MISSOURI HIGHWAYS

The Years Between

Where credit is due

This volume attempts to shed some light on the story of Missouri's highway system in the first three decades of this century. More individuals and groups than can be named here helped to illumine the nooks and crannies of that big and vastly complicated subject. We are grateful to them all. But our special thanks are due to:

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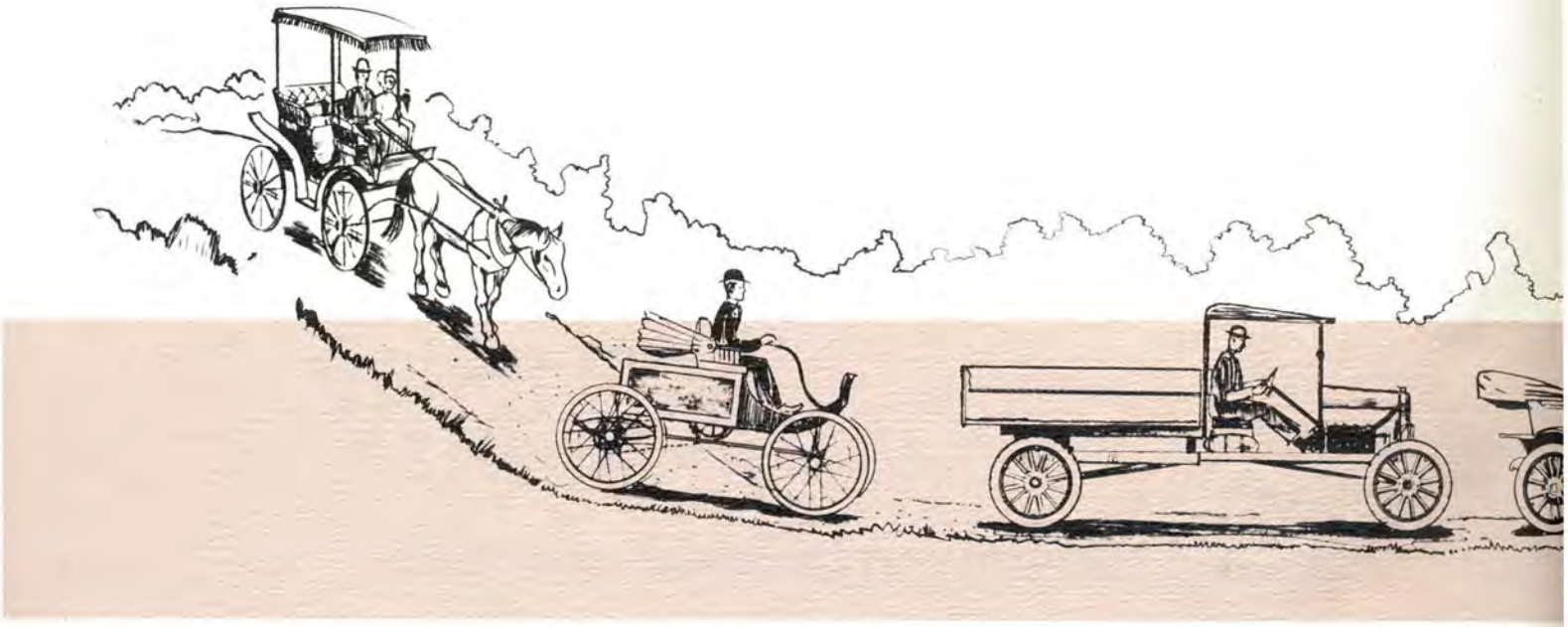
To all of these, and to many others too, our thanks. They deserve much credit for whatever value this little book contains. But the responsibility for any errors it includes belongs to us alone.



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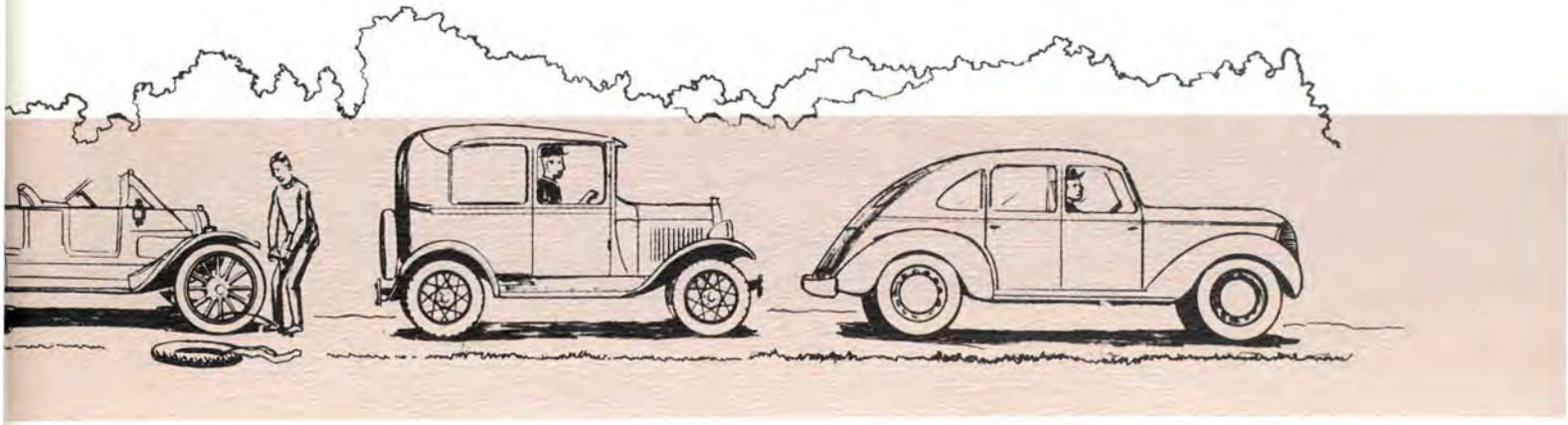

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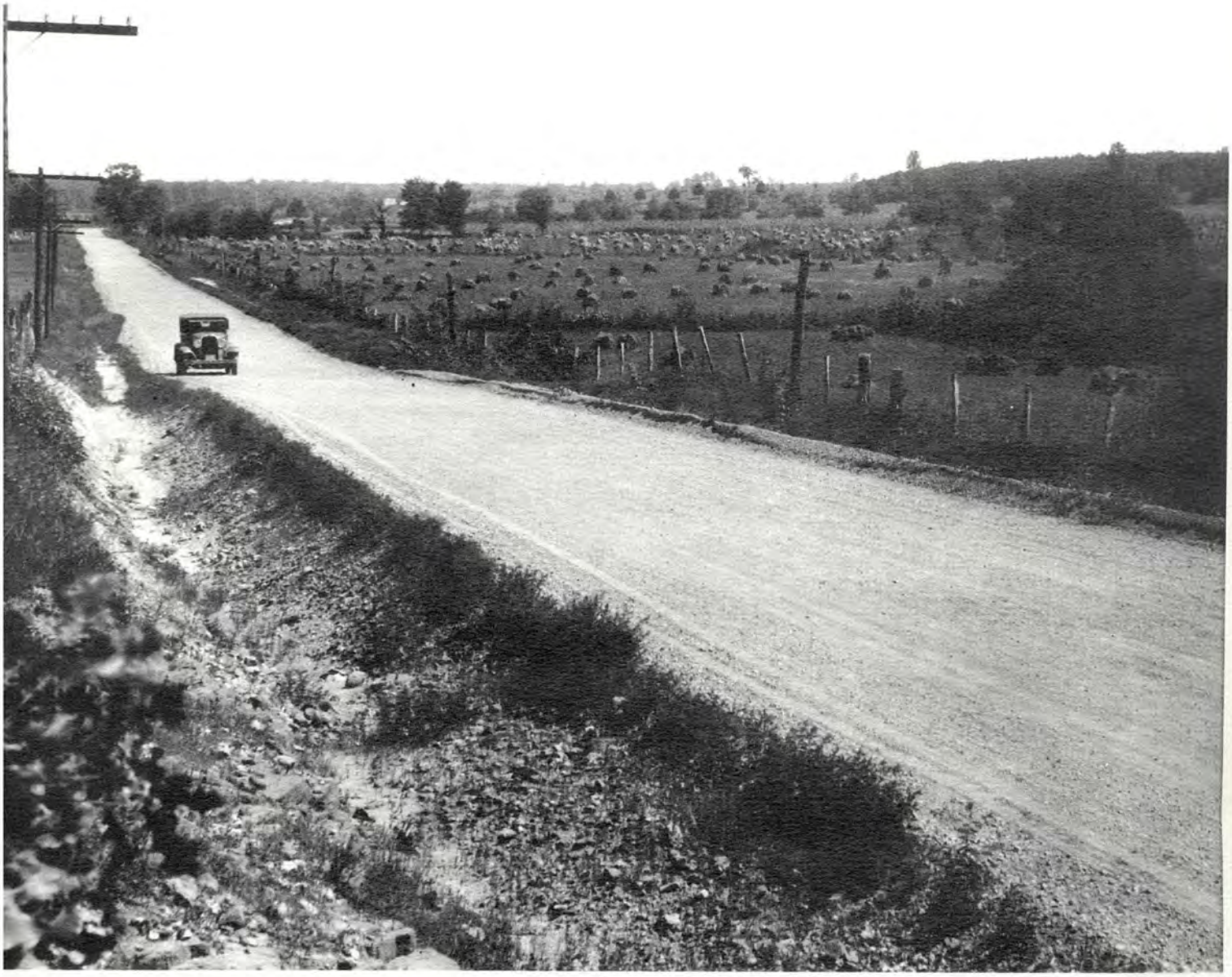

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A sort of journey

In 1883 a St. Louisan named J.D.P. Lewis built a "self-propelled vehicle," the city's first. It could clatter along at speeds of seven to eight miles per hour, to the open-mouthed amazement of the Mound City's residents and the wild-eyed terror of their horses.

That same year, in Sedalia, a group called the Missouri State Roads Improvement Association held its first annual convention. Governor William Joel Stone addressed the group, telling its members that "... roads are the products of age and development."

That's the way it was from the beginning of Missouri's revolution of the roads. And a revolution it was. Between this century's dawning and its most terrible war, Missouri's highway system underwent a mighty social, economic and geographic upheaval. It was triggered unawares by a man of genius from Michigan who reversed a food-processing technique he had observed in Illinois. The man was Henry Ford. With his assembly line and its rapidly multiplying spawn, he profoundly changed the mobility, the manners and even the morals of Missourians and all other Americans.

The cars came. And Missourians of unborrowed vision approached the herculean task of building roads, streets and highways for them.

The cars came. First in a trickle they came, then in a steady stream, in a constantly swelling torrent by the last years of the 1930's. As they came, the job of providing the highway system they required got big and demanding fast.

But the job was started. The building of a highway system was begun. Its creation was not a discrete event. It was a continuing process. A sort of a journey.

This is the story of that journey.

It smoothed things over on early Missouri roads

What pulled Missouri out of the mud?

Why, anyone with even a nodding acquaintance with Missouri roadbuilding history "knows" that it was the passage of the two multimillion dollar bond issues of the Twenties. Or the Centennial Road Law.

Well, maybe...

But a quarter of a century before the Twenties roared in, a North Missouri man and the "machine" he built made substantial contributions, indeed, to the laudable cause of lifting Missourians out of the mire.

The man was D. Ward King of Maitland in Holt County. His machine's efficacy was exceeded only by its simplicity – and the eagerness with which highway boosters embraced it. The machine was a split log drag which he invented, built and demonstrated with the zeal of a missionary to interested individuals and good roads groups inside Missouri – and out.

King devised his drag in 1894. It was a simple rig, cheap to make and easy to operate. But it worked. And the word that it worked got around fast. Nobody labored any harder at spreading the good news than the inventor himself:

"Mr. King," write Gary and Robbins in their ROAD HISTORY OF MISSOURI, "was a crusader and when he was not using his split log drag he was making speeches about it or writing articles for the papers about it. In later years he even carried what became officially designated in 1908 as 'the Missouri idea' to other states, by means of chautauqua engagements."

Evangelistic fervor of that sort makes things happen... particularly when it's enlisted in the cause of something that works as well as did D. Ward King's split log drag.

The State Board of Agriculture held a good roads convention in Chillicothe in 1906. Several thousand good roads advocates from

The marvelous

all over Missouri attended. They worked long and deliberated hard over the problems of roadbuilding and maintenance, and at the end of it all they put all their conclusions into only five resolutions. One of them said this:

"We strongly endorse the drag as the most effective and practical method of maintaining dirt roads, and would suggest that some law be enacted whereby its more general employment for this purpose may be effected."

King and his drag were becoming somewhat celebrated.

Maitland drag

In 1907, the State Board of Agriculture called another good roads convention. This one was held in Jefferson City, and it brought together as delegates about 150 of Missouri's leading good roads enthusiasts of the day. And they elected as their president D. Ward King of Maitland.

Maybe King and his drag aren't among the biggest factors in Missouri's 20th Century highway history. But if their place isn't of prime importance, it is by no means insignificant either. And their right to it is secure.

Until the Twenties roadbuilding and road maintenance in Missouri were primarily local problems. And there was neither money enough nor sentiment enough to hard surface many miles of Missouri roads.

The roads Missourians drove over were mostly dirt – or mud or dust, depending on the season. They were mostly bad, too – until the arrival on the scene of D. Ward King and his split log drag. And if they didn't lift Missourians out of the mud, they at least smoothed it over.

That was no small achievement, come to think of it.

The long

From passions, powers; from conflict, compromise; from men, a model road law

When free people govern themselves well, they do it largely by a just and prudent balancing of all the special interests involved. That's how government happens in a free society. That's why so many hymns of praise are sung to the gentle art of compromise.

Only compromise isn't a gentle art. And when it comes, it comes as a disappointment to the contending factions whose passions and powers have created the situation which brings it into being.

In the summer of 1921 passions and powers a-plenty focused on Missouri's capital city – and the passage of what was called the Centennial Road Law. It was a long hot summer...

Important parts of the high political drama which was played out in Jefferson City during that summer of 1921 had their beginnings a decade earlier, and more. Both Governor Joseph Wingate Folk and Governor Herbert Spencer Hadley had been much interested in the possibility of building a cross-state highway which would link St. Louis and Kansas City.

Three possible routes across the state had been suggested by Curtis Hill, then State Highway Engineer. In 1911 Governor Hadley appointed a committee from the State Board of Agriculture to study the comparative feasibilities of the three routes. The members of this committee toured each of the three, along with the governor, the lieutenant-governor and others.

In August of 1911 a meeting was held in Jefferson City to select the route which was to become known as the "Old Trails Road." Missouri historian H. B. Dickey has described that meeting and its aftermath:

"The hearing was long to be remembered as a red letter day in Jefferson City. For seven exciting hours over 1,600 persons sat

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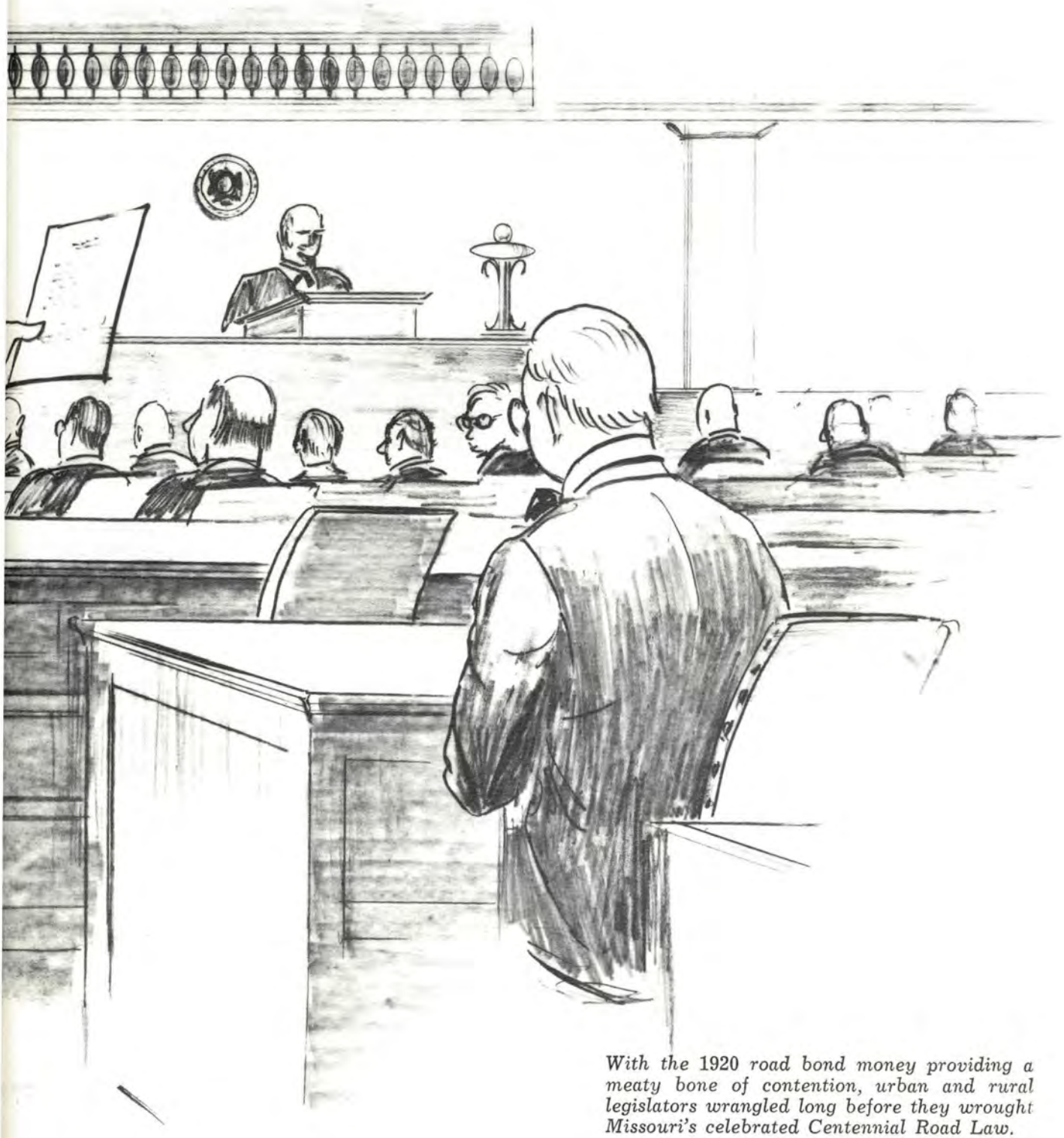
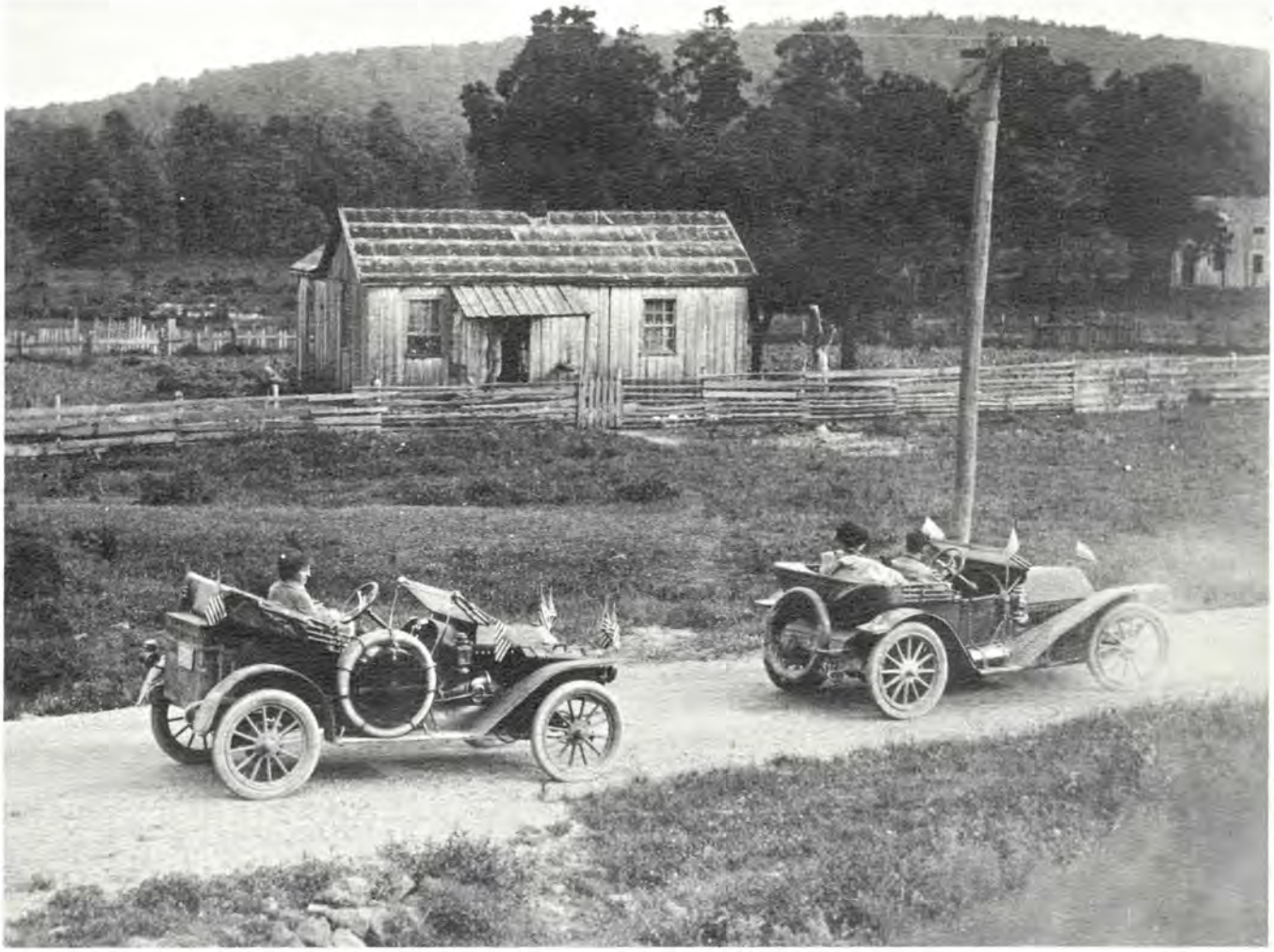
hot summer



With the 1920 road bond money providing a meaty bone of contention, urban and rural legislators wrangled long before they wrought Missouri's celebrated Centennial Road Law.



Missourians chugged and clattered into the Turbulent Teens with flags flying and in a traveling mood. They had some cars. They were going to have more. They wanted better roads - - and soon.

HOT SUMMER

A solid decade of interest led to a legislative showdown in '21

in stifling heat, under the spell of Missouri oratory, while the proponents of the various routes pleaded their cause ... "

"At noon the next day, August 3, the State Board of Agriculture announced the selection of the Central Route from St. Louis to New Florence. The Board met again August 17, 1911, and after hearing a report by Curtis Hill, State Highway Engineer, designated the Central Route as the Cross-State Highway. Engineer Hill made a further report to the Board, September 29, 1911, setting out the progress made and stating that road bond issues in Lexington, Columbia, and Fulton had carried to the extent of $330,000."

There weren't enough communities like Lexington, Columbia and Fulton along the proposed route, and the road wasn't built. Its building depended on the passage of road bonds in communities all the way across the state, the formation of special road districts and the help of county courts in every county through which it was to pass. This high degree of cooperation among the people and the local agencies of government wasn't attained. Probably it wasn't attainable in 1911 and the years immediately thereafter, given the fact that, in those years, road-building was mainly local and county business.

But something big was stirring here. The fact that a cross-state highway had been

proposed and had gained significant support whetted the desire of all Missourians – especially the residents of St. Louis, Kansas City and the other population centers through the state's midsection – for better highways. That sharpened desire was to cast a giant shadow, a shadow which would fall starkly across the deliberations of the 51st General Assembly in the history-making summer of 1921.

The people who lived in the cities of Missouri didn't feel the same way about highway matters in 1911 as did the people who lived in the state's smaller communities and on its farms. The differences between their points of view would become the lines of demarcation along which the bitter battle of the summer of 1921 would be fought.

With the enactment of the Hawes Law in 1917, the General Assembly gave Missouri its first modern highway legislation and shifted the primary responsibility for roadbuilding from the counties to the state. In 1919 the legislature's passage of the Morgan-McCullough amendments greatly increased both the scope of roadbuilding efforts in Missouri and the extent of the state's participation in them. In his book MISSOURI AND THE MISSOURIANS, Floyd C. Shoemaker describes the situation:

"The plans completed by 1920 were ambitious, but work moved slowly and it became apparent that revenue was insufficient. Therefore, the voters of Missouri were urged to support a bond issue of $60,000,000 in the election of 1920."

Helping in the urging were personnel of the Missouri State Highway Department. In ROAD HISTORY OF MISSOURI, Theodore Gary and Henry P. Robbins wrote:

"A thorough campaign of education was carried on. State Superintendent Malang issued several bulletins and made effective speeches in fifty of the counties in which there were road bond campaigns. The entire department personnel rendered great service in carrying the $60,000,000 bond issue."

The citizens of Missouri were ready to authorize the expenditure of some big money by their fledgling State Highway Department. The bond issue won a comfortable victory, carrying in 61 of the state's 114 counties and the City of St. Louis.

Now there was money enough to implement the ambitious Hawes Law and Morgan-McCullough plans. How would the money be spent, and what would be the climate in which the legislature would decide? Gary and Robbins set the stage:

"The great state bond victory had aroused greater expectations. The Fifty-first General Assembly was to be notable... It was soon seen that the road question was too big to be tied up with the multitudinous duties of the regular session. So road legislation was postponed to a second extraordinary session, called for the heat of midsummer."

More was destined to get hot than the weather. The people of St. Louis, Kansas City and the state's other large communities wanted one set of things and badly. The people of the state's small towns and farming areas wanted another set of things and just as badly.

The duly elected representatives of the two groups were obliged to resolve the differences between them, if possible. Urban and rural legislators were on a collision course. And Jefferson City was going to be the scene of the crash. Once again, the building under the big dome was to become a battle ground. Some law was about to be made.

Much of the work for the 1920 bond issue, though by no means all of it, had been done by residents of the state's urban areas. These urban bond issue advocates had thought they were working for a statewide road system, and when the bond issue was secured, they expected to get one. They assumed that any state system built would start with a St. Louis to Kansas City cross-state highway.

The memory of the cross-state highway which had been proposed but not constructed in the Hadley administration was fresh in their minds. The time to get started with the building of that highway, they felt, was at hand. Naturally enough, their wishes shaped the thinking and the action in the State Senate, the body in which urban causes traditionally got their most friendly receptions.

In the upper chamber, Senator Ralph of St. Louis County authored a measure which provided for continuous, connected, hard-surfaced state roads. The Ralph Bill sailed through the Senate.

But the House was in no mood for the sort of roads the Senate sought. "Peacock lanes," House members called them. And they wanted none of them. The entire Ralph

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House Speaker O'Fallon breaks a formidable legislative log-jam

Bill was thrown out, and the House substituted a measure of its own.

Gary and Robbins said about the House's substitute bill and the thinking behind it:

"It was virtually a town to town designation. Each member of the House knew his own county, its towns and roads. He had the advantage of field surveys. Connections with neighboring counties were arranged among neighboring members. Scant consideration was shown the... Senate highways. The House, overwhelmingly rural, talked farm to market roads. Some members did not believe that any roads except dirt roads could be built in Missouri. But for the conditions of Federal aid and the necessity for final concurrence by the Senate, many members would have disposed of the funds in the old-fashioned way, by distribution among the counties. The 4,000 road overseers would have found a way to spend the money."

While the metropolitan press heaped imprecations on the heads of the House "dirt roaders" and "mud daubers," the substitute House measure was sent back to the Senate. Without delay, the upper chamber threw out the whole of the House proposal and put back the Ralph Bill... sentence for sentence, word for word, comma for comma.

Stalemate.

A Senate-House Conference Committee was formed. "The conferees," remarked Shoemaker drily, "were truly representative. They wrestled night and day, with no sign of agreement."

Time passed. Tempers shortened. Mutual recriminations increased. Nothing came out of the Conference Committee. It stayed hot.

Many members of the legislature assumed that the deadlock in the Conference Committee couldn't be broken and began making preparations to leave Jefferson City. Some actually left.

But even as these pessimistic legislators were going out of the capital city, good roads advocates by the scores were streaming into it. They came to watch, to lobby for their specific causes, to encourage their legislative friends, to put pressure on their legislative foes.

One of the lawmakers who seems to have assumed that there was no way out of the legislative impasse which had developed was Representative D. L. Bales of Shannon County, one of the Senate-House conferees. He suggested a gentleman's agreement between Senate and House members: Each body would pass the other's bill and both bills would be referred to the people in the general election of 1922. The proposal found no general support. The responsibility for formulating some sort of highway legislation acceptable both in the cities and in the country remained with the General Assembly.

What was needed was a member of one house whose devotion to the cause of good roads for all was so obvious that proposals made by him could be accepted by members of the other house, a man who could protect his own group's special interest and realize while he was doing so that other groups had legitimate special interests, too. As the special session ground frustratingly on – active but not productive – such a man emerged.

The big roads battle in the Missouri General Assembly was between country and city - - between those who wanted many roads like the one at left and those who wanted fewer roads like the one at right. It sometimes seemed they'd never get together. But they did. And when they did, they made a law. And some history.

He was the Speaker of the House, Sam O'Fallon of Holt County. Largely because of the influence exerted by him, the House finally agreed to a pair of provisions which seemed to favor the interests of the city-dwellers. Both were written by O'Fallon.

The first authorized the Highway Commission to designate as "higher type than claybound gravel" about 1,500 miles of roads connecting the principal population centers of the state. The second earmarked a third of the bond money proceeds, and $6,000 a mile from the other two-thirds, for use on these hard-surface roads.

The legislative log-jam was broken. The urban interests which dominated in the Senate were to get their "peacock lanes," and the "mud daubers" who dominated in the House had given the proposal their reluctant assent. Wearily, warily, mostly feeling that they had failed in what they set out to do, the members of the Missouri General Assembly heaved a collective sigh and settled down to writing the rest of the Centennial Road Law.

In MISSOURI – MOTHER OF THE WEST, the law which finally was enacted and the attitudes of the men who made it were summarized like this:

"... the law itself was a last-day compromise to end what seemed to be a hopeless deadlock and neither members of the House and Senate who finally voted for it nor the governor who approved it felt that it was satisfactory. Nearly all the men who had led in the bond campaign were grievously disappointed. Road experts declared it 'a miserable mess.' It was freely predicted that it was impossible of execution."

That's the way it was in the City of Jefferson and the State of Missouri in the summer of 1921. That was the mood which greeted the creation by the General Assembly of Missouri's Centennial Road Law, now widely agreed to be among the most enlightened and most important single pieces of highway legislation ever enacted by a state legislature.

Special groups have special interests. And they fight for them. But free people can govern themselves well by a just and prudent balancing of all the special interests involved.

It's not a theory, it's a fact. Missourians proved it when in heat and in anger, in pride and in self-seeking, they worked and worried through one hot summer at a problem they all shared until they hammered out their Centennial Road Law.

His face a study and one hand wrapped around the book he wrote, Missouri highway pioneer Thad Snow gazes contemplatively into the middle distances and remembers other days.

An early-day Swampeast settler tells about one way roads were constructed in 'down yonder' country

There are pioneers, and there are those who follow them.

After the pioneers have done their work, those who follow usually refine what the pioneers created; they stabilize and consolidate and systematize it, to give it strength and permanence.

They are careful and methodical men, these refiners and stabilizers and consolidators and systematizers. Prudence is perhaps chief among their virtues. And like all the other artifacts of man, Missouri's highway system owes them much.

Much. But not all. For before anything can exist for them to build on, there must be a beginning made. And beginnings presuppose pioneers.

Like most pioneers everywhere, the pioneers of Missouri's 20th Century highway history were a colorful lot. They had imagination and optimism, daring and guts, style and verve.

One of Missouri's highway pioneers was an early-day Bootheeler named Thad Snow. He was a man of many parts, was Mr. Snow: Farmer, landowner, Mississippi County civic leader, author, seeker after a seat in the Congress. His day in the Missouri highway story came before the state and federal governments formed their historic partnership for roadbuilding, during the time when the task lay mainly on the counties.

In his book FROM MISSOURI, this transplanted Hoosier turned self-styled "devil of the Delta" tells, with gusto and pardonable pride, the story of how the people of Mississippi County tackled the job of building themselves some roads, and of the part he played in getting the job done.

The Bootheelers build

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All at once, when we were particularly optimistic – I think it was in 1918 – we became conscious of roads, and our lack of them. There was not an improved or surfaced road in the Delta. There is no describing what happened to our black-land roads in the winter, which is our season of heavy rainfall. The bottom dropped out. Four mules to a high-wheeled empty wagon would usually get you through, but not always. A few times our main roads were impassable for months, except for a saddle horse or mule that could skirt around the deepest holes. The sandy-land roads in a long dry summer cut too deep for a car, but never too deep for a wagon.

All at once we found out we just had to have roads. There was a good bit in the St. Louis papers about road building and about how other states, and even a few other communities in Missouri, were "pulling themselves out of the mud." Automobiles were increasing in numbers, even in the Delta where the number of days of the year in which you could drive them was severely restricted. So, suddenly every county in the Delta found it had to have roads. There was no collusion about it; the craze merely hit all the counties at about the same time. There was, however, much rivalry among the counties to see which would build the most roads first.

But how would we finance road building on top of all the rest of our insupportable tax burdens? It was easy. The Missouri legislature had also become road-conscious and it enacted a law permitting the counties to vote road bonds. People of the Delta counties knew all about voting bonds. We were used to it. We knew that by voting bonds we could build levees, ditches and roads right now, and pay later on. If we couldn't pay we still had the "improvement" and if we did pay, we paid twice, because interest on the bonds doubled the cost. But interest on our debts commonly made us pay double for everything we bought and for clearing our land. We were used to it.

The federal Congress was road-conscious too and about this time enacted the first federal-aid road law, which, within certain limits, proposed to match state money with federal money on a fifty-fifty basis in the construction of roads located and designed to fit later into a proper state and federal road system.

The state of Missouri, unfortunately, had no road money to match the new federal aid grants on a fifty-fifty basis, or any other basis. However, the new federal road law and our new state road law made it possible for a county that was fool enough to vote road bonds to turn its bond money over to the state; then the state could use the county's money to match federal aid, and spend the whole amount on roads in the county that voted the bonds. These new legal developments were on the way, or an accomplished fact – I don't remember which – when the Delta counties set out to build roads. But we knew nothing about it. When we voted our bonds we didn't expect the state or the federal government to help pay for our roads. We expected the bond buyers of St. Louis to pay the whole bill. They had built our levees and ditches, so why not our roads?

I think I must tell something about our first adventure in road building. In my

CONTINUED

their own

"I suppose I talked to everybody

county we made a grand success of it. The other Delta counties did not do well at all. We made as bad a start as they did but caught ourselves up in time. I have had and will have had so much to say about the blind heedlessness in our pioneer ways that it is only fair to tell something of our road-building adventure, in which we used the soundest of judgment, and which worked out exactly as planned. My county now has the best system of roads of all the rural counties in Missouri. So give us our due.

Our road boosters – and we had a lot of them – launched a campaign for a county road bond issue. The amount of the issue was small, because our assessed valuation was low. The amount was $250,000. I was for it. Pretty soon the campaign warmed up. We had lots of speakers to go to every little schoolhouse, and everywhere in the towns where voters could be got to listen. The crowds were good and everybody wanted roads; the speakers were well received until question time came, and then some old mossback was sure to ask how could he be sure he'd get his road built if he voted for them bonds. This embarrassing question came up invariably. Something had to be done about it.

The campaign committee went into a huddle and decided to publish a map that would show what roads would be built. Road costs were bound to be high. We had no road material except a few stone axes and arrowheads that the Indians bequeathed us. The question was whether to publish a map showing how many roads our little bond issue would actually build, and of course lose the bond issue vote, or have the map show the roads that ought to be built and make out that they would be built, and so carry the vote.

The committee men were all honest men but, at this moment, only in so far as honesty was the best policy for the purpose in hand, which was to carry the road bond vote. Over my protest the committee made the practical, and as it turned out, the wise decision. They went all the way and printed a map of the county with very nearly all the roads graveled. Nobody could ask troublesome questions any more, because every road of any consequence was to be graveled. A little figuring, of course, showed that no more than a third of all those roads could possibly be improved from the proceeds of the little bond issue. I called this to the committee's attention but they said Mississippi County folks hadn't ever learned to figure the cost of anything, so why expect them to figure the cost of roads – a matter which they knew absolutely nothing about. The boys were right. The map made everybody happy and the bond vote went over with a bang.

However, on account of the map, I withdrew from the committee and took no further part in the campaign. There was no falling out. I wanted a road as passionately as anybody and was certain to get one, map or no map, but some odd quirk in my make-up would not allow me to promise what I could not deliver. I said nothing against the bond issue and I voted for it along with the rest. But I had misgivings, and everybody knew it, which turned out to be fortunate when later I deliberately set out to tear up that map, and persuade the people to spend all of that bond money and twice as much more besides on just two roads – one splitting the county from east to west, and the other from north to south.

It is a long story and I can tell only

and courthouse meetings, and I kept

in the county, mainly in schoolhouse

a little of it but I want to tell enough to prove that sometimes, in special circumstances and when time permits, people can exercise sound judgment based on mere facts and figures, with no trimmings and no propaganda. I know it amounts to a treasonous repudiation of the "American way of Life" at this moment to suggest that plain facts, rather than propaganda, make-believe and falsification, may be relied on to make people do what they ought to do. I am merely saying that in the matter of our first road building Mississippi County people did act with regard to unadorned facts.

Fortunately, on account of war and postwar readjustments, we couldn't spend our bond money for a year or more. By this time I had got my farming more or less organized so I could take time off. I suppose I talked to everybody in the county, mainly in schoolhouse and courthouse meetings, and I kept articles and comments going in the weekly paper. Very early I got the Charleston Chamber of Commerce behind me, including all the go-getters who had put over the bond issue and had printed the "promising" map – over my protest.

We had voted bonds to spread gravel on all the roads on that map, and such was the enthusiasm of the moment that almost everybody felt like the roads were practically built on the day they voted the bonds. They had a fine feeling of well-being, of progress, and of vast accomplishment. The setup was perfect for a total waste of the bond money.

After a suitable cooling-off period and after making sure of substantial support I proposed publicly that we forget the "map," and spend all our money and twice as much more besides on just two roads, and that we build them of concrete instead of gravel. Concrete roads then were almost brand new, I had seen one in Indiana and one in Michigan. Nobody else in the county had ever seen one and few, I believe, had ever heard of such a thing. It was quite a shock!

My argument was as follows: If we spent all our money on these two roads and if the new State Highway Board, and the Federal Bureau of Public Roads, approved them, then we would have our money matched fifty-fifty with federal funds. Not only that, but if and when we voted a state gas tax (it was being talked about) then the Missouri Highway Department would take over our two roads as a part of the State Road System, and would refund to us every dollar we had spent on them. Whereupon we could go ahead and fill out our map. I cited a number of states that had enacted "refund" laws that provided for taking over roads and refunding to the counties "the value of the state of such roads at the time they were made a part of the State System." I said that Missouri would undoubtedly enact a similar law, if and when we voted a state gas tax; and that we must build only of concrete in order to be sure to get par value; that is, the exact amount we had spent. If we spread gravel it probably would be sunk in the mud and we would get no refund at all.

All this was somewhat complicated, and partly speculative. It required a lot of explaining. Beyond question it was the hardest job of my life. Later on when I ran for Congress I put in not one tenth of the time and energy on my campaign that I expended to overcome the magic of the road bond "map."

I'd like to report that no important opposition developed. Quite the contrary. The leader of the south end of the county who

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articles and comments going . . ."

'Never . . . have I undertaken anything of

was then our state representative, and a powerful man, fought me to the last. Once in a big meeting called by the county court he addressed the court and the assembled citizens, and told how on his own time and at his own expense he had investigated the whole matter of concrete roads, and had found out they would cut to pieces in no time at all under our kind of traffic. Our high-wheeled, narrow, steel-tired wagons that we would still have to use on our muddy side roads would cut deep ruts in the concrete just like a chisel, and the road would soon be dangerous for any kind of traffic. I couldn't very well disprove it then, but now I could, because many miles of our concrete roads built thirty years ago are still in use and in almost perfect condition. We soon quit using those narrow-tired wagons, though, so we may not have made a fair trial.

However, in spite of this and other opposition I was able to organize three Special Road Districts which, under a much older Missouri law, could vote road bonds up to ten per cent of their assessed valuation. These three districts cheerfully voted bonds, the proceeds of which we threw in with the money we already had from our county bonds. But we still lacked about $150,000 of having enough funds to pay our half of the cost of those two main roads. Where could we get it? The law wouldn't let us vote any more bonds. Somebody said I'd just have to pass the hat for the last $150,000. That was a lot of money in those days, and it is doubtful if there was that much unborrowed money in the whole county. But I did pass the hat and raised the money. I got a surprising amount of real money, but mainly I got notes which the banks bundled up in the usual way and took to St. Louis for rediscount as usual, and our road fund got the money.

We built our two roads under the supervision of the new State Highway Department exactly as planned, and the Federal Bureau of Roads paid its half. In a couple of years the state voted a gas tax, and the Legislature enacted a new road law that gave us our money all back just as I had guessed (but not promised) that it would. We couldn't get our money back all at once, or in cash, but did get it in roads over a period of years.

By common consent, but with no official position, title or remuneration, I handled the county's road matters for the ensuing fifteen years; and I filled in the original preposterous "map" to everybody's satisfaction – so far as I know.

Never before or since have I undertaken anything of consequence that turned out so nearly as planned. It was almost uncanny. I should add that road bonds were all paid on the dot. The notes, unfortunately, were not, and I imagine that some of them are still stowed away, along with thousands of others, in the vaults of St. Louis banks.

I think I have told of this road-building episode mainly to give just credit to the people of my community for their exercise of restraint and judgment in a joint enterprise, which by its nature is more often plagued by the hasty procedures of "grab and get." Twenty years later, at the time of the roadside-sit-down-strike, I saw the same people consumed and blinded by mass hysteria. Then they looked and acted quite differently. But they were still the same people.

consequence that turned out so nearly as planned'

Men to match the needs

Do men make history, or does history make men? The question is of interest to scholars. It probably wasn't of much interest to the men who fashioned Missouri's highway system. Probably few of them even considered it a question worth thinking about.

It isn't that the men who created Missouri's highway system despised theory. Men who despise theory don't build things as big and complex as highway systems. They can't. But the theory that history makes men is remarkable for its passivity. And passivity wasn't a characteristic much in evidence among the men who were Missouri highway-builders in the first four decades of this century. Those men were big dreamers and big doers. They figured a lot and sweat a lot. They pushed and shoved. They were activists, in the best sense of that much-abused word.

They were a widely differing lot, the men who saw Missouri's need for a state system of roads ... and matched it. But the few giants chosen here as representative of them all held some things in common: The vision to perceive that Missouri needed a state system of roads. The conviction that such a system could be built. The courage which gave that conviction meaning. The willingness to pay the price the courage cost. The ability to make the paying count for something.

The men who built Missouri's highway system knew it had to happen. Knowing that, they made it happen. They were the sort of men about whom history gets written.

If Missouri at the century's turn was not lacking in highway needs, it was not lacking either in men to match them. And all Missourians are richer now because it was so.

CONTINUED

Men to match the needs

Governor F.D. Gardner

A wartime Missouri governor, Frederick D. Gardner envisioned the needs of a state and nation at peace. And he worked toward that vision.

When he was asking Missourians to elect him Governor in 1916, he pledged "to construct a vast system of good roads that will eventually bring thousands of tourists and millions of dollars into the state." In his inaugural address he called for a law creating a bipartisan State Highway Commission. Of the law and the commission he hoped to see, Governor-elect Gardner said:

"This commission should be given broad powers, including authority to select a state highway engineer and to pay such salary as would guarantee a man of high attainments and successful experience... Politics should not enter into road work, and the law should be accordingly drawn... Missouri must act at once to avail itself of the federal aid law..."

In 1917, the General Assembly enacted the Hawes Law. Another step closer to his vision, Governor Gardner said in his first biennial message: "... considering the amount of money available for the purpose, I am convinced that today we have on our statute books the best good roads law in the entire country..."

But for Governor Gardner that wasn't good enough. In 1918 he proposed a $60,000,000 bond issue to be paid from automobile licenses. In 1919, he said "The building of a completely connected system of 6,000 miles of hard-surfaced roads, reaching every county of the state, should be undertaken at the earliest possible day. It is estimated that this would cost 60 million dollars... a small sum for this great state to invest and repay during the next thirty years."

The governor backed his words with deeds, throwing himself and the prestige of his office into the bond issue campaign of 1920. When the issue was approved, he asked the legislature in his second biennial message to enact the laws needed to carry out its purposes.

Missouri historian Floyd Shoemaker wrote: "Frederick D. Gardner was governor of Missouri during the World War period and while he was a model war executive he also achieved legislation of lasting peace-time value."

That value still lasts today.

Senator Harry Hawes

HARRY HAWES loved Missouri. During his life he worked for his state many years – as a state representative, a member of Congress and as a United States senator.

But his name lives on in Missouri history on a law which established the official beginning of federal aid in Missouri highway building.

On July 11, 1916 President Woodrow Wilson signed the Federal Aid Act. It opened up a source of revenue for all states by providing that the United States should aid the states in constructing rural post roads.

Under Hawes' leadership, Missouri enacted a new road law in 1917. The law created a bi-partisan state highway board of four members and brought all road laws up to date. But most important, the Hawes Law accepted federal aid and put Missouri in a partnership that has developed the country's highways to their modern level.

Senator J.G. Morgan

IN Missouri highway development Morgan goes with McCullough like Rodgers and Hart in show business because the law which bears their name marked a major milestone in the state highway history.

This law increased state highway system mileage, provided for state aid up to $1200 per mile, alloted $25 per mile per year for dragging roads connecting county seats.

Under the Hawes Law, the Department could not initiate road work but depended on counties and road districts to match federal aid. The McCullough-Morgan Law placed more authority in the hands of the Highway Board and called for surveying two roads through each county.

This meant more work – and expansion – for the Department. And it led to the establishment of what is now the district concept to provide administration on a local level.

CONTINUED

Men to match the needs

Alexander W. Graham

They tell a story over in Montgomery County about Dr. Robert Graham, who came to Missouri in 1816 and settled on a tract of land he bought from Daniel Morgan Boone, son of the legendary Dan'l.

They say Dr. Graham used to like to stand on a big rock well up toward the summit of Mineola Hill and look out over the Loutre Creek bottoms to the hills beyond. The place is called Graham's Rock. The view from there extends for miles. And everything Dr. Graham could see from the rock belonged to him. Or so the story goes.

A century after the redoubtable doctor put his family's name all over Montgomery County, a great-grandson of his added still more luster to it and spread its fame statewide.

The great-grandson was Alexander W. Graham. "Boss", he was called. As state highway engineer from 1917 to 1922, "Boss" was one of the men chiefly responsible for the start made on the tremendous amount of new highway construction provided for in the Hawes Law and the Morgan-McCullough amendments to it. The enactment of those laws triggered a building program whose scope and complexity were without precedent in Missouri's highway history to that point. To start that program on a sound basis, the leadership of a special sort of man was urgently needed. There was "Boss".

Somebody said that genius is the infinite capacity for taking pains. Graham had that, and much more besides. He gave generously of all that he had in the cause of good roads for Missouri. A stickler for accuracy, a bearcat for detail and a glutton for work, the man called "Boss" brought to his job the highest standards of personal rectitude and professional integrity.

Graham and his work fashioned the mold in which many Missouri highway engineers since his time were cast. The numbers of those men are legion now. And there are giants among them. But of all the names enrolled on Missouri's highway scroll of honor, none looms bigger than that of "Boss" Graham.

He was one of the first. And he was one of the best.

Theodore Gary

This native Ohioan left an enduring mark on Missouri and its highways through his service as first chairman of the State Highway Commission.

In 1921 Governor Arthur Hyde appointed Gary chairman of the State Highway Commission where he served until he resigned in November, 1926.

This period covered the Commission during its first five years of existence while the Department was in the process of formation and during the initial period of road progress under the Centennial Road Law of 1921.

"Missouri owes an especial debt to Theodore Gary," wrote Floyd Shoemaker in MISSOURI AND MISSOURIANS, "for the efficient, straightforward manner in which he directed the affairs of the State Highway Commission."

John Malang

COURAGE, vision, good judgment and hard work. These are the qualities that earned John Malang the right to be called the "Father of the Good Roads Movement" in Missouri.

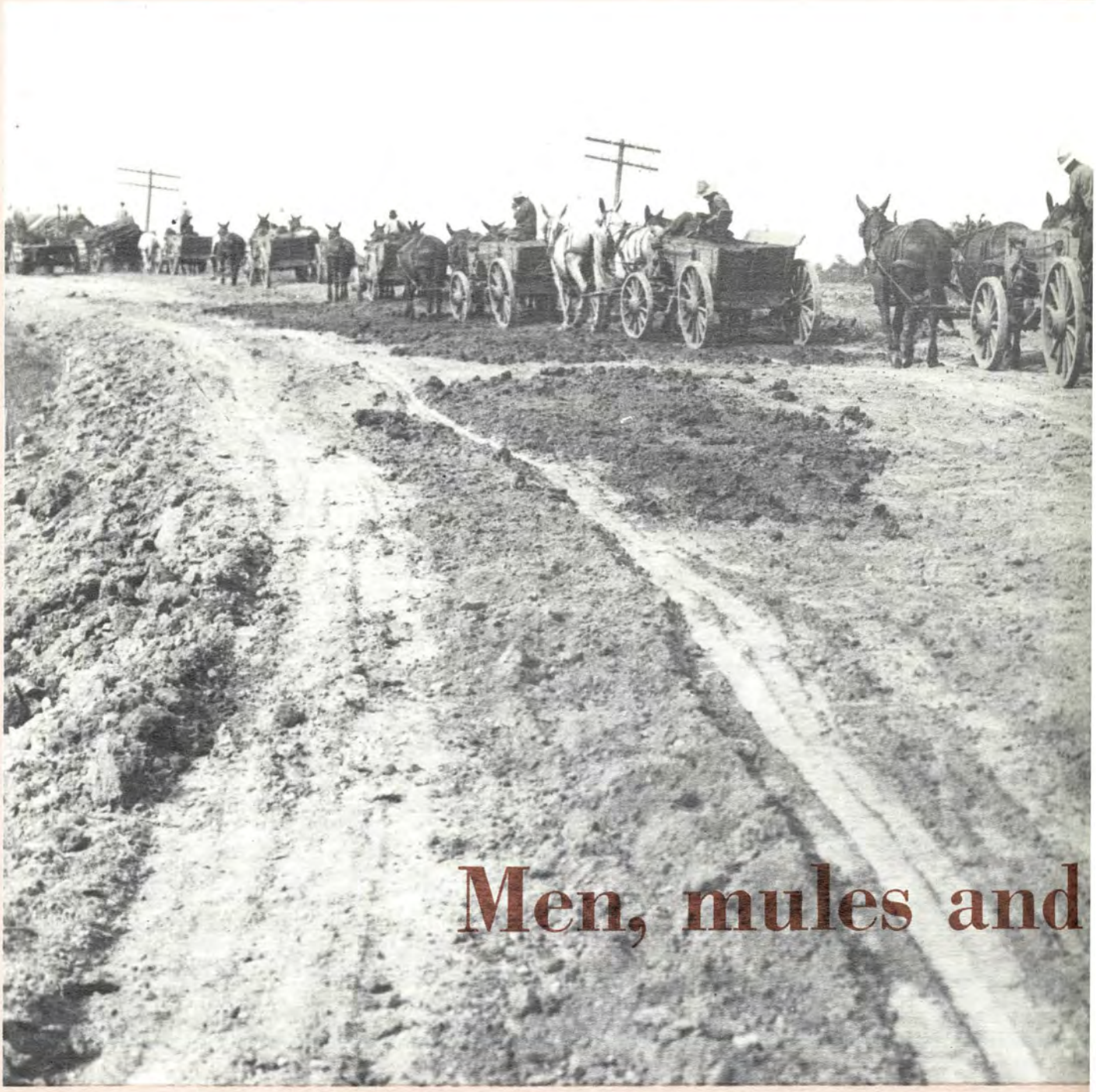
The McCullough-Morgan Law of 1919 provided for the appointment of a state superintendent of highways who also would be ex-officio secretary of the Highway Board.

The choice was easy – John Malang.

Malang started his highway work in 1914 as superintendent of the Joplin Special Road District. Here he built the first concrete road on the state system. Federal Aid Project No. 2, it was called, and it ran from Webb City to the Kansas line.

Later it would become part of the highway called the Kickapoo Trace, the Wire Road – and Route 66 and Interstate Route 44.

He rose rapidly to leadership in good roads movements, all the way insisting on an equitable and balanced road financing and construction program.



Mechanization was a spotty and a sometime thing during the years when Missouri's early roads were built. Often in those days, the motive forces were brute strength and the strength of brutes. It was a matter of muscle.

machines

Coming fast, a Missouri motorist of the '30s passes a Highway Department asphalt distributor.

On these pages and the next three, a pictorial sample of the way it used to be on Missouri's highway building scene

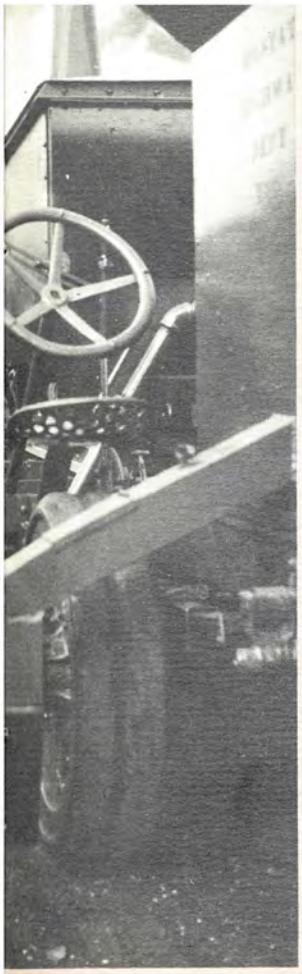
CONTINUED

Men, mules, and machines

Building and maintaining roads is a vastly complicated process. But at one stage or another in the work, one thing always is involved - - moving dirt.

From its smokestack up front to the Casey Jones position of its driver's seat, this 1930s striper is strangely reminiscent of one of the big steam locomotives of the same era.

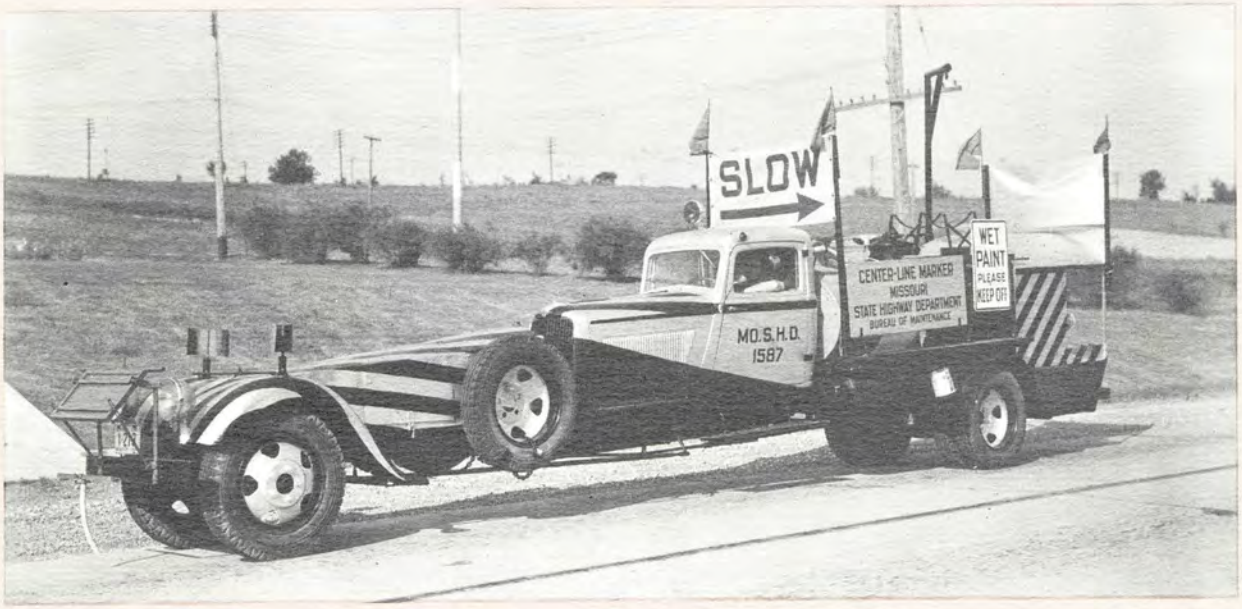
Quarrying operations are more sophisticated today than they were in the Twenties. Then as now, though, one of the prime objects was to make little ones of big ones.



Way back when, mowing operations had to be cranked up literally as well as figuratively. And in those days, it was hard for the driver and the mower to look at things the same way.

The clatter of equipment like this helped make the Twenties and the Thirties roar.

Designed and built by Highway Department people, this formidable looking centerline marker moved majestically over Missouri roads and highways - - applying paint to asphalt and concrete - - laying down a stripe which separated yesterday from tomorrow.



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A fond look backward at another era's " tools of the trade "

Coming at you! Wherever it went, the centerline marker left a bright, fresh look on Missouri highways - - a hopeful look that pointed the way to better days.

Iron-tired, chain-driven, exposed to the elements, an early day Highway Department truck stands poised like some great cat in front of its lair. Ugly? Perhaps. But in its time, a thing of awesome power.

From the earth and its elements, the builders of Missouri's early roads fashioned ways along which their fellow citizens could move toward the bright promise of their state's future - - and their own.

Missouri Highways in 1967

Accounting

The Accounting Division was importantly concerned during 1967 with the task of making further refinements and improvements on the new accounting system which first was introduced to the Highway Department in 1965. The basic system, which proved its usefulness in its first year of operation, has been materially strengthened and improved by the several changes which were made in it during the course of the 1967 year.

More than 152,400 checks were issued during the 1967 year for approximately $225,000,000. This amount covers salaries, contractor payments, operating expenses of the Department and fund transfers to cover tax collection expenses.

	1967	
RECEIPTS		
Highway Users' Taxes		
Motor Vehicle License Fees	$ 57,004,576.73	
Motor Bus Fees	58,236.00	
Motor Truck Fees	943,770.00	
Gasoline Tax Receipts	80,020,794.06	
Motor Vehicle Use Tax	3,792,908.40	
User Tax (Diesel Fuel)	5,726,614.45	
Drivers' License Fees	1,818,192.77	$149,365,093.31
Incidental Receipts		
Sale of Blueprints	34,818.34	
Refunds	1,923,378.05	
Civil Subdivision Refunds	1,689,149.73	
Miscellaneous Collections	854,253.07	4,501,599.19
Federal Aid Refunds		88,881,633.83
Total Receipts		242,748,326.33
DISBURSEMENTS		
Construction	$150,604,461.61	
Maintenance	42,621,062.01	
Other State Departments	17,249,641.50	
Gas Tax Refunds	6,356,645.97	
Administration	8,065,914.68	
Building Additions	35,203.31	
Total Disbursements		$224,932,929.08

152,401 checks for approximately $225,000,000.

Bridges

During the year designs were completed by the Division of Bridges and contracts let in the regular manner for 222 new structures. Of this number, 128 were for the major system routes and 94 were for the supplementary (farm to market) routes.

The total length of all new structures contracted for during 1967 amounted to 56,777 feet at a cost of $36,636,546. Of these amounts, 14,541 feet, costing $5,124,343, were for the supplementary routes.

Seventeen designs were also prepared for repairing, widening, or extending existing structures by contract at a cost of $3,757,339; total length was 9,747 feet.

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Construction

Awards were made on 355 projects in 1967. This represents 1,369 miles of road construction. 139 projects included Federal-Aid, while 216 projects were financed entirely by State funds. The money value of the awards including engineering and non-contractural costs totaled 154 million. The breakdown is:

- Approximately 55 million dollars for the Interstate System
- Approximately 67 million dollars for the Primary System
- Approximately 29 million dollars for the Supplementary System
- Approximately 3 million dollars for non-contractual costs

Total — 154 million dollars.

The Interstate System contracts involved new construction, upgrading existing dual facilities to Interstate standards, screening, rest areas, highway beautification, and implementing the latest safety features for the safety of highway traffic. Approximately 27 miles were completed to Interstate standards this year. There is now under construction approximately 12 miles of Interstate road. Missouri has 635 miles of Interstate roads up to Interstate standards and an additional 113 miles of Interstate roads in use as a dual facility but not up to full Interstate systems.

The Primary and Supplemental Systems include costs of Construction work in rural and urban areas and projects financed by Federal-aid and 100% state funds. They include new construction, bridge replacements, widening, resurfacing, screening, and highway beautification projects. Where applicable the latest safety features were included.

Below is a resume of the projects under construction that have not been completed.

ACTIVE PROJECTS AS OF DECEMBER 31, 1967

System	Contracted in 1964	Contracted in 1965	Contracted in 1966	Contracted in 1967	Totals
Interstate	1	5	20	35	61
Primary	0	2	10	41	53
Supplemental	0	0	9	59	68
Rte. & Sec.	0	2	17	115	134
Totals	1	9	56	250	316

Equipment and Procurement

During the year 115 units of rental equipment were purchased outright and 600 units were replaced through trades. At the close of the year the Division was maintaining 5,490 units made up of passenger cars, pickups, trucks, carryalls, tractors, tractor mowers, motorgraders, and various miscellaneous units.

It required 6,480,000 gallons of gasoline, 730,800 gallons of kerosene, and 1,562,100 gallons of diesel fuel to operate the fleet. In addition, 154,500 gallons of lubricating oil, 17,700 gallons of hydraulic oil, 56,500 pounds of multipurpose gear oil, and 40,800 pounds of lithium grease were used. Tires and tubes costing $174,740.68, tire chains costing $22,976.22, antifreeze in the amount of $11,082.39, and shop equipment, parts and supplies totaling $1,392,698.06 were contracted for during the year.

The quantities of material used in the maintenance of our highways and bridges are listed below:

Asphalt	60,901,060 Gallons
Gravel	1,618,031 Cubic Yards
Stone and Chat	1,701,869 Tons
Paint	379,800 Gallons
Reflectorizing Spheres	2,817.500 Pounds

Sodium Chloride (Winter 1966-67)	25,917 Tons
Calcium Chloride (Winter 1966-67)	2,640 Tons
Treated Sign Posts	32,650 Each
Steel Sign Posts	16,600 Each
Grader and Maintainer Blades	1,357,926 Pounds
Agricultural Seed	70,065 Pounds
Mower Parts	$116,955.07

Our Headquarters sign shop produced a total of 100,947 signs and markers of various shapes and sizes amounting to $852,213.32 during the year.

Highway Planning

During the year personnel in this division:

Continued the processing and analysis of home and roadside interviews, together with traffic and street inventory data to develop travel information for the St. Louis Area Land Use and Transportation Planning program. This included accuracy checks and assignment of vehicle trips to the existing street and highway network to verify the completeness of data.

Developed future major street and highway plan for the Hannibal area and cost estimates for improvements to that system.

Made and utilized estimates of future travel in the development of a major thoroughfare plan for the Columbia urban area. Five informal reports were prepared documenting the preliminary work and sample selection, data collection, accuracy checks, trip generation analysis, and trip projections and distribution procedures. A draft of the final report has been prepared.

Developed travel model by trip purpose for the Kansas City Area Transportation Study. Various checks and comparisons were made to update travel patterns and trip generation characteristics for the area.

Made and utilized estimates of future travel in the development of a major thoroughfare plan for the Kirksville urban area. Inventory of existing facilities and cost estimate for improvements to the system was prepared.

Developed preliminary major thoroughfare plan for the St. Joseph area. Continued with updating of travel models and trip patterns for the area based on revised estimates of future population and economic data.

Made and utilized estimates of future travel in testing the major thoroughfare plan for the Cape Girardeau area. Desirable service standards were developed to be used as a guide in determining cost improvements to the thoroughfare system.

Prepared the 1968 Five-Year Right-of-Way and Construction Program.

Made over 7,200 traffic counts to determine traffic volumes.

Operated 104 permanent traffic count stations to determine traffic variations and trends.

Prepared, published and distributed traffic origin and destination studies for: Alton, Carthage, Dixon, Malden, Monroe City, Table Rock Reservoir Area, Missouri Route 13 — Crane and U.S. Route 61 in Lewis County.

Prepared data for an inventory of "Safety Rest Areas" on the State Highway System.

Gathered and prepared traffic data for the "Cost and Earnings of Freeways" study.

Prepared traffic information for the 1968 Interstate Cost Estimate.

Prepared and distributed Traffic Volume Summary booklets and traffic count maps for 10 cities.

Prepared and distributed the 1967 traffic map and the 1967 commercial vehicle flow map for the State of Missouri.

Made "Roughometer Surveys" on 490 miles of new or resurfaced pavement and on 59 new bridges.

Processed over 700 requests for traffic information from within the Highway Department and from the general public.

Prepared and distributed a compilation entitled "Missouri Traffic Information — 1966."

Conducted annual vehicle speed and truck weight studies.

Prepared data concerning the 1,768,000 automobiles and 429,000 trucks and busses registered in Missouri in 1966.

Collected data concerning the amount spent by counties, cities, special road districts and townships for roads, streets and highways.

CONTINUED

Prepared data concerning motor fuel taxation in Missouri.

Prepared data concerning drivers licenses in Missouri.

Prepared data concerning Public Service Commission fees in Missouri.

In cooperation with other divisions and agencies sponsored research into control and eradication of Johnsongrass; creep and shrinkage of reinforced concrete under load; deterioration of concrete bridge decks; design of composite bridge stringers; beneficiation of coarse aggregates; flood magnitude and frequency on Missouri streams; design of precast-prestressed sections for composite bridges; design of continuous-composite-bolted beams; effects of climate, soil conditions and traffic loadings on the life of various types of highway sections; patterns in bids submitted on materials and supplies; deterioration or "D" cracking in concrete pavements; Missouri traffic laws and ordinances; and motor boat fuel consumption.

Prepared a manual and computer program for the computation of intersection capacities.

Prepared the 1966 annual accident report showing accident rates by highway systems.

Analyzed data collected for the purpose of estimating annual axle loadings on highway test sections.

Continued the development of a state-wide traffic model to estimate future traffic patterns on major routes. A projection of population, employment and related statistics was completed by the University of Missouri.

Completed a brief study of intersection capacities.

Collected field data for an evaluation of traffic congestion on three urban freeways.

Coordinated work with other divisions in the preparation and publication of the 1968 Interstate Cost Estimate.

Made an analysis of the effect of the Interstate System on traffic accidents.

Prepared and published the 1966 Interstate Traveled-Way Report.

Delineated the State Primary System of roads.

Prepared 550,000 copies of official highway map for 1967.

Made a field inventory of all roads, streets and highways in 29 counties.

Drafted and revised 29 county maps.

Drafted and revised 38 city and urban vicinity maps.

Status of State Highway System as of 12-31-67

System	Road Miles	Cost
Interstate	746.2	$ 678,601,974
Major	8203.0	1,008,210,785
Supplementary	22719.6	429,853,692
Totals	31668.8	$2,116,666,451

Mileages by Types

Type	Road Miles
Oiled Earth	279.3
Granular	2682.6
Low Type Bituminous	22317.2
High Type Bituminous	2837.0
Concrete	3552.7
Total Miles	31668.8

Legal

During the year the Chief Counsel filed condemnation proceedings involving 941 separate tracts of land, and 102 hearings were held for appointment of commissioners in condemnation proceedings. A total of 70 jury trials were completed with many other cases being settled at various stages of trial prior to jury verdict. Disposition was effected in 608 other pending condemnation cases during the year, and a total of $827,393.15 was recovered by the Commission in final judgments from excessive awards by commissioners in condemnation proceedings.

There were 20 hearings conducted before the Public Service Commission involving crossings of railroads by state highways either at grade or by grade separation.

13 Appellate Court decisions were rendered during the year.

Disposition was effected of antitrust litigation resulting in collection of $343,525, making total receipts by the Commission from this source $2,570,349.39.

Collection was effected on 1506 claims involving damage to Commission property, some by civil suit, in which a total of $276,834.-41 was collected.

During the year also, it was necessary to file petitions to close 69 junkyards under Missouri's junkyard law and, in 14 instances, these have been terminated by elimination of the junkyard involved or by appropriate action on the part of the landowner. Disposition was effected involving 242 other junkyards.

12 suits were filed against the Commission for various reasons, the majority being claims arising out of construction contracts, and 6 other special suits were filed by the Commission for injunctions or possession of property.

Several thousand contracts, deeds, and other instruments were drawn in routine transactions.

Maintenance and Traffic

On January 1, 1967 Maintenance and Traffic operations covered 32,648.3 miles. During the year, due to construction activity, there was a net gain of 119.8 miles; therefore, we had under maintenance a total of 32,768.1 miles on December 31, 1967.

The maintenance budget for 1967 amounted to $44,000,000.00.

The number of overdimension and overweight permits issued increased over last year, and the collection of permit fees amounted to $36,452.00 in the Headquarters Office and $81,132.00 from the ten District offices.

During 1967 considerable attention was directed to safety, and many improvements or corrections were made with this in mind, including the program of reflectorizing narrow bridges. Approximately 2,550 bridges were reflectorized at a cost of $55,000.00.

The Division initiated the use of breakaway posts in maintenance repairs on interstate signs and developed a breakaway feature for the lighting standards that will be used in replacement work.

Striping crews placed 18,000 miles of centerstripe, 850 miles of edgeline on narrow pavements and 2,665 miles of yellow No Passing Zone lines. In this work we used 233,800 gallons of white paint, 101,400 gallons of yellow paint, 97,250 gallons of black paint and 2,764,000 pounds of reflective glass beads.

Thirty additional intersections were either signalized or the existing signals were modified to meet current traffic demands. Districts placed 16,000 additional curve signs on secondary state routes. Speed surveys and recommendations were made for thirty-eight cities. The Division received and analyzed 39,832 accident reports and investigated the sites of 715 fatal accidents. Traffic studies were completed at 262 intersections.

Safety rest areas on interstate routes are proving popular. Four have been completed and are in operation. It is costing approximately $25,000.00 per year to maintain a pair of these rest areas with an attendant on duty sixteen hours a day, seven days per week.

A decided improvement was made in the Turf Management Program. It included improved mowing practices and the use of fertilizers and herbicides in order to control erosion, improve appearance and reduce the cost of maintaining roadside areas. The level of maintenance on roadside plantings has improved over the entire state due to more interest and education of maintenance personnel. Items that have shown a great improvement are insect control, mulching and fertilizing.

The two-way radio system was expanded during the year and is now approximately 70% complete for state-wide coverage. The system is proving invaluable in Maintenance and Traffic work.

Materials and Research

The construction and maintenance programs during 1967 were such that the Materials and Research Division continued to be quite active in the inspection and testing of all materials used in this work. The apparent decrease in the number of samples tested is occasioned to a significant degree by a change in the reporting procedure of the bituminous materials test.

To provide additional testing facilities for our laboratory, the following new equipment of a major nature has been purchased: a Beckman DU-2 Ultraviolet Spectrophotometer with flame attachment; a Spectrophotometric Electrometric Automatic Titrator; a Beach-Russ Vacuum Pump Assembly; a low temperature freeze chamber; a Los Angeles Abrasion

CONTINUED

Maryville College Library Saint Louis

Machine; one Joint-Bond Testing Machine; and four Frame-Type Consolidometers.

The quantities inspected and tested during 1967 were as follows: Cement — 3,244,196 barrels; Concrete Aggregate — 2,707,465 tons; Bituminous Aggregate — 2,813,487 tons; Surfacing and Base Aggregate — 5,441,304 tons; Reinforcing Steel — 46,431 tons; Culvert Pipe and Arches — 355,090 linear feet; Lumber and Timber — 624,136 board measure feet; Piling and Posts — 24,391 linear feet; Paint — 367,793 gallons; Bituminous Material — 97,843,366 gallons. There were 37,783 samples of material tested this year, 2,033 of which were special and investigational tests.

Personnel

On December 31, 1967, the Department had 6,154 salaried employees considered as full-time employees. This is an increase of 114 compared to the number of salaried employees as of December 31, 1966. Wage employees are considered as part-time employees and the number varies according to seasonal work and emergency maintenance requirements.

During the year, two engineers were secured through an on-campus recruiting program at colleges and universities in Missouri and neighboring states; however, three more engineering graduates were either employed or reemployed through other sources during the year, making a total of five graduate engineers.

The Co-Operative Civil Engineering Training Program, a program which aids qualified high school graduates to achieve a degree in Civil Engineering, entered its thirteenth year in 1967. The program is especially helpful to those students who due to financial problems might not otherwise be able to further their education. It is sponsored by the Missouri State Highway Commission and is operated in conjunction with the University of Missouri, Columbia, and the University of Missouri at Rolla. Currently, 25 students are taking advantage of this educational program. A total of 211 participants has been selected to the program since its inauguration in 1955.

During the year a Performance Appraisal Guide was issued to all supervisory personnel of the Missouri State Highway Department. The basic purpose of the guide is to aid the supervisor in preparing for and in conducting the performance appraisal interview in a manner which will be beneficial to both the supervisor and the person being interviewed.

An operations manual was prepared for the Graduate Engineer Orientation & Development Program outlining the necessary procedures and policies to be followed in order to carry out the new program in a uniform manner, thereby providing beneficial results to both the graduate engineer and the State Highway Department. The program will become operational in January, 1968, and its purpose is to familiarize the recent graduate engineer with the many and varied facets of highway engineering and the daily operations of the Department. It will also aid the recent graduate to more readily find his place in his chosen field of highway engineering.

A Highway Maintenance Foreman Training Program was prepared in conjunction with the Maintenance and Traffic Division. The purpose of the program is to augment the Maintenance Foreman's supervisory skills in order to increase the work efficiency and create more understanding between the supervisor and his subordinates. The actual training sessions will begin in January, 1968.

Several job investigations were conducted during the year by the Personnel Division in instances where Divisions or Districts felt that new jobs were warranted or where jobs had changed sufficiently to warrant a reevaluation.

The Highway Employees' Retirement Program, which is designed to allow employees to retire at a reasonable age with a moderate income, is currently paying benefits to 723 former Department employees. The program not only creates a feeling of security for the employees of the Department, it also allows younger employees to advance within the organization.

Public Information

Meeting the public's right and desire to know more about Missouri's highway program takes many forms.

During the year these forms included some 400 general news releases; writing about 25 major speeches; and preparing and distributing the MISSOURI HIGHWAY NEWS (8700 copies monthly); the Department's annual report 7,500 copies); and issuing twice-daily bulletins advising highway users of highway conditions during inclement weather or other emergency conditions.

This division also distributed a half-million copies of the official state highway road maps.

It continued its clipping service to keep Department administrative and engineering officials informed of newspaper comment and coverage of highway matters, and it supervised the annual Service Awards programs, the Missouri State Fair exhibit, and the production of the Department's movie.

Several special brochures on highway dedications and other subjects also were prepared and distributed by the division.

Right of Way

During 1967, the cost of right-of-way acquired for highway construction totaled $24,715,608.00.

The Department acquired 3,104 parcels — 2,551 by negotiation and 553 by condemnation or 82 percent by negotiation and 18 percent by condemnation.

There were 698 parcels acquired for the Interstate system — 566 by negotiation and 132 by condemnation, which is 81 percent by negotiation and 19 percent by condemnation.

During the year the Right of Way Division appraised 3,205 parcels. Two separate appraisals were prepared for 49.5 percent of the parcels involved, making a total of 4,790 appraisals produced and reviewed by Right of Way Division. This is an average of 267

parcels appraised and 399 appraisals produced per month.

Receipts from the sale of improvements located on right-of-way acquired for highway construction and from the sale of excess property totaled $99,297.24.

Rental of advance acquisitions and excess property resulted in an income of $218,743.45. An additional $28,462.57 was derived from miscellaneous sources.

Collections from contracts with political subdivisions for their participation in right-of-way costs amounted to $1,658,066.01.

Surveys and Plans

Construction projects for the Interstate, Primary, and Supplementary Systems, including Urban extension, costing $154,475,076 and covering 1,054.1 miles were placed under contract during 1967. The Primary System received the largest share with $69,246,620 of work on 620.0 miles. Contracts for Interstate System projects totaled $56,517,516 for 74.9 miles, and improvements on the Supplementary System consisted of 359.2 miles costing $28,710,940.

In addition to the above-listed construction 993.3 miles of Supplementary System routes were approved for oil-surface treatment by District maintenance forces at a cost of $1,787,940. Miscellaneous projects were approved for construction by state forces at a cost of $59,359.

The overall total for construction obligations amounts to $156,322,375 for 2,048.4 miles.

Maintenance projects financed with Maintenance funds were also contracted during 1967 for 316.1 miles of work costing $644,780.

Other work handled during the calendar year included the obligation of $69,270 for the installation of flashing light signals at 10 highway and railroad grade crossings. In addition 4 special railroad crossbucks with flashing amber beacons were installed at an obligation of $1,400.

Preliminary engineering contracts amounting to $1,622,206 were awarded to various consultant engineering firms during the year for surveys and design work, including bridge designs.

Reconnaissance studies were approved by the State Highway Commission for approximately 234.9 miles of Interstate, Primary, and Supplementary System highways that are scheduled for future improvements.

Cart Fund Program

In 1967 all counties in the State participated in the County Aid Road Trust Fund Program. The counties were reimbursed $3,855,218, which included $3,649,565 for work approved under the 1967 program and $205,653 for work approved under the 1966 program and completed during the 1967 calendar year.

Approximately 79.7 percent of funds reimbursed was used for maintenance. (Because there are no deadlines, payments are carried into the next calendar year for work begun but not completed by December 31.)

Computer Programming Unit

During the year 73 new programs were written. The data processed consisted of approximately 1,469 miles of earthwork volume computations, 194 geometric and interchange problems, 109 bridge design computations, bid tabulations, traffic assignments, Bureau of Public Roads' transactions, 12 asphaltic concrete wedge quantity computations, and strain gauge and slope stability problems.

Photogrammetric Unit

Aerial photography covering approximately 400 miles of highways was made for reconnaissance studies, topographic and planimetric mapping, traffic studies and for exhibits in right-of-way condemnation cases.

Planimetric and topographic maps for approximately 250 miles of highways were compiled from aerial photographs by the use of stereo plotting equipment.

Base line traverse surveys for approximately 180 miles of highways were measured with an electronic distance measuring system.

Urban Section

The Urban Section continued its collaboration with the Division of Highway Planning in the preparation of comprehensive traffic studies in the following communities: Columbia, Kirksville, St. Joseph, Hannibal, Springfield, Cape Girardeau, and Moberly.

In addition to the general routine consisting of the review of urban strip maps, preparation of preliminary interchanges, and other special design problems, a number of reconnaissance studies were made in various urban areas.

General

Eleven lettings were held during the year. Examination of the 1,046 bids received on 243 jobs (single projects or combination of projects) reveals the following statistics and trends:

- Average number of bids per job — 4.3
- Number of jobs on which bids were rejected — 14
- Low bids averaged 5.8 percent below the engineer's estimate.
- In 1967 the Composite Cost Index for grading, surfacing, and structures, based on the 1957-1959 average of 100, continued a 7-year trend of increase and reached an all-time high of 112, closely following national trends.
- The total amount of work placed under contract in 1967 was approximately 12 percent greater than the 1966 amount and second only to the highest year total occurring in 1964.

Time was, way back when, when many of the nation's most famous cars were

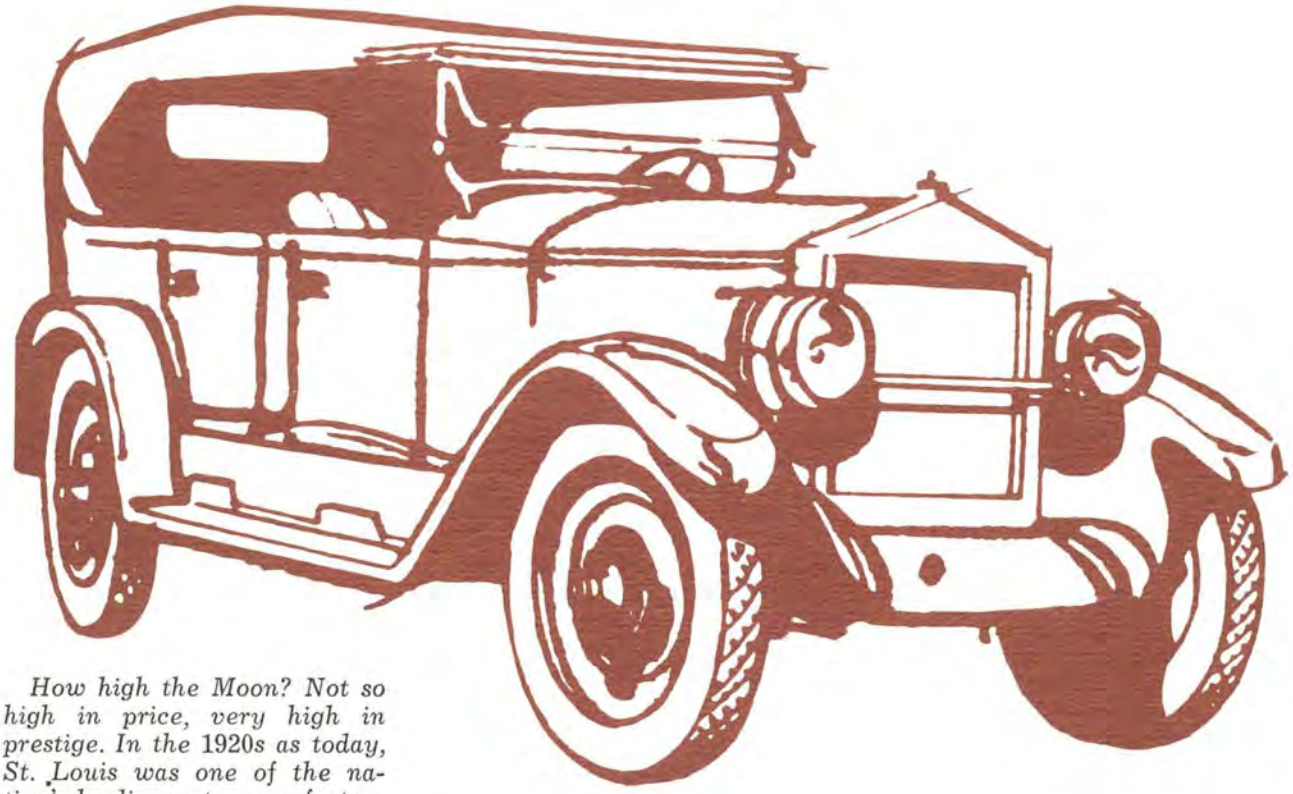
Made in St. Louis

The storied St. Louis World's Fair gave the world the hot dog and the ice cream cone in 1903. Two years later a St. Louisan named C. H. Laessig gave the world its first service station for cars, pumping gasoline through a garden hose.

By then other car makers had followed J. D. P. Lewis' "horseless carriage" onto the scene. And before the 1900's were very far along, St. Louis had become one of the premier car producing centers of the nation.

From here shone the fabled Moon. From here came also the Dorris, the Ruxton and the Windsor. And there were still others. About two dozen.

Most of the St. Louis-built cars of the Teens and Twenties have chugged and clattered their way into the mists of memory. But their emergence and their passing left a colorful trail along Missouri highway history, a trail re-traveled here by Harry N. D. Fisher in the ST. LOUIS COMMERCE magazine.



How high the Moon? Not so high in price, very high in prestige. In the 1920s as today, St. Louis was one of the nation's leading auto manufacturing centers. And in the '20s, the Moon was one of the big reasons why.

From the earliest days of the American automobile industry, St. Louis – now second only to Detroit in this field – has been a center of vehicle manufacture.

The throaty-voiced, 20-horsepower Moon 6 and its exotic stablemates, the Diana 8, Ruxton and Windsor; the beep-sounding Dorris, and the sleek Gardner with its distinctive griffin radiator ornament are but a few of some 30 automobiles that were made in St. Louis.

Names of the others? Most are now forgotten, but among them were the St. Louis, Eureka, Clymer, Scott, American Morse, Darby and Champion. Some "manufacturers" operated little backyard shops and made only one or two cars, others turned out several and quit. Mergers were frequent.

The first horseless carriage in St. Louis was built by J. D. Perry Lewis in 1893. An electric vehicle, it ran as fast as eight miles an hour. A $1500 larger model that Lewis built a year or so later ran into trouble in the 3000 block of Locust street one night. The axle broke and the batteries fell out.

Lewis obtained automobile license No. 1 in 1902, but it was not the first auto license plate in St. Louis. That was No. 67, issued to Dr. E. V. Dittlinger, who had built his own car.

The first automobile factory in St. Louis, the St. Louis Motor Carriage Co., at 1230 North Vandeventer avenue, was founded in 1898. It made the single (and later double) cylinder St. Louis Car, which in 1901 carried the first unit power plant. George P. Dorris owned the patent. When the company and its popular Boston model car moved to Peoria in 1905, shortly after making the first side-entrance car, Dorris resigned to found the Dorris Motor Car Co., which made the famous Dorris here until 1926.

In 1898, Ashley Scott and Semple S. Scott built an eight-passenger electric bus, which they later rebuilt and operated as a public carrier – St. Louis's first bus – on Olive street between Sixth street and Boyle avenue. In 1899 they built an electric run-about so good that they could run it all the way to the country club in Clayton and back downtown on one charge of the batteries.

1929 WINDSOR

H. F. Borbein & Co., 1112 Cass avenue, was the first U.S. manufacturer of automobile axles, wheels, chassis and bodies for the trade (1899).

Also in 1899, A. L. Dyke of St. Louis established the country's first automobile supply house. "Dyke's No. 1 outfit" (an early day do-it-yourself kit) consisted of engine, transmission, axles, wheels, steering device, radiator and other parts. He also sold appropriate "motoring clothes."

A person thoroughly dressed in such apparel for the rigors of the road was "all Dyked up." Today the expression is "all decked out."

The first American-made float-feed carburetor – still used in principle in contemporary engines – was invented in St. Louis by George Dorris and his sales manager, A. L. Dyke. An original model of the carburetor is displayed at the Smithsonian Institution in Washington, D.C.

St. Louis's first independent auto repair shop was opened by Charles A. Marien in 1902. Three years later Marien became manager of the automobile department of Anheuser-Busch, Inc., when the brewery became the first local company to replace horses for heavy hauling with a fleet of trucks. Initially there were 28 trucks in the fleet, 27 electric and one gas.

The Automobile Club of St. Louis was formed in 1902 with G. H. Walker as the first president. The club was instrumental in securing legislation in 1907 raising the

CONTINUED

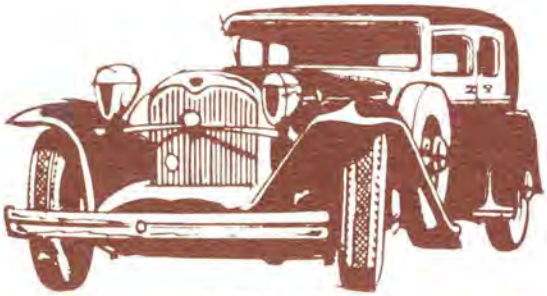
Then as now, St. Louis was one of the nation's car capitals

Missouri speed limit from nine to 15 miles an hour.

The world's first gasoline station was started in 1905 in St. Louis by C. H. Laessig on Theresa avenue. Gasoline was delivered through a garden hose. Before then, gasoline had to be purchased by the can at grocery stores.

1909 DORRIS

1927 GARDNER



1929 RUXTON

Dorris brought out the world's first valve-in-head engine. In 1907 his new four-cylinder car was driven all the way to DeSoto, Mo. – 47 miles – in high gear, an unheard-of accomplishment.

John C. Higdon built St. Louis's first light air-cooled engine in 1907. It had one speed forward with chain-to-rear wheels drive. In all, Higdon built 980 cars here.

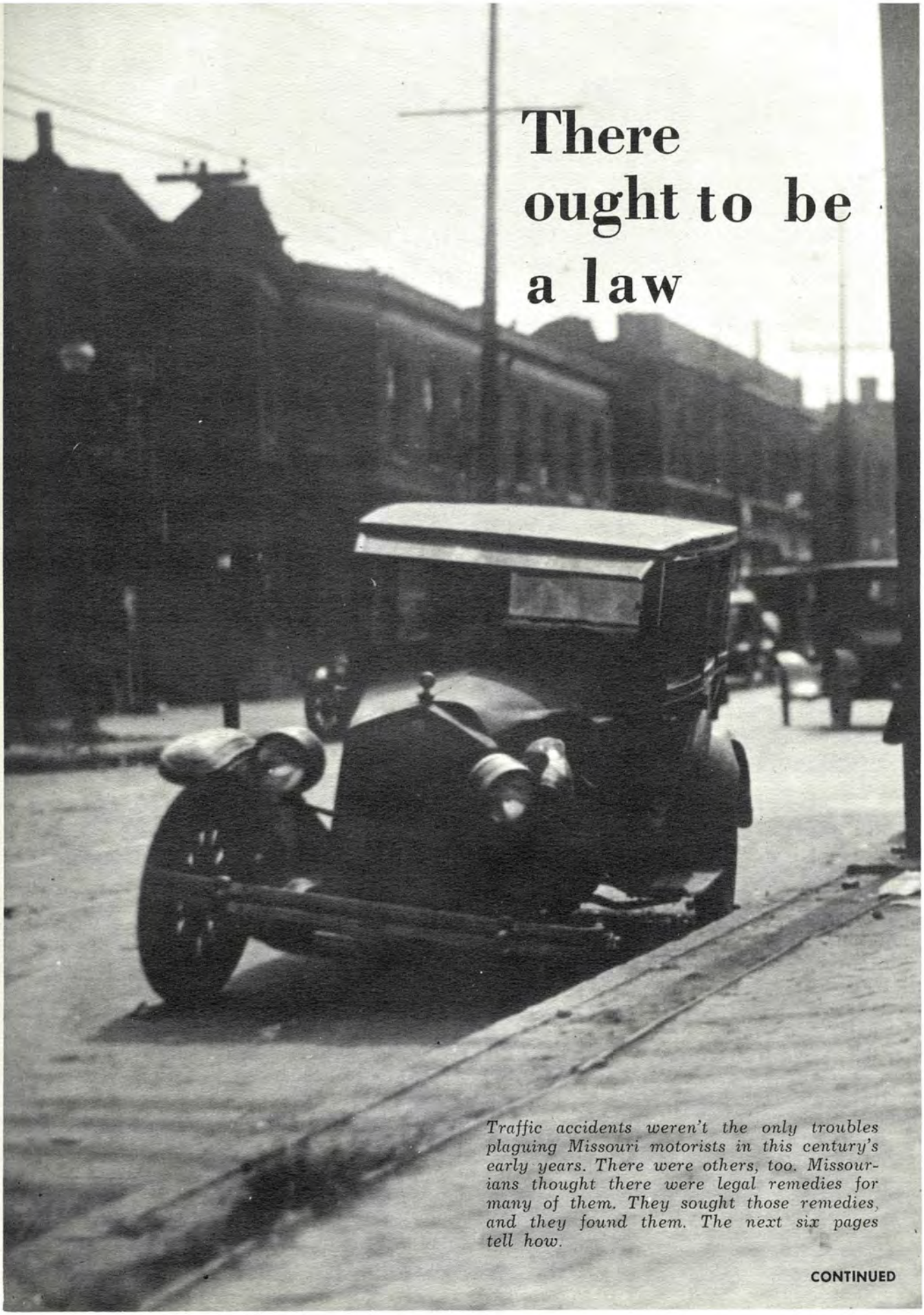
While these St. Louis "firsts" are interesting, no account of early St. Louis-made cars would be complete without mentioning Ford and Chevrolet, which were being built here before World War I – and still are today.

And some tribute must be paid two St. Louis auto manufacturers, Moon Motor Co. and Gardner Motor Co., whose fine cars were as well known in the 1920's as Fords, Chevrolets and Plymouths are today.

The Moon company, founded in 1907 by Joseph W. Moon, had its factory at Main and Cornelia streets and turned out cars with square radiators like the Rolls-Royce. The firm made the six-cylinder Moon and an eight-cylinder companion car appropriately called the Diana. It also assembled two luxury autos, the famous Windsor "White Prince Phaeton" and later the frontwheel drive, English-styled Ruxton.

Moon got into financial and legal difficulties and by November, 1930, was in receivership. Eventually, the Moon company's realty was sold to the Cupples Co. – for the making of matches.

Gardner Motor Co. was established by Russell E. Gardner Sr. in 1919, after he sold his franchise for the manufacture of Chevrolets to General Motors Corp. His factory at First and Rutger streets made more than 100,000 autos in the decade it flourished. The firm became a victim of the depression and folded in 1930, but not before its "Gardner Griffin" symbol had become one of the best known auto emblems in America.



There ought to be a law

Traffic accidents weren't the only troubles plaguing Missouri motorists in this century's early years. There were others, too. Missourians thought there were legal remedies for many of them. They sought those remedies, and they found them. The next six pages tell how.

CONTINUED

Missouri near the beginning of the motor age: The cars were coming, and the kind of roads they needed to travel on didn't exist. Something had to be done. Something was.

LAW

Landmark legislation lays a firm foundation for the revolution of the roads

In 1903, the year that the storied Wright brothers got off the ground at Kitty Hawk, 640 automobiles were "flying" around Missouri. Some of them were going so fast that Missourians deemed it proper to enact the state's first speed limit law. It stated, among other things, that no automobile was to be driven on the public highways of Missouri at speeds in excess of nine miles per hour.

By 1940 the speeds at which cars were moving over Missouri highways had changed so drastically that the phrase "mile a minute" sounded old-fangled and a little quaint. And in that year, the vehicles registered in Missouri totaled more than 921,000.

What happened on Missouri's system of highways during the first four decades of the 20th Century? A revolution. How can a revolution be chronicled? There are many ways. One of the most popular is to explain it in terms of legislation, to tell what happens when enough people, vexed by enough problems, say "There ought to be a law" so that there get to be some.

There are difficulties implicit in this kind of story-telling. One of the big ones is the fact that laws are simultaneously the results of some conditions and the creators of others, simultaneously effects and causes. But where there is no orderly structure of laws within which to do public business, there is likely to be little public business done at all. So, much of the spectacular story of Missouri's revolution of the roads can be told by reference to the series of legislative enactments by means of which the people of Missouri, acting through their General Assembly, laid the firm foundations on which has been built the Missouri highway system of today.

Here is the outline of that story, the story of the results achieved by people who believed "There ought to be a law".

1903 The state's first speed limit law fixes the top speed for cars at nine miles per hour. It provides also that before an automobile can attempt to pass any vehicle, carriage or wagon drawn by animals, its operator must sound a bell or whistle and, if necessary, stop his car so the driver of the other vehicle can alight before his animals become frightened and run away.

An annual license fee for the operation of motor vehicles in the state is fixed at $2. Proceeds from it are paid into the counties' general road funds.

1905 The General Assembly taxes private railroad cars operating in Missouri. Proceeds are apportioned to the counties, which give them to their townships for use in the construction and repair of public roads and streets.

1906 The State Board of Agriculture spearheads a movement seeking state participation in road matters. Meetings are held across the state. Governor Joseph Wingate Folk calls a good roads convention in Chillicothe. Thousands attend.

1907 Missouri newspapers and good roads groups increase the popular demand for state legislation. The threat is voiced that unless better roads are provided, free rural mail delivery service may be discontinued. Governor Folk calls for road legislation in his message to the 44th General Assembly.

The Legislature creates the office of State Highway Engineer and makes him responsible to the Board of Agriculture, which becomes in effect the state's first highway commission. Curtis Hill is named to the newly created post. But the initiative in matters concerning highways still rests with the counties. Under the terms of the law, Mr. Hill can do little but advise county officials, help them in planning and act as a public relations man for good roads.

Another law creates a State Road Fund, made possible by a federal appropriation of about $500,000 in payment of a Civil War claim. The money is distributed among the counties, with no county to receive more than 5 percent of the total. The funds are to be used for construction or improvements, not to purchase right of way.

Another law provides for state compensation to counties for dragging public roads. The rates of state pay to the counties are not to exceed $10 per mile on United States mail routes and $5 per mile on other roads.

An annual appropriation of $6,000 is established with which to pay the State Highway Engineer's $2,400 yearly salary and all other expenses of his office.

Other laws increase the speed limit to 15 miles per hour outside the cities and require that all motor vehicles and drivers be registered. The fees are set at $5 and $2 respectively. Each driver is required to wear a numbered badge "upon his clothing in a conspicuous place at all times" while driving.

1913 The 47th General Assembly creates a State Highway Department. It eliminates the office of State Highway Engineer and relieves the Agriculture Department of its responsibilities in highway affairs. A State Highway Commissioner is provided for, and his salary is fixed at $3,000 a year. His duties are largely advisory and of a public relations nature.

Registration fees which vary with the horsepower ratings of the vehicles involved are introduced.

County and state authorities, acting together, are empowered to designate selected

CONTINUED

The need is urgent; the ways are found

inter-county seat highways as "state roads." These are to be inspected annually by the State Highway Commissioner, and the State Highway Department is authorized to furnish tools for use in their construction.

1916 Congress passes the Federal Highway Act. It makes federal appropriations to the states on the basis of their areas, populations and postal road mileages. The states are required to match the federal funds provided and to follow the construction and maintenance specifications set by the Bureau of Public Roads of the United States Department of Agriculture.

1917 The Hawes Law gives Missouri's assent to the Federal Highway Act, and the modern era in Missouri highway building begins. The law is named after State Representative Harry B. Hawes, under whose leadership it is enacted. Later, Mr. Hawes is to become a member of the Congress and a United States Senator from Missouri.

The Hawes Law creates a bipartisan four member State Highway Board, which is empowered to appoint a State Highway Engineer. The Engineer and the Board are required to select and designate not less than 3,500 miles of "state roads." These are to be distributed among the several counties in proportion to their respective areas, populations and mileages of county roads. They are to be uniformly marked, and their rights of way are to be a minimum of 40 feet wide.

The law creates a state road fund. It is built from vehicle registration fees, corporation registration fees, federal money paid to the state under the terms of the Highway Act of 1916 and from miscellaneous other sources. Out of the state road fund are paid the administrative expenses of the Highway Department, the sum necessary to match the federal appropriation, $400,000 biennially to underwrite state payments of $15 a mile for dragging and otherwise improving inter-county seat highways, and another $400,000 with which to help counties, townships and road districts in constructing roads and bridges.

The Hawes Law provides the impetus for a tremendous spurt in Missouri road-building. In 1917 alone, 122 projects are approved under its terms, and 43 counties put 61 projects under contract. By year's end, more than 11,400 miles of inter-county seat roads are dragged and otherwise improved.

1919 The Morgan-McCullough Act attaches extensive amendments to the Hawes Law. It states "that there shall be

expended by the State Highway Board on... state roads in each county totaling approximately 6,000 miles the sum of $1,200 per mile without cost to the county and out of funds allocated from the federal government and such state road funds as are available."

Under the terms of the act, the total cost of all surveys and plans cannot exceed an average of $100 a mile. This survey and plans cost is to be included in the $1,200-a-mile figure allocated for construction. The act authorizes the counties to award contracts for all construction.

As a result of the passage of the Morgan-McCullough Act, each county in the state is guaranteed at least two state roads including not less than 50 miles on which state and federal funds are to be expended. No county is to receive more than one such road until all counties have been provided with one.

To meet costs of the new roadbuilding not provided for by the Morgan-McCullough Act, the counties find it necessary to vote bonds. These county bond campaigns begin in the last half of 1919, and the State Highway Department participates in many of them.

1920 Not all of the county road bond campaigns are successful, and it becomes apparent that road revenues are going to be insufficient to carry out the plans made under the Hawes Law and the Morgan-McCullough Act.

CONTINUED

Much of the early roadbuilding done in Missouri in the Twentieth Century was an uphill battle. The mud was deep. And the ruts ran all the way to the top of the hill.

Multimillion dollar bond issues fuel a tremendous surge forward in Missouri highway building

Under the leadership of State Highway Superintendent John A. Malang, the Highway Department assumes the leadership in a state-wide educational and fund-raising effort to "Get Missouri Out of the Mud." Passage is sought for a constitutional amendment which will authorize the sale of $60 million in state road bonds.

The constitutional amendment is approved. It provides that all motor vehicle registration fees collected in the state will "stand appropriated without legislative action for and to the payment of the principal" on the bonds. (Nine months after approval of this amendment, the adoption of another constitutional amendment authorizes the use of motor vehicle fees to pay interest on the bonds.)

1921 In Missouri's 100th year of statehood, the General Assembly passes the Centennial Road Law. The law shifts the focus of Missouri highway building from the local to the state level. It is to remain fundamentally unchanged from the time of its passage to the outbreak of World War II, and it is the rock-solid foundation on which the whole of Missouri's modern highway system is destined to stand.

It provides for a bipartisan State Highway Commission, A Secretary, a Chief Engineer, a Chief Counsel, and "such assistant engineers and other employees as the Commission may deem necessary." It gives the Commission comprehensive and discretionary powers to locate, design, construct, and maintain a "state highway system." The system is to include about 6,000 miles of secondary roads and about 1,500 miles of primary roads. Construction of the system is to be started in all counties as nearly at the same time as possible, and is to be carried on simultaneously in all the counties. Each county in the system is apportioned $6,000 a mile.

To provide for the construction and maintenance of the state highway system, the Centennial Road Law empowers the State Highway Commission to make the rules governing its own organization, to compile highway statistics, to prepare plans and make estimates, to let all contracts, to prescribe uniform highway markings, and to purchase or lease land. The law states that the Commission "shall have supervision of highways and bridges which are constructed, improved, and maintained in whole or in part by the aid of state moneys, and of highways constructed in whole or in part by the aid of moneys appropriated by the United States government, so far as such supervision is consistent with the acts of Congress relating thereto."

1922 An amendment to the Missouri Constitution allows money collected from registration fees in excess of that required for paying road bond interest and principal to be used for highway maintenance and construction.

1924 The initiative petition is used to put onto the ballot proposals "that a license of two cents per gallon be levied upon fuels used in motor vehicles upon the public roads of this state; that the annual motor registration fees be increased by fifty per cent; and that the... unsold portions of the sixty million dollars in road bonds should be sold prior to the times previously authorized by law."

The three proposals are grouped on the ballot as Proposition Number 5. The State Highway Department campaigns hard for Proposition 5, as do the state's various

good roads associations. The voters approve of the proposition by a margin of more than two to one.

1928 Another amendment to the State Constitution authorizes the issuance of $75 million more in road bonds. The amendment also provides for the improving and maintaining of the primary and secondary roads already in existence in the state, and for the constructing and maintaining of new roads and bridges... including traffic relief roads near the state's metropolitan areas, supplementary and connecting roads, and roads and bridges in State Parks.

The Constitutional Amendment enacted in 1928 makes it unlawful for any state official or agency to divert highway revenues to other-than-highway purposes. Missouri becomes the first state in the nation thus to protect and earmark its highway revenues.

1931 The Missouri State Highway Patrol is created "to police the highways constructed and maintained by the Commission; to regulate the movement of traffic thereon; to enforce thereon the laws of the state relating to the operation and use of vehicles on the highways; to enforce and prevent thereon the violation of the laws relating to the size, weight and speed of commercial motor vehicles and all laws designed to protect and safeguard the highways constructed and maintained by the Commission." Members of the State Highway Patrol are authorized to "arrest anyone violating any law in their presence or... any fugitive from justice or any felony violation," and to "make investigations concerning any crime of any nature."

1937 It becomes unlawful for "any person of Missouri" to drive any motor vehicle on any highway of the state without either an operator's or a chauffeur's license.

The mists over the building of Missouri highways were clearing. As they did, they revealed a maintenance problem of major proportions, and one that was to grow.

Missouri's pioneer highway engineers

They measured the extent of the need. They mapped a way out of the morass.

Where they

Many were the pioneers in Missouri's Twentieth Century revolution of the roads. There were the businessmen who saw the economic needs for roads. There were the farmers who saw the need for breaking the mucky stranglehold of mud which bound them to the farm lot. There were the politicians who heard the voices of the voters.

And there were the men who came to build these roads for the people.

Man and need met in Missouri – and none of the three ever was the same again. As James Jenkins Jr. described it:

"And then one bright day a man came over the hill wearing a flannel shirt, faded khaki pants, and a don't-give-a-damn hat with the brim pushed back. On his shoulder he carried the key to change – a transit."

Missourians generally welcomed these men in their "d – g – a – d" hats. But not always, because change has opponents.

Rex Whitton, former Missouri Chief Engineer and later federal highway administrator, remembers the unwelcome sight of the business end of a shotgun. The farmer on the other end wanted "no truck" with the likes of the "pioneers" in Whitton's survey party.

And B. H. Piepmeier, an earlier day chief engineer, recalls an encounter with a Missouri farmer who made his point without a shotgun:

"I got stuck in a mud hole near a large farm house on the Jefferson City-Fulton road and went to this farm house for help," Piepmeier said. "I can't recall the farmer's name but I well recall he told me, 'If you are the highway engineer from Jefferson City, you get out the best way you can.' "

It's true about prophets sometimes. Sometimes they really are without honor in their own country. Mostly, that doesn't stop them from being prophets. Mostly, it doesn't even slow them down.

Neither Mr. Whitton nor Mr. Piepmeier was stopped or slowed down. And neither was the rest of the hardy and far-sighted breed they typify.

walked, roads followed

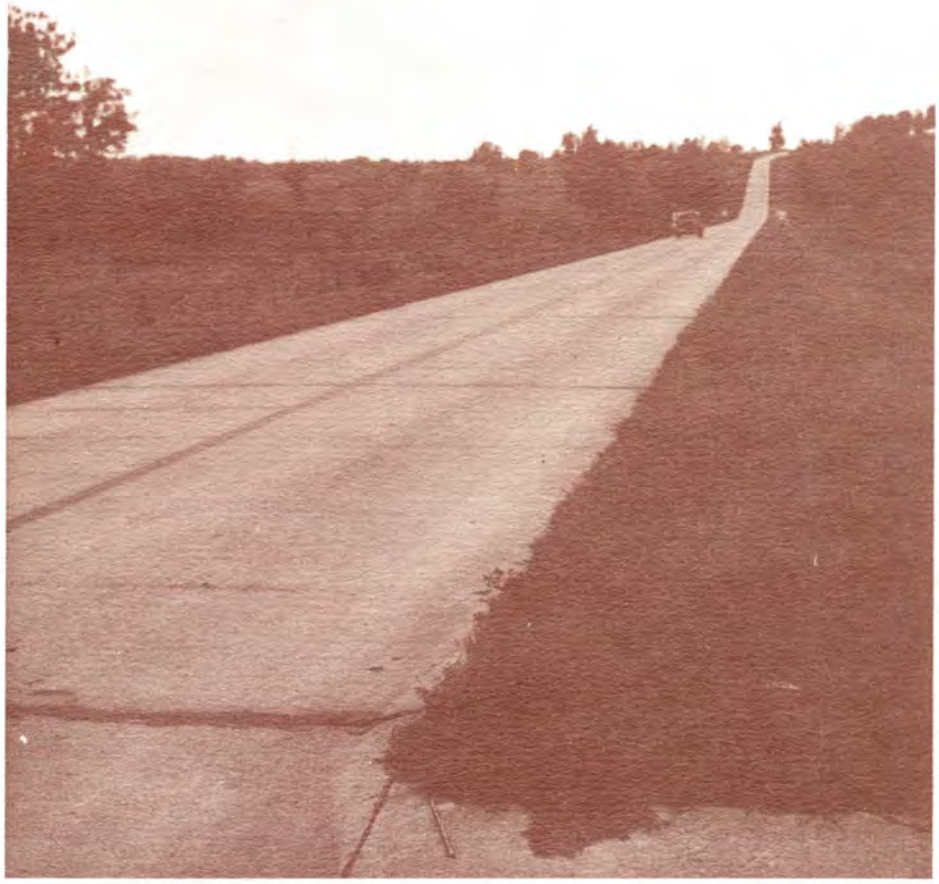
They were the engineers of the fledgling Missouri Highway Department. They started out as chainmen. Or rodmen. Or laborers. There were only a few of them. Only a very few. But they had a big dream. And they had the bone and muscle and mind and heart to fashion from it some roads for Missourians to travel on. Dirt roads at first. Then roads of chat and gravel. Then narrow slabs of asphalt and concrete. Then slabs that weren't so narrow.

They walked all over Missouri, these pioneer highway engineers. And where they walked, roads followed them. And things weren't the same after that. Not for any of us. Not ever again.

Before their coming, this great state was fragmented. Missouri was many different places, Missourians were many different peoples. And the blessings of our diversity were not unmixed. We knew each other, but not as neighbors. We communicated with each other, but slowly and expensively, so only rarely. We trusted each other, but mostly in the ways people trust strangers.

All of that was yesterday. The highway engineers helped to make it yesterday by building roads into tomorrow.

They carried a key to change - - a transit. Using it, they unlocked a better future for all Missourians.



A second World War and another mighty revolution of the roads were just over the next hill

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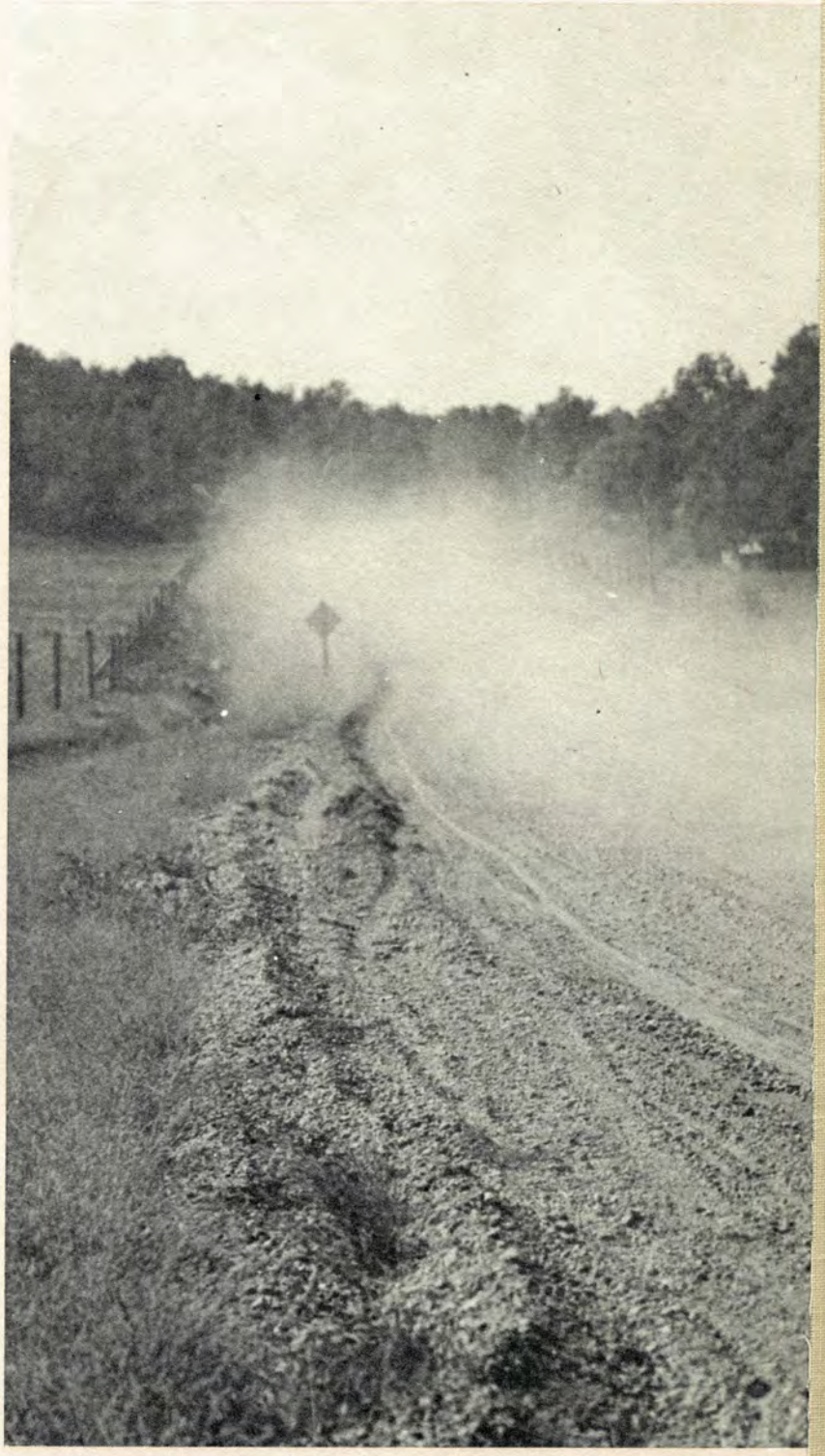
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