

**What's Ahead on the Highways?
Outlook for Major Road Projects During Remainder of the year
is not Promising**

**By Thomas H. MacDonald
Commissioner of Public Roads**

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IMPROVED METHODS OF TRANSPORT AND THEIR IMPORT

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By Thos. H. MacDonald
Commissioner of Public Roads

Prefatory.

Transportation rates its own high and secure place in the sun. While it is not in itself the objective it is the most potent tool for human accomplishment. There is far too great blindness to this definitive truth.

Economists have in high degree predicated major conclusions as to current human affairs and trends of future progress upon two considerations, - production and consumption. They have been inclined to place little emphasis upon the effects of transportation on the existing status or the actual attainment of the latent potentials inherent within these.

Humanists measure their conclusions by other considerations, such as capacity for self government, proficiency in the arts and sciences, opportunity to develop mental discipline and to advance the ethical conduct of the individual. These men of good will recognize the importance of environment in shaping the life of the individual but they focus their ideas too closely. Back of the immediate surroundings one of the

major elements in the creation and perpetuation of these conditions, good and bad, is transportation. If these criticisms are reasonably fair, how much greater then must be the lags and lacks of understanding of the ruling influence of transportation on the part of the general public. They reflect adversely upon the colleges and universities because of their failure to include in their curricula the courses that will give the needed academic training for public leadership in the transportation field.

They reflect adversely upon all of us who are connected with the many phases of transportation because of as yet too limited research of the character and scope needed to uncover the knowledge upon which to found sound laws and administrative policies.

It is high time that we recognize and accept the fact of the profound influence exercised by the kinds, the availability and the characteristics of transportation upon human affairs. These factors have been potent in the past and will be increasingly more determinative of the future trend affecting the daily life of the individual and the currents of national and international relations.

In our thinking certainly transportation with its essential concomitant, terminal facilities, including storage, must be accorded equal weight with production,

consumption and social relations in their combined determination of human economy and social trends.(1)

The Influence of Transportation upon the Present National Structure.

The inherent characteristics of each method of transportation as it has developed, have exerted a ruling influence in creating the present pattern of agricultural and industrial development and consequent population distribution. Certainly the availability of natural resources including fertile soils, determined what has been done, but the methods and costs of transportation have determined the pattern of the physical national structure as it exists today.

Beginning with the earliest form, water transport (which in the fifteenth century opened the new continent to exploitation and settlement by European countries) fixed the location of all our great population centers. There are only nine cities of more than 200,000 population which are not served by navigable water.

These foci of water transport became the natural origins and termini of rail lines to serve inland areas and to integrate them internally and transcontinentally. The development of rail transport radially from established ports

brought this service to large inland areas. Communities dependent upon the horse and ox for local transport power developed at distances along the lines fixed primarily by the limitations of animal travel. At important convergings of railroad routes, communities gradually grew into cities. Their location was largely dependent upon topography, itself a determiner of rail line location. They became the gateways from which supplies were distributed radially and to which the products of the lands flowed for processing or for shipment beyond.

More recently air transport has demonstrated its capacity for relatively light net loads to reduce the time-distance ratio to a fraction of that previously existing. The whole world is brought into physical contact measured by hours in place of days and weeks.

Major lines of air transport are dependent for sustaining income upon the already established metropolitan areas and intercommunication between these.

The result of water and rail transport, particularly in combination, has been to build population concentrations which until about 1900 were compact in form and thus occupied limited land areas.

With minor exception all three types of transport - rail, water and air - are predicated upon regimentation of the individual. No matter how commonplace or how luxurious his personal accommodations, he becomes one of a group subject to the discipline of the fixed schedule for departure and arrival over a fixed route. Once he adjusts his personal convenience to the schedule, he enjoys normally a fast, comfortable and safe trip.

Except for suburban train service these three types are chiefly used for passengers over relatively long distances and take on the flavor of state-wide, nation-wide or international movement.

The transport of commodities, livestock and all articles of commerce at present does not fall into as easily defined groups. The bulk of the tonnage which is moved in carloads and larger units goes to the railroads and to the waterways. The average distance of the movement is relatively long. There is, however, in the aggregate a very large movement of goods of commerce and types of articles such as mail, parcel post, perishable foods and other items of relatively small bulk and weight and relatively high value, which is divided among all the types of transport.

Development of Highway Transport.

Highway transport in its major uses is the antithesis of water, rail and air transport. (2) Its growth has been in the last two decades nothing less than fantastic, yet none of its early pioneers who are honest lay any claim to foreseeing its present dimensions. There was celebrated this year at Detroit the fiftieth anniversary of the automotive industry, but the early years gave little indication of the stature this type of transport was destined to acquire.

Between 1921 and 1941, the number of motor vehicles in use increased three-fold, and the annual use of the average vehicle measured by miles operated doubled. Thus in the two decades prior to World War II, the motor vehicle mileage increased by six hundred per cent. After deducting the trucks and busses, the State with the minimum ownership of passenger automobiles in 1941 had 9.9 persons per car, and the State with the maximum ownership had 2.6 persons per car. The average was 4.5 persons per car for the nation. Each car travelled in 1941 an average distance of 9,285 miles. The passenger car capacity was thus equal to the moving of the whole population of the nation simultaneously. While the number of cars in service was

reduced during the war years, the prior highest level will be regained rapidly.

These facts are perhaps indicative of the overall growth of highway transport, but carry little illumination as to the intensity of its impact upon existing conditions and its potency to effect changes.

Highway Transport in Urban Areas.

The growth of industry brought with it a constantly increasing urban population and concentrated more people in compact areas. The typical city developed without much planning and without an overall conception as to the form which might have a chance for survival. The stage was being set for a movement so spectacular it has been quite well named "the explosion of the cities." The motor vehicle did not create this situation. The blighted and slum areas had been slowly developing until now the estimate is made by Commissioner W.E. Reynolds that "the health, safety and morals of some 25 millions of Americans are being seriously affected by blighted areas." (3)

Rather than creating these conditions, highway transport has become one of the basic tools to remedy

then, to shape the pattern of daily life and to make possible a new urban culture. There are 140 urban areas of 50,000 or more, which aggregate about one-half of our whole population.

While there is a wide variation in the pattern of the central city and its satellite communities, the problems of both are common to those of other metropolitan areas. Actually some of these metropolitan areas are approaching the autonomous quality of the old Grecian city-states. Los Angeles, for example, has an actual corporate area of 452 square miles, but the urban area spreads over 600 square miles, equal to more than one-half the area of the State of Rhode Island. Within this urban area there are 1-1/2 million people and 30 cities of 5,000 or more population. For the larger urban areas highway transport is being used as a tool to effect - although as yet in the early stages - city redevelopment, abolishment of slum areas, opening of parks and parkways and suburban communities of far superior living facilities and with the minimum of time required to reach place of employment. There are some 2,042 cities of more than 5,000 people within their corporate limits, and the concentric bands of urban population widely overflow the corporate limits. Based on the 1940

census, 56.5 per cent of the total population live in urban surroundings and are very largely dependent upon highway transport for their daily movements and services.

Highway Transport in Rural Areas.

Probably the most significant service in its long range effect is the change made possible by the school bus. The little red school house is being rapidly replaced by the consolidated elementary and high schools. The relative opportunities of these two need no comment.

Rural mail delivery started with horse-drawn vehicles, but the service has been greatly augmented by the speed and capacity of the motor vehicle, plus better roads.

Traveling libraries and other potentials have already contributed, and in the future will in an increasing degree contribute to rural life. The opportunities for recreation, social contact or education are shared by the farmer quite generally now, and these will be extended by reason of the rural road improvement program now under way.

Highway Transport in Industry and Agriculture.

War production required many new plants employing astounding numbers of people who were dependent upon highway transport. The Willow Run and Chrysler plants at Detroit and many of the Chicago plants were built away from the hearts of the cities in locations where land was available quickly and at lower relative costs. Here were revolutionary ideas put into practice because highway transport was available. Industrial plants were located in the areas where labor of the required skills and in sufficient numbers was established. Highway transport became a part of the assembly line. All kinds of raw materials were moved to plants over the highways, and units built in plants situated miles apart were brought together for assembly over the highways. There were numerous instances of almost fantastic procedures. For example, wings for bomber assembly at Tulsa, Oklahoma, were built at Willow Run.

One industrial organization during the war had four plants located in three cities. It hauled, by means of motor trucks, forgings from plant A to plant B, 100 miles away, for heat treating; then hauled the heat-treated forgings another 100 miles to plant C for machining;

and finally to plant D, 15 miles away, for assembly into finished unit. The prime contractor in this instance had an assembly line of approximately 215 miles in length between the forging plant and final assembly.

Indicative of the hauling on highways in normal peace times are the following:

Commodities Transported on Rural Highways

| <u>Item</u> | Massa- chusetts | Cali- fornia | Wyoming | 43 States Survey yrs. |
|--------------------------------------|----------------------------|-------------------------------|-------------------------------|-------------------------------|
| | <u>1938</u> Per cent | <u>1936-37</u> Per cent | <u>1936-37</u> Per cent | <u>1936-39</u> Per cent |
| Products of Agriculture..... | 8.05 | 16.96 | 17.17 | 12.8 |
| Animals and Products..... | 12.37 | 9.93 | 10.00 | 13.2 |
| Products of Mines..... | 4.71 | 2.85 | 12.08 | 6.4 |
| Products of Forests..... | 3.31 | 3.80 | 4.01 | 5.2 |
| Manufactures and Miscellaneous... | 62.03 | 66.46 | 56.74 | 53.5 |
| Mixed Freight..... | <u>9.53</u> | _____ | _____ | <u>8.9</u> |
| | 100.00 | 100.00 | 100.00 | 100.0 |

The specialized equipment available for transport over the highways of products difficult to handle has been particularly marked in the growth of the milk industry, contributing alike to the farm income and the provisioning of the cities with better quality foods. The consumption of milk in Washington in 1925 was 40,850 tons, and in 1945 had increased to 216,290 tons, - an increase to five times the earlier figure in a two decade period when the population doubled. This milk is produced largely in the near-by areas of Maryland and Virginia. The fine dairy farms with their sanitary buildings and high-bred dairy cattle have become perhaps the most pleasing elements of the rural landscape in the vicinity of Washington. (4)

Competition between Types of Transportation.

There is far too great emphasis upon the element of competition between the available types of transportation, and far too little accent upon the degree to which each type is necessary and supplementary to the others. Each type of transportation is supreme in the service it can best render. This does not mean necessarily the cheapest service. As a general rule,

the public has evidenced its willingness to pay a premium for time-saving, but this has decided limits. Since ordinarily water, rail and air transport cannot perform a complete service, - that is, from origin to destination, - highway transport must supplement each one. Highway service is chiefly important in the short-haul field. In the transportation of persons the following is indicative:

Passenger trips - Average length

| | | |
|-----------------------------|---------------|---------|
| Rail..... | 82 miles | 1936-40 |
| Air..... | 525 miles | 1946 |
| Private motor vehicles..... | 14.6 miles | 1937-38 |
| Bus - Intercity..... | 30 - 40 miles | 1941-44 |

Studies of the use of the passenger car reflect in a major degree the repetitive daily travel of the average individual and his family within the environs of his own community. Eighty-five per cent of all individual trips of the passenger car are within a 20-mile radius. Focusing this more closely upon the use of passenger cars in four cities of different population, origin and destination

studies of 1944-45 show within what narrow limits passenger cars operate.

| <u>City</u> | <u>Population</u> (Metropolitan area) | <u>Trips entirely</u> <u>within city</u> Miles | <u>All trips -</u> <u>transcity, into</u> <u>and out of, and</u> <u>within the area</u> Miles |
|-------------------|---|--|---|
| Denver, Colo. | 361,100 | 3.12 | 3.67 |
| Fort Wayne, Ind. | 120,000 | 2.07 | 2.61 |
| Greenville, S.C. | 75,000 | 1.47 | 1.31 |
| Spartanburg, S.C. | 45,000 | 1.37 | 1.98 |

In the field of truck use there seems to be little evidence to show that distance in itself is a determining factor in competition between rail and highway transportation, although trucks are at present little used for transcontinental hauling. Trucks are used, however, in regular hauling for distances of 1,000 or 1,500 miles. The nature of the commodity to be moved, the particular conditions surrounding the shipment, and the importance of the element of time are more significant than distance in the shipper's choice of mode of transportation.

Fruit and vegetables are hauled by truck to New York City from States as far south as Florida, and as close as New Jersey. Furniture is conveniently moved by van,

principally because of the elimination of the need for crating. Once loaded the van may traverse a few blocks, or as readily, as many States. Livestock movement by truck is increasing, with trips often covering substantial distances, for truck movement is quicker and loss of weight of the animals is reduced. In Ohio large quantities of coal are hauled from the southern Ohio fields to Columbus and other cities by truck. Here the product of the small mines tunneled into the hillside by one or two miners is loaded onto light trucks or semi-trailers and hauled directly to the consumer. In areas of large-scale operations, however, in which loading facilities are designed for use of railroad cars, shipment of the same product by rail over the same or even much shorter distances would be the rule. Milk moves into New York City from nearby farms and likewise from the Adirondack milk shed by highway, now that suitable bodies are available, with the obvious advantages of its receipt in bulk rather than in cans. Many other examples could be cited in which the product to be moved and the peculiar advantages of truck movement direct from producer or shipper to consumer or processor are of far greater significance than distance alone.

Another factor in actual or potential competition between rail and highway, the importance of which should be investigated as opportunity offers, is the degree in which truck haul between points served by rail is in reality not competition. Undoubtedly much southern fruit is sold in northern markets because it can be brought in quickly and with little handling by truck, when such shipment by rail would not have been practicable and would not have been made. In other words, is it not possible that the truck has developed markets that otherwise never would have existed? Probably few trucks are actually competing with freight trains they pass.

The ability of trucks to compete in tonnage hauling with freight trains becomes somewhat ludicrous when it is shown that of the 3,711,000 registered trucks, classified according to manufacturer's capacity in tons in 1941, 3,212,000 or 36.6 per cent, were in the 1-1/2-ton-and-less class, and over half of these in the less-than-one-ton class. (5)

While highway transport in the aggregate reaches tremendous proportions of passenger-miles and ton-miles, its sphere is in the local field, and supplementary to, rather than competitive with, other kinds of transport. The road program is geared into this aspect, and will be governed by the principles of developing urban, main rural, and secondary roads on a balanced program to serve primarily the objectives of the communities in which they are located. In the cities the most distinctive newer type of improvement will be the controlled access road, which is designed to carry traffic rapidly and safely into and through the metropolitan areas. The main rural roads, when they reach a daily volume of 4,000 vehicles, will be considered for improvement as 4-lane, divided highways. Rural secondary roads will be built to serve the travel with the quality of minimum annual maintenance cost.

The highway builders are not fumbling the problems. The State-wide planning surveys that started generally in 1934 have been continued, and the highway program reflects the actual and potential uses which the individual highways composing the different classes or groups are called upon to serve. Many new techniques

have been developed. The origin and destination studies alone have added tremendously to our knowledge of how and why humans behave as they do on the roads. Because the motor vehicle is so closely tied to the needs and demands of the individual, it is through research into these that we must determine the future highway pattern and thus the ability of the motor vehicle to serve.

NOTES

- (1) The experience of the Public Roads Administration in Central America and elsewhere has well proved this important conclusion. For example, in the field of food distribution, in Central America there have been food supplies in one country when there was hunger in an adjacent country. There has been an abundance of some vitally important foods in sections of one country that were denied other sections of the same country. There have been surpluses to the embarrassment of the markets when famine or near famine existed elsewhere.

At the moment the United States is engaged in the furnishing of great quantities of food stuffs and equipment for food production to other nations. The nation is suffering criticism for not doing enough, yet the amount of food stuffs held to be necessary are materially increased by lack of internal transportation and proper storage facilities and the agricultural implements are reaching their destinations slowly.

A responsible official of one provincial government of India very recently stated that the limitations of transportation and the impermanency of the go-downs (storage granaries) would result in a decrease of available supplies of grain from internal sources and a rapid spoilage of supplies stored for use in Calcutta - perhaps the greatest danger spot with its over four million people.

- (2) The characteristics which differentiate highway transport from the other types are:

Its use is determined by the convenience of the individual.

It provides a family unit at substantially the same cost as for a single individual.

Both passenger and freight units provide wide ranges in the cost of the vehicle itself and in models designed for the particular purpose to be served.

(Notes continued)

The serviceability extends to widely varying conditions.

The cost of ownership and operation is within the reach of a large percentage of families.

Its use completely frees the individual from fixed routes, fixed schedules.

- (3) The statement of Mr. W. E. Reynolds, Commissioner of Public Buildings, before the Public Buildings and Grounds Committee of the House of Representatives of the Congress, on postwar urban redevelopment in March 1944 carried the following estimates.

"Although slum and blighted districts comprise about 20% of the metropolitan residential areas they account for:

- 33% of the population
- 45% of the major crimes
- 55% of the juvenile delinquency
- 50% of the arrests
- 60% of the tuberculosis victims
- 50% of the disease
- 35% of the fires
- 45% of the city service costs
- 6% of the tax revenues (real estate)

"Above percentages are adjusted averages for various cities throughout the country."

(Notes continued)

(4) Trend in Washington, D. C. Milk Receipts

From Maryland-Virginia Producers' Association and U.S. Department of Agriculture

| <u>Year</u> | <u>Gallons (1,000) Association data</u> | <u>Estimated total 1/ Gallons (1,000)</u> | <u>Tons 2/</u> | <u>Index 3/ (1936-40)</u> |
|-------------|---|---|----------------|-------------------------------|
| 1925 | 8,550 | 9,500 | 40,850 | 35 |
| 1930 | 17,300 | 19,200 | 82,560 | 70 |
| 1935 | 21,900 | 24,300 | 104,630 | 88 |
| 1940 | 28,150 | 31,300 | 134,590 | 114 |
| 1941 | 33,800 | 37,600 | 161,680 | 136 |
| 1942 | 39,100 | 43,400 | 186,620 | 158 |
| 1943 | 40,700 | 45,200 | 194,360 | 164 |
| 1944 | 42,500 (Est.) | 47,200 (Est.) | 202,960 | 172 |
| 1945 | 45,260 | 50,300 | 216,290 | 183 |

1/ Estimated from Maryland-Virginia Producers' Association sales which are approximately 90 per cent of total.

2/ Converted from thousands of gallons of milk on the basis of one gallon weighing 8.6 lbs. to "short" tons of 2,000 lbs. each. (Factor .0043)

3/ Index: 100 = 27,520,000 gallons or 118,336 tons of milk.

(Notes continued)

- (5) Number of registered trucks classified according to manufacturer's rated capacity in tons showing the average annual (1941) mileage driven for each capacity group.

| Manufacturer's rated capacity in tons | Number | Per Cent | Average annual mileage 1941 |
|--|------------------|-------------|-----------------------------------|
| Less than 1 | 1,578,526 | 42.5 | 9,200 |
| 1 - 1-1/4 | 257,595 | 7.0 | 8,200 |
| 1-1/2 | <u>1,376,228</u> | <u>37.1</u> | <u>10,800</u> |
| Subtotal . . | 3,212,349 | 86.6 | |
| 1-3/4 - 2-3/4 | 167,514 | 4.5 | 11,800 |
| 3 - 4-1/2 | 92,840 | 2.5 | 12,700 |
| 5 - 6-1/2 | 40,870 | 1.1 | 13,100 |
| 7 - 9-1/2 | 16,253 | 0.4 | 13,978 |
| 10 - 22-1/2 | 8,363 | 0.2 | 18,700 |
| Not reported | 172,948 | 4.7 | 9,400 |
| | <hr/> | | |
| Total | 3,711,137 | 100.0 | 10,013 |