

XII. THE GOOD ROADS REVOLUTION

Few of the men who argued in favor of better roads at the first good roads convention in St. Paul in 1893 could have foreseen what their ideas would grow into in the space of twenty-seven years. The changes amounted to a revolution, but they occurred so gradually that, until the final steps were taken, they were scarcely perceptible. It is only by comparing periods separated by a number of years that the development of the good roads idea shows up as a startlingly distinct achievement. In the matter of expenditures for roads and bridges this revolution in opinion was especially distinctive. In 1900 the total tax levy for roads and bridges amounted to \$757,981, and many of the people of Minnesota undoubtedly felt that they were overtaxed for that purpose. Five years later the road and bridge expenditures reached \$1,434,141. In 1910 the people of the state spent more than \$2,500,000, and in 1915 the total amounted to almost \$7,275,000. Five years later, in 1920, Minnesota spent well over \$22,000,000 on roads and bridges, and that fall the electorate of the state sanctioned the spending of an additional \$10,000,000 a year. During that same period there was an increase in the number of miles of road in the state, but the

increase was so small in relation to the increase in expenditures, that there obviously was little connection between the two. In 1906 the highway commission reported the total road mileage as a little more than 79,000; in 1920 there were about 98,000 miles of roads in the state. ¹

The influence of state aid in inducing the local units of government to increase their expenditures for roads undoubtedly was great. In 1907, the first year that state aid was available, the proceeds of the one-twentieth of a mill state tax amounted to about \$54,800, and the commission found it hard to persuade the county officials to designate roads to receive that aid. In fact, in 1908, after two years, only sixty-four of the eighty-five counties of the state had taken the trouble to designate roads, and the total mileage of state-aid roads was only 4,032. By 1910 the mileage had increased to 7,153, and seventy-seven of the counties had designated roads. By 1911, however, the mileage had grown to a total of 12,688, and all counties were showing an interest in the state-aid fund. During 1912 and 1913 the mileage of state-aid roads increased to a little more than 16,000, but, because of the provision of the Dunn law which made it necessary to spend twenty per cent of the state aid for maintenance, the mileage was reduced

1. State Highway Commission of Minnesota, Reports, 1906, p. 15; Babcock and Mullen, State Trunk Highway System, 3; post, p. 479n.

in 1914 to 11,406, and from then until 1920 the average number of miles included in the state-aid road system remained about 13,000. In 1921, when the trunk highway system was set up, 6,851 miles were removed from the state-aid system, leaving 6,802 miles in that system. By the end of the year, however, additional state-aid roads had been designated, bringing the mileage to 8,358, and within a year or two, the total again approached the 13,000 mile average. ²

During this same period the amount of aid that the state gave the counties for the construction of roads gradually increased from \$54,800 in 1907 to \$1,933,822 in 1920. Under the watchful eyes of the state officials, these funds were expended solely upon the state-aid roads. In addition to aid from the state, aid from the federal government totaled almost \$5,000,000 during the last four years of the period. It was necessary for the local units of government to appropriate a sum of money equal to that granted by the state and federal governments, and this money could be spent only on roads

2. Commissioner of Highways of Minnesota, Reports, 1921, p. 29, 64, 1923, p. 77. The following table shows the mileage in the state-aid road system from 1908 to 1920.

1908	4,032.00	1914	11,406.51
1910	7,153.00	1916	12,700.00
1911	12,688.00	1917	13,198.91
1912	16,034.75	1919	13,203.80
1913	16,723.79	1920	13,653.00

The figures for this table were obtained from the reports of the state highway commission and after 1917 from those of the commissioner of highways.

designated to receive the aid. There seems to be in most people an almost irresistible impulse to take advantage of a bargain, and the counties, in order to take advantage of the state and federal aid offered them, undoubtedly raised more money by local taxation and special bond issues than they otherwise might have done. ³

The influence of the highway commission and the department of highways is evident in many ways. One of the first acts of the commission was to make experimental roads. In 1906 the highway officials demonstrated what could be done to improve roads by using

3. Following is a table of expenditures for roads and bridges from 1900 to 1920. The figures for the town and county appropriations were obtained from the reports of the state auditor; the figures for the state aid and federal aid appropriations were compiled from the reports of the state highway commission and after 1917 from those of the commissioner of highways.

Year	Town and County Appropriations	State Aid	Federal Aid
1900	\$ 757,981.04		
1905	1,434,140.94		
1907	1,776,923.15	\$ 54,800	
1908	2,055,114.93	72,650	
1909	2,264,254.40	74,090	
1910	2,426,709.89	79,400	
1911	2,600,437.72	79,300	
1912	2,785,106.88	340,000	
1913	4,272,254.15	350,000	
1914	5,237,665.00	1,400,000	
1915	5,794,226.61	1,480,000	
1916	6,595,020.60	1,500,000	
1917	8,473,016.92	1,432,150	\$ 142,394
1918	9,178,458.77	2,220,000	284,788
1919	13,513,613.61	1,969,017	1,846,640
1920	17,706,242.00	1,933,822	2,699,471

only the native materials that they found in the Red River Valley. The following year experimental roads were laid out in the sandy portions of the state, where a mixture of sand and straw was tried with good results on one road in Sherburne County. On a road in Isanti County a mixture of straw and sawdust proved to be slightly less successful. The problem of surfacing the roads also was attacked with energy by the state highway officials, and counties receiving state aid were encouraged to spend at least a portion of the aid for graveling roads, or, where sandy conditions prevailed, to apply a coating of clay on the sand and gravel. A third way in which the highway officials encouraged local authorities was in their insistence upon proper maintenance of roads. The highway commission as early as 1909 was authorized to conduct experiments in the maintenance of the road system. A short extent of road in Dakota County was selected for the first experimental work, and the wisdom of the policy of adequate road maintenance at all times of the year was proved thereby. By 1911 road maintenance was carried on, in an experimental way, in eight counties. Discontinuance of the patrols, the commission reported, brought "very urgent protests." After 1913 a one-mill tax for the "dragging fund" was made compulsory throughout the state. By virtue of that fact, it was claimed, Minnesota became "the first state west of the Alleghenies to organize a

maintenance system," and under that system the state made "greater progress than almost any other State."⁴ Throughout the story of the contacts of the highway commission with local authorities, the cumulative effect of the value of skilled technical training is perceptible. When the rapidly increasing volume of automobile traffic demonstrated that even with the best of care gravel roads deteriorated, it was the officials in the highway department who led the way in persuading people that a new system of hard-surfaced, all-weather roads was needed.

It is doubtful that the progress in road construction between 1900 and 1920 would have been made had it not been for the introduction of the automobile as a means of transportation. Riding in the automobiles of the early years of the twentieth century was uncomfortable at best, and the rougher the roads, the greater the degree of discomfort that attached to riding in them was. When automobiles became a common means of transportation, the number of advocates of good roads increased, and the inescapable fact remains that the revolution in road making was finally accomplished in the automobile age. The farmers of America were not sufficiently impressed by the appeals of the bicycle age, using as an argument the economic value to the

4. State Highway Commission of Minnesota, Reports, 1909-10, p. 24-29, 1911, p. 34; Babcock and Mullen, State Trunk Highway System, 14.

farmers of good roads, to improve their market roads. The change came only when the farmer bought an automobile. What the appeal to the farmer's pocketbook could not do, the jolting of a "flivver" over a rough country roadway accomplished.

The revolution in road making as evidenced by the development of the Babcock plan of roads was the Minnesota manifestation of a condition that prevailed throughout America at the same time. From one end of the United States to the other, a revolt against poor road conditions broke out during the years immediately following the end of the war. Virginia, in 1918, enacted legislation to set up a system of state roads, constructed by the state and financed by a general property tax. In Pennsylvania the people authorized a road bond issue of \$50,000,000 the same year, while in Michigan a constitutional amendment was ratified in 1919 permitting the state to issue up to \$50,000,000 in bonds to finance the construction of a system of trunk highways.⁵ North Carolina, to cite another example, was in the midst of a struggle during 1920 and 1921 to provide a system of state highways, and in North Dakota plans were made in the fall of 1920 for the opening of a campaign for a plan of road con-

5. Tipton R. Snavely, Duncan C. Hyde, and Alvin B. Biscoe, State Grants-in-Aid in Virginia, 159 (New York, 1933); Frank E. Rogers, History of the Michigan State Highway Department, 1905-1933, 103-107 (Lansing, 1933); Wilbur C. Plummer, The Road Policy of Pennsylvania, 90 (Philadelphia, 1935).

struction similar to that of Minnesota. ⁶

The basic factors motivating the revolt were everywhere the same. The numerous warnings that the automobile was pushing the world into a new era of transportation went unheeded, and the motor vehicle crept in almost unnoticed to supplant the horse and buggy of the nineteenth century. In 1900 the automobile was the new and exciting toy of a few persons who were reckless enough and wealthy enough to own them. A decade later, they were commonplace enough to occasion little comment, but the wiseacres refused to entertain the idea that a motor-driven vehicle could supplant the traditional horse-drawn vehicles of their day. In another decade -- by 1920 -- the automobile was the vehicle in which thousands of people traveled in every-day life, from home to office, from farm to town, from town to town. The automobile completely changed the old concepts of time and distance. Where six or eight miles had been the common radius of travel for pre-war Americans, the post-war generation lived in a community the extent of which reached out a hundred miles on all sides. The state, not the township or the county, was the unit in terms of which that generation thought. ⁷

6. Brown, State Highway System of North Carolina, 73-123; St. Paul Pioneer Press, December 22, 1920.

7. For a recognition of this increased radius of travel, see St. Paul Pioneer Press, January 13, 1919; H. M. Orfield to Koll, August 18, 1920, in the Koll Papers; Babcock and Mullen, State Trunk Highway System, 14.

The statistics of the number of automobiles in different parts of the nation are an interesting gauge of the increasing popularity of the automobile. In 1900 there were, at the most, but a few more than three thousand automobiles in the entire nation. Yet, in 1913 there were in Michigan alone a total of 60,468 registered automobiles. Half a dozen years later, in 1919, the number of licensed automobiles in Michigan had increased to more than 325,000. There were about 10,000 automobiles in the state of North Carolina in 1913; in 1920 the number had increased to almost 130,000. In Minnesota the increase was similarly marked. In 1913 the number of cars was about 45,000; by 1920 it had increased to 300,000. For the nation as a whole, the number of automobiles increased from a little less than 1,750,000 in 1914, to a little more than 7,500,000 in 1919. In the pre-war period, the owners of automobiles were decidedly in the minority. In 1920, they still constituted a minority of the population, but they were a minority which had become highly vocal and efficiently organized. ⁸

During the years between 1913 and 1920, the nation passed through a trying crisis, and the energies of the

8. Rogers, History of the Michigan State Highway Department, 102; Brown, State Highway System of North Carolina, 53, 190; Secretary of State of Minnesota, Reports, 1912-14, p. 4, 1918-20, p. 3. The total number of automobiles by states is given in Public Roads, vol. 3, no. 25, p. 13 (May, 1920).

people were directed to a successful prosecution of a war. During that period, all activities which did not further the war program were relegated to the background. One of the reasons for this was the shortage of labor. With a large proportion of the available man power of the nation dedicated to the war service, and a still larger proportion devoted to the task of producing war materials, the number of men who could be hired for road-building purposes was too small to permit much of an impression to be made upon the huge task of building needed roads. Maintenance of the existing systems was, perhaps, more than could be expected of a nation so preoccupied. ⁹

With the return of peace, however, the situation suddenly changed. By 1920 the nation had awakened to the fact that the automobile was a permanent part of the transportation system. Then the people found that they had on their hands an antiquated road system built for vehicular traffic which moved much more slowly than did that of 1920. The disbandment of the huge army which had been built up during the war years, and the release of that still larger army engaged in the manufacture of the materials of war, spilled out upon the nation a

9. Report of the chief of the bureau of public roads, in Department of Agriculture, Reports, 1919, p. 397; Commissioner of Highways of Minnesota, Reports, 1918-19, p. 3; Babcock and Mullen, State Trunk Highway System, 12.

labor supply for which employment had to be found. ¹⁰ On top of this, the nation, during the years of war, had experienced a colossal inflation of ideas and values. During the period of high prices which prevailed during the war, the nation endured a brief era of extraordinary prosperity, and men who, before the war, thought in terms of thousands, now found that millions were as easily envisioned. The idea of incurring large debts for the construction of roads, no longer roused feelings of horror in the man on the street, and he was willing, even eager to embark upon a plan which would give him and his family broad, even avenues of communication.

Americans had the imagination necessary to plan for roads on a large scale without flinching at the thought of the heavy expenditures their construction involved. But behind them, and encouraging the activities of groups in the various states, stood the federal government. A large measure of responsibility for the sudden burst of activity in road building and the reform in practices of administration, as well as construction, in the period immediately following the war must be laid at the door of the federal government. The national

10. The appropriation for roads by Congress in 1919 was, to a considerable extent, based upon the necessity of finding employment for the men discharged from the army. Congressional Record, 65 Congress, 3 session, 2801-2805.

road appropriation measure of 1916 and the supplementary act of 1919 had "far reaching results, not only in the financial aid" they "rendered the several states, but by directly causing them to organize State Highway Departments equipped with staffs of engineers capable of supervising the construction of highways to the satisfaction of the U. S. Bureau of Public Roads." 11 More than that, the act of February 28, 1919, gave a summary warning to states which had failed to make provision for a constructive program of road building that, unless they reformed their ways, the federal aid would be withheld from them. 12

Equally powerful as a stimulant to progressive road building was the action of the federal government in distributing among the states excess war material which could be adapted for use in constructing highways. Under the provisions of the act of February 28, 1919, the secretary of war was authorized to turn over to the secretary of agriculture war material and equipment not needed for military purposes, and the department of agriculture was to parcel it out among the states. 13 The distribution of trucks, tractors, and other heavy equipment was begun at once, and by the end of 1920 Minnesota alone had received a total of 632 motor trucks

11. Rogers, History of the Michigan State Highway Department, 98.

12. Ante, p. 453; Commissioner of Highways of Minnesota, Reports, 1918-19, p. 3.

13. Statutes at Large, 40: 1201.

and tractors valued at more than \$1,900,000, together with other materials, such as engineer's equipment, road-building machinery, explosives, and wagons and harnesses, valued at almost \$350,000. Many of these pieces of equipment were new; others required extensive repairs or rebuilding in order that they might be used. When the machinery was in good running condition, the state highway department lent it to the counties for use on roads, the only charge made for it being the actual cost of repairs and shipping. When the trunk highways amendment became operative, of course, it became necessary for the highway department to build up an inventory of road-making equipment for its own purposes, and the amount of excess war materials distributed to the counties was reduced. In Minnesota the action of the federal government had the effect of stimulating local efforts to build roads, and, since the materials were distributed among all the states, the cumulative effect of the federal action cannot have been other than great. ¹⁴

It was under such circumstances that the constitutional amendment of 1920, and the legislation of 1921, came into existence. The Minnesota plan adapted for

14. Commissioner of Highways of Minnesota, Reports, 1918-19, p. 4, 1920, p. 37-40, 1922, p. 19, 21; reports of the chief of the bureau of public roads, in Department of Agriculture, Reports, 1919, p. 411, 1922, p. 462, 1923, p. 489, 491.

use the ideas which were being tried elsewhere. Many states, by 1920, had delineated systems of trunk or main highways. Many of them had taken over the task of building such roads. All the states followed a procedure of taxing motor vehicles, and in most of them at least a portion of the proceeds was devoted to the construction of roads. In 1920 Minnesota was the only state in the Union which did not require an annual registration, and one of the few which did not utilize the income from the sale of such licenses for road purposes.

Public Roads, a publication sponsored by the federal road bureau, estimated that in 1920 sixty-six per cent of the income from automobile license fees in the country as a whole was used for road construction under the supervision of state highway officials. The remainder went for local roads or other local expenditures.¹⁵ To the extent that the income from the sale of automobile licenses was dedicated to paying for the construction of a system of highways, Minnesota, therefore, in 1921 was falling into line with other states.

15. Inaugural Message of Governor J.A.O. Preus to the Legislature of Minnesota, January 5, 1921, 16; Public Roads, vol. 3, no. 25, p. 12, 15 (May, 1920). The cost of license registration in a number of near-by states in 1920 was: Wisconsin, \$10.00; Illinois and Ohio, \$8.00 to \$25.00, according to valuation and weight; Iowa, 1 per cent of value, plus \$.40 per hundred pounds of weight. In all these states, motor vehicles were subject to a personal property tax in addition to the license fee. Public Roads, vol. 3, no. 25, p. 14-17 (May, 1920). See also St. Paul Dispatch, December 26, 1920.

The Minnesota program, however, contemplated the construction of a network of trunk or main highways without recourse to taxing other property, and this was something of an innovation, for, in other states undertaking a similar program at that time, a portion of the cost of construction was paid by a general tax. Even in Minnesota the amendment provided for a general tax if the revenue from automobile licenses was insufficient to pay the whole cost.¹⁶ The authors of the constitutional amendment asserted that the possibility that a general tax would be resorted to was remote, and that the clause was inserted in the measure to serve as a guarantee to purchasers of highway bonds that they would receive their money when the bonds matured. Otherwise, they claimed, the bonds could not be sold. On the assumption that the clause was inserted as a perfunctory guarantee of payment and was not intended to be used, the Minnesota plan may be considered a pioneer in the field of highway financing. There were said to be only

16. In Wisconsin the road-building program was based upon an equal sharing of cost between state and counties, with federal aid funds amounting to one-third of the entire cost. St. Paul Dispatch, December 27, 1920. In Michigan the counties, or townships, participated in the cost of building the trunk line roads in amounts ranging from five to twenty-five per cent, according to the assessed valuation of property. Rogers, History of the Michigan State Highway Department, 104. In Pennsylvania the income from the license fees was devoted to road construction and maintenance, but in addition specific legislative appropriations were made. Plummer, Road Policy of Pennsylvania, 103.

six states in 1920 -- Alabama, Illinois, Maine, Minnesota, Nevada, and Utah -- which planned to finance highway construction by the sale of bonds redeemable from the proceeds of the motor vehicle license fees. The question raised by this departure in highway finance was whether the income from motor vehicle registrations would be sufficient to permit the inauguration of both an extensive campaign of trunk highway construction, and an adequate system of maintenance. The sponsors of the Minnesota plan were sure that, with the federal help that was available, there would be enough funds for all purposes. At all events, the Minnesota plan was the object of close scrutiny by good roads leaders in other states. It marked the opening of an intensive campaign to give the entire state a connected system of well maintained, well improved, surfaced roads. ¹⁷

The Babcock plan did not bring Minnesota to the millennium. It did not even take Minnesota entirely "out of the mud." But it did bring the state to an era of scientific road construction, and introduced it to a period of high-speed highway transportation. It completed the revolution which began in the nineties when the idea of state participation in road making was

17. Public Roads, vol. 3, no. 25, p. 13 (May, 1920); St. Paul Dispatch, December 20, 1920. The latter item is an interview by a reporter with Babcock and Mullen upon their return from the annual meeting of the American Association of State Highway Officials, held in Washington, D. C., in mid-December.

brought out for public discussion. It did not mean that the state took over all the responsibilities for road construction and road making. But it set up a new system of highways which was independent of local roads, and, by relieving the local communities of a portion of the financial burden which they had borne, it enabled them to improve roads serving less heavily traveled regions. Moreover, the trunk highways, constructed by men skilled in the work, constituted models for local authorities to emulate.

In a sense the road system outlined in the amendment of 1920 resembles the road system which the pioneers laid out when Minnesota was young. The pioneers were concerned with problems very similar to those dealt with by the Babcock plan of roads. They needed a system of communication which would bind together all the principal points in the settled areas of the state. The roads of the pioneers were built in a day when wagon roads constituted the principal links of communication for most of the state. Their main roads, therefore, were arterial highways leading from one main town to another. It was essential to the pioneers that the system be co-ordinated, for mail service had to be carried on over it, and passenger and freight service as well. During the last half of the nineteenth century this need for a co-ordinated system was obviated by the construction of railroads, for the rail link pro-

vided a means for getting from one town to another.

During this period the wagon road was simply a method by which people living in the country could get to town; they became just country roads.

The Babcock plan combined the two ideas. The local or farm to market road was just as essential in 1920 as it was in 1890, and the automobile made the trunk highway just as important as were the main thoroughfares of the fifties in the century before. The triumph of the Babcock plan lay in its ability to serve both needs without impeding either. Indeed, by its organization, the development of both kinds of roads was fostered. In one respect, the Babcock plan meant a return to pioneer principles. The modern highway engineer is not so much concerned over the necessity for following section lines; he is chiefly concerned with locating the easiest grade and the most practicable route. That was the plan of the pioneers. It was only in the period of development which followed the conquest of the frontier that the pioneer trails were rerouted and put on the section lines, whether or not they represented the most practicable routes of travel. There the resemblance between the old and the new ends, for in the pioneer era, and for long after, the distinguishing feature of road construction and maintenance was the labor tax, the small road district, and the road overseer. These have been driven into the discard.