

## Building American Highways For Safety

By S. S. STEINBERG

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The present is pre-eminently the age of individual transportation. There are to be found on our highways today more than twenty million motor vehicles, sufficient in number to supply one to each family in the United States. It is predicted that in seven years we will have one vehicle to every four persons, sufficient to furnish one to each individual that is old enough to reach the steering wheel.

We travel about unhampered by fixed schedules, at speeds that annihilate time and space, and are limited only by the physical condition of our roads.

Although we are improving our highways at a rate never dreamed of before, we cannot keep pace with the demands created by the enormous increase in vehicles. Last year alone, more than four and one-third million motor vehicles were produced, an increase over the preceding year of 20 per cent. During this period about 40,000 miles of highways were surfaced, an increase of but 11 per cent. It is then evident that we are producing and absorbing motor vehicles twice as fast as we are providing roads upon which they may conveniently travel. This condition has brought about a traffic congestion on our streets and roads so acute that we have come to realize that one of the major problems facing the country today is to provide sufficient road and street capacity to permit safe operation of our vehicles.

The enormous increase in traffic on our limited mileage of improved roads, coupled with the ever-increasing speed and weight of motor vehicles, has meant not only a great economic loss, but has resulted in a steady increase in highway accidents, taking a toll of human life and property damage so great as to arouse public opinion to a demand for more extensive highway improvements to keep abreast of motor vehicle registration. The demand is for roads so built and maintained as to permit quick and safe transportation at all times. Likewise, highway engineers now realize that safety is as important as engineering and economics in the design and operation of our highways.

Road builders are making every effort to build safety into the road rather than depend upon warning signs and devices alone to protect the motorist. Many state highway departments, as for instance, Maryland, Con-

necticut, and Pennsylvania, as well as a number of large cities, are making a careful study of the causes of accidents occurring on their highways, and are thereby enabled to remedy unsafe conditions. Accident records are kept by means of a highway map on which various colored pins are inserted at the spots on the map where accidents have occurred. An accumulation of pins shows in a graphic manner the location where a construction change is needed.

In the interest of safety, highway engineers are relocating the main roads to eliminate curves, to avoid railroad grade crossings, and to reduce steep grades. Incidentally, these relocations save distance, avoid costly bridges and mean large benefits to the motorist in the cost of vehicle operation. For instance, in Illinois a road 150 miles long was relocated almost entirely throughout its length, thereby saving 30 miles of unnecessary distance and eliminating 31 grade crossings. The saving in vehicle operation to the citizens of that state, as a result of this improvement, is estimated at one million dollars a year.

The frequency of highway accidents resulting from traffic congestion has demonstrated not only that we must construct our new highways of ample width, but also that we need to widen many of the roads and bridges now in use. This has led to the construction in the vicinity of large industrial centers and on main thoroughfares of what is known as the "super-highway" to insure the maximum road capacity, speed and safety. It is only by widening our congested roads and by providing alternate routes, that accidents can be reduced and traffic enabled to move smoothly, quickly, and with a maximum degree of safety. Foremost of the super-highways is the one out of Detroit. This road has a total width of 204 feet, with two separated roadways 44 feet wide, each carrying one way traffic. On each of the four-track roadways horse-drawn traffic keeps to the right hand curb; slow moving heavy trucks outside them, and automobiles in the two other lanes, thereby providing rapid, safe, and easy movement for all kinds of traffic. In addition, space is provided between the roadways for rapid transit trolley lines, and provision is made for motor parking, as well as for pedestrians. Other highways on which extensive widening programs are going on, or parallel routes are being extended, are

*(Just Turn the Page)*

## Study Baby Development

In all the thousands of years that fathers and mothers have watched their children they have never explained how a gurgling baby masters the sounds that make up human speech. They have never understood the mysterious process by which one baby blossoms out into a social sort of person liking everybody, while another becomes a shy child, that clings only to a few trusted relatives. They have studied and loved and worried over their children, but even in a flourishing family of twelve the parents could not tell you in what manner each child's development was being shaped by factors of heredity or environment.

A systematic attempt to supply some of the missing information about human development in a normal home is to be started by three specialists in child research here, it has just been announced. Dr. Mary Cover Jones, Miss Edith M. Burdick, a graduate nurse, and Dr. Harold E. Jones, assistant professor of psychology at Columbia University, are arranging to assume the care of a group of normal and superior children, under conditions as nearly ideal as possible. The children may in this way be observed both day and night, as in an ordinary household. A wide assortment of scientific records of the physical, mental, and emotional development of the children will be made.

The number of babies to be observed will be small, in order that conditions may be kept like those in a real home, rather than an institution. The group is to consist of about six, two of them the young children of Dr. and Mrs. Jones.

A home for the babies has been purchased in New York, and financial arrangements for the project have been made, so that the experiment may be continued for at least the next three years.

The three specific aims of the project are "the study of human development in a controlled superior environment; the determination of the best methods of handling children of nursery age; and the educational ends to be achieved in the interest of the children themselves."

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The density of a star is often only one-thousandth that of the air in a soap bubble.

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## Building Highways

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the Pacific Highway in the State of Washington; highways out of Chicago; the Lincoln Highway west of Philadelphia; the Boston Post Road between New York and New Haven; as well as roads leading out of Cleveland, Akron and Cincinnati.

One of the developments of the future may be separate roads for freight and for passenger service, a low grade, heavily constructed road for trucks and a less expensive type for passenger vehicles. A road planned primarily for trucking between Boston and New York is now under construction.

To relieve traffic congestion and to promote safety at the intersection of important roads, highway grade separations are being planned. The first structure of this kind is now being erected just north of Chicago at a very congested highway intersection. The design provides for two levels. Through traffic proceeds on an overhead bridge on one of the roads while turning traffic swings wide of the bridge and uses the ground level.

Traffic congestion, as well as a large proportion of accident cases, may be charged to the slow-moving vehicle. As the speed of the vehicle naturally affects road capacity, it is possible that one of the developments of the future may be a penalty for not maintaining a minimum, as well as for exceeding a maximum speed.

Statistics show that more than half the motor vehicles in the United States are owned and largely operated in urban communities of 5,000 population and over. When in addition to the local traffic, all through non-stop traffic is also made to pass down "Main Street," congestion must result. This condition has forced the attention of large communities to the desirability of routing through traffic around the edge of the town rather than into the business district. In Philadelphia, a belt line has been provided for routing through traffic around the edge of the city; while in Delaware the DuPont highway, which extends the entire length of the state, avoids passing through built-up sections.

One of the most recent experimental developments in the interest of public safety is lighting the rural highway at night. The greatest menace of night driving is the abundance of glaring lights which makes driving at such times dangerous. It is found that a large percentage of highway accidents occur at night due to this cause. Lighting the highway not only reduces this danger, but also increases the capacity of the road by making it available for

maximum use throughout the 24 hours of the day, and serves as an inducement for trucks to operate at night when passenger traffic is at a minimum. Highway illumination is now in use between Albany and Schenectady, on the Lincoln Highway in Indiana, on the motor causeway out of Miami, and on some roads out of Detroit.

An important step to promote highway safety was recently taken by the United States Bureau of Public Roads in cooperation with the State highway departments, in adopting uniform standards for warning signs to be used throughout the country. The motorist will no longer be confused by a multiplicity of signs of various designs and degrees of legibility. Hazards will be indicated by signs which will be uniform in all states and which will plainly indicate the kind and degree of danger. The new signs make use of a system of different shapes, thereby increasing their value at night. The shape indicates the degree of hazard and if the motorist cannot read the legend, the shape will tell him the degree of caution required.

In this system a round sign indicates a railroad crossing; a diamond-shaped sign calls for a reduction of speed, as at a curve or narrow bridge; an octagon indicates a complete stop, or necessity for proceeding slowly with car under control; a square sign indicates a lesser degree of caution than any of the others, such as a school zone or a side road. Twenty states are now actually engaged in erecting these standard warning signs, and the other states have signified their intention of erecting them in the immediate future.

The highway engineer is bringing science to bear upon the solution of the problems of highway safety. Today but a very small percentage of accidents on our main roads can be attributed directly to engineering defects. No public work is of greater importance than that of widening and extending our present roads, as well as paving new ones to meet our constantly increasing need for adequate highway facilities. Every effort is being put forth by the highway engineer and the road builder, with the limited funds at their disposal, to make the public highway a safer and a better place upon which to ride.

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A railroad tunnel almost eight miles long, which will be the longest in America, is being constructed in the Cascade Mountains, of Washington.

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