

ABOUT GOOD ROADS.

Matters Pertaining to Highways in the United States as Compared with Foreign Countries—America is Greatly Behind Europe in this Respect.

By Hon. Logan Waller Page, in "Southern Good Roads." The present road situation in the United States may be briefly summed up as follows: In mileage, we have the most tremendous system of roads which any country has ever possessed since the world began. According to a careful road census, the length of all of our roads amounts to 2,155,000 miles. The most liberal estimate of our annual expenditure on these roads, both in money and labor, was a fraction over \$79,000,000 in 1904, or about \$1.05 per capita. At the same rate, this would be an expenditure of about \$90,000,000 a year at the present time. England, with only 150,000 miles of road, spends about \$80,000,000 a year, or about fourteen times as much per mile.

Same as 30 Years ago. According to our road census, we have less than 40,000 miles of stone surfaced road, or about 2 per cent of the total mileage; we have 108,000 miles of gravel road, or about 5 per cent of the total mileage. Small as our annual expenditure for roads has been, it has aggregated, during the 30-year period from 1870 to 1900, a total of upwards of \$1,800,000,000. We may, therefore, say that road building in the United States is, considering area, population and wealth, at the same point at which it stood thirty years ago, and the seventeen hundred and odd million dollars have produced few appreciable results.

When we turn to the subject of road administration in the United States, we find that about half of the states are operating under practically the same road laws as prevailed in England when America was a Colony. This system of road administration provides for the payment of road taxes partly in labor and localizes the work to an extreme degree, by placing in authority the district or township road overseers, or road supervisors, no requirement being made to insure skill of knowledge of road building on the part of these petty officials. With few exceptions, no system of accounting is in force, so that an intelligent idea may be obtained as to the disposition of the road tax, and no definite lines of authority are established such as would guarantee the wise and equitable conduct of the work.

This is the system which prevailed in all the states until less than twenty years ago. It is, therefore, easily understood why, at the present time, the concrete results in the matter of road building are so few, are confined to a comparatively recent period, and are located in those states which have broken away from the inadequate and ineffective system which I have just described. It can also be understood why, at the present time, road work in those states which have clung to the old methods, and the old system, is conducted in a wasteful, intermittent and wholly ineffective manner, productive of no good results.

Not on Sound Basis. Road administration has either been placed on a sound and practical basis, or steps taken in that direction, in about half of the states of the Union, comprising the New England States, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, Ohio, Michigan, Illinois, Wisconsin, Minnesota, Missouri, Kansas, California and Washington. These states have adopted in principle or practice, or both, the system of centralizing under a state highway department the conduct of all or part of the road work of the state, thereby securing uniformity in methods, economy in administration, and skill in supervision. In some of the state highway departments the work is educational and investigative, with a view to ultimately giving these departments administrative powers. Some of the states, notably Kansas, Missouri and West Virginia, have provided for skilled supervision in the counties, through the appointment of county highway engineers. In most of these states, appropriations have been made from the state treasuries, or the aid of the state convict force has been given toward carrying on road work throughout the various counties.

It is not possible in a short paper to enter into a discussion of the various systems of state aid in effect in this country. Suffice it to say that the principle of state aid and supervision constitutes the germ of the only road administration which has proven successful in other countries. This movement is gaining headway at a very rapid rate, and when we consider that it has been little more than a decade and a half since its inception, the fact that half of the states have adopted it in principle and have actually expended over \$5,000,000,000, we may well feel encouraged for the future of road building in this country.

Foreign Highways. France.—The striking feature of the French road system is the skilled supervision provided in every grade of road work and in every unit of the administrative organization. The basis of the system is the school of roads and bridges, one of the finest technical schools in the world, maintained at the expense of the national government. In this school are trained the highway engineers to whom are entrusted the building and maintenance of the roads of France. The course of study lasts three years and the instruction is free. At the head of the administrative organization is an inspector-general of bridges and highways, under whom are chief engineers in charge of the road work of single departments and communes. Single ar-

rangements are under engineers, the latter being equivalent in rank to non-commissioned officers in the army. The sub-divisions are under the direction of principal conductors and ordinary conductors. Next in line come the clerks employed at headquarters, and finally the cantonniers or patrolmen, each having from four to seven kilometers highway under his immediate supervision. This great administrative machine working in complete harmony with definite lines of responsibility clearly established, accomplishes results with the precision and regularity of a great clock ticking off the seconds of time. Probably the most important unit in this great army of workers is the cantonnier or patrolman who has charge of a single section of the road. He keeps the ditches open, carefully fills holes and ruts with broken stone, removes dust and deposits of sand and earth after heavy rains, trims the trees and bushes, and when ordinary work is impossible he breaks stone and transports it to points where it is likely to be needed. He brings all matters requiring attention to the notice of his chief. Each cantonnier carries a little book in which the chief cantonnier notes his instructions and checks up the work accomplished. The conductors go over the line at regular intervals and direct the chief cantonnier and all reports are transmitted to the central authorities, so that any day or any hour the exact condition of every foot of road throughout France may be ascertained. Every year the conductors prepare estimates of necessary expense for the next year, under three heads—namely: maintenance, heavy repairs and new work, and the parliamentary appropriations are based upon these careful calculations.

French Road Figures. There are in France at the present time 23,656 miles of national routes which cost \$302,975,000 to build. There are 316,898 miles of local highways built at a cost of \$209,800,000 of which the state furnished \$81,060,000 and the interested localities \$227,740,000. The roads of France are classified into five classes: 1st, national routes, traversing the various departments and connecting important centers of population; 2nd, the department routes connecting the important centers of a single department and dissecting the national routes; 3rd, highways of grand communication little less important than the previous class; 4th, highways of public interest traversing a single canton and connecting remote villages and groups of houses with the more important roads.

The English Roads. England.—There are at the present time 149,759 miles of road in England, from which the annual expenditure for the year 1905 to 1906 amounted to \$78,039,000. It is, therefore, evident that the annual expenditure per mile of road amounts to about \$520. In view of the fact that most of the principal roads of England have already been constructed would appear to be devoted in a large measure to maintenance. It would seem that a system which requires an annual outlay of \$520 per mile for the entire mileage must be ineffective and costly. The explanation of this is found perhaps in the fact that in England the maintenance of the public highways devolves entirely on local authorities, these numbering about 1900. Jurisdiction over the roads is vested in, first country boroughs; 2nd, the county councils; 3rd, the urban district councils; 4th, the rural district councils. The county boroughs are certain large towns which hold charters from the crown entitling them to the privilege of self-government. In these the maintenance of the highways devolves entirely upon the borough of town council. In counties, the maintenance of the highways devolves upon urban councils in the urban districts and rural councils in the rural districts. The only exception to the control of the urban and rural district councils is in the case of main roads which are highways between great towns, and the maintenance of these roads devolves upon the county councils.

Revenues are provided by district taxes except for the main roads, for the maintenance of which a county levy is made. The national

government aids in the maintenance of the highways by a contribution proportioned to the sum raised by the imperial taxation levied in the different areas. As to skilled supervision it may be said that no qualifications are required by law to be possessed by the person in charge of road building and maintenance, but it is the general practice in the important districts to appoint experienced engineers for this work. The English system lacks strong central control in each county there being four different classes of government unit, namely—the county boroughs, the urban districts, the rural districts and rural parishes. While the county council exercises some control over the rural districts and the rural parishes, they exercise none over the other two units.

How Germany does it. Germany.—Germany is a federation of states, and it follows that road administration is conducted separately by each state of the empire. The imperial government exercises very little control over the highways, and does not in any way contribute to the expense of their construction and maintenance. The Kingdom of Saxony may be taken as a representative state of the German empire. In Saxony, the highways are divided into state roads, country roads and private ways. The state roads comprise those which have been built by the state and are maintained by the state. The country roads are generally termed "communicating roads," and are built and maintained at the expense of the parishes through whose territory they lead.

A striking feature of the Saxon road system is the practice of planting of fruit trees along the roads, the fruit yielding a considerable revenue. About \$40,000 a year is obtained from the fruit grown along state roads, while the amount obtained from the country road represents a much larger sum. The state roads are cared for by a commission of engineers. The Kingdom is divided into seventeen road districts, in each of which here is a road inspector and road masters, who are employed constantly throughout the year. Each road master has about thirty-seven miles of road under his direction, and a road force of about fifteen men; each man caring for two and a half miles of road.

In the case of the minor roads, the direct responsibility is borne by the authorities of the county. They levy the cost of maintenance and collect the revenues. The communities engage the road employes for the continued care of the highways. The technical supervision, however, is exercised by the road masters of the state force.

Strict provisions are made requiring skill and special knowledge before road officials are appointed. Little Switzerland's Method. Switzerland. The road system of Switzerland is local in character, the various cantons having jurisdiction over the roads within their respective borders. The roads are classified into state roads—built and maintained at the expense of the respective cantons; community roads—built and maintained by the communities; and side, or auxiliary, connecting main lines of state or community roads.

Each canton has at the head of its road system and engineer with capable assistants. In the canton of St. Gall, which may be taken as representative, there are under the control of the engineers five inspectors, or road masters, who are assigned to certain districts in the canton. The engineers and their assistants must have an academic education, and possess a diploma from the Polytechnic Institute. While the road masters are required to have a good technical education.

Conclusion Drawn. General Analysis.—It is apparent from the foregoing that while the units of administration in European countries range all the way from the localism of England to the highly centralized system of France, through varying degrees, skilled supervision is provided by all of the systems, as well as an ample cash revenue sufficient to enable the engineers to carry out adequately their plans for improvement and maintenance. England is the most striking example of extreme localization, and it is a significant fact that England is also the most strik-



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ing example of lack of uniformity construction, is that of France, ad- for maintenance. Certainly the in- ference must be plain that central- ization makes for economy and ef- ficiency in the administration of the public roads. (continued on page 7).

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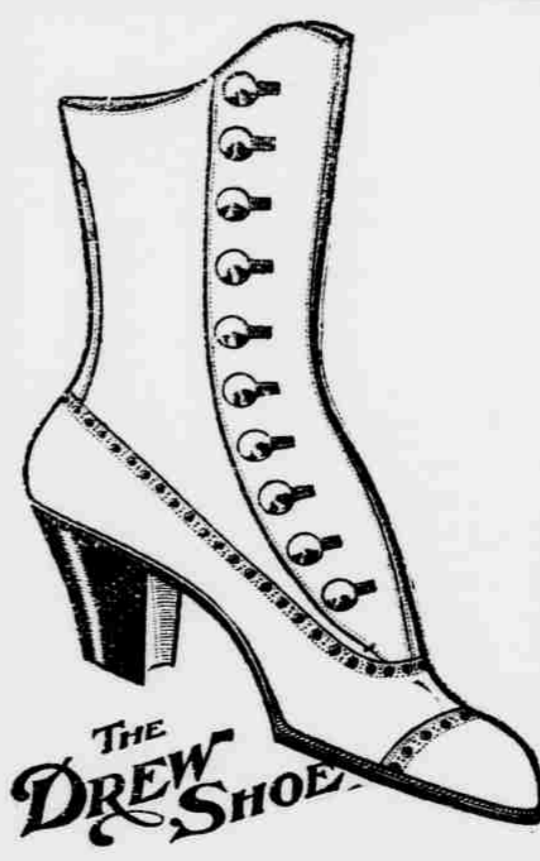


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