neering research. Research of this kind takes a great deal of time, and because of that it is costly. But extensive research on roads is amply justified, for the highway business is not only a huge one on which the nation is expending more than a thousand million dollars every year but it is also one that intimately affects every citizen. Besides, it is characteristic of research, when intelligently conducted, that in the long run it usually yields, as a kind of by-product, savings that amount to more than the cost of the research. In fact, the cost of not doing research has a habit of being higher than the cost of doing it.

In the future, then, it looks as though the course of research on roads will be a widening in scope and a deepening in character. Its function should be to search out all the basic knowledge possible on every problem relating to roads and to the control of traffic on them. More and more, it seems, the practical "getter-doners," the planners and the builders, which you men are for the most part perhaps, are going to need the help of the no less practical "finder-outers." For as Abe Martin, that famous Indiana philosopher, said once, "It's funny how a fellow with facts can break up an argument."

THE MOTORIST'S STAKE IN HIGHWAY DEVELOPMENT

James D. Adams

President, Indiana Automobile Taxpayers League,
Chairman, State Highway Commission of Indiana

When I was invited to appear on this program, I held no official position, and even though my status has recently changed, I am speaking particularly this afternoon as a private citizen, expressing only my own views on what I consider the motorist's stake in highway improvement.

May I restate that subject? To me it means "What is an ideal highway system?" My talk will be divided into two parts: first, a discussion of highway finances, and second, what to me would be an ideal highway system.

The first part of my talk covering the question of highway revenues is made possible very largely through the Indiana Automobile Taxpayers League, of which I have been president since its organization, and through Mr. Albert Wedeking, vice-president. Mr. M. V. Cameron has been executive secretary of the League and to him the motorists of Indiana are indebted for a most remarkable assemblage of factual data. Through the efforts of the Indiana Automobile Taxpayers League, and Mr. Cameron in particular, motorists are now able to get quickly a comprehensive view of this important question of highways.
In a talk which I gave before this Purdue Road School on January 24, 1935, I quoted from the able study of county and municipal taxation and expenditures in New Jersey, made in 1928 under the direction of Dr. Harvey L. Lutz of Princeton University. In that study the conclusion was reached that the problem of road and street costs was the second most important problem in government finance before the people of New Jersey. It was also stated, “If to this very large volume of expenditures there be added the difficult question of a wise and economical future policy, the highway situation becomes easily the most important problem before the people in the field of governmental finance. The State and local units are alike involved.”

The second part of this talk deals with what might be termed “an ideal highway system for Indiana.”

HIGHWAY SAFETY

It was eight years ago this week that I first spoke at the Purdue Road School. That afternoon I stressed the importance of safety on our highways. Recently, as I attempted to visualize an ideal highway system for Indiana, the thought of safety again and again has asserted itself. In my first address eight years ago I said that if highway fatalities continued at the rate of 1933 for fifteen years, they would total 450,000. Such a statement seemed fantastic at that time.

I made a comparison between America’s six major wars, which covered fifteen years of actual conflict, the Revolutionary War, the War of 1812, the Mexican War, the Civil War, the Spanish-American War, and the World War. The total number of Americans who were killed and died of wounds during that period of conflict of fifteen years totalled 300,000. I called attention to the fact that we had found the answer to “what is worse than war.”

In each of my talks the next three years at the Purdue Road School, safety continued to be the theme. In the preparation of this paper I could not banish the importance of safety in visualizing an ideal highway setup.

From that afternoon eight years ago to now, 281,747 people have been killed in this country in motor-car accidents, and more than 9,600,000 have been injured. My estimate for the number to be killed in that period from 1933 to 1941 was too low by 41,747. If the present death toll is to continue for fifteen years, the total number killed will be 540,000. Contrast that, if you please, with America’s experience in fifteen years of warfare with 300,000 killed and died of wounds. The number injured in the next fifteen years will total 19,800,000. Considerably over 20,000,000 people will be killed or injured.

*(Editor’s Note: At this point Mr. Adams spoke extemporaneously, using slides for illustrative purposes. Data contained on slides are shown in Figs. 1-6, pages 24-29.)*
Property damage will be counted in billions, and I have no hesitancy in saying that it is my belief that the property loss, the loss of time, and personal injury cost, will exceed the disbursements now being made for preparedness in America. Although accurate figures are not available, it is my belief that more Americans were killed and injured in motor-car accidents during 1940 than have been killed in England during the blitzkrieg, which is now showering death from the skies.

This question of safety has another vital aspect. We are in a world of change. Ideologies of government are in mortal conflict. Whether we like it or not, that fact stands. We may do wishful thinking with the hope ever present that the situation is not as serious as it seems. But it is safe to assume that within the next fifty years, America will find herself engaged in war. Less than a year ago I wrote to one of my friends on the Pacific Coast that we here in Indiana have a feeling of security prompted by our inland position a considerable distance from the sea. But today, within a year of writing that letter, my sense of security has undergone a great change. Let us analyze our situation.

Today is being built in Indiana the largest powder plant in the world. In fact, it is nearing completion and will be turning out powder in a few weeks. The largest ammunition storage plant in the world is being constructed in Indiana. We have the largest oil refineries and largest steel mills in the world, spreading out over thousands of acres in northwestern Indiana. We have the largest strip coal mine in the world in this State. Powder, ammunition, coal, steel, and gasoline are the sinews of modern war. Production of these forms industries which any enemy will seek first to destroy. In the next war airliners will cruise the stratosphere, invisible to the naked eye, carrying instruments of destruction.

War today is not like a war of yesterday. It is described now as total war, because there is no such thing as a noncombatant. The civil population, the old, the halt, and the lame; the women, the children, and soldiers as well—all find themselves in the midst of carnage. Armies are transported in the air, and Indiana, with these huge vital industries, may be a strategic point of attack. Speed in the movement of troops may be vital to our own safety as well as for the safety of the nation. That necessity, then, should be given thought in any long-time highway planning.

LOOKING BACK TO 1935

May I quote at this time from an address which I gave at Miami, Florida, December 11, 1935, in which I was discussing dual-lane highways. I quote:

"Already we find that Germany is working toward a well defined system of highways. In addressing German workers
on May 1, 1933, Chancellor Hitler drew attention, quote, 'to the program of our road construction, a gigantic task which will cost thousands of millions of marks.'"

Continuing from that talk, "It is Germany's plan to construct five thousand miles of dual-lane highways connecting her principal cities and extending to practically every frontier. They are to be designated as 'Motor Roads.' A uniform style will be carried out, whether in East Prussia or Bavaria. These roads consist of two parallel tracks, each one about twenty-five feet wide with a grass strip fifteen wide in between.

"The outside of each lane is for the slower moving traffic while the inside is for passing and for the higher-speed motor cars.

"One hundred thousand laborers are toiling at the actual construction while 150,000 more are at work producing the raw materials. Germany expects to require six or seven years for the completion of the system as set up and the estimated cost is placed at 250 million pounds, or something over a billion dollars.

"On May 19th, of this year [1935], in opening the first completed portion of the 5,000-mile program, consisting of fourteen miles of dual lanes between Frankfurt and Darmstadt, the Chancellor proudly said, quote 'When this scheme is finished, Germany will possess the most modern net of motor roads in the world.'"

Still quoting: "Do any of you doubt the truth of his statement—when you consider the important part transportation has always played in the world's history, and its increased importance today, may I repeat, do any of you doubt the truth of Chancellor Hitler's statement that when their present 5,000 mile program of dual-lane roads is finished, Germany will possess the most modern net of motor highways in the world?

"Germany is entering upon this remarkable road program with pride and enthusiasm. It is a stupendous undertaking for an old civilization to embark on such a task, but once it is completed, millions of motorists will have opportunity to enjoy it. It is an employment-giving, self-liquidating project whether it is undertaken in Germany or in the United States of America."

Without examining too deeply the motives which prompted Hitler to inaugurate that program, the fact remains that either for peacetime or military purposes Germany now possesses a mighty system of motor roads which ties the nation together, welding it into an economic unit. The railroads of Germany, through lack of repairs, plus incessant bombing, can no longer carry the load of a wartime economy. But Germany has her highways and they alone made it possible to crush Poland, and the low countries and France, with lightning speed.
An analysis of data obtained by the State Traffic Department under Mr. Myers shows that 60 per cent of accidents occur on 27 per cent of the highway system and that 28.6 per cent of accidents are now head-on collisions, but—note this—cause 39 per cent of the deaths.

**Dual-Lane Highways**

Any ideal system of highways must consist of dual-lane construction on the more heavily-traveled trunk routes. Such a program will reduce these head-on collisions to practically zero, and the economic saving over a period of time will offset the expense. Such modern construction will furnish the motorist with an insurance policy against loss of life or limb, on which he, himself, will reap the benefit.

There are many logical reasons for this kind of construction. First, it is the best type of public work because it will tend to preserve life and property. It will increase traffic on those particular highways, thus bringing relief to others. It will expedite traffic. It will add immeasurably to the pleasure of motoring and so bring out many motorists who otherwise are staying at home in fear of accidents. That will increase revenues for the highway industry.

If we had a plague which reaped the toll of life and economic loss exacted each year by highway accidents, there would be no hesitancy in voting unlimited funds to eradicate it. The greatest assurance against the life and injury toll which our highway accidents take is a system of highways built according to the best modern standards with regard to safety, convenience and economy of travel.

Indiana now ranks as the third most important state in the production of defense material. In this period of national emergency, let us not forget the lesson which Germany has taught us.

I have spoken earlier of the factors which should determine the future road policy of Indiana. Fortunately for us the demands of a national defense program and the sanest peacetime objectives coincide.

In a world at war, either now or in the future, Indiana, with its vital industries, may be called upon to shift troops with lightning speed to meet troops landed from the air.

I grant you that this seems fantastic; but when I spoke at Miami in 1935 about the dual-lane highways which Chancellor Hitler was building in Germany, that too seemed fantastic. But we know too well the history that has been written in the past few months. Unquestionably Indiana ultimately will have to have these dual-lane highways. Let's set the machinery in motion to have them during our generation.
Fig. 1. Sources and distribution of Indiana Motor Vehicle Highway Fund for 1939.
### LICENSE FEES IN OTHER STATES

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* Based on delivery price

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**Fig. 2.** A comparison of automobile license fees in Indiana with those of 16 other states.
Fig. 3. A striking illustration of the loss to the motor vehicle travelling public through diversion of highway funds.
WHAT THE AVERAGE MOTORIST PAYS FOR THE USE OF INDIANA HIGHWAYS

AVERAGE PASSENGER CAR LICENSE FEE IN INDIANA IN 1939 $7.45

GASOLINE TAX PAID BY MOTORIST DRIVING 8000 MI. PER YEAR (Average) 19.20
(480 GALLONS @ 44c PER GALLON)

TOTAL ANNUAL COST PER YEAR $26.65

OR $2.22 PER MONTH—OR ½c PER MILE

OUR STATE highway system represents an investment equal to approximately $300 for each car registered in Indiana.

WHICH would you prefer, Mr. Motorist, the $300 and no state highway system or the system as it stands?

"WE pay for improved roads whether we have them or not . . . We pay less if we have them than if we have them not."

Fig. 4. Data illustrating the low cost of highway service to Indiana motorists.
Fig. 5. A comparison of Indiana state highway mileage and expenditures (including Federal Aid) from 1929 to 1939. The mileage practically doubled during this period, while the funds increased only 6⅔%.
Compared with the same charges in adjoining states on 1½ ton truck:

- Indiana: $44.00
- Illinois: $50.00
- Kentucky: $52.00
- Michigan: $60.00
- Ohio: $75.00

Average cost in these five States is $600; Indiana is $130 below the average.

In future trucks the fees in adjoining states are comparatively higher.

INDIANA TRUCK OWNERS BENEFITS

Indiana has reciprocity agreements with adjoining states giving Indiana truckers free use of an additional 20,000 miles of highways in those states.

Fig. 6. Indiana truck owners enjoy low fees in comparison to those of our four neighboring states.