1,149,437	100.0
<i>Year 1929</i>							
1	General taxation and appropriations.....	71,737	7.4	480,171	61.9	560,908	32.0
2	Bond issues.....	161,229	16.8	110,635	14.0	271,864	15.5
3	Motor vehicle fees ¹	278,093	28.9	51,836	6.6	329,929	18.9
4	Gasoline tax receipts ²	287,258	29.9	70,493	8.9	357,751	20.4
5	Federal-aid and forest funds.....	77,573	8.1			77,573	4.4
6	Transfers by counties:						
	Funds raised by bond issues.....						
	Funds raised by county property tax.....						
	Total.....	85,917	8.9			85,917	4.9
7	Transfers by States.....			31,715	4.0	31,715	1.8
8	Not allocated as to source, and miscellaneous.....			36,229	4.6	36,229	2.1
	Total.....	901,807	100.0	790,129	100.0	1,751,936	100.0

¹ Does not represent gross receipts, which in 1929 were \$779,155,062. Deduction of collection costs leaves about \$759,000,000, of which \$687,000,000 was appropriated for State and county roads as indicated above and the remainder used to meet payments on State and county road bonds and for miscellaneous purposes, including the improvement of city streets and the construction of public buildings.

² Forest road funds.

³ Less than one-tenth of 1 per cent.

* Includes miscellaneous.

* Logically, only revenues required to retire bonds should be included as revenues, for the proceeds of bond issues are not income.

In 1921, 25.8 per cent of the funds raised for State highway purposes came from special charges against motor vehicles. The gasoline tax at that time was of negligible importance. Including bond issues, Federal aid, and transfers from counties, 64.7 per cent of the funds (sum of items 1, 2, 5, 6, and 7) were raised from general sources, including Federal sources. An unascertained item (No. 8) constitutes 9.5 per cent of the total. In the same year 90.1 per cent of the current revenues for county and local roads were similarly derived from general sources, 2.5 per cent from special charges against motor vehicles, and 7.4 per cent from undetermined sources. Of all funds used for rural road purposes in 1921, 81.2 per cent came from general sources, 10.6 per cent from special charges against motor vehicles, and 8.2 per cent from undetermined sources.

Of the funds becoming available for State highways in 1929, 58.8 per cent came from charges against motor vehicles or from gasoline tax receipts (items 3 and 4), 32.3 per cent from general taxation, bonds⁷, and Federal aid (items 1, 2, and 5), and 8.9 per cent by transfers from counties and from miscellaneous sources (item 6).⁸ Of the funds raised for county and local highway purposes, 15.5 per cent came from charges against motor vehicles and the gasoline tax, 75.9 per cent from general taxation and bonds (items 1 and 2), and 8.6 per cent⁹ from miscellaneous or undetermined sources (items 7 and 8). Of the total revenue raised in that year for rural highways, 30.3 per cent came from motor-vehicle fees and the gasoline tax, 51.9 per cent from general taxation, bonds, and Federal aid (items 1, 2, and 5), and 8.8 per cent from miscellaneous or undetermined sources (items 6, 7, and 8).

It is true that motor vehicles, garages, stations, etc., contribute to or are subject to the general property tax¹⁰ and that highway operators for hire are subject to State and Federal business or income taxes. It is also true that there is a tendency, as yet of minor proportions, to use funds collected from the gasoline tax for purposes other than the construction and maintenance of rural roads.¹¹ The diversions to other than highway purposes are, however, offset and probably more than offset by amounts raised from general sources inseparably included in items 6, 7, and 8 above. It is therefore reasonable to conclude that in 1929 direct charges against owners and users of motor vehicles contributed about 75 per cent of the funds currently raised for State-highway purposes,¹² 16 per cent of those raised for county and local purposes, and 48.5 per cent¹³ of all funds raised.¹⁴

Preliminary conclusions as to alleged subsidy.—The foregoing analysis indicates that the contention of the railroads that they are called upon to contribute to the provision of highways for their competitors to use rests on an increasingly smaller basis as the well-defined tendency to relieve the general taxpayer

⁷ Since 1925, principal and interest of most State highway bond issues are being met from special motor-vehicle taxes.

⁸ The portion of this item derived by general taxation is not ascertainable.

⁹ In some States assessments and collections appear to be lax.

¹⁰ Thus, of the 1929 collections, 60 per cent was distributed for State-road purposes, 20 per cent for local-road purposes, 5 per cent to meet payments on State and county road bonds, and 6 per cent for miscellaneous purposes, including principally the improvement of city streets and the construction of public buildings.

¹¹ Assuming that all State highway bonds issued in that year were supported, principal and interest, from special motor-vehicle taxes. Credit should also be given for gas-tax receipts used for nonhighway purposes.

¹² There are, of course, great variations in percentages from State to State. In view of the variety of conditions it is impossible to carry the analysis further, but a definitive analysis would have to reckon with these differences.

of levies for State-highway purposes continues.¹³ Specific figures are lacking, but such payments by the railroads are probably of minor proportions to-day, though doubtless of importance to some railroads, particularly at a time such as the present. However, the county and local roads of all States receive the major part of their support from the general taxpayer, including the railroads. The amounts contributed thereto by the railroads are very substantial, though only a small part of the aggregate.¹⁴ An estimate made below puts railroad contributions to all roads, but mainly county and local roads, in 1929 at about \$50,000,000, or approximately one-eighth of all their taxes of that year. Against their total taxes of \$400,000,000 they set the \$250,000,000 paid by highway carriers¹⁵ and, as previously indicated, the large and direct benefits which the latter receive in return. It must not be overlooked, however, that the railroads benefit (as do operators for hire over the State highways) from the presence of county and local roads. Railroads also benefit from the development of country and city, from expenditures for educational purposes, and otherwise from expenditures for general Government purposes. Their contention that they contribute largely to the support of State, county, and local Governments is well founded, as is their view that their highway competitors make relatively small contributions for such purposes. However, in comparing the amounts paid by the two forms of transportation, consideration should be given to the relatively small volume of business done by highway operators compared with that done by rail carriers.

QUESTIONS OF FACT—SECOND STAGE, DIVIDING HIGHWAY COSTS BETWEEN CLASSES OF USERS

In this second stage consideration may be given to the view that, whether or not users of the highways as a class pay adequately, individual classes of users do not bear their proportionate share of the burden. Thus parties to this proceeding have stressed distinctions between the payments of those who use the highways for business and for pleasure purposes, between taxes paid on vehicles used in city and in intercity operations, between classes of operators using the highways for business purposes (common carriers, contract carriers, and private operators), and between vehicles of large and small size. Clarification will result from such appraisal of these distinctions as is possible with the facts available of record. A statement of present motor-vehicle taxes will serve to introduce this analysis.

Briefly, the tax programs of practically all States vary motor vehicle fees according to kind and size of vehicle (whether measured by weight, capacity,

¹³ In 1929, 21 States did not levy general property taxes for such purposes.

¹⁴ The railroads of Atchison County, Mo., are said to have contributed \$4,481.50 in 1930 for road and bridge purposes, while commercial truck lines contributed only \$12.90; all railroads having a property assessment of \$1,000,000 or more in the State of Colorado paid the State for rural-road purposes \$432,937 in 1930; all the railroads in Florida paid \$1,377,037 for such purposes in 1928; in Georgia \$411,876; and in 33 Tennessee counties \$289,050. All railroads in 12 of the 14 States served by the Chicago, Rock Island and Pacific Railway Company are said to have paid \$80,351,183 in taxes (other than Federal) in 1928-1929, of which \$13,855,498, or 16.05 per cent, was apportioned for road use. If this ratio held the country over, the railroad contributions would have totaled \$49,312,000 in 1929 or approximately 8.1 per cent of the gross highway expenditures of that year, excluding transfers between States and their subdivisions, and 6.6 per cent of those for county and local roads.

¹⁵ Motor-truck license fees and gasoline taxes, \$181,500,000, common-carrier bus license fees and gasoline taxes, \$20,500,000, and personal-property tax, municipal levies, etc., \$42,000,000.

horsepower, value, or otherwise), and most of them also make a partial distinction between vehicles for hire and all others, though failing to reach with special taxation the privately owned car used for business purposes. Operators for hire may pay not only additional fees proportioned to size of vehicles but in some cases gross-receipts taxes also. A further distinction is sometimes made between those vehicles for hire which are engaged in common-carrier service and those engaged in other services for hire. The former are thus required to pay a larger part of their gross receipts in taxes or a mileage tax per passenger-mile or ton-mile. Special taxes on for-hire vehicles are sometimes designated as taxes in compensation for use of highways and sometimes are imposed to meet the costs of regulation attributable to such operations. There are also personal-property taxes to be considered and taxes on garages and other facilities used by both private and commercial operators of motor vehicles. According to one estimate, such taxes yielded \$130,000,000 in 1929. Some \$20,000,000 of municipal fees are also reported. The gasoline tax applies equally to all uses of the highways.

Distinction between users of highways for business and other purposes.—

It is sometimes urged that those who use the highways for pleasure purposes contribute more than their portion and so underwrite the use of the highways for business purposes. There were 22,948,000 passenger cars, 95,400 busses, and 3,481,000 trucks in service on December 31, 1930, or 80.5 per cent in the first group compared with only 0.4 and 13.1 per cent in the second and third. On the basis of numbers alone there apparently is truth in the contention. Measured in vehicle-miles, passenger cars and busses have been found in 11 Western States to make a relatively greater use of the highways than would be expected on the basis of numbers.¹⁶ However, the differences are not great and moreover the higher fees and gasoline consumption of commercial vehicles must be considered. On the other hand, it should be noted that a very considerable part of the passenger cars found on the highways are used in business pursuits but without differentiation from the pleasure car.¹⁷ Clear-cut distinctions between pleasure and business use of such cars would be difficult to make. As a practical matter, the distinction under examination becomes merged with numerous other ones, including those relating to the size of vehicle.

The distinction is, however, of considerable force in so far as it enters into the planning of highways. Allocation of the expense of providing and maintaining highways should bear some relationship to the purposes which particular highways are intended to serve. In so far as business uses call for more highways or better ones than would suffice for other purposes, a charge is created for business users to bear. The facts are not easily discernible, owing to the variety of considerations which explain particular highway projects. Some urge that there is a tendency to build highways beyond the limits justified by community development and individual user economies. There appears to be evidence of such overbuilding in the scanty use made of expensive highways in some sections, as in the State of Tennessee. Also, as highways are improved a demand for further improvements based on developed use sets in, until a State may become committed to increasingly large expenditures which it had not foreseen.

¹⁶ The Bureau of Public Roads survey made in 11 Western States in 1929 and 1930 indicates that trucks represented 10.4 per cent of the total traffic on the highways surveyed, measured in vehicle-miles, busses 1 per cent, and passenger cars 88.6 per cent, compared with registrations of 13.1, 0.4, and 86.5 in the country as a whole.

¹⁷ The proportion of passenger cars so used is sometimes set as high as 50 per cent of all passenger cars on the highways, but no authoritative data are of record.

Distinction between users of city streets and rural highways.—Another distinction which has been urged as a reason for shifting a greater part of highway costs on to those who use the highways for business purposes is that between vehicles used on the city streets and vehicles used on the highways. It is urged that vehicles which do not get off of city streets and city-owned vehicles which use the highways only infrequently pay large amounts in fees and gasoline taxes which are devoted to highway uses.

It is necessarily true that the ownership of motor vehicles rests predominantly in city dwellers. Thus in 1922, 71.0 per cent of the passenger cars, 80.7 per cent of the trucks, and 72.1 per cent of all cars were of other than farm ownership, and in 1929, 78.8, 77.3, and 78.6 per cent, respectively. Such figures do not, however, measure the relative use made of the highways by vehicles of city and other ownership. Traffic tests made on the State highways of Ohio in 1925 put the percentage of city-owned vehicles at 87.6 per cent of the total in the case of passenger cars and at 84.5 per cent in the case of trucks. Similar tests in Vermont and New Hampshire in the year 1926 show that city-owned passenger cars were 89.9 and 93.9 per cent, respectively, of the total passenger cars on the highways and city-owned trucks 81.1 and 88.6 per cent of the total trucks. Farm-owned vehicles therefore make a proportionately less use of State highways than do city vehicles, but the reverse would likely be true of the use of county and local roads. The relative vehicle mileage on urban and rural roadways is also indeterminate.¹⁸

However, at best the distinction between city-owned and farm-owned vehicles is rather meaningless. City and country are interdependent. Farmers bring products to cities or start them on their way toward cities by using the highways, and they bring city purchases back. Movements of any class of products between cities, involving use of the highways, are also primarily for the benefit of city dwellers. Consumption is roughly in proportion to population. Much highway mileage of passenger cars is also due to employment in cities. To label certain movements as intercity or rural and others as urban and to base taxing programs on such a distinction is therefore not helpful. Also, even though the city dweller uses the rural highways only occasionally, he enjoys a sort of stand-by service which he would dislike to give up. To urge, therefore, that gasoline taxes and license fees paid by city cars are improperly diverted to highway use, and to urge further that intercity or farm-city movements should be charged for the use of city streets, large though the expenditures on the latter must be, is to confuse payments and benefits and to obscure the real issues.¹⁹

Distinction between users of State highways and of county and local roads.—A further distinction, urged in this instance by commercial users of the highways, is that between vehicles using State highways and those using county and local ones. Two-thirds of all highway traffic is said to take place over the State systems. Inasmuch as a third of the mileage of such highways was unsurfaced in 1929 and more than another third only lightly surfaced,²⁰ it appears that there is a still further tendency to concentrate on the more highly surfaced State roads, which are less than a third of the State mileage and little more than 3 per cent of the total highway mileage of the United States.

¹⁸ An estimate that the division is about equal is found of record.

¹⁹ The interdependence of cities and adjacent countryside is of different degree, as may be illustrated on the one hand by New York City, which draws its food supplies mostly from long distances by rail, and, on the other hand, by a small trading center.

²⁰ Page 415.

However, accurate details are lacking and doubtless considerably more commercial operations, particularly trucking, take place on lightly surfaced highways than is commonly believed.²¹ The lower construction cost but higher maintenance costs of such highways make it important to establish the facts, owing to the destructiveness of heavy vehicles on such highways.²²

The contention, however, is that, since commercial vehicles make relatively little use of county and local roads, the payments they make should be credited entirely against the cost of providing State highways.²³ The question here is largely one of policy but certain pertinent considerations may be cited. From the point of view of the ultimate purposes which highways serve, all in essential respects are parts of an interrelated system. Trunk-line highways do not exist for their own traffic alone nor do lateral and branch ones; each type also feeds the other in the same sense that branch and main line railroads do. This basic fact has become increasingly ignored in recent years,²⁴ with the result, as contrary views gain acceptance and as traffic is diverted from railroads, that the public which pays the transportation bill is more and more broken up into segments, some of which gain advantage from the resulting segregation and others of which suffer severely. The tying together of all communities served by a great system of railroads, which relationship, incidentally, benefited local communities further through affording them large tangible railroad assets to tax, is becoming less of a factor in the adjustment of transportation charges.

Distinction between common and contract carriers.—The difference in charges paid by common carriers and so-called contract carriers is very great in many States and, coupled with other advantages enjoyed by contract carriers, makes it difficult for common carriers to compete effectively. A tendency to surrender common-carrier permits is noticeable in such States. The question at hand is largely one of policy: Of whether one or the other form of truck operation should be encouraged and, in fact, of whether privately operated vehicles used for business purposes should be made amenable to the same taxation as vehicles used for hire.

Certain generalizations bearing on whether or not for-hire vehicles pay adequately for the use of highways appear of record. According to one statement, the average payment in registration and license fees and gasoline taxes made by motor vehicles of every description was \$29.40 in 1929, whereas the average interstate motor bus paid \$739.27, or 25.1 times the preceding figure, the average intercity bus \$539.68, or 18.4 times, and the average common-carrier bus, including intracity, \$576.04 or 19.6 times. Moreover, it is urged, though busses make more use of the highways than do other vehicles, they make for a more efficient use of the highways. Specifically, it is said if half the bus traffic moved in private cars, the annual highway vehicle mileage would be almost doubled and the gross tonnage on the highways more than doubled.²⁵ It is urged that this saving more than offsets the added cost

²¹ The Wilson Transportation Company, trucking subsidiary of the Chicago, St. Paul, Minneapolis and Omaha Railroad, reports that 76 per cent of its operations take place on gravel roads.

²² Page 424.

²³ A considerable part of special motor vehicle fees and gasoline taxes now goes to county and local roads. See page 418.

²⁴ As seen also in relatively small amount of feeder service operated by large bus and truck companies.

²⁵ This latter part of the statement loses its significance when it is considered that private cars do not put a critical strain on highways. See page 423. The statement also assumes that this half of bus travel would have moved in private cars, which may or may not be the case.

of the roads due to the presence of the larger vehicles. However, allowing for differences in gross weight of busses and private cars, set at 4.17 to 1, it was stated that the average bus was paying 5.6 times its share and the average intercity bus 5.7 times, provided the average of all vehicles on the highways was paying its share. Using national averages for weights of cars and busses and applying the varying special taxes of each State to such average bus and car, the conclusion was further reached that in each State the bus was paying considerably more than its share if the average vehicle was paying adequately. To demonstrate that the average vehicle was paying adequately, it was developed that the carrying charges of State highways were \$433,836,739 in 1929 while motor-vehicle fees and gasoline taxes contributed \$759,000,000, leaving about \$325,000,000 for application to the cost or carrying charges of county and local roads.

Comment has elsewhere been made on the derivation of the item of carrying charges.²⁶ There is much that is subject to discussion about other features of this analysis. While it contributes to an understanding of the highway tax problem it does not supply the definitive answer required.

Less convincing are estimates relative to truck taxes. To state, as is done on the record, that in 1930 the average passenger car paid \$25.52 in special taxes, the average truck \$53.78, the average privately operated 3-ton truck \$101.27, and the average common-carrier 3-ton truck \$458.78, can lead to no definitive conclusions in the absence of a great amount of essential data and of expressed policy on important points. Among other things, the questions next to be discussed require answer.

QUESTIONS OF FACT—THIRD STAGE—QUESTIONS RELATING TO HEAVY VEHICLES

In the two preceding stages of this discussion it has generally been assumed that all vehicles require the same type of highway and that none put a critical strain on the highways provided. In this final stage of the analysis the question to be considered is whether, assuming equitable taxation in all other respects, certain vehicles make special demands for highway facilities for which they should be specifically assessed. This question is a twofold one: Does the presence of heavy vehicles require a better type of surfacing than would otherwise be necessary, and do such vehicles require extra thickness or width of roads of a given surfacing? These questions are largely of an engineering character and in many essentials are not satisfactorily answered by the data at hand.

It is well known that busses and trucks destroyed many miles of pre-war highways of various surfacings which had not been constructed to withstand such heavy wheel loading. However, such occurrences lie outside the period to which attention is chiefly confined in this analysis.

Weight of vehicle and required type of surfacing.—It is also a matter of common observation, for which there is support of record, that heavy vehicles are particularly destructive of macadam and gravel and other lightly surfaced roads. In 1929 gravel and macadam surfacing constituted 95 per cent of the total surfaced mileage of county and local roads (other than that of only sand-clay or topsoil surfacing), 68 per cent of the surfaced State highway mileage, and nearly 86 per cent of all surfaced mileage.²⁷ The more highly surfaced

²⁶ Page 416. Also, about a third of the taxes are paid by urban busses, a fact possibly entitled to consideration in so far as urban travel is of purely local concern.

²⁷ Page 415.

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mileage in State highways, particularly Portland cement concrete, has, however, increased rapidly in recent years, though the increase in the mileage of bituminous macadam in county and local roads has been practically as great.

The difference in construction costs between macadam surfacing built for the average passenger vehicle and concrete surfacing of the thickness generally prevailing is varyingly estimated at from \$10,000 to \$20,000 per mile, and, while the maintenance cost of macadam roads is greater, a considerable net saving results where such surfacing suffices. It is therefore necessary to determine whether the added cost of higher surfacing is attributable to bus and truck operation or to the demands of the general public for roads adequate and safe for a large volume of high-speed traffic. Both classes of operator profit from the lower cost of operation on well-located and smooth-surfaced highways. Those who emphasize speed and therefore its necessary concomitant, safety, require, in addition to a smooth surface, a small degree of curvature, a limited per cent of grade and other protective features of highway construction. Vehicles are being built to make use of an added demand for better highways. Insofar as this demand for speed, comfort, and safety of passenger travel does not explain the constant increase of surfacing of the highest types, there is a cost which may properly be imputed to those who otherwise use for business purposes vehicles which would destroy a lower grade of surfacing. Such use by heavier vehicles may also require added thickness or strength of macadam roads.²² There must, therefore, be a clear determination of what size vehicle puts a critical strain on each type of lower-grade surfacing and what the relative commercial and private demands on highways are. It is not unlikely that, assuming proper observance of speed laws, a relatively small number of trucks and busses are doing the major part of the damage to present surfacings or creating the greatest demand for better ones.²³ However, the answer now required for disposing of these questions is largely indeterminate in the absence of information as to the factors which explain particular highway projects and the types of vehicle which use each.²⁴

Weight of vehicle and required thickness of pavement.—Treatment of the second major question stated above, what thickness of highway is required to meet the different demands of private car and heavy types of bus and truck, is confined to the cement-concrete type of construction. The results of two sets of experimental tests, one in process of completion and hereinafter referred to as the public roads test, and the other, made some 10 years ago and referred to as the Bates test, are of record.²⁵

²² The subsequent discussion of thickness requirements is confined to cement concrete roads, as data of record relate only to this type. The flexibility of macadam foundations makes them less subject to frost action, a factor of importance in Northern States in selecting types of road. See page 425.

²³ Of the 180,000 trucks examined in the Western States traffic survey 07.0 per cent were 1.5 tons' capacity or less, 17.6 per cent from 2 to 2.5 tons' capacity, and 14.5 per cent of greater size, including 2.6 per cent and 5 tons or over. A survey of 2,909 trucks in common and contract service in 42 States showed that only 11 per cent were 1.5 to 3 tons' capacity, 60 per cent being of from 3.5 to 5 tons' capacity and 29 per cent of over 5 tons' capacity. There is a tendency to use lighter trucks in combination with trailers, giving a larger but better distributed gross weight.

²⁴ See page 420. It is a fact that a considerable part of trucking operations are conducted on highways of the lower types of surfacing, as must of necessity be the case where States have limited mileage of better roads. See page 422.

²⁵ Respectively introduced by the chief of the Bureau of Public Roads, United States Department of Agriculture and the engineer in charge of the Bates tests, the former chief of the Illinois State Highway Department.

There has been considerable change in recent years in the views of engineers as to what, other than overloading, actually causes destruction of highways. Such change is attributable in large part to the substitution of pneumatic for solid tires on freight vehicles. Concrete highways are now said to have an indefinite life, provided they are properly constructed and their strength is not overtaxed, and overtaxing is said not to occur until considerably greater weights are reached than were formerly believed safe. Rubber, in other words, is said to wear out faster than concrete. This conclusion therefore throws the responsibility for minimum thickness of highways on to soil and climatic factors, the first of which may cause road failures by reason of soft spots in substructures and the latter through heaving and cracking.

Using the results of the Bates test, which was performed in Illinois, the former highway engineer of that State testified that 4 inches² is sufficient thickness to cope with soil and weather conditions, whereas the chief of the Bureau of Public Roads, basing his conclusion on varied national conditions, finds that not much less than 6 inches is required. Further study is being given this question by engineers. As more highway mileage is being cleared each year for winter traffic, leaving the surface unprotected from frost attack, this problem is of increasing importance in climates subject to severe frost conditions. It may be accepted, in the absence of convincing evidence to the contrary, that a minimum thickness of about 6 inches is advisable, subject to some revision downward if both soil and climatic conditions are highly favorable and to some increase where either poor subgrades or severe winter conditions are a consideration. In other words, the factor of safety used by designers to cover these phases of highway construction needs to be carefully related to given conditions and not applied as part of a general formula. It is not unlikely that there are many miles of highway designed with too generous a factor of safety for soil and climatic conditions, though of course the weight of loads may also enter in to explain the thicknesses adopted.

The 6-inch minimum thickness assumed for the purpose of this discussion as generally necessary will, according to the public roads tests, take care of all private passenger vehicles and other vehicles up to 3 tons' capacity. How much additional thickness do heavier vehicles require? According to the Bates tests, "the thickness required to support the load varies as the square root of the load." A somewhat smaller rate of increase is believed necessary by the chief of the Bureau of Public Roads. His conclusions are based on theoretical analyses of the strength of materials checked by actual road tests. The difference of views is doubtless attributable in large part to differences in method and to changes in truck design in the 10 years which have elapsed since the Bates test was made. In the latter the same trucks appeared to have been used throughout, increased wheel loadings being obtained by adding to the loads. In the public roads test different trucks were used for each important variation in load, thus approximating actual present conditions more closely through increasing the size of tire in keeping with the increase in size of truck. Also, the use of pneumatic, including balloon tires, has become general since the Bates test was completed.

The public roads tests have made clearer the importance of proper transmission of loads to the road surface. The ability of a pavement to withstand heavy loads is not a function of the gross weight but of the load on each of the

² All thicknesses referred to are at the center of the highway; an additional inch is provided at the edges to prevent cracking. The gradation from one thickness to the other assumes generally the form of a parabolic curve.

rear wheels.²² Thus if a truck has six wheels the weight transmitted through each wheel to the pavement will be less than if it had but four, and if two rear axles are used, placed 46 inches apart, each could be loaded to the maximum for which the concrete is designed without having the stresses overlap. Dual rear wheels are regarded as a necessity for all but the lightest trucks and two rear axles, properly spaced, are regarded as a means of increasing gross loads without overtaxing a given thickness of highway.

In addition to this static load (the load on the wheel of a vehicle standing still) there is the impact load which occurs as a vehicle moves. This load represents the shock on the pavement and the bouncing produced by surface irregularities. Thus for a static wheel load of 9,000 pounds, which is that of a 5-ton truck, the maximum impact load is 12,500 pounds at 30 miles per hour if pneumatic tires are used and 21,000 pounds if solid rubber tires are in use. Speed does not affect the impact load imparted by pneumatic tires within the reasonable limits of 45 miles per hour, but it increases such load greatly where solid tires are used, as shown by the fact that at 20 miles per hour the impact load is 17,400 pounds compared with the above 21,000 pounds at 30 miles per hour. Solid rubber tires are increasingly being removed from the highways.²³

The size of pneumatic-tire equipment is also an important factor to which State laws are giving greater attention than heretofore. The greater the area of contact between tire and road surface the less the strain produced. Thus if an impact load is concentrated at a theoretical single point the surface stress is 833 pounds, whereas if there is an 8-inch contact the stress is 433 pounds.

In keeping with the foregoing findings the Bureau of Public Roads concludes that the following thicknesses of concrete pavement are required for different sizes of vehicles, assuming the use of pneumatic tires (dual except in case of passenger cars), a speed of 30 miles per hour,²⁴ and a soft subgrade.

TABLE V

Class of vehicle	Maximum static rear-wheel load	Maximum impact force	Thickness required	
			Center	Edge
	Pounds	Pounds	Inches	Inches
All private passenger vehicles and trucks to 3 tons' capacity.	5,600	9,200	6	7
5-ton trucks	9,000	12,500	6.5	7.5
7.5-ton trucks	11,000	14,600	7	8

Assuming the exclusion of solid-tire vehicles,²⁵ a 5-ton truck with the usual 8-inch dual tires and operating at speeds not to exceed 45 miles per hour would require about one-half inch or 7.7 per cent more thickness than the minimum which appears to be generally required by soil and climate conditions, though the latter is more than is required by light vehicles.²⁶ To provide for a 7.5-ton

²² It was assumed that 80 per cent of the load was on the rear wheels. Trucks of better design are in use.

²³ Only 3.6 per cent of all trucks produced in 1930 had solid tires, and these were largely for use in cities. The proportion is much higher in the case of older trucks.

²⁴ As stated, increases in speed up to 45 miles per hour have no important effects where pneumatic tires are used.

²⁵ A 5-ton truck with solid tires would require 38.5 per cent more thickness and a 7-ton truck so equipped 42.3 per cent more.

²⁶ This thickness would meet the requirements of most military trucks, though much heavier trucks of great military value are being designed.

truck with dual 10.5-inch tires about 1-inch additional thickness must be provided, or 15.4 per cent more than the stated minimum. No indication was given of the increased cost which increased thickness entails, but presumably the increase would not be proportionate to the increase of thickness.

However, the chief of the Bureau of Public Roads regards 9,000 pounds wheel load as about the maximum for which a highway should be designed. Such a maximum would take care of a 5-ton truck as indicated by Table V. Greater truck loadings can be achieved within this limitation by adding to the number of axles. Actually, however, according to this witness, 9 inches is a very ordinary thickness of highway to-day, representing excess costs of several thousands of dollars per mile. Such thickness was presumably built into the roads in part to make them available for heavy trucks but also because of the earlier prevalence of solid tires, or of differences of engineering judgment as to the thickness required. The fact can not be escaped, however, that, in so far as the findings of the Public Roads tests are conclusive, thousands of miles of excessively costly roads are in existence to-day. Since present highway trucks use preponderantly pneumatic tires and are therefore not responsible for highway costs incurred for trucks having solid tires, it becomes a question of public policy to determine whether to charge any or all of the extra thickness not required by the preponderant number of passenger cars (other than that attributable to soil or climatic conditions) against present truck users.

As for highways constructed in the future, the use of the percentages indicated in the above table may be taken to indicate approximately the costs to which use of heavier vehicles puts the public. There are highway designers, however, who appear not to apply these results in the highways for which they are responsible, since highways of greater thickness are being laid down at the present time. This situation may be attributed to failure to subscribe to the findings of the tests or to the recency of such findings. This lack of agreement can not but be expensive and troublesome to the public and to users of the highways.

The number of vehicles of greater than 5-ton capacity is considerable. As the bearing of extra charges of the magnitude indicated would render use of such trucks practically prohibitive, the better course would be to set a rigid maximum to wheel loading and provide no roads in the future to take care of greater loadings. Enforcement of speed limitations is also indicated as necessary for the protection of the highways.

GENERAL SUMMARY AND CONCLUSIONS

The following statements sum up the results of the foregoing analysis: (1) In 1929 direct charges against owners and users of motor vehicles contributed about 75 per cent of the funds currently provided for State highways, 16 per cent of those for county and local roads, and 48.5 per cent of all such funds; (2) the railroads are being increasingly relieved of contributing to funds used for State highway purposes, but they contribute very substantially to those used for county and local roads; highway operators make relatively small contributions to the latter funds; (3) distinctions between users of the highways for business and for pleasure purposes are at this time of importance mainly as they bear on the planning of future highway projects; (4) distinctions between the contributions of users of city streets and rural highways are not significant; (5) programs based on distinctions between users of State

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highways on the one hand and county and local roads on the other overlook the fundamental interdependence of all highway systems; (6) present distinctions in taxation between common and contract carriers lessen the competitive opportunities of the former group; the distinction in taxation between operations for hire and other operations for business purposes is also of questionable significance; (7) heavy vehicles require more highly surfaced highways than would otherwise be necessary and damage existing highways of low-grade surfacing; however, private passenger vehicles also create demands for highly surfaced roadways; (8) recent tests and experience have shown that required minimum thicknesses of highways are determined largely by soil and climatic conditions and that 6 inches is the minimum most generally required; assuming proper design of vehicles, the exclusion of solid-tire vehicles, and the observance of speed regulations, such minimum thickness will suffice for all private passenger vehicles and trucks up to 3-ton capacity; 5-ton trucks will require about one-half inch greater thickness, and 7.5-ton trucks about 1 inch additional thickness; engineering experience indicates that highways should not be designed for trucks of greater than 5-ton capacity; because of the earlier presence of solid-tired vehicles of less efficient design than those in use to-day and for other reasons, many existing highways greatly exceed these specifications and highways of greater thickness than is now considered necessary are still being constructed; as a practical matter, therefore, there continue to be excessive costs which should be examined for determination of the part thereof which is chargeable against the heavier types of vehicles; only detailed analysis of representative highways would supply the conclusive information required in framing a future taxing program.

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