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BOARD OF TRUSTEES

AMERICAN HIGHWAY POLICY

BY
CHARLES L. DEARING

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DIRECTOR'S PREFACE

This study is the outgrowth of inquiries directed to the Brookings Institution by the Commissioner of Public Roads of the United States Public Roads Administration. As he pointed out, over 2 billion dollars of public money is expended annually in the improvement and maintenance of somewhat more than 3 million miles of public roads in the United States. This cost must be distributed among federal, state, and local groups and must be allocated among taxpayers according to various classifications. Authority over the location, design, and maintenance of these roads must likewise be distributed among various government agencies. Yet the economic and political issues involved have not received from students of economics and government and from public administrators the continuing and intensive attention needed for their solution. As a result, controversies of long standing have recently tended to sharpen—both those among different groups of taxpayers and those arising between highway transportation enterprises and competing forms of transportation, notably the railroads.

As an approach to the solution of these problems, the federal and state governments have, during recent years, spent large sums in state-wide highway planning surveys. An enormous amount of factual information has thus been brought together. In the absence of some agreement as to underlying principles, however, it has not been possible to marshal these data to the solution of the controversial problems of highway financing and administration.

The main purpose of the author of this volume has been to analyze the basic purposes and classify the principal beneficiaries of the several types of public roads.

Utilizing the abundant data of the highway planning surveys and other pertinent material, Mr. Dearing has tried to place the entire matter in proper historical perspective and to view the problems of highway management, not as isolated phenomena, but rather in their practical relation to general transportation policy. He has been alert to temper the theoretical ideal with considerations of administrative feasibility based upon previous field studies which the Institute for Government Research of the Brookings Institution has conducted in some half dozen states and in Montgomery County, Maryland, during recent years. By putting the great mass of country-wide data and personal experience to the test of general principles, he has, we believe, provided a tool which should prove of great value to legislative bodies and highway officials in attacking financial and administrative problems.

On various questions relating to matters of tax policy, the author was assisted by Daniel T. Selko of the Institution's staff.

EDWIN G. NOURSE
Director

Institute of Economics
December 1941

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I wish to make grateful acknowledgment to H. S. Fairbank, United States Public Roads Administration, and J. C. Nelson, Bureau of Agricultural Economics, who read the book in manuscript and offered many valuable suggestions. Responsibility for factual accuracy, interpretation, and conclusions rests, of course, upon the author.

CHARLES L. DEARING

CONTENTS

CHAPTER V

CHAPTER VI

CHAPTER VII

CHAPTER VIII

APPENDIX A

APPENDIX B

APPENDIXES

APPENDIX A

THE GOOD ROADS MOVEMENT

WITH THE COLLABORATION OF ADAH L. LEE

The movement for improved roads which toward the close of the nineteenth century developed to national proportions was in some respects similar to the campaign for internal improvements of which Henry Clay was the most ardent champion. The movement after the Civil War differed from that of the earlier period, however, in that it stressed the necessity for improvement and more efficient administration of existing roads rather than the creation of new ones.

With the rapid development of railroads, interest in wagon roads diminished, and politicians forgot the once aggressive campaign for "internal improvements." In general, the public believed that railroads would largely replace the highway system, and that horses would go out of use almost entirely for transportation purposes.[1] For two decades after the Civil War, Americans accepted with little protest the discomfort and inconvenience of bad roads.

I. DEFECTS IN THE SYSTEM OF ADMINISTRATION AND FINANCE

The fact that the American rural highway resembled a continuous mud hole while European countries were experimenting with improved methods of building and administering roads was attributable to several factors. Among these were the vast expanse of territory, the effort to maintain too many highways, the expense of

[1] Martin Dodge, "Ideas of Clay and Calhoun: A Return to Them is Now Imperative," *League of American Wheelmen Magazine*, Old Series XXXI, New Series I, No. 1, June 1900, pp. 16, 17, 18.

repairing them properly, popular indifference, and a defective system of road laws.[2] The last reason was perhaps the most important factor.

Under the township system of road management, direct supervisory control over the building and repair of roads was placed in the hands of annually elected district overseers. This office had, in many cases, become a sinecure, and the money voted for repairing roads was often wasted.[3] Moreover, the system was unsuited to the development of continuous stretches of improved roads. As one contemporary put it, "Neither of the Napoleons, nor both, could have ever made the roads of France the best in the world with 100 independent road overseers in each division of 100 square miles; that is, a road overseer for every square mile."[4]

Even more inefficient was the medieval poll tax method by which local communities financed their roads. The taxpayers themselves performed the work. Early in the summer the man who had a road tax assessed against him received a warning to work it out. On the designated morning he reported to the pathmaster with his wagon, plow, and scraper, and began to plow a furrow in leisurely fashion along the sides of the road, and occasionally across, where drainage seemed necessary. His periods of rest often were longer than those of plowing. At five o'clock he received credit for one day's work for himself and for his team, plow, scraper, and wagon—five days' work in all. Five or six others re-

[2] Governor Hill's message to the New York Legislature, discussed editorially in the *New-York Daily Tribune*, Jan. 13, 1890.

[3] E. Burrough, *State Aid to Road-Building in New Jersey*, U. S. Department of Agriculture, Office of Road Inquiry, Bulletin No. 9 (1894), p. 7.

[4] Chauncey B. Ripley, in U. S. Department of Agriculture, *Proceedings of Convention of the National League for Good Roads*, Office of Experiment Stations, Bulletin 14 (1893), pp. 73-74.

ceived credit for one or more days' work apiece. A contemporary commented: ". . . one energetic man and a pair of horses could have done more work in half a day than the whole of them." They often left the road in such condition that the first rain rendered it practically impassable.[5] The farmer often selected for road labor boys who were too young to perform a man's work, sent out unbroken steers and colts to be trained at public expense, and used tools and implements that were unfit for use. "Under this system, sitting on the fence smoking clay pipes and swapping stale stories has long been synonymous with 'working out the road tax.' "[6]

Since amateurs handled the business of road-making, highway engineering as a profession was practically nonexistent. In 1868 the Commissioner of Agriculture stated: "Not until the professional engineer shall receive greater encouragement to make common road engineering, in all its details, more a specialty will it be more skillfully executed."[7] Progress in this direction was slow. As late as 1890 no engineers had been trained in the specialized field of highway construction, virtually no engineering schools existed,[8] and almost no technical literature on highway construction had appeared.[9]

With the rapid development of the country, traffic over the highways became heavier, and the need for improved roads became progressively more apparent. The

[5] *New-York Daily Tribune*, Jan. 13, Apr. 20, 1890.

[6] Ripley, *Proceedings of Convention of the National League for Good Roads*, 1893, p. 71.

[7] Henry F. French, "Country Roads and Road Laws," *Report of the Commissioner of Agriculture*, 1868, p. 363.

[8] Nathaniel S. Shaler, "The Common Roads," *Scribner's Magazine*, Vol. VI (1889), p. 478; *American Highways* (1896), Chap. XII.

[9] "Literature on the actual detail of road-making is scarce and fragmentary." C. Hershel and E. P. North, *Road Making and Maintenance* (1890), preface.

steady drifting of population toward the cities during this period increased the demand for transportation of agricultural produce of all kinds.[10] Wagon roads became ever more important to supplement rail and water in the transportation of produce to the centers of population. But many of the roads were actually impassable during the winter months. While urban dwellers, having supplied themselves with telford and macadam roads, were experimenting with elevated railroads, subway lines, and electric cars, the farmers remained isolated from markets and schools by a medieval system of rural transportation.

The agricultural class accepted this situation with equanimity. Preferring to repair the roads themselves rather than pay for efficient road work in higher taxes, they opposed any suggested improvements. A contemporary commented: ". . . the feeling prevails among farmers that their taxes are already greatly in excess of those of other citizens, and that the cost of transforming mud roads into macadam is so great as to be impracticable."[11]

II. SELLING ROAD REFORM

Until the end of the nineteenth century the public was, in general, indifferent to the highway problem, but a few pioneers prepared the ground for a campaign that after 1890 assumed the proportions of a crusade. Soon after the close of the Civil War, Henry F. French, Commissioner of Agriculture, began a general investiga-

[10] *Documents of the Assembly of the State of New York*, Vol. V (1896), Report of the Special Committee on Good Roads, Doc. 26, pp. 18-19.

[11] Lewis M. Haupt, *A Move for Better Roads* (1891), p. 282. Another class that opposed any change in the administration of road work was the local road officials. Letter of William A. Sweet to *Engineering News*, Vol. XXIV (1890), p. 172.

tion of rural highways. By means of a nationally circulated questionnaire, he collected data on the administration, financing, and cost of constructing and maintaining common roads. The Commissioner stated that good roads "were the exception in all the States," and recommended the abolition of the labor tax and the appointment of permanent county engineers who could devote their full time to road work.[12]

Renewed travel abroad after the war drew attention to the inferior character of even the best American rural roads compared with those in Europe, and in several states, officials sought to remedy the situation. In 1869 Governor Claflin recommended that the Massachusetts legislature revise the road laws in order to provide more uniformity in their construction and repair. He urged also that the science of road-building be given a prominent place in the Massachusetts Agricultural College.[13] Concurrently with this discussion of road problems in Massachusetts, Essex County, New Jersey, was providing for the construction of hard-surfaced highways.[14] Mecklenburg County, North Carolina, also pioneered in road improvement. In 1878 the state legislature authorized the levying of a general property tax on all county property, city and rural, to be used for permanent highway improvement. There resulted a fine system of highways which in 1903 was still a model for the country.[15]

[12] He stated, however, that roads in eastern New York and New England had surfaces superior to those elsewhere. "Country Roads and Road Laws," *Report of the Commissioner of Agriculture*, 1868, p. 353. See also French, "Country Roads," the same, 1866, p. 538.

[13] Massachusetts State Board of Agriculture, *Prize Essays on Roads and Roadmaking, 1870* (1870), p. 3.

[14] James Owen, "The Birthplace of American Road Improvement," *Good Roads*, Vol. III (1893), p. 313.

[15] Office of Public Road Inquiries, *Report*, 1903, p. 332.

These were but isolated instances of an awakening interest in highway improvement. Not until 1889 did the general public interest awaken in the common road as part of the national transportation system. It developed then, however, with remarkable suddenness. An observer wrote, "It is doubtful if in any country a social or economic question has ever so swiftly and effectively been brought to the attention of the people."[16]

A. The Principals in the Campaign and Their Motives

The campaign for good roads was energized by a curious combination of groups and motives. The academic profession furnished the theoretical framework; and special groups with monetary interests at stake supplied the driving force and funds necessary to the translation of the promotional scheme into practice.

1. *Academic.* A group of men in academic circles who were interested in improving governmental performance of basic functions was the first to bring the highway problem before the general public. Outstanding among them was Nathaniel S. Shaler, professor of geology at Harvard University. After extensive travel through the rural areas he concluded that the toll road system should be abolished, since a direct charge necessarily interfered with the free movement of goods and people. He recommended the establishment of highway engineering courses in the agricultural and mechanical colleges, the development of the county as an administrative unit for road work, the establishment of state engineers to supervise the construction and maintenance of roads, and the designation of a national highway commissioner in the Department of Agriculture who would "prepare and

[16] *Good Roads*, Vol. III (1893), p. 20; and Haupt, *A Move for Better Roads*, p. 1.

print as public documents accounts of the condition of roadways in this country with essays on the method of their construction."[17]

Lewis M. Haupt, head of the civil engineering department of the University of Pennsylvania, and Jeremiah W. Jenks, professor of political science and English literature at Knox College, Illinois, also made substantial contributions to the development of a theoretical basis for highway administration and finance.[18]

2. *Pecuniary.* The academic profession prepared the way for those whose interest in improved roads was a pecuniary one. It was this second group that waged a vigorous and ultimately successful campaign for better highway construction and administration. Most active in the campaign were the bicycle, the railroad, and, later, the automobile interests.[19]

a. *Bicycle interests.* Bicycle manufacturers were first in the field. Numerous articles on roads appeared in *Manufacturer*, *American Athlete*, and other periodicals devoted to the interests of "wheelmen." The League of American Wheelmen published a series of articles on the construction and maintenance of roads.[20] Colonel Albert A. Pope, of Boston, a leading bicycle manufacturer, was one of the most active supporters of the good roads movement. Addressing a convention of the National Carriage Builders' Association on the value of good roads, he remarked:

[17] *Scribner's Magazine*, Vol. VI, pp. 477, 483.

[18] Haupt, *A Move for Better Roads*; Jenks, "Road Legislation for the American State," *Publications of the American Economic Association*, Vol. IV (1889).

[19] The benefits that each special group could expect to reap from road improvement were spelled out in *Proceedings of the Convention of the National League for Good Roads*, 1892, p. 49.

[20] Haupt, *A Move for Better Roads*, p. 2.

. . . the question of the most particular interest, today, to you and to me, as manufacturers and merchants, in this whole question of good and bad roads is *what is the effect on our business?* . . . It must be clear to any man with the most ordinary business instincts that good roads mean thrift, liberality, and wealth.[21]

b. *Railroad interests.* During 1892 the bicycle interests made a special effort to gain the support of railroads for a good roads campaign. In January 1892 the first number of the League of American Wheelmen's *Good Roads*[22] summarized the railroads' interests in highway transportation. It pointed out that the territory contributing to the carrying trade of the railroad at each country town was extremely limited because of the poor condition of country roads, and that the resulting depressed condition of country town trade reacted upon the railroads' business.[23]

Colonel Pope made a direct bid for railroad support in securing road legislation. He urged every railway corporation to request its officers, agents, and employees to encourage a "right sentiment" in regard to highway improvements. It was also suggested that railroad executives should inform congressmen as to the importance of improved roads, and that they should request newspapers receiving their patronage to devote space to the matter.[24]

[21] *Highway Improvement*, address before the Carriage Builders' National Association, 1889, pp. 9, 12, 13.

[22] The first issue indicated the owners' intention of looking to commercial interests for financial support. "Especially will it ask and expect the support of those citizens whose business and property will receive pecuniary benefit by the improvement of the public roads and streets." Editorial.

[23] P. 40.

[24] *Wagon Roads as Feeders to Railways* (1892), p. 8. This pamphlet includes excerpts from letters received from railroads, and Pope's second, but not his first, letter addressed to them.

Railroad leaders entered the campaign with enthusiasm. For at this period it seemed a truism that the function of highways in the transportation scheme was to serve primarily as feeders to the railroads, and to a lesser extent in the same capacity to water transportation.

c. *Automobile interests.* Within a few years the automobile appeared upon the scene, and the bicycle interests, seeing in manufacturers and owners of horseless carriages potentially powerful allies in the good roads movement, made a bid for their support. In 1899 *Elliott's Magazine*, a League of American Wheelmen publication, remarked that owners of the new vehicles, who were learning much on their own account regarding road surfaces, were in many cases the men to whom bicycle interests had been "obliged to appeal for funds and legislation which must precede highway improvement." The magazine stated also that when the "lawmaker wants good roads for his own private automobile to run over we are still more sure of his vote."[25]

Motorists willingly entered the campaign. As their number increased they demanded more and more insistently that interstate travel be unhampered by legislative restrictions and bad roads. They received the active support of the manufacturers of automobiles, automobile accessories, and supplies, as well as of petroleum refiners. The financial interest of these groups in the good roads movement of course increased in direct proportion to the expansion of automobile use.

Within a few years it became evident that the collective interests of automobile manufacturers and motorists were diverging from those of the railroads. In sponsoring the good roads movement the railroads had assumed that they would continue to dominate the transportation

[25] Vol. XXXI (1899), pp. 47, 98.

field. To them, roads patently meant one thing—a feeder service to the rail system. It is difficult to determine the precise date at which railroad leaders grew uneasy about the potential competition of the automobile interests, but not until 1910 were they sufficiently concerned over demands of automobilists for through roads to launch a counter drive for farm-to-market roads.[26] Only in 1916 did the railroads begin to regard the motor vehicle as a really serious competitor.[27]

d. *Other interested groups.* The vested interests in an efficient highway system grew with the development of the good roads movement. An important feature of this movement was the promotion of a profession of highway engineering. The result was an ever-increasing body of trained men[28] who were eager to apply their technique to highway development.

Progress in the science of road construction and growth in the volume of mileage under improvement brought an increased demand for specialized machinery and equipment. At the same time came a demand for specially prepared road materials to replace the natural rock used in earlier periods.[29] Specialized ma-

[26] See p. 260.

[27] See pp. 81-83. This judgment is based upon editorials and articles in the *Railway Age Gazette*, 1910-16. As late as December 1915 the *Gazette* treated with indifference a Des Moines, Iowa, newspaper article forecasting the importance of the private passenger car (Vol. 59, p. 1180). The first serious article by a railway executive on passenger car competition did not appear in this magazine until December 1916 (Vol. 61, p. 997).

[28] The growth of the American Road Builders illustrates this point. When H. S. Earle (who had been active in promoting good roads in Michigan and who was at the time president of the League of American Wheelmen) sent out an invitation, Dec. 26, 1901, to 200 persons to form an association, only three met with him. At their second annual convention in 1904 they had 1,129 delegates representing 29 states. Organized as the American Road Makers, this group subsequently became the American Road Builders Association.

[29] The early hard-surface highways in New Jersey and Massachusetts were constructed in accordance with the general principles of Telford

terials and special skills went into the building of the modern bridges and culverts that replaced simple wooden structures. By 1911 the Office of Public Roads had begun the study of road maintenance as a definite phase of highway work. State highway officials, as administrative agencies especially concerned with state financing and supervision of highways, formed in 1910 a preliminary organization, and in 1914 the American Association of State Highway Officials. Every year, therefore, from the beginning of the good roads movement until the passage of the act of 1916 added hundreds to the group who had pecuniary interests in the promotion of good highways.

B. The Techniques of the Campaign

Unlike great national issues such as slavery or prohibition, the movement for better roads did not arouse

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and Macadam. These roads were crushed stone with rock dust binders. R. L. Morrison, "History of the Construction of Broken Stone Roads," *Canadian Engineer*, Vol. 26 (1914), pp. 513-16.

Crude oil was tried as a binder on dirt roads at least as early as 1898 (*Engineering News*, Vol. 40 (1898), p. 383). The Office of Public Roads Inquiry began to experiment with coal tar and crude oil in 1905 and carried on extensive research and experimentation with bituminous binders in the following years. The need for repairing some of the telford and macadam paving laid in the 1890's and the dust problem created by motor traffic stimulated this effort. See Office of Road Inquiry, *Circular No. 47* (1906) and *Bulletin No. 34* (1908); and "Bituminous Road Materials," *Proceedings of the Second Annual Good Roads Convention* (American Automobile Association), 1909, p. 81, for account of early experiments with these materials.

The Office of Public Roads also experimented during the same period with sugar refinery waste, sulphite liquors from pulp mills, calcium chloride, and light oils as binders. U. S. Department of Agriculture, Office of Public Roads, *Annual Report*, 1909, p. 4.

The first mile of concrete rural highway was laid in 1908 near Detroit (Lincoln Highway Association, *The Lincoln Highway* (1935), p. 5) and prizes were offered in 1909 for papers on concrete roadways by the Association of Cement Manufacturers. First Congress of American Road Building, *Transactions*, 1909, p. 47.

deep emotions or create bitter antagonisms, and unlike the national bank issue the good roads movement created no immediate economic issues of a highly controversial nature. An improved highway system was a common good about which there could be no quarrel. Banker, merchant, politician, railroad, newspaper—all could agree, without sacrifice of principle, to the desirability of improving the rural highways.

Moreover, any improvement in a stretch of road was a tangible physical accomplishment plain for all to see. Perhaps the improved section extended only half a mile, poor material might have been used, inefficient machinery employed. But to the traveler, the local newspaper, or the good roads advocate, the improvement was a net gain and fresh evidence of the importance of good roads. Then, as now, traffic gravitated toward the improved route. And what one community had, others wanted.

Equally important, the improved road was a "free" road. With virtually no information at hand on traffic volume and with the difficulty of determining true economic cost in any case, millions of highway users could endorse better roads without much concern as to the financial burden such improvements would mean to them individually.

The most important methods used for selling good roads to the country were the distribution of good roads literature, and the organization of good roads conventions. Other devices utilized by good road enthusiasts were the offering of prizes for essays on road construction and maintenance,[30] the circulation of photographs

[30] During 1890 two groups—a Committee on Better Roads and the *Engineering Record*—offered prizes for essays on road construction and maintenance. William H. Rhawn, president of the American Bankers Association, initiated the first of these. Haupt, *A Move for Better Roads*, Introduction.

showing poor roads and contrasting pictures of improved ones,[31] the formation of good roads associations,[32] the construction of model highways,[33] and the operation of "good roads trains."[34]

[31] The state commission appointed to report on Massachusetts highways used this method. In 1891 the New York and Connecticut divisions of the League of American Wheelmen offered prizes for "the best collection of photographs showing the need of improved roads." (Statement of Haupt in the *Engineering Magazine*, Vol. I (1891), p. 337.) The National Highway Association distributed in 1912 and 1913 an elaborately printed volume with illustrations of poor and improved roads.

[32] These increased in number as the campaign developed. In 1890 a Good Roads Improvement Association became active in New York under the leadership of William A. Sweet of Syracuse, New York. Mr. Sweet put down 600 feet of Belgian block paving in Syracuse at his own expense in order to demonstrate good roads to his fellow citizens. (*Engineering News*, Vol. XXIV (1890), p. 172.) Similar associations sprang up in other states, including Pa., Mass., R.I., Ill., Tenn., and Ga. The same, Vol. XXV (1891), p. 307.

[33] The Office of Public Roads constructed sample sections of improved roads throughout the country as a demonstration of engineering technique, often with the additional purpose of stimulating interest in the use of local materials, slag, chert, or gravel for road improvement. Office of Public Road Inquiry, *Annual Report*, 1898, p. 160.

[34] Between 1900 and 1905 several model roads were built cooperatively in connection with these good roads trains. The agricultural colleges and experiment stations furnished the materials and labor; the manufacturers donated the machinery and equipment; the railroads provided free transportation for the machinery as well as for representatives and experts of the Office of Public Roads. The first good roads train furnished by the Illinois Central Railroad operated from April to August, 1901, in the Mississippi Valley between Chicago and New Orleans. (Office of Public Roads Inquiry, *Annual Report*, 1901, p. 243.) In 1901 the Southern Railway Company sent out a good roads train for a five-month tour through Va., N.C., S.C., Tenn., Ala., and Ga. It covered 4,037 miles, and at 18 places its crew built object lesson roads while its experts held conventions. (*Yearbook of the Department of Agriculture*, 1902, p. 118, and *Annual Report* of the Office of Public Road Inquiries, 1902, p. 310.) Other trains operated in 1901 and 1902, and in 1905 the Missouri, Kansas and Topeka Railway, the Chicago and Northwestern, and the Union Pacific operated good roads trains. (*Yearbook of the U. S. Department of Agriculture*, 1902, p. 118; *Annual Report* of the Office of Public Roads Inquiry, 1902, p. 310; 1903, p. 339. For material regarding good roads trains operating in 1909-11 see *Good Roads Party*, 1909; *Journal of the Engineers Society of Pennsylvania*, March 1911, p. 95; American Highway Association, *Good Roads Yearbook*, 1912, p. 15.) Wherever a good roads train

1. *Distribution of good roads literature.* The bicycle interests pioneered in the distribution of literature on road improvement. In 1890 the League of American Wheelmen issued three pamphlets on highways[35] and in September 1891 distributed "The Gospel of Good Roads: A Letter to the American Farmer," by I. B. Potter.[36] Its new monthly magazine, *Good Roads*, did much to collect and disseminate information for the campaign.

Subsequently the Office of Public Roads Inquiry,[37] the bicycle interests, and the National Good Roads Association were all active.[38] In 1908 the National Grange campaigned for state and federal aid. From 1910 to 1916 the American Highway Association, an organization of the railroad interests, and the National Highway Association, representing the motor vehicle group, endeavored through the printed page to give direction to federal aid legislation.

2. *Good roads conventions.* Between 1890 and 1916 thousands of conventions met to discuss road improvement. These varied from small gatherings of local groups to national and international conventions.[39] We

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stopped for construction of an object lesson road, the officials aboard staged a "convention," and sought to organize local and state good roads associations. *Congressional Record*, Vol. 48, Pt. 1, 62 Cong. 2 sess., p. 919.

[35] Reprinted in *Engineering Magazine*, Vol. I (1891): E. P. North. "Highways and National Prosperity," pp. 47-56; Haupt, "The Importance of Good Wagon Roads," pp. 332-37; Isaac B. Potter, "Common Roads of Europe and America," pp. 613-26.

[36] Published in *Good Roads*, Vol. I (1892).

[37] Provided for by Congress in 1893. This office collected and disseminated information that would develop public interest in better roads.

[38] The movement had the full support of the press. Writing Aug. 31, 1898, the Director of the Office of Public Roads Inquiry stated, "The press of the country seems to have become thoroughly aroused in behalf of the road movement." *Report*, 1898, p. 160.

[39] Most of them left no written record of their proceedings.

shall mention here only the most important of these gatherings.

In October 1892 the first national good roads convention met at Chicago concurrently with the opening of the World Columbian Exposition. Colonel Pope and General Roy Stone, a New York civil engineer, led in promoting the gathering.[40] The call for this convention was issued by an impressive group, including C. F. Manderson, president of the United States Senate. The gathering was designed to encourage the continuation of efforts to provide an exhibit of road materials at the Columbian exposition; endorsement of General Stone's National Highway Commission bill then pending in the House of Representatives; and the perfection of a national good roads organization with local units which would be "planted, if possible, in all the School Districts of the country."[41]

The delegates provided for a second convention to be held in Washington in January 1893 concurrently with the meeting of the National Board of Trade. Its purpose was the discussion of national legislation and the means of obtaining uniformity in state laws.[42]

As a result of an interstate good roads convention held in St. Louis in 1898, the National Good Roads Association was organized in November 1900. Representatives of 38 states participated in the organized proceedings. For more than ten years this society agitated aggressively for good roads.[43]

[40] *Good Roads*, Vol. I (1892), p. 46; National League for Good Roads, *Proceedings*, 1892, p. 48.

[41] The same, p. 49.

[42] The same, 1893, p. 12.

[43] Its extensive work as publicity agent is evident from the following statement: "During the last 20 years the State, interstate and national good-roads associations have held over 2,000 county, State, national, and international roads conventions. We have issued and distributed vast

In 1908, 1909, and 1910 the National Grange and the American Automobile Association sponsored three national good roads conventions. In 1912 and 1913 the A.A.A. alone sponsored two federal aid conventions. From 1910 to 1914 the American Highway Association sponsored four annual congresses. Organizations such as the American Road Builders Association and the engineering societies, for example, devoted sessions of their annual meetings to discussion of many phases of the good roads movement.

III. DIVERGENT OBJECTIVES AND ARGUMENTS

At the beginning of the campaign for good roads there was little agreement concerning the physical character of the roads to be provided. Some leaders talked as though the objective were telford or macadam surfacing for the entire two million or more miles of rural roads, while others apparently had nothing more in mind than the better grading of dirt roads. As a matter of fact, many leaders were so preoccupied with praising the value of "better" roads that they made little effort to define their objectives. It seemed necessary to convince the public first of the benefits to be derived from good highways; for a time, therefore, they discussed only incidentally the methods by which that system could be obtained.

Writers and speakers described all sorts of gains that would result from better roads. For example, the chief of the Forestry Division, United States Department of Agriculture, stated at an early good roads convention that only better roads would render possible the economical management of national forests. Sometimes

quantities of literature on the subject. The public press has always given us unqualified support. It has printed thousands of pages, ever educating communities." *Congressional Record*, Vol. 48, Pt. 1, p. 919.

enthusiasts contended that better roads would reduce the cost of living for the urban population.

A. Persuading the Farmers

Most frequently, however, leaders directed their arguments to the farmer, who for the most part opposed improved highways because of their cost. General Stone, director of the Office of Road Inquiry, stated that the chief obstacle to road improvements was the "negative or hostile attitude of the rural population towards all effective legislation in this direction."[44] In the effort to overcome this hostile attitude the campaign attempted to persuade the farmer (1) that good roads would result in no great increase in taxes; (2) that they would reduce transportation costs; (3) that they would increase the value of farm land; and (4) that they were necessary to the maintenance of desirable levels of rural cultural life.

1. *No great increase in taxes.* Turning their attention to the most persistent opponents of the movement, writers assured farmers that the greater part of increased taxes would fall upon city dwellers. In an article in *Good Roads*, William P. Richardson's special appeal to the farmer was in terms of shifting the burden of better highways to the cities. He stated that the bill he favored would "give to the farmer a gold dollar's worth of good roads for ten cents, from the fact that the farming lands of the state" paid "only about ten per cent of the state taxes."[45] One of the main objectives of the New York Good Roads Improvement Association was to win farm support for a pending road bill by convincing agri-

[44] *Engineering News*, Vol. XXXIX (1898), p. 326.

[45] "The State and the Farmer," *Good Roads*, Vol. III (1893), pp. 84-87.

culturalists that a state appropriation would be met largely out of nonagrarian taxes.[46]

2. *Reduced transportation costs.* Editorials and pamphlets repeatedly directed the attention of farmers to the money-making potentialities of improved highways. "The amount of money lost to farmers because they cannot readily get to market," stated the *New-York Daily Tribune*, "is annually greatly in excess of what it would cost to keep the roads in good repair."[47] Potter's "Gospel of Good Roads" emphasized the direct relationship between good roads and agricultural prosperity. Drawing on European practice, it appealed to farmers to endorse federal aid.[48]

Soon after the appearance of this article John M. Stahl, secretary of the National Farmers' Congress and editor of the *Farmer's Call*, sought to demonstrate to farmers that better roads would bring them substantial financial gains. He endeavored by the use of data, including the use of ton-mile rates on railway and waterborne tonnage, and various estimates and computations relating to wagon haulage, to arrive at comparative costs for rail, water, and wagon transportation; to estimate the aggregate tonnage and ton mileage of freight mov-

[46] Letter of William A. Sweet to *Engineering News*, Vol. XXIV (1890), p. 172. This association sought data on foreign highway development in its effort to demonstrate the value of good roads to the farmer. In November 1890, it requested the Department of State to have its consuls gather material on "the practical results brought about by the use of improved roads and their value to farmers as compared with ordinary dirt roads."

[47] Aug. 12, 1890.

[48] The pamphlet pointed out that European governments ". . . instead of rolling up and hoarding a ridiculous surplus, spend large sums in the building and repairing of the country roads. The result is that in Europe the farmers drive 20 to 30 miles from home to market with immense loads, in all kinds of weather, at all seasons of the year, and return home the same day. The European horse hauls twice as much as an American horse, simply because the roads are much better." *Good Roads*, Vol. I (1892), pp. 16, 17, 21.

ing by wagon; and to compute the potential savings to the country to be gained from road improvement.[49] Stahl estimated that this annual saving would be $512,000,000. He pointed out that farmers would gain further from better roads by their opportunity to place butter, berries, and perishable vegetables on the market more quickly.[50]

About 1895, the Office of Road Inquiry also endeavored to compute wagon transportation costs for the entire country. It sent out a questionnaire requesting 10,000 farmers throughout the country to supply information on "average length of haul, in miles, from farms to market or shipping points, the average weight of load hauled, and . . . the average cost per ton for the whole length of haul."[51] On the basis of these data the Office arrived at a total tonnage of products hauled over the public roads of 313,349,227 and, using the average cost of $3.02, computed the "annual cost of hauling on the public roads" at $946,414,665. It stated in a report of April 1896, ". . . all things being considered, nearly, if not quite, two-thirds of this vast expense

[49] In 1892 Stahl presented his figures before the Illinois Highway Improvement Association and the National Farmers' Congress. They also appeared in *Current Topics* and *Good Roads*. Only two of Stahl's estimates are available. Both contain considerable statistical data but are so lacking in precision of statement that it is impossible to reproduce the calculations by which he derived his estimates.

[50] *Good Roads*, Vol. I (1892), p. 336. Others also used statistics in an effort to win farm support. See *Engineering News*, Vol. XXV (1891), p. 140; Jenks, *Publications of the American Economic Association*, Vol. IV (1889), pp. 12 ff.; Haupt, *A Move for Better Roads*.

[51] The Office arrived at the following averages for the United States: average weight of load, 2,002 pounds; average wagon transportation cost per ton mile, 25 cents; average total cost per ton for the whole length of haul, $3.02.

The Office estimated the total weight of farm products to be 219,824,227 tons; the Division of Forestry estimated the volume of forest products hauled over the public roads at 93,525,000 tons. Office of Road Inquiry, *Circular No. 19* (1896).

may be saved by road improvement, and this at a total cost not exceeding the losses of three or, at the most, four years by bad roads."[52]

Although these estimates made by Stahl and the Office of Road Inquiry did not escape challenge, they formed the basis of arguments as to the value of improved roads for many years.[53]

3. *Increase in value of farm lands.* Throughout the good roads movement proponents of the campaign spoke in glowing terms of the increase in land values that would result from better highways. In 1889 Professor Jenks stated: "If the road to the town is a good one, it is hardly extravagant to say that two-thirds of the good farms in the Mississippi Valley, of which the present value is from forty to fifty dollars an acre, would be increased in value to the extent of ten dollars an acre, if good roads were made by them."[54]

The virtual boom in New Jersey real estate which accompanied the development of paved highways in that state furnished perfect ammunition for the good roads campaign, and leaders of the movement made the most of it.

At the International Good Roads Congress of 1901, General Stone said: "The general advance in value of

[52] *Circular No. 19*, p. 2. Revised and elaborated estimates were subsequently made by the Office of Road Inquiry. See *Circular No. 23* (1896).

[53] When the Joint Committee on Federal Aid made its report in 1915 it concluded that "by a reasonable and practical improvement, with material less expensive on an average than macadam, a saving can be made of at least 8 cents per ton-mile" and that this would amount to an annual saving in highway costs of $504,000,000. *Federal Aid to Good Roads*, Report of Joint Committee on Federal Aid in the Construction of Post Roads, H. Doc. 1510, 63 Cong. 3 sess., p. 16.

[54] *Publications of the American Economic Association*, Vol. IV, p. 159. Stahl also argued that good roads would increase land values. *Good Roads*, Vol. 2 (1892), p. 336.

the property along the line [a proposed object lesson road] would enhance the national wealth by hundreds of millions taxable by the States."[55] In 1912 and 1913 the National Highway Association distributed literature in which it claimed that 2 million miles of improved highways would increase land values 10 billion dollars, a gain of approximately one-third over prevailing values.[56] The Joint Committee on Good Roads, while refraining from making any estimates in dollars and cents, concluded that good roads would "materially raise the value of farm property."[57] During the legislative debate of 1916 a member of Congress argued that the average percentage increase in the value of farms contiguous or close to good roads was from 75 to 100 per cent.[58]

4. *Cultural value of good roads to rural communities.* Another argument used to attract farmers into the movement was the one that emphasized the importance of good roads for the maintenance of rural social life and for education. At hearings in 1904 on the Brownlow and Latimer federal aid bills it was maintained that when the season of "bottomless roads" arrived, attendance at rural schools became small and irregular. The consolidation of small and unsatisfactory rural schools with large, centrally located ones was feasible only where the roads were uniformly good. Poor roads, therefore, were a great handicap to educational progress.[59] In 1908 both

[55] U. S. Department of Agriculture, *Proceedings of the International Good Roads Congress*, 1901, Public Road Inquiries, Bulletin No. 21, p. 55.

[56] *National Highways*, p. 6.

[57] H. Doc. 1510, 63 Cong. 3 sess., p. 18.

[58] Representative Kincheloe, Kentucky, *Congressional Record*, Vol. 53, Pt. 2, 64 Cong. 1 sess., p. 1367. Representatives Alman of Alabama and Howard of Georgia made similar statements. The same, pp. 1374, 1397.

[59] *Roads and Road Building*, Hearing before the Senate Committee on Agriculture and Forestry, 58 Cong. 2 sess., p. 77. Also issued as S. Doc. 204.

Senator John H. Bankhead and the Joint Committee on Federal Aid made similar statements.[60] In 1916 Senator William H. Thompson stated in the Senate that "the success of the consolidated schools depends almost entirely upon the condition of the public roads."[61]

On one point then, the campaign's leaders could agree: that the farmers would benefit in several important ways from an improved highway system. In order to convince that reluctant group of the direction in which its interests lay, writers and speakers turned upon it the full force of their propaganda. Although appeals to the farmers predominated particularly during the campaign's early years, these arguments were an important factor in the movement until it culminated in the 1916 federal aid act. The agricultural class finally allowed itself to be persuaded, and in 1907 the National Grange entered the good roads movement.[62]

B. Methods Proposed to Attain Objectives

Two decades before the awakening of general interest in good roads the academic writers on American highways realized that some centralized control was essential to the development of a system of modern highways built in accordance with the most progressive engineering ideas. As early as 1870 New England students of highway problems were recommending state supervision. About 1882 a movement for "national co-

[60] *Congressional Record*, Vol. 42, Pt. 6, 60 Cong. 1 sess., pp. 5152, 5157.

[61] ". . . it has been demonstrated that the falling off in school attendance in bad road sections is as high as 18 out of each 100 pupils enrolled, and that in States with improved roads the average daily attendance is 78 per cent while in the States with unimproved roads it is only 59 per cent." *Congressional Record*, Vol. 53, Pt. 8, 64 Cong. 1 sess., p. 7512.

[62] See p. 255.

operation in road building" developed,[63] and by 1885 the management of principal highways by state highway boards had become a matter of general discussion.[64] In 1885 the Pennsylvania legislature considered a proposal for state aid as a means of gaining local co-operation for road improvement.[65]

1. *Early arguments for state and federal aid.* During the movement's early years a few urged federal aid. In 1889, Colonel Pope sought to place responsibility for highway development in the hands of the federal government.[66] In 1890 the winners of the first and third places in a national essay contest recommended national control.[67] By 1892 at least two state organizations, the Missouri Good Roads Convention and the Rhode Island Republican Convention, went on record in favor of national aid.[68] Stahl, fearing that such methods might work against agricultural interests, believed the national government might assist local authorities in obtaining funds, as was the case in England; but he opposed national or state roads as "dangerous and vicious expedients."[69]

[63] Roy Stone, *Proceedings of First Annual Meeting of the Missouri State Roads Improvement Association and Roads Improvement Convention*, 1893, p. 22.

[64] Shaler, *American Highways*, p. 90.

[65] J. L. Ringwalt, *Development of Transportation Systems in the United States* (1888), p. 39.

[66] "Highway Improvement," address before the Carriage Builders' National Association, 1889, p. 11. He recommended a commissioner of highways in the Department of Agriculture, and state highway commissioners.

[67] Engineering Record, *Road Construction and Maintenance, Prize Essays* (1892).

[68] National League for Good Roads, *Proceedings of the Convention*, 1892.

[69] "We have become too prone to appeal to distant agencies while neglecting the instruments at hand. We should not lose sight of the fact that the more we can localize measures and undertakings, the more surely can we locate responsibility." *Report*, Twelfth Annual Session of the National Farmers Congress, 1892, p. 35.

At the two national good roads conventions held in 1892 and 1893 the delegates discussed federal aid at some length. At the Chicago convention General Stone favored extension of federal credit to state and local government units, and justified federal aid on the ground that it was a traditional national function, and on the needs of the rural mail service and national defense.[70]

Events soon demonstrated that discussions of federal aid and the form it should take were premature. The Department of Agriculture declined to sponsor any form of federal aid for highway development. When it became clear that Congress would not pass General Stone's bill for an independent national highway commission, the good roads convention of 1893 requested a federal appropriation to be administered by the Department of Agriculture. And with the creation of the federal Office of Road Inquiry in 1893, the good roads movement concentrated its efforts upon the promotion of state aid. Under the leadership of General Stone, the Office of Road Inquiry pioneered in collecting data on state road legislation,[71] and sent out speakers familiar with accomplishments of the more progressive states to address road conventions and to assist state legislative committees in drafting road laws.

2. *Development of state aid.* In the meantime the states were taking up the problem. In 1889 several gov-

[70] National League for Good Roads, *Proceedings of the Convention*, 1892, pp. 6-15.

[71] From time to time the Office published data showing the progress of state road legislation. See *State Laws Relating to the Management of Roads*, Bulletin No. 1, covering laws enacted 1888-93; "Progress of Road Legislation and Road Improvement in the Different States," in Department of Agriculture *Yearbook*, 1905, pp. 624-27, and a similar report in the *Yearbook* for 1910, pp. 265, 297; also articles printed by the Office at various times dealing with individual states.

ernors made references to the road problem in their annual messages; and by 1891 numerous proposals were current for effecting a general revision of rural highway financing and management.[72] New Jersey took the lead in 1891 by passing the first state aid law. Massachusetts followed in 1894, Connecticut in 1895, and New York in 1898.

a. *New Jersey.* In New Jersey the success of the Essex County hard-surfaced roads offered a direct challenge to Union County to improve her highways.[73] Moreover, many were becoming cognizant of the fact that the overseer system was not only inefficient but unsuited to the development of continuous stretches of improved highways. Agitation of the matter led to the passage in 1889 of an optional county bonding law which provided county aid to the minor municipal divisions.[74] Union County soon could boast paved highways, and, more important to the good roads movement, a real estate boom developed.[75]

The immediate success of the paved highways laid down in the progressive counties, the dissatisfaction with local road administration, the successful operation of a county aid law, and the general discussions of state aid which were current in several states made the achievement of state aid a relatively easy matter.[76] When the

[72] Pope, address before the Carriage Builders' National Association, *Proceedings*, 1889, pp. 10-12. See also State Board of Agriculture of New Jersey, *Eighteenth Annual Report*, 1890-91, pp. 37-38.

[73] Charles C. McBride, editor of the *Elizabeth Daily Journal*, "The Famous Roads of Union County," *Good Roads*, Vol. 3 (1893), p. 295.

[74] The same, p. 287. The bill became Laws of New Jersey, Session of 1889, c. 41, approved March 19.

[75] *Good Roads*, Vol. 3 (1893), pp. 286-97. Enthusiasts overlooked the fact that conditions were ripe in 1890 for considerable suburban development in northeastern New Jersey.

[76] New Jersey State Board of Agriculture, *Nineteenth Annual Report*, p. 567.

legislature passed the measure in 1891 it justified the step on the grounds of the general utility of highways.[77]

b. *Massachusetts.* State aid in Massachusetts resulted primarily from agitation of the industrial groups, who realized that the common roads were no longer limited to local travel but provided important transportation facilities for the state as a whole.[78] They aroused popular interest in improved roads—an interest which the legislature was finally induced to recognize in 1894 with the enactment of a state aid law. This act provided for the laying out, grading, and completing by the state of roads accepted by the highway commission as state highways, "three fourths of the expense to be paid by the State and the remaining one fourth by the county in which the road lay."[79]

[77] Preamble to Acts of New Jersey, General Public Laws, c. 201, approved Apr. 14, 1891.

In addition to the two laws cited above, the legislature passed other road laws between 1888 and 1892. The text of these laws will be found in New Jersey State Board of Agriculture, *New Jersey Road Laws*, 1892.

An abstract of the same as given in Office of Road Inquiry, *State Laws Relating to the Management of Roads*, is as follows:

"1. The roads of a township are placed under the management of the township committee, and money may be raised by township bonds for grading, macadamizing, and improving the same; bonds to be authorized by vote of the annual town meeting.

"2. The board of chosen freeholders of any county may designate certain roads as county roads and improve the same by the issue of county bonds.

"3. The state shall pay one-third of all cost of road improvement so authorized by the chosen freeholders, within the limit, at present, of $75,000 per annum.

"4. Whenever the owners of two-thirds of the lands fronting on any public road will undertake to pay one-tenth of the cost of improving such road, it shall be the duty of the board of chosen freeholders to cause such improvements to be made.

"5. The office of overseer of highways is abolished.

"6. All road taxes are to be paid in money."

[78] Massachusetts Highway Commission, House Doc. 45, 1894, p. 3.

[79] As summarized in the *Journal of the Massachusetts Highway Association*, Vol. I (1896-97), p. 4. See also Shaler, *American Highways*. Shaler was a member of the state highway commission.

c. *New York.* Agitation for reform of rural highway administration in New York began in 1890 with the organization of a state good roads association and the introduction of State Senator Richardson's bill providing for a state highway system.[80] The legislature, however, rejected this proposal for a highly centralized form of control and in 1893 accepted Governor R. P. Flower's compromise plan,[81] in the form of a county option law.[82]

Two years later the legislature, acceding to popular pressure, appointed a special committee on good roads which visited New Jersey, Massachusetts, and Connecticut, where state aid laws were in operation.[83] From the perspective thus gained the special committee presented to the legislature in 1896 a comprehensive picture of the function of New York highways with recommendation for state aid.[84] Two years later, following widespread discussion at farmers' meetings, intensive campaigning on the part of the League of American Wheelmen, and the building of object lesson roads, the legislature passed the Higbie-Armstrong and Fuller laws.[85]

[80] Governor Hill's description of the plan, *Documents of the Assembly of the State of New York*, Vol. V (1896), Doc. 26, p. 8.

[81] Annual Message to Legislature, Jan. 3, 1893, in C. Z. Lincoln, ed., *State of New York, Messages from the Governors* (1909), Vol. IX, p. 198; "Road Improvement in New York," *Good Roads*, Vol. 3 (1893), p. 65. The Governor also opposed national participation in highway development. *Good Roads*, p. 64.

[82] *Laws of New York 1893*, Vol. I, c. 333. An official résumé of the law may be found in a note on "Highway Improvement" in Lincoln, *State of New York, Messages from the Governors*, Vol. VIII, p. 1042.

[83] *Documents of the Assembly of the State of New York*, Vol. V (1896), Doc. 26, p. 14.

[84] The same, pp. 18-21.

[85] The Higbie-Armstrong Act (Laws of New York, 1898, Vol. I, c. 115) authorized state aid to an amount equal to 50 per cent of the expense of construction of county roads ordered by a board of supervisors. Thirty-five per cent of the expense was to be paid by the county and 15 per cent by owners of property fronting on the improved road if they had petitioned for it. If not, the 15 per cent was to be assessed on the town or towns in which the road was situated.

The Fuller Act (the same, c. 351) provided for state aid to towns

Other states rapidly followed the lead of these pioneers. By 1904 thirteen states had some form of state aid,[86] and by 1917 all 48 states were supplying aids of various types to their local subdivisions.[87]

In each state numerous factors combined to bring about state aid laws. But the most important factors in the move for road reform undoubtedly were the universal dissatisfaction with the poll tax and the general recognition of the fact that the self-contained road district representing the township area had outlived its usefulness. It obviously was not feasible to provide technical training in highway engineering for an elective road supervisor, nor was it practical to give full-time employment to an engineer in so small a unit.

Several other circumstances, some of a more fortuitous character, aided the movement. Massachusetts was sufficiently industrialized for her trade interests to profit from inter-city and inter-state roads. Consequently, good roads proponents found support for their argument that highways served all interests of the state and therefore were a proper subject for financing out of the general tax fund. And, the circumstance that population density in northern New Jersey and parts of New England was such as to call for suburban development and a more intensive agriculture enabled sponsors of good roads to claim a direct causal relationship between the development of highways and increases in land values. Moreover, these increases in land values swept aside any need for considering whether the reduction in wagon

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maintaining roads under the money system. Lincoln, *State of New York, Messages from the Governors*, Vol. VIII, p. 1042.

[86] F. G. Young, "Tendencies in Recent American Road Legislation," *University of Oregon Bulletin*, Vol. 2 (1905), p. 16.

[87] U. S. Department of Agriculture, *Agriculture Yearbook*, 1924, p. 98.

transportation costs had been purchased at too high an expenditure in tax outlays.

It is also worth noting that the advocates of federal aid found it essential to espouse state aid and consequently centralized state supervision as a necessary condition to the attainment of their federal aid objective.

3. *Renewed agitation for federal aid.* Early in the present century a new and more vigorous movement for federal aid began under the leadership of the bicycle interests and Martin Dodge, director of the Office of Public Road Inquiries.

In March 1902, Representative Otey of Virginia introduced in Congress a bill providing $100,000,000 for the construction of federal highways, but the investment contemplated was too extensive to receive serious attention.[88] In December 1902 Representative Brownlow of Tennessee proposed the creation of a Bureau of Public Roads and the appropriation of a more modest sum, $20,000,000, to aid the states in the construction of roads.[89] Following the introduction of these federal aid bills in 1902 the demand for federal funds to help improve the common roads became a major objective of the good roads movement.[90]

Members of the Fifty-Ninth Congress introduced during its first session (March 4, 1905, to June 30, 1906) more than twenty bills, resolutions, and memorials providing for the construction of highways, the appropriation of funds, the creation of a bureau, distribution of the Treasury surplus, highway development, etc.

[88] H. R. 12650, 57 Cong. 1 sess., introduced to Committee on Agriculture by Mr. Otey, Mar. 17, 1902.

[89] This bill was drawn by Director Dodge of the Office of Public Road Inquiries, according to his statement made later. First Annual Federal Good Roads Convention, *Proceedings*, 1912, p. 119.

[90] Young, *University of Oregon Bulletin*, Vol. 2.

In succeeding Congresses similar proposals appeared. In addition to bills for general projects, many proposals were made for specific military, post, and national forest roads. Some provided for utilization of army officers in the construction of roads.

During the extended debates which ensued, there was no general controversy over the desirability of some type of federal participation in highway provision, the opposition that did develop being sectional in character, or poorly organized.[91]

Without exception the platforms of political parties contained endorsements of some form of federal aid.[92] And leading statesmen of the period called attention to the importance of good roads as an instrument for advancing the general national welfare.[93] All advocates of good roads—academic writers, statesmen, and special interest groups alike—classified the provision of road facilities as one of the essential functions of government.

Nor did any important controversy arise over the question of constitutionality of federal participation in road development. From the very beginning of the good roads movement leaders justified federal aid on the grounds of developing the mail service and promoting national defense. General Stone stated in 1893:

[91] Representatives of the northeastern states, which had spent millions of dollars between 1890 and 1916 creating a relatively extensive mileage of hard-surfaced highways, contended that use of the general tax fund to build roads in other states was unfair to them. The other principal arguments offered in opposition to the 1916 bill were that there was no money in the Treasury; that the nation should concentrate on national defense plans; that the measure was pork-barrel and analogous to river and harbor bills; that federal administration of the fund would prove impracticable; that federal aid for local road improvements would discourage state-aid programs; and that it was unconstitutional.

[92] See K. H. Porter, *National Party Platforms* (1924); *Congressional Record*, Vol. 53, Pt. 15, Appendix (1916), pp. 1988-2018.

[93] See, for example: address of President Theodore Roosevelt, *Good Roads as an Element in National Greatness*, Bulletin No. 26 of the Office

The interest of the general Government in the common roads has been newly demonstrated by recent events; on the one hand, a successful experiment in the rural free delivery of mails, and on the other, a failure of railway transportation for troops in an emergency. Both these events show the need of good roads to the general Government, even regarding that Government in its narrowest aspect, as something apart from the people it governs. It needs post roads and military roads all over the country.[94]

The Joint Committee on Federal Aid assured the Congress: "Federal aid to good roads will accomplish several of the objects indicated by the framers of the Constitution—establish post roads, regulate commerce, provide for the common defense, and promote the general welfare. Above all, it will promote the general welfare."[95]

Although there was general agreement as to the desirability and constitutionality of federal participation in road development, sharp differences of opinion did arise with respect to the administrative form and the financial extent of such action. On these issues the positions taken by the automobile and agricultural interests—the two major groups of sponsors—ran parallel at first, but subsequently diverged in important respects.

a. *Automobile interests enter movement for federal aid.* The automobile played no part in the formative pe-

of Public Road Inquiries (1903), p. 79; and address of Woodrow Wilson, *Proceedings of the American Road Congress*, 1912, Pt. II, p. 7.

[94] Missouri State Roads Improvement Association, *Proceedings of First Annual Meeting*, 1893, p. 23.

The initiative for introducing rural free delivery of the mails appears to have been taken by postal authorities. In the summer of 1891, the Universal Postal Union, in convention at Vienna, Austria, out of courtesy to the American delegates, adopted resolutions favoring the free distribution of mail on a house-to-house basis.

The U. S. Post Office Department was at that time experimenting with the distribution of mail in small towns and villages.

[95] H. Doc. 1510, 63 Cong. 3 sess., p. 14.

riod of the good roads movement. At the turn of the century there were only 5,000 automobiles in the country.[96] As might be expected, the early years of automobile development had been devoted to reliability tests and publicity stunts designed to win approval of a revolutionary device from a highly skeptical public.[97]

It was not until about 1908 that the pioneer work of demonstrating the automobile's usefulness began to produce tangible results. At this time, however, motor vehicle users appeared to be less interested in the movement for federal financial aid than in the removal of obstacles to their use of the new invention. One of the main obstacles was restrictive state legislation.

When the American Automobile Association held its first good roads and legislative convention jointly with the National Grange in 1907, the chairman of the A.A.A. legislative committee stated that 31 states required registration of motor vehicles and charged a fee varying from 25 cents to 25 dollars; that eight states extended no privileges to motorists from other states; that speed limits varied from 4 to 20 miles an hour. Expressing the reaction of the growing body of motorists to these conditions, Mr. Terry stated,

> Highways are national. For all purposes of interstate travel, highways belong to the citizens of the United States, with the absolute right to travel thereon and to make ingress and egress

[96] H. C. Spurr, *Motor Vehicle Transportation* (1922), p. 7.

[97] Numerous tests, endurance runs, and mountain climbing trials characterized this period. In addition to publicizing the motor vehicle as a means of transportation, they performed the functions which the professional racetracks and the proving grounds perform today. *Engineering News*, Vol. XXXII (1894), p. 147, Vol. XL (1898), p. 367, Vol. XLI (1899), p. 142; Waldemar Kaempffert, ed., *A Popular History of American Invention* (1924), Vol. I; League of American Wheelmen, *Good Roads*, Vol. 23 (1896), p. 594.

from the various States, unhampered by the narrow restrictions sought to be imposed by provincial enactments.[98]

The interest of automobile manufacturers and owners was not limited to the removal of restrictive legislation. These groups also wanted good and continuous roads. From 1905 on, there was no question but that the motor vehicle owners would use their influence to direct the good roads movement toward the construction of continuous main line highways with a network of coast to coast routes the ultimate objective.[99] In 1907, the motorists took official action to enter the good roads campaign when a New England motor club called a good roads convention to meet at Springfield, Massachusetts.[100] In the same year the Good Roads Board of the A.A.A. began actively to promote the interests of the motorists in good roads.[101]

Highway developments in the northeastern states far outran progress in other sections. By the close of 1909, the New England states had appropriated almost $4,000,000 for through lines of trunk highways. In 1910 the New York legislature provided for the completion of a through route between New York and Albany and in 1911 for the completion of 1,464 miles of trunk line highways.[102] At the same time the manufac-

[98] *Proceedings of the First Annual Good Roads and Legislative Convention*, 1908, pp. 27-32.

[99] For evidence of the growing interest in this subject, see *Good Roads Magazine*, Vol. VI (1905), pp. 533, 851; *American Motorists*, February 1911, p. 108; Connecticut State Highway Commission, *Biennial Report*, 1907-1908, p. 11; A.A.A., *Yearbook*, 1907, p. 62; *Engineering News*, Vol. XLVII (1902), p. 365.

[100] A.A.A., *Yearbook*, 1907, p. 64.

[101] The most important accomplishment was completion of plans for joint conventions in 1908 (held also in 1909 and 1910) with the National Grange in support of the Grange's $50,000,000 state aid bill.

[102] *Southern Good Roads*, Vols. 7 and 8, February 1913, p. 19.

ture and sale of automobiles increased rapidly so that the potential value of interstate motor travel and the need of financial aid for the poorer states became more and more evident.

With the rapid increase in automobile ownership, motor interests concentrated their efforts on two interrelated objectives. They advocated the construction of a network of principal highways throughout the country and they attempted to prevent the dissipation of funds in the indifferent improvement of a vast mileage of local roads. The National Highways Association, which became active in 1912 and 1913, endeavored to gain federal authorization for an integrated system of highways to be constructed and operated under the administration of a national highways commission.[103] The A.A.A. advocated limiting federal participation in the good roads movement to the development of trunk lines, contending that

> the Federal Government will have done practically its full duty when it shall have taken over and improved and provided for the maintenance of the great interstate routes, the highways upon which the traffic falls most heavily, and the making and upkeep of which constitutes the greatest item of expense in a State highway system.[104]

In justification of this position the automobile interests contended:

> Experience has demonstrated that in permanent and economical progress certain principles have been established. This development can be divided into four great sub-divisions: Town-

[103] National Highway Association, *National Highways and Good Roads Everywhere* (1913).

[104] Statement of American Automobile Association quoted in *Good Roads*, Hearings before the Joint Committee on Federal Aid in the Construction of Post Roads, 1913, Pt. I, p. 120.

The Association, however, was obviously willing to compromise on

ship, County, State and Nation. Each sub-division has a function to perform, namely: the township in its lateral roads, the county in its market roads, the state in its inter-county roads, and the government in its interstate roads.[105]

According to the program advocated by the automobile groups, the appropriate function of each of these levels of government in the field of road development was as follows:

INTER-STATE ROADS.

In these days of multiplying travel National highways across the various States naturally come into existence. To these roads traffic gravitates and compels durable construction and systematic maintenance. A State which does not provide interstate road connections with adjoining States is plainly at a disadvantage. Such a road brings commensurate value for the expenditure. Always keep in mind that these roads are available to those living in the territory traversed as well as to the ones who come from a distance. Just as a railroad builds its most important lines first, so should a commonwealth construct arteries of communication which accommodate the greatest volume of tonnage and meet the wants of the largest number of people.

STATE ROADS.

Since these inter-state roads are a prime necessity of the State, and are demanded by the fullest development of the commonwealth, it is plain to be seen that if their cost, either in whole or in part, is placed upon the National Government, then the State will have that money to utilize in its bounden duty to create State systems connecting county seats with each other, thus supplying branches of the main trunk highways. These inter-county roads should be built and maintained at the expense of the State.

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this question. It agreed not to oppose improvement of market roads if the United States government wished to improve them and recommended that a federal appropriation be authorized, one-half to be used to match state funds, and the other half to be used for the "construction, maintenance and improvement of highways." The same, p. 125.

[105] From "Whyfore of the Washington Convention," A.A.A., *Second Federal Aid Good Roads Convention*, 1913, p. 7.

COUNTY MARKET ROADS.

The next sub-division is the county system, meaning the highways which form the main market roads, and the central point of which naturally is the county seat. Such county highways should be paid for at the joint expense of the State, county and township, in such proportions as best meet the needs of the various States.

Practically every farmer, going from his farm to the market, passes over a section of main highway, and its improvement benefits country and city residents alike; hence any plan which seeks to expend large amounts from the cities should be the result of co-operation between the urban and rural localities.

TOWN ROADS.

Finally, we have the town roads, which form the fourth sub-division in the system. Such town highways are best governed by the town officials, and should vary as the local conditions of each town demand. They could be built jointly at the expense of the State and the town, the cost being borne equally, both for construction and maintenance. In this manner a system of town highways would fit into the county system, just as a county system would become a part of the State system, and that in turn a part of the National plan.

NATIONAL PARTICIPATION IN ROADS.

Any National participation in roads progress, having in view the good of the entire country, should proceed along important lines. As the State plans its inter-county roads through both rich and poor counties, through well-developed and sparsely settled districts, in order to develop the State as a whole, so should the Federal Government build inter-state roads through rich and poor States, through developed and undeveloped resources, in order that the weaker parts may be strengthened and all sections more closely knit together. It is clear that populous States will require more expensively built roads than will the sparsely peopled States. In this way there will automatically come about an equitable distribution of money, keeping in mind the fact that some of the newer States may properly receive such additional consideration as will benefit the Nation as a whole.[106]

[106] The same.

b. *Agricultural interests enter movement for federal aid.* In 1907, about the same time that automobile interests became active in the campaign for federal aid, the National Grange voted to support the good roads movement. During 1909 the Grange engaged in a "widespread educational campaign" seeking support for a bill which created a federal highway department and proposed the distribution of 50 million dollars among the states for road development. It sent out hundreds of thousands of pamphlets to farmers purporting to show the reduction in haulage costs and the increase in farm values which would result from better roads; it distributed literature to 10,000 newspapers on the losses from bad roads; and it prepared special articles for syndicated newspaper material. The Grange urged farmers and local granges to petition Congress in support of the bill.[107] Finding that one objection of Congress to federal aid was the lack of state highway departments in many states, the National Grange, as noted above, also strove to further state aid and state administration of local roads.[108]

At the outset, the motor vehicle interests and the farm organization displayed a willingness to co-operate. In 1908, 1909, and 1910, the Grange, the A.A.A., and the automobile manufacturers held three joint conventions. In addition to the Grange, which chiefly represented northern and middle western farmers, the Farmers Educational and Co-operative Union, claiming two million members, representing the southern and southwestern rival group, joined in the third convention.[109]

[107] A.A.A., *Proceedings of the Second Annual Good Roads Convention*, 1909, pp. 23-24.

[108] The same, p. 24.

[109] Other co-operating organizations were the Office of Public Roads, the American Roadmakers' Association, the American Society of Equity,

The two groups, however, had radically different views as to the purposes for which federal funds should be used. The motor interests, as we have seen, advocated the concentration of funds on the creation of main trunk highways. The agricultural and railroad interests favored improvement of farm to railroad or farm to market roads.[110]

The case for concentrating federal aid upon the type of road improvement that would be of greatest immediate benefit to the farm population was presented in broad declamatory terms. One of the reasons offered most frequently for seeking national aid for rural roads was that the farmer had been discriminated against in the allocation of federal funds. This argument was advanced in various forms.[111] The Department of Agri-

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and National Civic Federation. *American Motorists*, August 1910, p. 319; A.A.A., *Proceedings of the First Annual Good Roads and Legislative Convention*, 1908, p. 64.

[110] The Office of Public Roads changed its views in regard to the manner in which improvements should be brought about. As first director of the Office, Roy Stone virtually recommended paving the entire rural road system. *Yearbook of the Department of Agriculture*, 1894, p. 501; the same, 1895, p. 490; *Good Roads for Farmers*, Farmers' Bulletin No. 95. This idea drew forth sharp criticism as being visionary.

In the interests of the farming class the *Engineering News* challenged concentration of the good roads movement on hard-surfaced highways. (*Engineering News*, Vol. XXX (1893), p. 434; Vol. XLIV (1900), p. 434.) Whether because of this criticism or not the Office changed its views on the improvement of country roads. Soon after the criticisms in *Engineering News* it admitted that "the majority of our public highways will of necessity be composed of earth for many years to come." (*Earth Roads*, Farmers' Bulletin No. 136 (1902).) Even as late as 1910 the Office considered the dirt road the only practical one for most of the country. (Director of the Office of Public Roads, *Report*, 1910, p. 770.) After 1912, however, spokesmen for the rural areas were endeavoring to secure an allocation of national funds for the entire road mileage of the country.

[111] In addition to the documents referred to below see: *Good Roads*, Vol. I (1892), pp. 17-18, 22-23; address of William Jennings Bryan before Convention of the American Road Makers Association, *Good Roads Magazine*, Vol. 8 (1907), pp. 106-07; statement of Special Committee appointed by National Good Roads Association, to appear before

culture, for example, pointed out that "the farms of the United States comprise less than one-fourth of the total property of the country yet that small fraction pays the whole cost of building roads."[112] And the Senate Committee on Agriculture and Forestry was told:

> The farmer is unable to get to the towns through the long, dreary months of winter, because he is made a prisoner by the bad condition of the roads. Make the roads good and you make the farmer a better and a more intelligent citizen, coming in contact with his fellows. . . .
>
> For one hundred and twenty-seven years the farmer has borne the heaviest burdens of life. He has responded to every call of duty. Never before has he come to Congress and asked a single thing, and now for the first time in more than a century and a quarter he comes here and knocks at the doors of Congress and says, "Gentlemen, help us to build good roads for all the people." He believes, with Lincoln, that this is a "Government of the people, by the people, and for the people."[113]

A favorite method of particularizing the argument that the farmer received short measure of the federal largess was to call attention to federal expenditures for other media of communication and for other purposes, often with the implication that they did not benefit the farmer.[114] It was argued that the farmers were entitled to federal funds for rural road improvements because they had helped finance—for the benefit of others—rivers and harbors, coast defenses, the Panama Canal, public buildings (in cities), irrigation projects, pensions,

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the House Committee on Agriculture in support of the Brownlow bill in 1904; *Good Roads Magazine*, Old Series XXXI, New Series Vol. V (1904), p. 64.

[112] *Yearbook*, 1897, p. 177.

[113] Statement of Winthrop E. Scarritt, *Roads and Road Building*, Hearing before the Senate Committee on Agriculture and Forestry, 58 Cong. 2 sess., p. 7.

[114] For example, see League of American Wheelmen, *Must the Farmer Pay for Good Roads?* distributed as Office of Road Inquiry, *Circular No. 31*.

subsidies to railways, tariffs for the benefit of the industrialists, and a "thousand other purposes."[115]

By 1916 this type of argument was used for rebuttal purposes as well as for constructive argument. Chief opposition to a federal aid measure came from the northeastern states—an area that had enthusiastically embraced state aid programs in the nineties and by 1916 had built up an extensive system of hard-surfaced highways. By way of rejoinder western and southern representatives cited alleged inequities of federal pension and tariff policy. The pension argument was clinched in these picturesque terms:

Surely the man who is fortunate enough to live in a great State like New York, Massachusetts, or Pennsylvania should not for one moment want to hold their forefeet in the Federal Treasury all of the time and keep off a few of these Western

[115] In the House debate on 1916 road bills, for example, Representative Davenport of Oklahoma phrased the argument thus: "In the past our Government has donated millions of acres of land as a subsidy to railroad companies to induce them to construct railroads, yet practically nothing has been done for the improvement of dirt roads or national highways. We have to-day in the United States daily Rural Delivery Service, which traverses about 42,000 miles of different highways of the Nation, coming in daily contact with more than 20,000,000 people living in the rural districts. I do not anticipate that anyone will seriously oppose the passage of this bill in the House, but if they should do so, I desire to invite their attention to the fact heretofore mentioned that in the early construction of railroads throughout the United States land was donated to the railroads as an inducement to the corporations to construct their lines, at an estimated value now of more than $1,000,000,000. There has been appropriated for rivers and harbors since 1875, $592,395,000; for the building of levees alone to June 1902, $16,582,000; for the construction of public buildings up to June 1911, $213,376,000. Again, we have expended nearly $400,000,000 on the Panama Canal; for the construction of roads in Porto Rico, the Philippine Islands, and the Territory of Alaska, $8,300,000. . . .

"I now think the time has come when we should consider the interest of those who live in the rural communities and provide for the improvement of our internal highways, so that those living in the rural district may reap as great benefit from Government as those living in cities, on railroads, and navigable streams." *Congressional Record*, Vol. 53, Pt. 2, 64 Cong. 1 sess., p. 1455.

and Southern states. The South has been for years paying great pension bills where the people of other sections of the country have had their feet in the long trough drinking all of the slop. Do you mean to say that this road bill, that might take a little revenue from some of the great States of the East that have been preying on this Republic all of these years, should forsooth, not pass for that reason?[116]

Nor was the rural contribution to the moral and material fiber of the nation forgotten. Southern legislators, borrowing from physiocratic doctrine, contended that farms were the source of our national wealth and the origin of the best people and that it was, therefore, important to the nation to retard the drift of population toward the cities. Senator Bankhead concluded his 1908 address on good roads with these words:

Year after year the human tide flows from the country to the city. . . . Do not let us have great mobs of the unemployed, combining the scum of Europe with the misled boys from our American farms, so long as there are millions of acres of land waiting to be tilled and homes waiting to be built. Good roads will make farm life attractive; they will bring the isolated dweller closer to his neighbor, and I feel confident they will check the movement of our rural population to the great cities.[117]

The Joint Committee on Federal Aid expressed the same thought as follows:

With city population increasing three times as fast as rural population, and production of foodstuffs not near keeping pace with increase in population, there is surely need to make farm life more pleasant and farm operation more profitable. The problem is one of national importance, for congestion of popu-

[116] Statement of Representative Quin of Mississippi, the same, p. 1391.

[117] The same, p. 6737. See also the remarks of Representative Brett of North Carolina, p. 1400; Representative Adamson of Georgia, pp. 1452-53; Senator Vardman of Mississippi, pp. 6784-85. For further illustrations of their argument see also Representative Price of Maryland, p. 1459; Representative Kincheloe of Kentucky, p. 1367; Representative Aswell of Louisiana, p. 1280; and Representative Thompson of Oklahoma, p. 1394.

lation in cities is a national evil. Upon country life we depend chiefly for the strength and vigor of body, mind, and moral character that make a nation great.[118]

Members of Congress often contended that the federal government had a direct obligation to facilitate the rural free delivery mail service. Generally, however, they made the point in terms of roads to serve both the mails and agriculture. For instance, Representative Quin of Mississippi observed:

The gentleman from New York [Mr. Magee] said that our Republic has given the rural route system and carried mails through muddy roads to the farmers. He thinks that is a great favor which the Congress has conferred upon the people. I just cite the gentlemen to the great cities of this Republic where nine mail deliveries are made a day and nothing is thought about it, and he thinks it is a great favor of the Government to carry mail once a day, or perhaps three times a week, to the man out in the country, the great taxpayer and supporter of this Government. It is a right that he has. He is entitled to good roads, and the Federal Government, with all of its activities, should give the farmers of this country roads over which to haul their produce to town.[119]

c. *The railroad position on federal aid.* By 1910 the railroads had assumed the leadership in opposition to the National Highway Association and the A.A.A., which advocated the construction of a limited mileage (about 50,000 miles) of interstate highways under the administrative supervision of a national highway commission.

At the risk . . . of seeming to be actuated by the interest of the railways, I have no hesitation in saying that, if the greatest good is to be done to the greatest numbers, the farmer is more

[118] H. Doc. 1510, 63 Cong. 3 sess., p. 18.

[119] *Congressional Record*, Vol. 53, Pt. 2, p. 1391; see also the remarks of Senator Gallinger of New Hampshire and of Senator Bankhead of Alabama. The same, p. 6428.

interested in the improvement of the roads of the second class . . . those radiating from a market town or shipping station.[120]

And they had active support in this position from a substantial congressional bloc which maintained that

. . . the railway station is the terminus for roads; that neither freight nor passengers will ever be carried long distances over roads as cheaply as they could be over railways, and that it is an idle dream to imagine that auto trucks and automobiles will take the place of railways in the long-distance movement of freight or passengers; that the proper function of roads is not to connect antipodal oceans nor the distant capitals of far-away States, but to make easy communication between the farms on one hand and the towns and railway stations on the other, to the end that the farmer may market his crops at less expense and the town dweller may get farm products more easily and at less cost.[121]

Moreover, the Secretary of Agriculture recommended that farm to market roads be given priority in the allocation of federal aid funds and stated: "The roads which the Nation most needs to have improved are those that lead from the farm to the nearest railway station. . . . I suppose everybody will agree that the railroad is the national road for the vast majority of the people."[122]

Curiously enough, the railroad position does not appear to have been influenced by any concern over the competitive potentialities of highway transportation. In 1913 a spokesman for the railroad interests told a congressional committee:

[120] W. W. Finley, "Good Roads and the Farmer," *Papers, Addresses, and Resolutions before the American Road Congress*, 1911, pp. 11-15. At the 1914 Congress, Fairfax Harrison, successor to Finley as president of the Southern Railway, repeated these ideas. "Selecting Roads to be Improved," *Proceedings of the Fourth American Road Congress*, 1914, pp. 171-73.

[121] Dorsey W. Shackleford, chairman of House of Representatives Committee on Roads, *Proceedings of the Third American Road Congress*, 1913, p. 57.

[122] D. F. Houston in *Good Roads*, Hearings before the House Committee on Roads, 63 Cong. 2 sess., Pt. 2, p. 4.

I do not care where the good roads are built just so long as they are built to meet the real necessities of the situations. I mean by that I do not care whether under those circumstances they parallel our road from one end to the other. I do not regard them as factors in long-distance transportation and I welcome them in connection with the development of the areas surrounding our system.[123]

Another spokesman, when asked if he thought a highway would successfully compete with a railroad as a long distance transportation line or mail route, replied, "I do not see how it can be expected to so compete."[124]

IV. IMMEDIATE LEGISLATIVE BACKGROUND OF THE 1916 FEDERAL AID HIGHWAY ACT

Between 1893 and 1913 federal participation in the highway field involved no direct financial aid to the states or their local subdivisions. In 1912, however, Congress created an investigating committee to report on the subject of federal aid in the construction of post roads and appropriated a post road fund of $500,000.[125]

This was the initial and experimental step in a program of financial participation which has since expanded to the point where the federal government now bears a substantial share of the total highway bill and plays an important if not definitive role in the formulation of highway policy.

The 1912 law named the Secretary of Agriculture and the Postmaster General as administrators of the fund and required them to select and improve certain roads, and to establish rural mail delivery over them. It directed them to report on the increase in the territory which could be served by carriers as a result of improve-

[123] Testimony of W. W. Finley in *Good Roads*, Hearings before the Joint Committee on Federal Aid in the Construction of Post Roads, 1913, Pt. I, p. 28.

[124] Testimony of Alfred Noble, the same, p. 10.

[125] *Congressional Record*, Vol. 53, Pt. 2, p. 1467.

ments, the possible increase of delivery days, the amount required in excess of local expenditures for proper maintenance of these roads, and the relative saving to the government in the operation of the rural delivery service and to the local inhabitants in the transportation of their products as a result of the improvements. The administrators were also directed to promote such co-operation among the states as would insure equitable and uniform state highway regulations, and to report to Congress within one year their recommendations for a general plan of national aid for the post road improvement in co-operation with the states and counties.[126]

The project, a co-operative arrangement, required the states or their subdivisions to contribute double the amount expended by the federal government. In operation this experiment brought out some illuminating facts. The first program which the authorities worked out called for equal allotments of the fund to all the states. The plan failed completely. Some states ignored the federal offer of co-operative road improvement; some refused outright to participate; and most of the others were unable to enter into the plan. Some of the southern states were hampered by the fact that federal contracts prohibited the use of convict labor. And the eight-hour day requirement for federal contracts precluded co-operative agreements in some states. The great diversity of local fiscal procedures involved "long delays," "the most unsatisfactory conferences," and "troublesome routine."[127]

[126] 37 Stat. L. 552, approved Aug. 24, 1912.

[127] The Director of the Office of Public Roads commented: "I never imagined that co-operation was such a difficult thing. . . . We thought by dividing the appropriation equally among all the States . . . that we could allot the whole sum in that way on a fairly equitable plan." *Agriculture Appropriation Bill*, Hearings before the House Committee on Agriculture, 63 Cong. 2 sess., p. 12.

The officials, therefore, conducted the experiment by selecting a number of projects throughout the country where "different topographic, soil, and climatic conditions" were found.[128] They had not advanced these road improvement test cases sufficiently at the end of the year to answer the act's inquiries as to potential savings in transportation costs for rural mail delivery, increased efficiency of service, etc. The authorities were, however, quite obviously convinced that any plan of national aid to the states would have to be administered through co-operation between federal officials and state highway agencies.[129] The other factor of major importance was the discovery that it was impractical from the construction angle to limit improvements to those sections of road traversed by the rural mail service. Even where such limitation was practical the localities co-operating in the work wanted continuous market roads.[130]

[128] For a detailed history of this experimental road fund, see *Joint Report of the Progress of Post-Road Improvement*, H. Doc. 204, 63 Cong. 1 sess.

[129] On this point the Secretary of Agriculture testified: "It has seemed to me that the State should be the lowest unit with which the Federal authorities should deal, and I should like very much to see an expert State highway commission unit indicated as the State agency for handling the work, if that could be done; and if by such a course the majority of States that do not now have expert State highway commissions were induced to create them, with adequate power and funds, the expenditure would have been justified." David F. Houston, in *Good Roads*, Hearings before the House Committee on Roads, 63 Cong. 2 sess., Pt 2, p. 5.

In their report to Congress the Cabinet officials stated: "This constant necessity of changing the method of supervision or of handling the funds to meet the special and peculiar conditions arising under the local laws makes it obvious that effective national aid in highway improvement is conditioned on certain definite and uniform action on the part of the States which will permit either the State government or the local administrative subdivisions to act in harmony with the Federal Government, according to some uniform plan, in expending the joint funds which might be created by allotments of Federal aid." H. Doc. 204, 63 Cong. 1 sess., p. 13.

[130] This point came out in the testimony of the Director of the Office of Public Roads, Dr. Logan Waller Page, who stated: "We at first intended not to use the money unless it was all used on rural free-delivery

Meanwhile the investigating committee, known as the Joint Committee on Federal Aid in the Construction of Post Roads, was collecting information on foreign and domestic road systems and holding hearings. Besides assembling a mass of valuable material, the report emphasized the extensive popular demand for federal aid and officially endorsed such a step.[131] It refrained from recommending any specific bill or plan for federal aid.[132]

At the end of 1913 the House Committee on Roads conducted further hearings on federal aid plans. These hearings formed the last step in the search for information; thereafter Congress took over the problem of discussing and deciding the form that federal aid should take. This deliberation resulted in the 1916 Federal Aid Highway Act. With the passage of this act the good roads movement completed the achievement of its major objectives—state and federal participation in the development of a national highway system.

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roads. But we have never yet found such a road. . . . A rural free-delivery route will start on a road, branch off, and then turn around and come back, and then there will be a strip of road that is not rural free delivery at all. . . . We could not fly around out of the way of portions of the roads that were not used for free delivery. The local people would not put up the money on that basis. They wanted the work done on the main market roads." *Agricultural Appropriation Bill*, Hearings before the House Committee on Agriculture, 63 Cong. 2 sess., p. 14.

[131] The final report of this committee was issued as *Federal Aid to Good Roads*, H. Doc. 1510, 63 Cong. 3 sess.

[132] The following comment made during the time the Joint Committee on Federal Aid was active is informative: "Secretary [of Agriculture] Houston: I have appreciated the fact that there is a definite sentiment in both Houses of Congress in favor of further Federal Aid." [The $500,000 for experimental improvement of rural post roads had already been made.]

"The Chairman: Well, I think that is not so true as it would be if it were stated the other way—that the constituencies of the Senators and Congressmen who make up the two branches are so determined upon this matter that it would not be possible to resist it." *Good Roads*, Hearings before the House Committee on Roads, 63 Cong. 2 sess., Pt. 2, p. 8, December 1913.

APPENDIX B

STATISTICAL TABLES

1. Physical Character of Rural Roads, by Systems and by Types, 1904–39[a]

I. ALL RURAL ROADS

Year	Mileage				*Percentage Surfaced*	
	Total	High-Type Surfaced[b]	Other Surfaced	Not Surfaced	*High-Type*	*All Types*
1904...	2,151,379	...	153,530	1,997,849	...	*7.1*
1909...	2,199,645	...	190,476	2,009,169	...	*8.7*
1914...	2,445,761	3,296	253,996	2,188,469	*.1*	*10.5*
1921...	2,924,505	25,774	361,683	2,537,048	*.9*	*13.2*
1923...	2,995,727	38,416	400,925	2,556,386	*1.3*	*14.7*
1924...	3,004,411	45,593	426,074	2,532,744	*1.5*	*15.7*
1925...	3,006,183	53,750	467,510	2,484,823	*1.8*	*17.3*
1926...	3,000,190	58,409	491,655	2,450,126	*1.9*	*18.3*
1927...	3,013,584	64,914	523,807	2,424,863	*2.2*	*19.5*
1928...	3,016,281	72,406	613,731	2,390,144	*2.4*	*22.7*
1929...	3,024,233	81,719	580,716	2,361,798	*2.7*	*21.9*
1930...	3,009,066	92,059	601,500	2,315,507	*3.1*	*23.0*
1931...	...	...	...	...	...	...
1932...	...	...	...	...	...	...
1933[c]..	...	...	...	...	...	...
1934[d]..	...	...	...	...	...	...
1935[d]..	...	...	...	...	...	...
1936[d]..	...	...	...	...	...	...
1939...	2,912,283	...	...	...	...	...

1. PHYSICAL CHARACTER OF RURAL ROADS, BY SYSTEMS AND BY TYPES, 1904–39—*Continued*

II. STATE SYSTEM[a]

Year	Mileage				*Percentage Surfaced*	
	Total	High-Type Surfaced[b]	Other Surfaced	Not Surfaced	*High-Type*	*All Types*
1904...	...	...	...	...	...	...
1909...	...	...	...	...	...	...
1914...	...	...	...	...	...	...
1921...	202,915	14,707	69,665	118,543	*7.2*	*41.6*
1923...	251,611	25,339	86,061	140,211	*10.1*	*44.3*
1924...	261,216	31,126	100,983	129,107	*11.9*	*50.6*
1925...	274,911	36,244	108,610	130,057	*13.2*	*52.7*
1926...	287,928	41,022	122,037	124,869	*14.2*	*56.6*
1927...	293,353	46,642	129,924	116,787	*15.9*	*60.2*
1928...	306,442	53,173	139,965	113,304	*17.4*	*63.0*
1929...	314,136	61,070	147,254	105,812	*19.4*	*66.3*
1930...	324,496	69,522	156,699	98,275	*21.4*	*69.7*
1931...	328,942	80,985	161,715	86,242	*24.6*	*73.8*
1932...	358,210	89,726	176,334	92,150	*25.0*	*74.3*
1933[c]..	480,920	95,274	215,219	170,427	*19.8*	*64.6*
1934[d]..	510,796	109,000	252,860	148,936	*21.3*	*70.8*
1935[d]..	523,267	111,905	262,435	148,927	*21.4*	*71.5*
1936[d]..	536,548	115,030	277,925	143,593	*21.4*	*73.2*
1939...	520,524	...	...	...	...	...

[a] 1904, 1909: Office of Public Roads, Bulletins 32 and 41.
1914: Dept. of Agriculture, Bureau of Public Roads, Bulletin 390.
1921, 1923–31: Harold G. Moulton and Associates, *American Transportation Problem*, p. 530.
1932, 1933: Bureau of Public Roads, *State Highway Mileage*, table M-4.
1934–36: The same, table SM-1 to 4.
1939: Latest available estimates based on 30 state replies to telegraphic request in March 1939.

Data not available for other years or for items marked (...).

1. PHYSICAL CHARACTER OF RURAL ROADS, BY SYSTEMS AND BY TYPES, 1904–39—*Continued*

III. COUNTY AND LOCAL SYSTEM

Year	Mileage				*Percentage Surfaced*	
	Total	High-Type Surfaced[b]	Other Surfaced	Not Surfaced	*High-Type*	*All Types*
1904...	...	...	...	...	...	...
1909...	...	...	...	...	...	...
1914...	...	...	...	...	...	...
1921...	2,721,590	11,067	292,018	2,418,505	*.4*	*11.1*
1923...	2,744,116	13,077	314,864	2,416,175	*.5*	*12.0*
1924...	2,743,195	14,467	325,091	2,403,637	*.5*	*12.4*
1925...	2,731,172	17,506	358,900	2,354,766	*.6*	*13.8*
1926...	2,712,262	17,387	369,618	2,325,257	*.6*	*14.3*
1927...	2,720,231	18,272	393,883	2,308,076	*.7*	*15.2*
1928...	2,709,839	19,233	473,766	2,276,840	*.7*	*16.0*
1929...	2,710,097	20,649	433,462	2,255,986	*.8*	*16.8*
1930...	2,684,570	22,537	444,801	2,217,232	*.8*	*17.4*
1931...	...	...	...	...	...	...
1932...	...	...	...	...	...	...
1933[c]..	...	...	...	...	...	...
1934[d]..	...	...	...	...	...	...
1935[d]..	...	...	...	...	...	...
1936[d]..	...	...	...	...	...	...
1939...	2,391,759	...	...	...	...	...

[b] Includes Portland cement concrete, bituminous concrete, brick and block.

[c] Urban street mileage under state jurisdiction not included under state system in 1933.

[d] Because of adjustment of B.P.R. published mileages to include "bituminous macadam" under "other surfaced" roads, certain differences from published figures appear in the years 1934–36.

[e] Before 1933, where states had assumed control of all or practically all highways, the mileage formerly classed as local mileage remained in this classification; beginning in 1933 this mileage is classed as state mileage.

2. Physical Character of Rural Roads, by Systems and by Types, 1937–38[a] (30 states)

I. ALL RURAL ROADS

States	Mileage				Percentage Surfaced	
	Total[b]	High-Type Surfaced[c]	Other Surfaced[d]	Not Surfaced[e]	*High-Type*	*All Types*
Maryland	16,502	2,593	6,788	7,121	*15.7*	*56.8*
California	88,838	10,004	40,918	37,916	*11.3*	*57.3*
Illinois	102,684	11,390	48,579	42,715	*11.1*	*58.4*
Ohio	82,449	8,060	62,354	12,035	*9.8*	*85.4*
Louisiana	38,508	3,405	13,160	21,943	*8.8*	*42.9*
North Carolina	56,980	4,937	24,643	27,400	*8.6*	*51.9*
West Virginia	32,590	2,437	8,189	21,964	*7.5*	*32.6*
Florida	28,378	1,834	9,979	16,565	*6.5*	*41.6*
Wisconsin	81,488	4,920	53,480	23,088	*6.0*	*71.7*
South Carolina	42,776	2,326	10,684	29,766	*5.4*	*30.4*
Oregon	36,398	1,783	16,523	18,092	*4.9*	*50.3*
Iowa	101,809	4,843	35,560	61,406	*4.8*	*39.7*
Virginia	45,465	2,198	27,376	15,891	*4.8*	*65.0*
Missouri	115,926	4,007	31,950	79,969	*3.5*	*31.1*
Texas	170,317	5,903	33,782	130,632	*3.5*	*23.3*
Kentucky	56,222	1,910	24,871	29,441	*3.4*	*47.6*
New Hampshire	12,378	414	7,240	4,724	*3.3*	*61.8*
Arizona	17,573	528	3,775	13,270	*3.0*	*24.5*
Arkansas	54,325	1,614	13,162	39,549	*3.0*	*27.2*
Vermont[f]	13,376	377	6,528	6,471	*2.8*	*51.6*
Oklahoma	100,068	2,787	12,218	85,063	*2.8*	*15.0*
Montana	61,525	1,449	8,691	51,385	*2.4*	*16.6*
Utah	19,208	287	6,227	12,694	*1.5*	*33.9*
Kansas	129,401	1,817	28,374	99,210	*1.4*	*23.3*
Nebraska	100,081	1,029	17,169	81,883	*1.0*	*18.2*
South Dakota	100,210	971	18,951	80,288	*1.0*	*19.9*
Idaho	28,020	197	9,467	18,356	*0.7*	*34.5*
Colorado	74,896	476	11,579	62,841	*0.6*	*16.0*
Nevada	23,274	51	3,100	20,123	*0.2*	*13.5*
Wyoming	23,040	15	3,930	19,095	*	*17.1*
All states	1,854,705	84,562	599,247	1,170,896	*4.6*	*37.3*

[a] U. S. Public Roads Administration, Highway Planning Surveys, Road Inventory tables.

[b] Excludes mileage of special systems not duplicated in state, county, and local systems.

[c] Includes Portland cement concrete, bituminous concrete, brick, and block.

2. PHYSICAL CHARACTER OF RURAL ROADS, BY SYSTEMS AND BY TYPES, 1937–38—*Continued*
(30 states)

II. STATE SYSTEMS

States	Mileage				Percentage Surfaced	
	Total	High-Type Surfaced[c]	Other Surfaced[d]	Not Surfaced[e]	*High-Type*	*All Types*
Maryland	3,982	2,337	1,645	—	*58.7*	*100.0*
California	12,637	4,732	7,395	510	*37.4*	*95.9*
Illinois	9,650	9,590	23	37	*99.4*	*99.6*
Ohio	14,557	6,434	8,013	110	*44.2*	*99.2*
Louisiana	3,816	2,868	903	45	*75.2*	*98.9*
North Carolina	10,463	4,391	5,531	541	*42.0*	*94.9*
West Virginia	4,428	2,012	1,917	499	*45.4*	*88.7*
Florida	6,489	1,306	4,526	657	*20.1*	*89.9*
Wisconsin	9,208	3,889	5,135	184	*42.2*	*98.0*
South Carolina	6,916	2,217	3,728	971	*32.1*	*86.0*
Oregon	4,343	1,095	3,102	146	*25.2*	*96.6*
Iowa	8,462	4,818	3,501	143	*56.9*	*98.3*
Virginia	9,111	1,271	7,295	545	*14.0*	*94.1*
Missouri	7,801	3,476	4,274	51	*44.6*	*99.4*
Texas	19,218	5,131	10,494	3,593	*26.7*	*81.3*
Kentucky	8,651	1,778	6,548	325	*20.6*	*96.3*
New Hampshire	3,297	407	2,787	103	*12.3*	*96.8*
Arizona	3,358	215	2,375	768	*6.4*	*77.1*
Arkansas	8,591	1,538	6,200	853	*17.9*	*90.1*
Vermont[f]	1,700[h]	364	1,336	—	*21.4*	*100.0*
Oklahoma	8,145	2,550	4,262	1,333	*31.3*	*83.6*
Montana	5,104	1,444	3,467	193	*28.3*	*96.2*
Utah	4,625	272	3,422	931	*6.4*	*80.4*
Kansas	9,219	1,585	6,638	996	*17.2*	*89.2*
Nebraska	8,051	958	6,650	443	*11.9*	*94.5*
South Dakota	6,334	967	4,452	915	*15.3*	*85.6*
Idaho	4,574	190[i]	3,486[i]	898	*4.2*	*80.4*
Colorado	9,297[i]	470	5,960	2,867	*5.1*	*69.2*
Nevada	2,691	51	2,338	302	*1.9*	*88.8*
Wyoming	3,696	15	3,346	335	*.4*	*90.9*
All states	218,414	68,371	130,749	19,294	*31.3*	*91.2*

[d] "Other surfaced" includes low-type bituminous, plain macadam, plain gravel, and soil surfaced.

[e] Includes graded and drained earth, unimproved earth, and primitive roads.

[f] Macadam and gravel "mixed in place" transferred from "high type" to "other surfaced."

2. Physical Character of Rural Roads, by Systems and by Types, 1937–38—*Continued*

(30 states)

III. COUNTY AND LOCAL SYSTEMS

States	Mileage				*Percentage Surfaced*	
	Total	High-Type Surfaced[c]	Other Surfaced[d]	Not Surfaced[e]	*High-Type*	*All Types*
Maryland	12,520	256	5,143	7,121	*2.0*	*43.1*
California	76,201	5,272	33,523	37,406	*6.9*	*50.9*
Illinois	93,347	1,800	48,556	42,678	*1.9*	*54.1*
Ohio	67,892	1,626	54,341	11,925	*2.4*	*82.4*
Louisiana	34,692	537	12,257	21,898[k]	*1.5*	*36.8*
North Carolina	46,517	546	19,112	26,859	*1.2*	*42.3*
West Virginia	28,162	425	6,272	21,465	*1.5*	*23.8*
Florida	21,889	528	5,453	15,908	*2.4*	*27.3*
Wisconsin	72,280	1,031	48,345	22,904	*1.4*	*68.3*
South Carolina	35,860	109	6,956	28,795	*.3*	*19.7*
Oregon	32,055	688	13,421	17,946	*2.1*	*44.0*
Iowa	93,347	25	32,059	61,263	[a]	*34.3*
Virginia	36,354	927	20,081	15,346	*2.5*	*57.7*
Missouri	108,125	531	27,676	79,918	*.5*	*26.1*
Texas	151,099	772	23,288	127,039	*.5*	*15.9*
Kentucky	47,571	132	18,323	29,116	*.3*	*38.8*
New Hampshire	9,081	7	4,453	4,621	*.1*	*49.1*
Arizona	14,215	313	1,400	12,502	*2.2*	*12.0*
Arkansas	45,734	76	6,962	38,696	*.2*	*15.4*
Vermont[f]	11,676	13	5,192	6,471	*.1*	*44.6*
Oklahoma	91,923	237	7,956	83,730	*.3*	*9.0*
Montana	56,421	5	5,224	51,192	[a]	*9.3*
Utah	14,583	15	2,805	11,763	*.1*	*19.3*
Kansas	120,182	232	21,736	98,214	*.2*	*18.3*
Nebraska	92,030	71	10,519	81,440	.1	*11.5*
South Dakota	93,876	4	14,499	79,373	[a]	*15.4*
Idaho	23,446	7	5,981	17,458	[a]	*25.5*
Colorado	65,599	6	5,619	59,974	[a]	*8.6*
Nevada	20,583	—	762	19,821	—	*3.7*
Wyoming	19,344	—	584	18,760	—	*3.0*
All states	1,636,291	16,191	468,498	1,151,602	*1.0*	*29.6*

[a] Less than .05 per cent.

[b] Excludes 123 miles of (1) state highway and (2) state aid connecting links in municipalities.

[f] 25 miles of bituminous penetration shifted from "other surfaced" to "high type."

[j] Includes 5,812 miles of "other state rural system."

[k] Includes four miles of miscellaneous types.

3. Distribution of Vehicle Miles Operated Annually on Legally Defined Classes of Rural Roads in 28 States, 1936–37[a]
(Figures are percentages)

State	State Highways	County and Local Roads
Alabama	67.8	32.2
Arizona	65.5	34.5
Colorado	78.7	21.3
Florida	76.8	23.2
Idaho	73.2	26.8
Illinois	71.8	28.2
Indiana	75.1	24.9
Iowa	63.7	36.3
Kansas	62.7	37.3
Kentucky	78.4	21.6
Maine	71.4	28.6
Maryland	83.5	16.5
Missouri	73.8	26.2
Montana	67.1	32.9
Nebraska	69.2	30.8
New Mexico	83.2	16.8
North Carolina	81.6	18.4
North Dakota	63.2	36.8
Oklahoma	75.4	24.6
Oregon	73.3	26.7
South Carolina	76.9	23.1
South Dakota	71.1	28.9
Tennessee	92.3	7.7
Texas	70.8	29.2
Vermont	76.8	23.2
West Virginia	67.9	32.1
Wisconsin	78.3	21.7
Wyoming	80.1	19.9
Total	73.8	26.2

[a] Compiled from U. S. Public Roads Administration, Highway Planning Surveys.

4. DISTRIBUTION OF THE MOTOR VEHICLE MILES OPERATED ANNUALLY ON THE VARIOUS TYPES OF RURAL ROADS IN 32 STATES, 1936–37[a]

(Figures are percentages)

State	Paved[b]		Other Surfaced[b]		Unsurfaced[b]	
	Road Mileage	Vehicle Miles	Road Mileage	Vehicle Miles	Road Mileage	Vehicle Miles
Alabama	2.6	35.2	49.7	54.7	47.7	10.1
Arizona	2.1	23.1	16.3	57.3	81.6	19.6
California	10.2	64.0	42.7	32.3	47.1	3.7
Colorado	0.7	23.1	16.6	59.2	82.7	17.7
Florida	6.4	36.2	34.7	55.8	58.9	8.0
Idaho	0.5	13.9	29.0	71.9	70.5	14.2
Indiana	7.2	59.1	73.7	40.0	19.1	0.9
Iowa	4.8	51.5	35.0	34.2	60.2	14.3
Kansas	1.4	26.9	21.9	53.5	76.7	19.6
Louisiana	8.9	65.9	34.0	29.0	57.1	5.1
Maryland	15.3	58.3	40.5	37.7	44.2	4.0
Michigan	6.1	58.2	58.0	37.8	35.9	4.0
Missouri	3.4	57.7	27.6	32.1	69.0	10.2
Montana	2.2	30.0	14.0	47.7	83.8	22.3
Nebraska	1.9	33.2	16.9	44.6	81.2	22.2
Nevada	0.2	10.2	13.5	74.0	86.3	15.8
New Hampshire	3.5	35.7	59.6	62.8	36.9	1.5
New Mexico	0.2	8.3	10.0	71.3	89.8	20.4
North Carolina	8.4	54.3	43.5	34.6	48.1	11.1
North Dakota	—	2.1	15.8	77.5	84.2	20.4
Ohio	9.8	54.8	75.6	43.8	14.6	1.4
Oklahoma	2.7	45.9	12.3	32.5	85.0	21.6
Oregon	3.9	47.0	37.4	48.8	58.7	4.2
Pennsylvania	20.1	72.1	33.0	23.3	46.9	4.6
South Carolina	5.2	51.1	25.9	34.8	68.9	14.1
South Dakota	0.2	8.9	19.3	70.6	80.5	20.5
Texas	3.5	34.7	20.3	45.7	76.2	19.6
Utah	1.7	33.4	31.8	59.6	66.5	7.0
Vermont	6.6	55.0	45.3	41.4	48.1	3.6
Washington	4.0	52.8	47.4	43.9	48.6	3.3
West Virginia	7.5	50.4	25.1	34.3	67.4	15.3
Wyoming	0.1	0.8	16.3	80.3	83.6	18.9
Total	4.5	48.9	31.0	41.2	64.5	9.9

[a] U. S. Public Roads Administration, Highway Planning Surveys, Traffic Tables (T1). Most of the traffic counts were taken during 1936 or 1937.

[b] For types of improvement included in "paved," "other surfaced," and "unsurfaced" and for mileage figures, see tables 2 and 5.

5. Number of Selected Institutions Served by Rural Roads of Several Improvement Types in 38 States, 1936–37[a]

State	Road Mileage				School Units			
	Paved[b]	Other Surfaced[c]	Unsurfaced[d]	Total	Paved	Surfaced	Other	Total
Alabama	1,495	29,242	28,060	58,797	129	2,140	1,249	3,518
Arizona	565	4,492	22,491	27,548	37	131	247	415
Arkansas	1,614	13,162	39,549	54,325	142	1,045	1,343	2,530
California	10,115	42,517	46,907	99,539	818	2,047	515	3,380
Colorado	493	12,527	62,235	75,255	20	547	1,696	2,263
Connecticut	1,215	6,989	3,226	11,430	116	462	50	628
Florida	1,894	11,738	21,481	35,113	80	430	720	1,230
Idaho	172	9,732	23,636	33,540	9	535	609	1,153
Illinois	11,390	45,457	42,715	99,562	1,311	6,863	3,568	11,742
Iowa	4,843	35,559	61,131	101,533	446	4,091	5,059	9,596
Kansas	1,810	28,098	98,290	128,198	186	2,456	5,121	7,763
Kentucky	1,910	24,500	29,871	56,281	201	2,704	3,334	6,239
Louisiana	3,297	12,924	21,889	38,110	192	711	532	1,435
Maryland	2,447	6,471	7,065	15,983	283	723	378	1,384
Michigan	5,461	53,335	33,347	92,143	586	5,456	1,041	7,083
Mississippi	1,876	27,206	31,507	60,589	97	1,720	1,305	3,122
Missouri	3,998	32,524	80,172	116,694	321	2,793	5,707	8,821
Montana	1,466	9,214	55,049	65,729	60	569	2,055	2,684
Nebraska	1,834	16,849	81,572	100,255	83	1,415	5,009	6,507
Nevada	51	3,100	20,123	23,274	6	62	148	216
New Hampshire	435	7,458	4,623	12,516	62	708	138	908
New Mexico	131	6,155	55,284	61,570	13	230	760	1,003
North Carolina	4,975	25,178	27,654	57,807	508	1,687	1,380	3,575
North Dakota	25	17,391	92,638	110,054	2	1,058	3,670	4,730
Ohio	8,060	62,354	12,035	82,449	693	3,284	314	4,291
Oklahoma	2,696	12,531	86,178	101,405	105	810	4,265	5,180
Oregon	1,800	17,507	27,460	46,767	172	1,274	463	1,909
South Carolina	2,284	11,422	30,512	44,218	207	1,099	1,992	3,298
South Dakota	229	19,524	81,392	101,145	15	1,544	3,539	5,098
Tennessee	2,724	36,524	23,376	62,624	232	3,581	1,356	5,169
Texas	6,580	37,657	141,624	185,861	311	2,524	6,501	9,336
Utah	289	6,915	14,274	21,478	22	150	83	255
Vermont	377	6,528	6,471	13,376	59	2,106	441	2,606
Virginia[e]	4,551	24,881	15,877	45,309	480	2,542	1,047	4,069
Washington	1,973	23,032	23,637	48,642	183	1,314	600	2,097
West Virginia	2,437	8,188	21,965	32,590	459	1,475	3,020	4,954
Wisconsin	4,981	54,503	22,793	82,277	691	5,552	962	7,205
Wyoming	15	4,026	20,684	24,725	1	128	641	770
Total	102,508	807,410	1,518,793	2,428,711	9,338	67,966	70,858	148,162
Percentage	*4.2*	*33.3*	*62.5*	*100.0*	*6.3*	*45.9*	*47.8*	*100.0*

[a] Road Inventory Table #10, Highway Planning Survey, Public Roads Administration.
[b] "Paved" includes block, brick, concrete, high-type bituminous.
[c] "Other surfaced" includes low-type bituminous, plain macadam, plain gravel, soil surfaced.
[d] "Unsurfaced" includes graded and drained earth, unimproved earth, and primitive roads.

5. Number of Selected Institutions Served by Rural Roads of Several Improvement Types in 38 States, 1936–37—*Continued*

State	Farm Units[f]				Churches			
	Paved	Surfaced	Other	Total	Paved	Surfaced	Other	Total
Alabama	3,820	82,509	65,271	151,600	231	3,995	2,652	6,878
Arizona	1,941	3,670	7,319	12,930	43	62	162	267
Arkansas	3,196	27,824	67,454	98,474	140	944	2,076	3,160
California	33,508	98,190	30,491	162,189	432	794	138	1,364
Colorado	1,088	14,626	38,026	53,740	4	143	190	337
Connecticut	2,349	13,150	2,781	18,280	126	327	21	474
Florida	2,020	12,728	27,601	42,349	147	693	1,259	2,099
Idaho	594	22,218	20,578	43,390	7	165	103	275
Illinois	22,603	107,467	59,832	189,902	389	649	1,120	2,158
Iowa	10,801	81,606	116,180	208,587	64	804	876	1,744
Kansas	3,508	40,534	89,433	133,475	84	711	757	1,552
Kentucky	6,816	90,283	89,819	186,918	246	2,566	1,877	4,689
Louisiana	9,031	37,939	45,113	92,083	361	1,380	1,140	2,881
Maryland	7,942	19,456	17,264	44,662	463	945	460	1,868
Michigan	16,126	155,261	43,759	215,146	293	1,879	253	2,425
Mississippi	2,004	49,852	43,604	95,460	141	2,951	2,253	5,345
Missouri	9,101	77,006	159,965	246,072	150	1,555	2,497	4,202
Montana	154	1,132	2,676	3,962	24	174	224	422
Nebraska	2,272	28,649	92,749	123,670	11	306	517	834
Nevada	70	725	2,081	2,876	1	20	35	56
New Hampshire	1,017	16,580	5,877	23,474	36	393	25	454
New Mexico	608	8,105	26,425	35,138	11	152	492	655
North Carolina	15,240	88,720	92,122	196,082	909	3,647	2,691	7,247
North Dakota	17	16,147	57,213	73,377	—	329	645	974
Ohio	80,094[g]	295,195[g]	24,560[g]	399,849[g]	1,356	6,309	532	8,197
Oklahoma	5,010	24,607	149,018	178,635	44	264	1,180	1,488
Oregon	6,157	42,555	12,106	60,818	120	560	105	785
South Carolina	5,975	27,649	60,988	94,612	308	1,358	2,525	4,191
South Dakota	421	22,479	50,857	73,757	2	396	528	926
Tennessee	7,172	111,926	57,381	176,479	313	4,544	1,424	6,281
Texas	12,639	80,041	244,089	336,769	237	2,380	5,368	7,985
Utah	1,869	14,237	13,086	29,192[h]	22	111	34	167
Vermont	990	15,372	10,812	27,174	46	432	52	530
Virginia[e]	17,133	72,942	43,393	133,468	818	3,808	1,281	5,907
Washington	10,254	69,148	20,341	99,743	96	445	88	629
West Virginia	2,805	10,264	22,449	35,518	503	1,653	1,608	3,764
Wisconsin	13,172	117,997	25,418	156,587	220	1,688	201	2,109
Wyoming	22	3,135	12,284	15,441	—	21	42	63
Total	319,539	2,001,924	1,950,415	4,271,878	8,398	49,553	37,431	95,382
Percentage	*7.5*	*46.8*	*45.7*	*100.0*	*8.8*	*52.0*	*39.2*	*100.0*

[e] Does not include Arlington, Henrico, and Warwick Counties.
[f] Generally excludes rural dwellings with small acreage.
[g] Includes all farms and dwellings, except unoccupied houses.
[h] Includes 11,111 "farms without dwellings."

5. Number of Selected Institutions Served by Rural Roads of Several Improvement Types in 38 States, 1936–37—*Continued*

State	Dwellings[i]				Business Establishments[j]			
	Paved	Surfaced	Other	Total	Paved	Surfaced	Other	Total
Alabama	8,265	65,168	38,931	112,364[k]	1,405	5,369	1,411	8,185
Arizona	5,734	13,943	28,075	47,752	1,222	2,072	1,127	4,421
Arkansas	6,273	25,684	56,134	88,091	1,521	3,624	2,349	7,494
California	75,966	106,993	22,008	204,967	17,820	10,062	993	28,875
Colorado	994	13,234	19,730	33,958	702	2,258	3,152	6,112
Connecticut	11,312	39,248	4,599	55,159	2,475	2,129	97	4,701
Florida	12,840	49,574	34,391	96,805	2,992	5,424	1,318	9,734
Idaho	820	5,355	4,666	10,841	205	919	459	1,583
Illinois	31,460	17,797	39,510	88,767	5,943	2,233	902	9,078
Iowa	2,543	12,068	9,905	24,516	701	1,217	825	2,743
Kansas	8,143	25,552	26,183	59,878	1,850	3,745	1,345	6,940
Kentucky	10,759	52,465	30,486	93,710	2,444	8,724	4,110	15,278
Louisiana	15,752	38,118	23,242	77,112	3,037	4,427	905	8,369
Maryland	22,693	45,921	12,769	81,383	3,801	3,467	556	7,824
Michigan	18,464	88,852	26,956	134,272	6,330	8,707	1,028	16,065
Mississippi	9,380	101,791	81,664	192,835	903	4,503	1,097	6,503
Missouri	7,000	33,853	24,125	64,978	3,335	5,478	2,985	11,798
Montana	2,631	14,758	36,194	53,583	1,567	5,205	5,213	11,985[l]
Nebraska	862	3,705	3,110	7,677	491	1,005	729	2,225
Nevada	176	2,531	6,170	8,877	95	993	678	1,766
New Hampshire	4,136	40,587	9,543	54,266	876	2,780	97	3,753
New Mexico	619	7,976	17,207	25,802	448	1,806	1,004	3,258
North Carolina	38,630	59,974	49,259	147,863	7,588	9,061	3,536	20,185
North Dakota	22	2,419	1,337	3,778	25	2,183	693	2,901
Ohio	645[m]	5,834[m]	1,889[m]	8,368[m]	7,551	7,746	168	15,465
Oklahoma	4,536	10,399	26,647	41,582	1,970	2,286	2,994	7,250
Oregon	5,727	17,863	4,285	27,875	1,516	2,537	334	4,387
South Carolina	12,205	38,283	73,621	124,109	2,479	3,100	2,301	7,880
South Dakota	23	3,220	2,820	6,063	38	1,445	664	2,147
Tennessee	11,733	98,652	29,272	139,657	3,691	10,667	1,055	15,413
Texas	14,110	75,238	90,561	179,909	5,607	16,441	10,954	33,002
Utah	1,237	6,268	2,884	10,389	453	662	183	1,298
Vermont	2,345	20,482	7,249	30,076	606	2,170	242	3,018
Virginia[e]	27,175	64,641	18,168	109,984	7,456	10,917	1,532	19,905
Washington	8,957	21,035	5,457	35,449	3,897	4,838	485	9,220
West Virginia	30,919	52,631	53,051	136,601	2,580	2,962	1,547	7,089
Wisconsin	13,766	58,768	15,272	87,806	4,533	8,263	1,120	13,916
Wyoming	39	2,322	3,917	6,278	23	629	547	1,199
Total	428,891	1,343,202	941,287	2,713,380	110,176	172,054	60,735	342,965
Percentage	*15.8*	*49.5*	*34.7*	*100.0*	*32.1*	*50.2*	*17.7*	*100.0*

[i] Year-round dwellings only; that is, "seasonal" dwellings excluded.
[j] Includes stores, gas stations, inns, garages, restaurants, tourist camps, and small shops.
[k] Excludes 372 businesses with "residences combined."
[l] Includes 7,898 "transportation terminals."
[m] Includes unoccupied houses only.

6. GOVERNMENT OWNERSHIP OF MOTOR VEHICLES

Type of Vehicle	Federal, 1939[a]	State, County, and Municipal, 1938[b]
Passenger cars	18,128	50,284
Buses	382	22,290
Trucks	104,408	117,239
Trailers and semi-trailers	—	8,610
Motorcycles	—	8,081
Unclassified	—	67,656
Total	182,918	274,160

[a] From replies to questionnaire sent to all federal agencies in February 1939 by W. T. Comeron, Secretary, Federal Interdepartmental Safety Council, Division of Labor Standards, Department of Labor. These data contain some overlaps where vehicles are owned by one agency and occasionally used by another.

Federal ownership of vehicles classified according to functional purpose was as follows in 1939:

	Passenger	Bus	Truck
Agriculture	5,652	65	36,600
Finance and taxation	2,000	—	121
Regulation of business	667	1	824
Labor and welfare	3,389	184	91,313
Law and order	734	2	31
Imperialism	4,670	128	19,809
Post office	—	—	8,390
Recreation	684	—	6,213
General-overhead-miscellaneous	332	2	1,107
Total	18,128	382	164,408

[b] "Publicly Owned Vehicles," *Public Roads*, October 1939, p. 167 (published by Public Roads Administration).

7. GROWTH OF PUPIL TRANSPORTATION, 1925–40[a]

Year	Number of Schools Using Buses	Number of School Buses in Operation[b]	Miles of Route—One Way	Children Carried Daily	Cost of Service
1940....	44,249	93,306	1,265,030	3,967,411	$76,052,788
1939....	42,452	91,616	1,276,315	3,742,240	72,949,264
1938....	36,336	86,099	1,224,279	3,388,645	66,011,592
1937....	34,615	84,061	1,017,056	3,225,361	61,032,340
1936....	31,912	79,798	989,004	3,145,180	55,380,496
1935....	28,231	77,825	924,597	2,918,657	52,621,881
1934....	23,580	70,130	702,578	2,571,456	48,562,565
1933....	23,355	66,320	687,780	2,374,488	50,533,603
1932....	21,286	63,438	641,618	2,131,699	48,759,730
1931....	16,426	55,306	506,063	1,583,917	40,696,368
1930....	16,547	48,775	451,013	1,478,699	34,044,138
1929....	16,518	45,067	425,000	1,276,427	30,119,302
1928....	15,929	40,868	410,527	1,152,223	27,256,738
1927....	14,695	35,867	352,892	981,240	24,659,598
1926....	13,874	32,778	316,045	875,462	23,430,195
1925....	14,587	26,685	323,637	...	...

[a] From censuses of school buses as made by *Bus Transportation*. For some states the data are partially estimates. Compiled from annual statistical numbers of *Bus Transportation*.

[b] As would be expected, a part of the growth shown is due to more inclusive reporting of school bus operations as time passes. In its annual statistical report for 1933, for example, *Bus Transportation* reported that the growth shown by 1932 figures compared with 1931 was affected by more accurate reporting of data.

The figure used here is the gross figure reported. *Bus Transportation* estimates that around 1930 this figure included some 3,000 common carrier buses which carried school children and that in the last few years it includes some 6,000 common carrier buses.

8. COMMERCIAL PRODUCTION OF BUSES, 1925–39[a]

Period	City	Intercity	School	Total	*School Buses as Percentage of Total*
1925–29....	16,676	15,871	13,597	46,144	*29.5*
1930–34....	8,267	6,675	18,421	33,363	*55.2*
1935–39....	23,710	11,877	50,986	86,573	*58.9*

[a] Number of buses for 1930–39 taken from *Bus Transportation*, January 1940, p. 51. Buses for 1925–29 classified on basis of data in *Bus Transportation*, February 1930, p. 78. For purpose of this table sightseeing, hotel, and miscellaneous buses as reported for 1925–29 were classed as city buses. A small number of buses for each year not accounted for owing to discrepancies between sub-totals and totals were also classed as intercity.

INDEX

INDEX