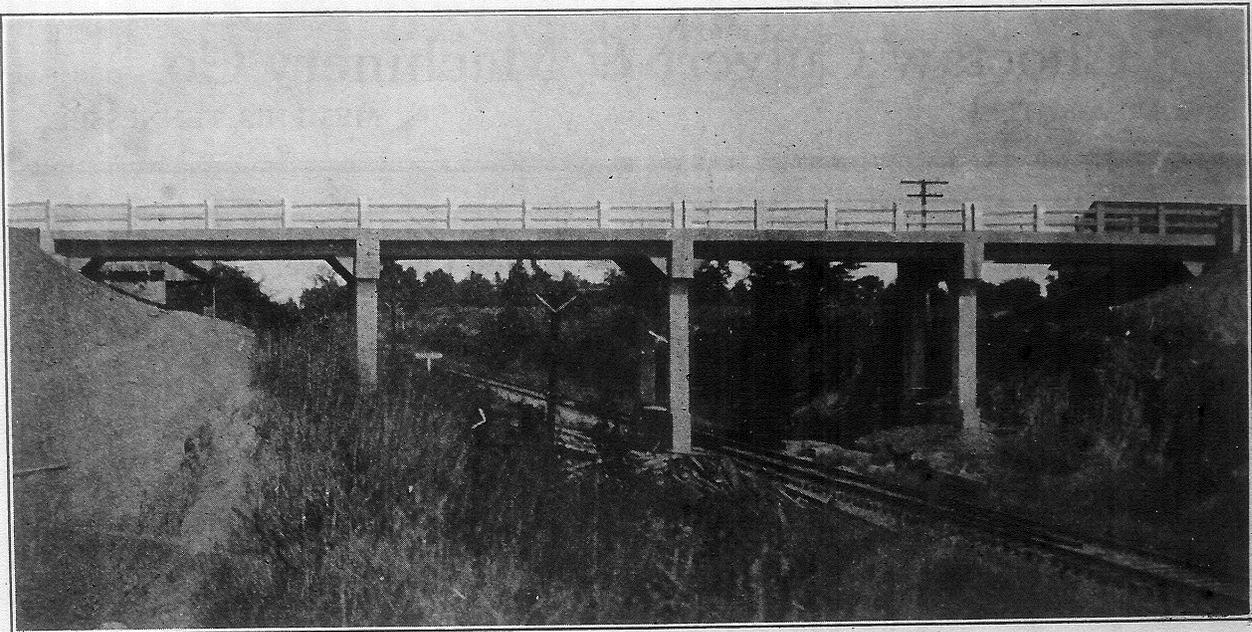


ARKANSAS HIGHWAYS

The Official Magazine of the Arkansas
State Highway Department, Little Rock



A CONCRETE TRESTLE BRIDGE BETWEEN MARIANNA AND FORREST CITY

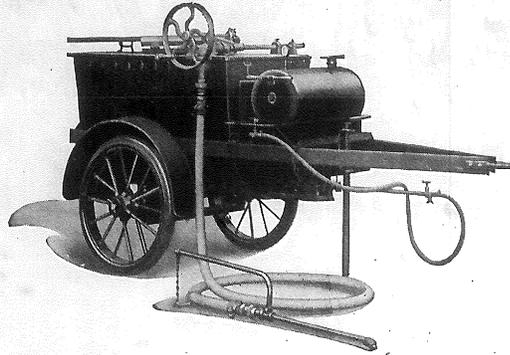
Vol. 4

JUNE • 1927

No. 6

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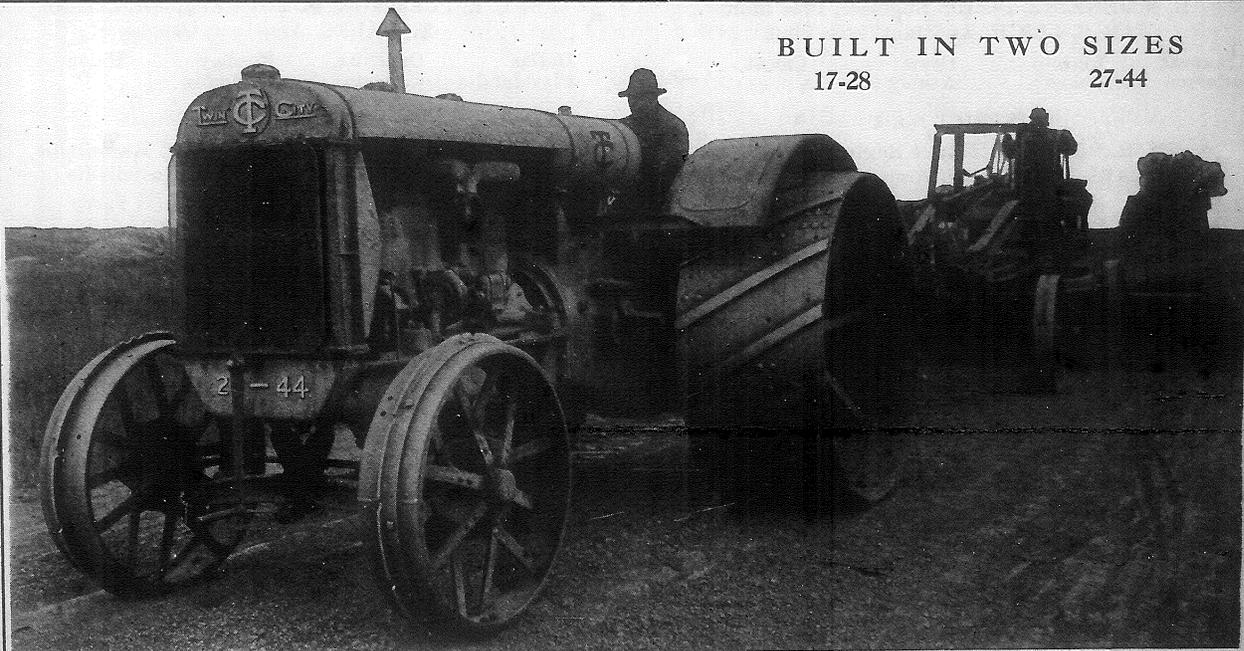
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ARKANSAS HIGHWAYS

*Official Monthly
Magazine*



*State Highway
Department*

"Arkansas Highways" is edited in the offices of the Highway Department at Little Rock. Communications relative to advertising or articles and photographs submitted for publication should be sent to Bryan Lancaster, Editor, care Highway Department, Little Rock. The bulletin is sent free to State and County Officials, newspapers of the State and Road Commissioners who apply for it. Permission to reprint any matter contained in *"Arkansas Highways,"* with proper credit, is granted to all newspapers of the State.

VOL. IV.

JUNE, 1927

No. 6

WHO'S PERFECT

By DWIGHT H. BLACKWOOD, State Highway Commissioner

OCCASIONALLY a real peeved person gets to me with his reasons why I ought to be ashamed to stay on earth. Setting forth his complaints and substantiations of the complaints, in some cases, has brought a lot of information to me, although coming, it must be admitted, from a source that no help was intended.

It is mighty hard to please all the broad group called the public. This is true of all walks of life, and particularly true of political situations. I never expected when I asked for the place of Highway Commissioner to escape criticism. I am not asking that criticism be stayed when it is due. I am only asking that when my friends hear some man complaining about my shortcomings and bemoaning my administration that they request the man to bring his grief to me. I am here to serve to the best of my ability and I want every man who has a real complaint to bring it to me, and if he is really interested in the betterment of things, I want him to try to study out some relief for the issue involved.

There are complaints, and there are kicks. A friend of mine told me when I first entered the race for Highway Commissioner that I'd get both. When I asked him for a definition of complaints and kicks, he said that a complaint was a justifiable kick, and that a kick was an unjustifiable complaint.

The purpose of this article is to say to the people of Arkansas that we are doing our best to make this the best administration you have ever had in the Highway Department. We are just now about to start the most comprehensive program of road building ever launched in the State and everybody won't be satisfied. Bring on your complaints, kicks and remedies.

Arkansas' Comprehensive Road Building Program Under Way

It remained for the sale of the first issue of the State Road Notes, amounting to \$13,000,000 to be consummated, for a real and supported opportunity to come to the great State of Arkansas for a comprehensive program of road building to be seriously considered. Many years have passed with hopes going down with the failure of provision for funds for the laying and maintenance of the roads that it now seems certain that will be a reality, and that soon.

This sale of notes on June 7, to Halsey-Stewart Company of Chicago, Ill., was an issue of one-fourth the total of \$52,000,000 authorized by the Martineau Road Bill for the period 1927-1930, and they brought a premium of \$169,000 and are interest bearing at 4½%. It is estimated that the printer will deliver the note forms in time for the issue to be completed by July 7, on which date the above mentioned sum of money will be paid to the State Treasurer, and an efficient highway plan will have been underwritten and immediately begun.

Under the new highway law, according to Dwight H. Blackwood, Commissioner, a great number of the hindrances of local difficulties in the program of road building have been eliminated, and greater power vested in the Highway Commissioner. Continuing, Mr. Blackwood asserts that his plan for the next four years includes the construction of at least 1,000 miles of hard-surfaced roads. This program will be launched in the unbonded section of the State, and as soon as practicable will extend into the lighter bonded area, finally extending into that section of the State where great bonded debts have been created for the construction of many

arterial routes, and there connecting gaps will be closed by roads that are really needed to round out the system of that section of the State.

Gravel roads, where they will serve will probably be built to a total of at least 1,000 miles, and at this writing it appears that such a mileage of gravel structure will cover the necessity where gravel will serve best.

Much of the present system of highways must be rehabilitated, and yet a great amount of mileage will be utilized of the worn out roads in building new and better roads. It is estimated that there are more than 500 miles of roads worn beyond further satisfactory utility that can be converted into modern and lasting structures through the use of the present bed as a base for the new roads.

Several ferries will go in the next four years has been announced by Mr. Blackwood, for at least 18 substantial and modern bridges will be placed where they will best serve the convenience of the public.

Act No. 104 provides a new plan for the erection of bridges that have been needed in many localities for many years, yet bridges that could not be erected on account of the disapproval in too many cases of local authorities. Under this act special bridge bonds can be issued for financing the erection of bridges that will be operated as toll bridges until the cost of erection and the money necessary to retire the bonds has been collected, after which the bridges will be free bridges. This plan applies the equitable assessment of fees in proportion to amount of use that the bridge is subjected, and eliminates the rather heavy levy of tax that was necessary under

CONSTRUCTION PROJECTS ADVERTISED FOR BIDS ON JUNE 30, 1927

Total Number of Road Projects..... 15—140.135 Miles

Total Number of Bridge Projects..... 5—0.54 Miles

Total Projects..... 20—140.675 Miles—2,844 Feet

PROJECT No.	DESIGNATION	COUNTY	LENGTH	NATURE OF WORK
F. A. R-182-A	El Dorado-Smackover.....	Union	10.814 Mi.	Grading, Minor Structures—Paving
F. A. R-182-B	El Dorado-Smackover.....	Union	355 Ft.	5 Reinforced Concrete Girder Bridges
F. A. 192-C	Lee-Phillips Co. Line-Barton.....	Phillips	6.058 Mi.	Grading and All Structures
F. A. 215-B	Hope-Lewisville.....	Lafayette	9.59 Mi.	Grading, All Structures, Gravel Surf.
F. A. 226-A	Hampton-Camden.....	Calhoun	14.788 Mi.	Gravel Surfacing
F. A. 229-A	Warren-North.....	Bradley	6.306 Mi.	Concrete Paving
C-2-S4-C	Village-Union Co. Line.....	Columbia	3.163 Mi.	Grading and All Structures
C-16-S11-A	Heber Springs-Edgemont.....	Cleburne	8.902 Mi.	Grading and Minor Structures
C-59-S1-A	Eudora-Kilbourne.....	Chicot	7.81 Mi.	Gravel Surfacing
C-67-S4-A	Okolona-South.....	Clark	8.238 Mi.	Grading and All Structures
C-67-S6-A	Donaldson-Arkadelphia.....	Clark	3.349 Mi.	Grading and Minor Structures
C-67-S7-A	Donaldson-Arkadelphia.....	Hot Spring	6.506 Mi.	Grading and Minor Structures
C-67-S6-B	Donaldson-Arkadelphia.....	Clark	1,516 Ft.	8 Reinforced Concrete Girder Bridges
C-67-S7-B	Donaldson-Arkadelphia.....	Hot Spring	246 Ft.	3 Reinforced Concrete Girder Bridges
C-70-S4-A	Kirby-Dierks.....	Pike	17.050 Mi.	Grading and Minor Structures
C-70-S-4-B	Kirby-Dierks.....	Pike	422 Ft.	Alternate, Trusses and Concrete Girders—Concrete Arches
C-71-S1-A	Texarkana-La. State Line.....	Miller	7.950 Mi.	Grading and Minor Structures
C-71-S1-B	Texarkana-La. State Line.....	Miller	200 Ft.	2 Reinforced Concrete Girder Bridges
C-115-S3-A	Thornton-Hampton.....	Calhoun	16.828 Mi.	Grading and Minor Structures
C-167-S3-A	Smackover-Camden.....	Ouachita	12.783 Mi.	Grading and Minor Structures
C-167-S3-B	Smackover-Camden.....	Ouachita	105 Ft.	2 Reinforced Concrete Girder Bridges

the old plan of collecting the cost of the bridge from the immediately adjacent property.

A summary of some features of the Martineau Road Bill that are outstanding, compiled by the engineering department, which might be interesting, follow:

All highway bonds of road improvement districts maturing beginning January 1, 1927, and interest on same, are taken over and paid by the Highway Commission, provided the annual payments covering maturities and interest do not exceed \$6,500,000.

The sum of \$13,000,000 is provided for new construction each year for the next four years, through the sale of note issues, the first of which were recently placed on the market and sold at a substantial premium. Where new construction is considered, a type of pavement will be decided on that will adequately take care of, not only the present day traffic, but the normal increases in traffic as well.

The sums of \$2,500,000 and \$2,700,000 are provided for the maintenance of the State Highway system for the fiscal years 1927 and 1928, respectively.

The sums of \$1,288,854.75 and \$1,468,236.65 are provided to pay the county highway, funds of all the counties, to be distributed on or before June 30, 1927, and June 30, 1928, respectively.

Funds for new construction are secured from the sale of State highway notes, which are secured by a pledge of the revenues derived from the sale of gasoline and automobile tax or so much thereof as may be necessary for the payment of the notes.

All new construction work costing \$1,000 or more shall be advertised and let by contract to the lowest responsible bidder unless, in the opinion of the Highway Commission, the work can be done more economically and advantageously by State forces.

Women's Clubs Winning Their Fight Against Unsightly Billboards

The General Federation of Women's Clubs has been fighting unsightly and improperly placed billboards for a number of years, and as evidence that it has not worked in vain it now presents a list of sixty-five large corporations, all big national advertisers, that have agreed not to deface the landscape with billboards any more.

This list includes several tire companies and oil companies, and such concerns as Armour & Co. and the National Biscuit Company.

These concerns have quit using billboards with a background of interesting scenery because they have found that with the public sentiment worked up against that practice by the women's clubs it doesn't pay. Because it does not pay to advertise this way, they will advertise in other ways, because all of these concerns have built their prosperity on a foundation of advertising.

An incidental result of what these women's organizations have been doing is the present eagerness of billboard companies to do away with practices that flagrantly arouse public resentment. But the General Federation feels that it is not enough to rely on self-regulation by the billboard companies, so it is working not only for more restrictive legislation, but for a more vigorous public sentiment.

And one intelligent thing the Federation is doing is to ask advertisers to re-examine the comparative values of billboards and other mediums, to see whether, after all, they would not be better off if they confined their advertising to mediums that do not stir up hostile sentiment which, as it grows, will surely negative any value there may be in such advertising mediums.

Says the New York Times, in commenting on this work which women undertook because men never thought of taking it up: "There are certain signs near villages and towns which are of direct service to the public. These include information about hotels, restaurants, garages and supply stores. It is not the desire of the opponents of the billboards completely to eliminate this method. They wish to see it confined to commercial areas, so as not to mar spots of beauty.

"Legislation has proved effective in curbing the misuse of billboards. But legislation is determined by public opinion. This has been stirred in many communities by organizations such as the women's clubs, the garden clubs and civic welfare groups. They have succeeded in persuading the local authorities to prohibit objectionable signs, and sometimes have prevailed on advertisers voluntarily to withdraw them.

"This good work is far from finished. But in view of the progress made since the campaign was started a few years ago, the prospects of final victory for those who seek to curtail the unsightly use of billboards are promising."



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State Road Notes Command Premium

\$13,000,000 Issue Is Sold to Syndicate at Par Plus \$169,000

Arkansas' first block of \$13,000,000 worth of highway notes was sold June 7th to a group of New York, Chicago and St. Louis security dealers for \$13,169,000 at four and a half per cent interest.

Halsey-Stuart & Co. of Chicago and New York submitted the highest bid, seven other firms having pooled their bids with that company.

The second high bid was \$13,147,000 at four and a half per cent, submitted by the First National Bank of New York, representing a pool of a dozen banks and security dealers, including the Union Trust Company, Bankers Trust Company and W. B. Worthen Company, bankers of Little Rock, and the Merchants and Planters Title and Investment Company of Pine Bluff.

The third best bid was \$13,307,000 at five per cent interest, offered by Kaufman-Smith & Co., of St. Louis. The National Bank of Arkansas, Pine Bluff, submitted a bid for \$200,000 worth of the notes.

The selling price means that the buyers gave the State \$169,000 for permission to buy four and a half per cent notes at par.

All members of the State Highway Note Board were present, except former Gov. T. C. McRae, and all expressed themselves as well pleased with the result of the sale. The law provides that the notes could not be sold for less than their value at par with five per cent interest. The selling price is considerably better than par at a half of one per cent less interest than the legal maximum.

Firms in the successful pool were Halsey-Stuart & Co., Equitable Trust Co., E. H. Rollins & Sons, Pressprich & Co., Redmond & Co. and B. J. Van Ingen & Co., all of New York; the First National Bank of St. Louis and Howe-Snow Bertles, Chicago.

The sale was held at the State Treasurer's office, with Governor Martineau presiding and Reece Caudle, speaker of the House and secretary of the board, opening and reading the bids.

Five officials must sign each of the 13,000 notes.

Highway Commissioner Dwight H. Blackwood, Governor Martineau, Treasurer Ralph Koonce, Secretary and Auditor J. Carroll Cone.

It is estimated that one of the officials can sign 200 an hour. At this rate, allowing for a steady eight-hour day, it would require eight or nine days to complete the task.

The bonds will be delivered personally in New York by State Treasurer Koonce. Mr Koonce said yesterday he probably will not sign them until he arrives in New York because he does not care to be lugging around \$13,000,000 worth of negotiable paper. Another factor in his decision is the fact that by using the multiple method of signing the notes in New York he can complete the task in fewer hours than it would require days to sign them one at a time.

The notes will be dated June 1 and interest from that date until the notes are delivered will be refunded to the State.

Proceeds of the sale will be used to finance the construction of State roads and to pay the outstanding bonded indebtedness of districts in the State system. The Martineau road law, passed by the last Legislature, authorizes the issuance of \$52,000,000 worth of such notes during a four-year period.

The Highway Note Board is composed of the following officials and citizens:

Highway Commissioner Blackwood, Governor Martineau, Lieutenant Governor Parnell, Speaker Caudle and Honorary Commissioners J. L. Williams, Osceola; Sam J. Wilson, Portland; Justin Matthews, Little Rock and J. S. Parks, Fort Smith; former Governor McRae, Prescott; Senator Creed Caldwell, Pine Bluff, and Representative John W. Nance, Bentonville.

To Be Exact

The witness had been cautioned to give more precise answers.

"We don't want your opinion of the question," the judge told him. "We want it answered—that's all."

"You drive a wagon?" asked the prosecuting attorney.

"No, sir; I do not," was the decided reply.

"Why, sir, did you not tell my learned friend but a moment ago that you did?"

"No, sir; I did not."

"Now, I put it to you, my man, on your oath. Do you drive a wagon?"

"No, sir."

"Then what is your occupation?" asked the state's attorney, in desperation.

"I drive a horse," was the reply.—*Florida Highways.*

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LITTLE ROCK, ARKANSAS

From By-Way To Highway

By W. E. Rosengarten, Traffic Engineer The Asphalt Association, New York City

Civilization moves forward with a step that is a steady measured tread. It is resistless. Where yesterday there was a woodland country usually there is today a village and tomorrow there will probably be a flourishing city. Where yesterday there were a few by-ways through the forest with an occasional passerby, there usually is today a gravel roadway to serve a daily traffic of a few hundred vehicles. Tomorrow, because of the increased modern traffic asphalt paved highway may cover the gravel road in order to make an up-to-date highway to accommodate a multitude. Thus the progress that is certain to come is rightfully anticipated and provided for.

Transportation arteries in many communities have advanced from the by-way to the highway and have been made passable for light traffic at all seasons of the year by first surfacing with gravel. Such roads, while serving immediate needs, are daily being compacted to form the foundations for the new asphaltic surfaces of tomorrow. Each vehicle contributes its bit of energy toward making a firm support for tomorrow's traffic by compacting the stone particles of the gravel or macadam road.

Forming a net work that covers the State of Louisiana are a number of thoroughfares which, as their use increased, have been surfaced with gravel in order better to sustain traffic at all seasons of the year. These roads have been serving admirably the traffic for which they were intended but with the development of the State, travel over them has been increasing continuously and with this increase there has been a corresponding rise in maintenance costs.

Many localities have been confronted with the problem of increasing traffic on their gravel highways and for a time have met it by treating them with asphaltic road oils with excellent and economical results. However, with excessive traffic, investigations have shown that the most practical way of decreasing the mounting annual maintenance cost is to construct a more durable and more permanent surface. The most logical and economical method is first to redress the old gravel, disturbing it as little as possible, since years of traffic have thoroughly compacted it and formed a solid foundation. Then upon this foundation there is laid such high types of surfacing two to three inches in depth, as penetration macadam, asphaltic concrete or sheet asphalt. This practice is now quite general throughout the United States.

A few years ago Burlington County, N. J., was confronted with the problem of transforming its gravel and macadam roads into more permanent types. The problem was solved by placing upon some 85 miles of old macadam and gravel roads a levelling or binder course averaging 1½ inches in thickness and topped with 1½ inches of sheet asphalt surface. As evidence of the suitability of such a method of conversion the following is cited from the experience of a few cities:

Augusta, Ga., where a dozen or more streets have been resurfaced, the city engineer reports: "All streets paved on macadam base are in first class condition and they require no repairs."

New Haven, Conn., where over nineteen miles of broken stone roads have been resurfaced with asphalt, the report is that "Continued practice speaks for durability." The first street in that city was resurfaced in 1913.

Grand Rapids, Mich., has surfaced a large number of its old gravel and macadam streets with three inches of sheet asphalt mixture and reports them all in fine shape and very satisfactory after three to ten years' service.

Detroit, Mich., which has followed this practice quite generally, reports that results have proved very satisfactory and there has been no maintenance on any of the work to date. Some of these improved surfaces were laid as early as 1913.

Paul D. Sargent, chief engineer of the State Highway Commission in Maine, has reported maintenance costs on several gravel surfaced highways in his State for periods of from seven to eight years during which a marked increase in the amount of traffic has taken place. On these gravel highways, where traffic was under five hundred vehicles per day, according to Mr. Sargent, the maintenance cost remained below \$500 per mile per year. However, when the traffic grew to seven hundred vehicles per day the average cost of maintenance increased to double that amount, and with 800 vehicles per day the maintenance trebled and was close to \$1,500 per mile per year. Mr. Sargent observed that when traffic increases to approximately five hundred vehicles per day on a gravel surface, corrugations and ripples begin to appear and surface treatment is necessary. There are many who believe that when the maintenance on a gravel or macadam road reaches \$1,000 per mile per year it is time to transform it into a higher type pavement.

The problem as to the time when the improvement "from the by-way to the highway" should be made is largely one of economics. It has been demonstrated repeatedly that the maintenance costs on a gravel or macadam road rise very rapidly as traffic increases. Therefore, an asphaltic top should be laid when its costs, including maintenance is less than the upkeep of the existing road. Several dependent factors, such as first cost of an asphalt surface as well as its life and maintenance cost, must be considered.

The first cost of a hot mix asphaltic surface has been found to average about \$1.50 per square yard, or \$15,840 per mile of 18-foot roadway. That of an asphalt macadam surface is about 90 cents per square yard, or \$9,500 per mile. The hot mix asphalt pavements in New York City have given, under concentrated traffic conditions, an average service of 18 years. In Washington, D. C., they have averaged 25 years, and in Buffalo, 24 years. It is safe to assume, therefore, an average life for them of 20 years. The asphalt macadam type has demonstrated a life of at least 15 years. Maintenance varies considerably. In the State of Washington the average cost in 1923 of maintaining asphaltic surfaces was \$216.14 a mile. The maintenance on asphalt macadam State highways in Massachusetts for 1921, 1922 and 1923 was \$.0239 per square yard, or about \$250 per mile per year. In Kentucky, in 1922, for bituminous macadam it average \$240 a mile. In Illinois main-

tenance cost per mile on bituminous macadam was \$538.48. In New York State, expenditures for the maintenance of bituminous macadam surfaces to January 1, 1925, averaged \$247 per mile.

The average cost of maintaining sheet asphalt pavements in Washington, D. C., has been 2.22 cents per square yard, which is equivalent to \$234.43 per mile of 18-foot roadway. These Washington pavements had an average age at the time of resurfacing of 25 years, with some pavements in service for forty years. The average cost of maintaining asphaltic concrete roads, as reported by the Massachusetts State Highway Commission for the years 1921, 1922 and 1923, is \$.0111 per square yard, or \$117 per mile. In Illinois the maintenance cost on bituminous concrete was \$119.53 per mile. Taking the above figures as a basis the average cost of maintaining the hot mix asphaltic types of paving may be considered to be \$185 per mile per year. For the penetration or asphalt macadam type the cost may be considered to be \$320 per mile per year.

With the above average figures it is a simple problem in mathematics to determine when the time has arrived for the transformation of an existing gravel road into a high type asphaltic surface. If we consider money to be worth five per cent, the investment of \$15,840 per mile for a hot mixed asphaltic surface that will give twenty years of service will cost for amortization \$1,270 per year, plus \$185 per mile for maintenance, or a total of \$1,455 per mile per year. An asphalt macadam surface costing \$9,500 per mile, with a fifteen year life, will require annually \$913 per year plus \$320 for maintenance, or a total of \$1,233 per mile. When traffic on a gravel road increases to the extent of about 800 vehicles per day, the average cost of maintenance will be in the neighborhood of \$1,500, or in excess of the cost of laying and maintaining an asphalt surface; then the time has arrived for transforming it into a high type of surfacing.

Traffic running between four and eight hundred vehicles per day will undoubtedly require a bituminous surface treatment. Recent traffic census counts as reported in the March, 1925, issue of "Louisiana Highways" indicate that from one thousand to thirty-two hundred cars pass over some of the country highways in Louisiana daily. It is quite possible that on many of these roads there is an economic waste in maintenance expenditures which could be eliminated by utilizing the gravel roads as foundations for asphaltic highways.

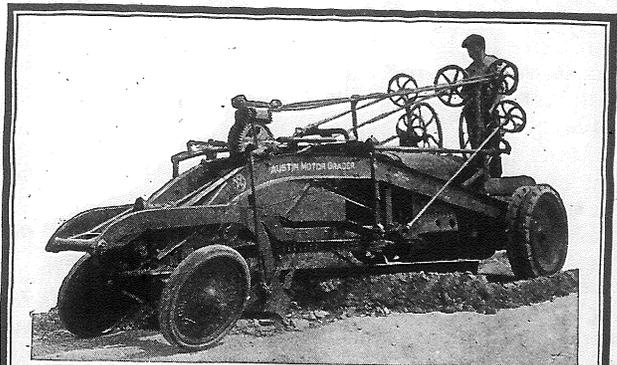
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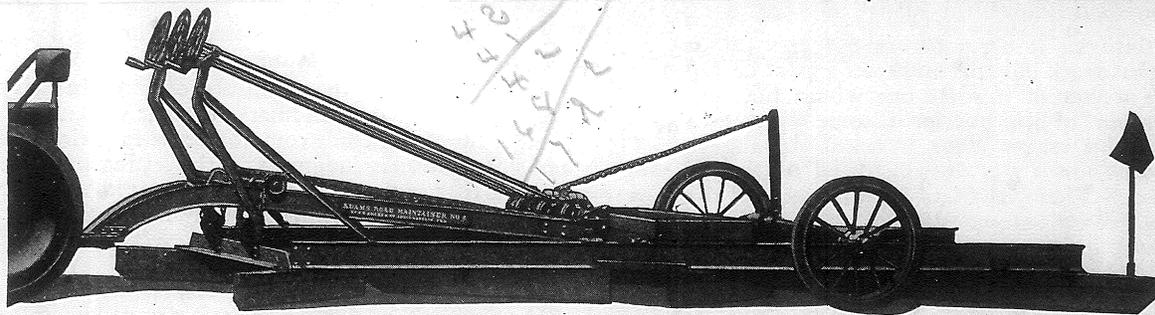
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J. D. ADAMS & COMPANY

20 ADAMS AVE.

MEMPHIS, TENN.

Representatives and Distributors Throughout United States and Canada

tenance cost per mile on bituminous macadam was \$538.48. In New York State, expenditures for the maintenance of bituminous macadam surfaces to January 1, 1925, averaged \$247 per mile.

The average cost of maintaining sheet asphalt pavements in Washington, D. C., has been 2.22 cents per square yard, which is equivalent to \$234.43 per mile of 18-foot roadway. These Washington pavements had an average age at the time of resurfacing of 25 years, with some pavements in service for forty years. The average cost of maintaining asphaltic concrete roads, as reported by the Massachusetts State Highway Commission for the years 1921, 1922 and 1923, is \$.0111 per square yard, or \$117 per mile. In Illinois the maintenance cost on bituminous concrete was \$119.53 per mile. Taking the above figures as a basis the average cost of maintaining the hot mix asphaltic types of paving may be considered to be \$185 per mile per year. For the penetration or asphalt macadam type the cost may be considered to be \$320 per mile per year.

With the above average figures it is a simple problem in mathematics to determine when the time has arrived for the transformation of an existing gravel road into a high type asphaltic surface. If we consider money to be worth five per cent, the investment of \$15,840 per mile for a hot mixed asphaltic surface that will give twenty years of service will cost for amortization \$1,270 per year, plus \$185 per mile for maintenance, or a total of \$1,455 per mile per year. An asphalt macadam surface costing \$9,500 per mile, with a fifteen year life, will require annually \$913 per year plus \$320 for maintenance, or a total of \$1,233 per mile. When traffic on a gravel road increases to the extent of about 800 vehicles per day, the average cost of maintenance will be in the neighborhood of \$1,500, or in excess of the cost of laying and maintaining an asphalt surface; then the time has arrived for transforming it into a high type of surfacing.

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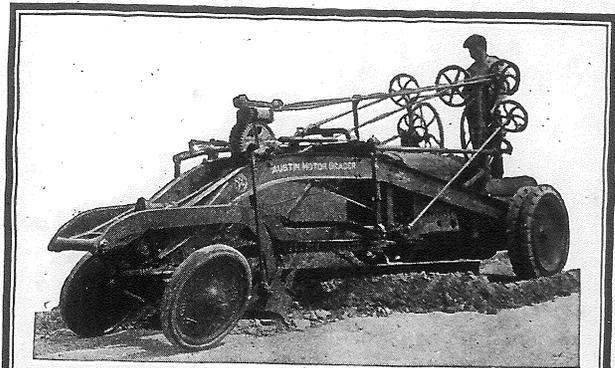
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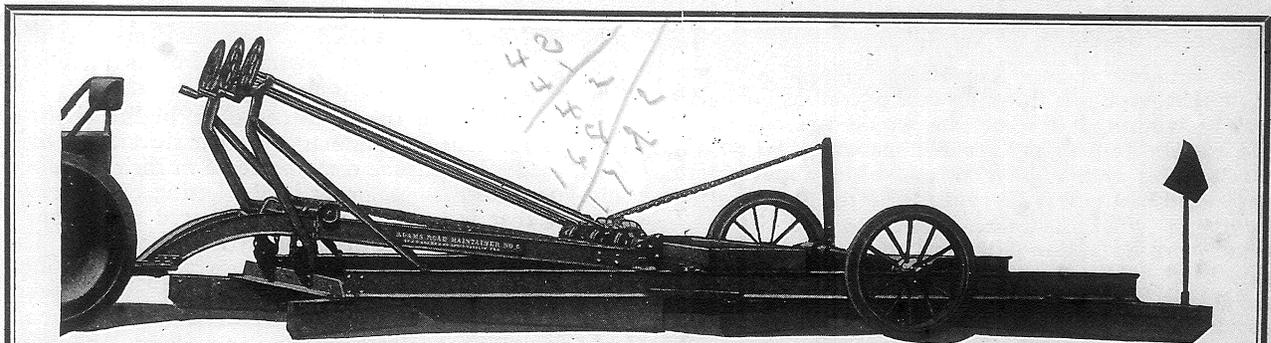
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of the time that the trip consumed before the road was graded. But the rains came, deep mud holes were formed in the road, and again the farmer was cut off from his marketing place. During the winter, he felt that he was worse off than before the road was made. However, when dry weather came in the spring, the road was again smoothed up with the tractors and grading machines, and a fleet of trucks began dumping gravel in the middle of the road. This was smoothed down and leveled by the ever useful grader and after being packed by the travel and kept smooth with the drags for a few weeks, the farmer found he had a smooth, hard road which he could travel in all kinds of weather, winter and summer.

His nearest neighbor, who lived several miles down the creek at the mouth of Coon Hollow, had a son who had done his "bit" in France and who was now married and living on the home place.

One morning the farmer met the young man driving one of the old army trucks, and, with a grader and drag, was pushing the loose gravel from the edges back up on the road.

"Hello, Tom," said the farmer, "Just what and why is it?"

"Well," said Tom, "It's this way. The State engineer has given me a steady job looking after the part of this road from Union Hill to Alum Fork. Dad and Bill will run the farm, and I'll have to put in all my time keeping this road smooth and free from holes, looking after the drainage, and keeping the shoulders patched and trimmed up. Ezra Taylor has the section beyond Union Hill, and he'll sure have to go some if I can't show the people that I'm a better patrolman than he is. Just watch me. So 'ong." And he threw in the gears and moved on down the road.

In thinking it over, the farmer grew uneasy. He knew that work like this must cost a great deal of money and he wondered if some one would not come along and ask him to help pay for it, some way. So when he next saw his county judge, he asked him about it. The judge told him it was all paid for by the State in which he lived. That the State in turn secured the money from a tax on automobiles and the gas and oil which they used. He was told that in earlier times, the lands along such roads had been taxed to build the road, and in some cases, these taxes had been so heavy that real hardships were suffered by the land owners, to the extent even of causing some to abandon their lands. Now, however, under wiser laws, all this was changed, and his State would build and maintain such roads as were a part of the State Highways System, and thus provide an inducement for people to come in from the older and more thickly populated States, and make farms and homes on what was now unimproved land, more schools and churches would be established, and a higher standard of living set up for the whole community.

The farmer, thus encouraged, proceeded to clear more land for himself, read the farm papers and periodicals which the mail carrier left at his gate each week, improved the breed of his livestock and presently decided to build a new home for his family. Now, you may see a little white cottage with a fence around it and flowers in the yard, where the old log house once stood. There is a garage for a car in the rear, and farther back near the branch, a substantial barn and other farm buildings.

This evening, seeing the pleasantly smiling farmer and his wife on the front porch, you stop to greet them, and asking about the children you are told they had taken the car for a trip to the county seat to see Jackie Coogan in his latest movie. "Yes," the farmer agreed, as he waved his hand at the merry occupants of a car speeding swiftly down the road, "A highway sure is a wonderful thing for the country."

WHAT HATH ROADS WROUGHT?

Because roads and highways are as old as civilization; because they have been so close to the needs of trade and travel, their development has been taken for granted. First it was the by-path of the caveman hunter, needing only the physical space to negotiate the jungle passes. Later came the ox-cart and the buggy, with wheels large enough in diameter and slow enough in speed to cover the rough places without great difficulty. But now the automobile's terrific speed demands roads as smooth as can be made.

And such are worth all they cost. Whether of grading, gravel, concrete or asphalt, the motoring public—and that means all of us—must have good roads. Comparable to any financial panic would be the sudden deprivation of any section of the country of its good roads. Yet many communities are suffering from backwardness in this respect. They are "losing out" every inch of the way in competition with progressive communities whose people long ago saw the vision of what good roads meant and set about to make them real.

A city, town, county, State or nation that is not going after improved highways is commercially and socially committing self-imposed ostracism from the rest of the world. He who advocates better ways of transportation is to be welcomed. He is a salesman of high order. He is the kind of salesman who can look into the face of a satisfied customer.

Good roads are the monitors of a higher civilization. Bad roads are landmarks of civic slovenness. But good roads also include common sense in their building, and good business judgment in the letting of contracts. To say that we want a new or improved road from a certain place to another place is only half the battle. The fight is never finished until the project is seen through with width for future needs, straight and level as practicable, a solid foundation or understructure, adequate thickness, high quality of materials and workmanship, and backed by an honest contractor. Then you've got a road! Until then you've got a wish.

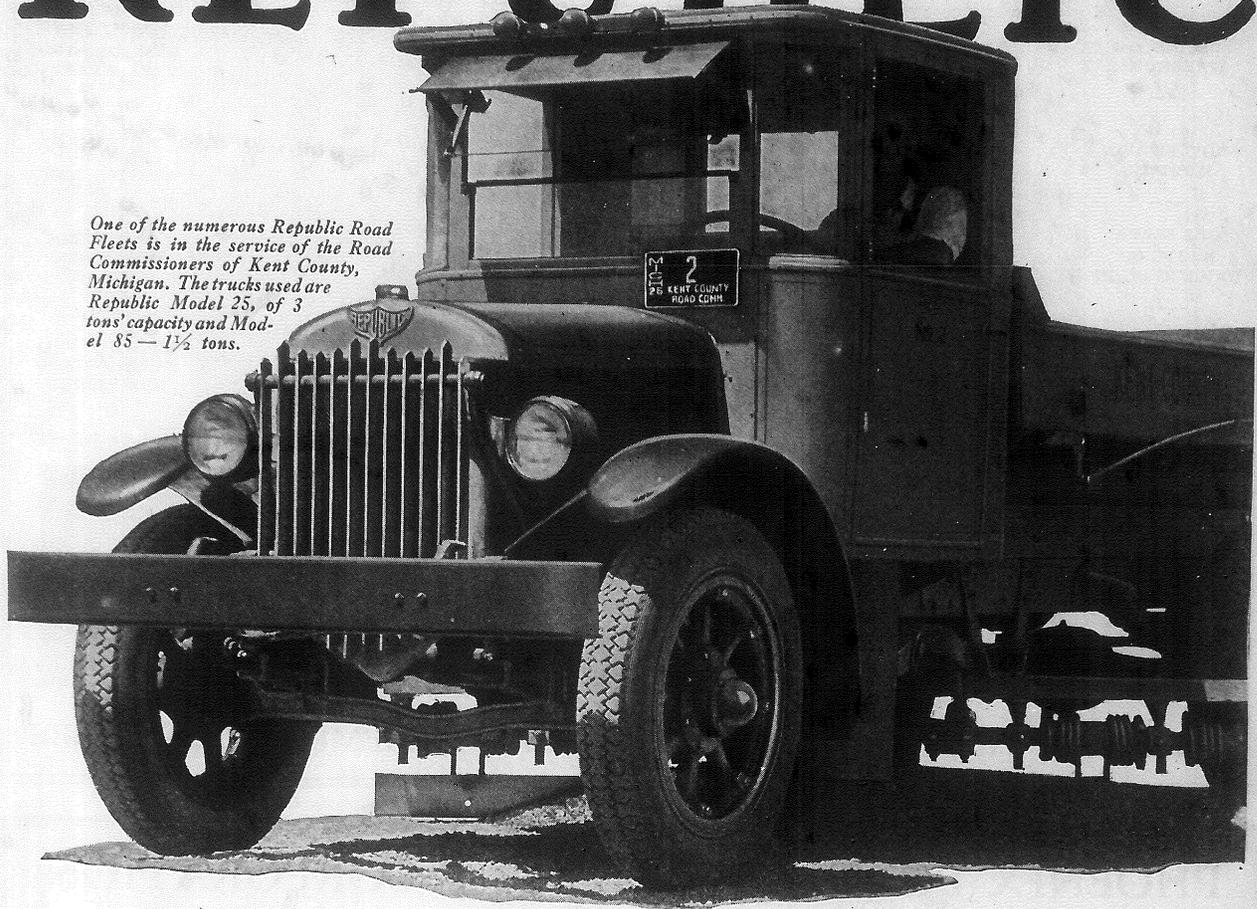
What hath good roads wrought? They have brought prosperity, convenience, safety, self-respect and happiness to countless millions; and these are the great tests of whether they are worth while.

Dizzy Doings On the Desk

The pencil has made quite a number of pointed remarks about the sponge being soaked all day and the waste basket being full. The scissors are cutting up and the paper weight is trying to hold them down while the paste is sticking around to see the stamps get a good licking. The ink's well, but appears to be blue, while bill is stuck on the file, and the calendar is looking fresh after having a month off. The blotter is lying around taking it all in.—*Exchange*.

REPUBLIC

One of the numerous Republic Road Fleets is in the service of the Road Commissioners of Kent County, Michigan. The trucks used are Republic Model 25, of 3 tons' capacity and Model 85—1½ tons.



Good Roads— a National Job for Republic

As widespread as the good roads movement is the use of Republic trucks for delivery of road materials, construction, and maintenance. And like the good roads themselves Republic trucks, on these tough jobs, are a public economy.

Faced by weather limitations and by contract penalties, road builders have found the Republic their safest reliance. Indeed, that highly specialized Republic Model, the "Road Builder" has become virtually the national standard for truck budgets on road projects. Like all Repub-

lic Trucks, the Road Builder has a bridge-like factor of strength to match against ditches, dumps, and all the fierce "badlands" of road construction.

Where it is often a question of lifting a truck almost "by its own bootstraps", Republic engines have a real chance to reveal the power that is always on tap in every Republic. Yet this irresistible capacity is not proportionately costly, because Republic carburetion, combustion and lubrication are perfected far beyond

the point usually thought necessary or possible outside the research laboratory!

Generating so much more power, Republic trucks also apply it most effectively, through the famous special high-clearance, fully oil-bathed rear axle. That's the value of examining any model in the complete Republic line—whether you inspect axle or radiator, frame or cab, steering or brakes, there is something more advanced and better about every unit. And the first cost favors you, too!

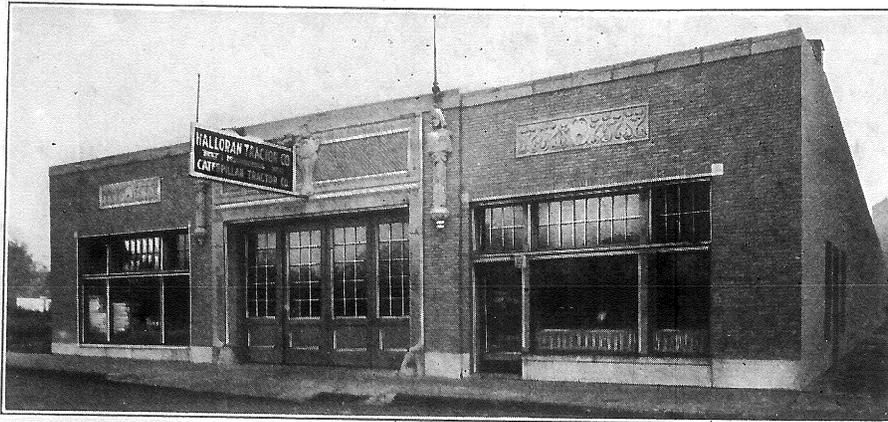
ARKANSAS ROAD EQUIPMENT COMPANY, LITTLE ROCK, ARKANSAS
REPUBLIC MOTOR TRUCK COMPANY, INC., ALMA, MICHIGAN

MEMPHIS
OFFICE and
WAREHOUSE

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ONE BLOCK
NORTH OF
UNION STATION

LONG
DISTANCE
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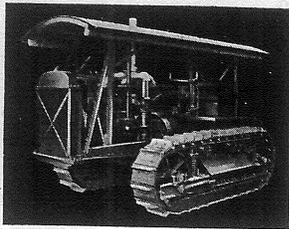
COMPLETE
STOCK, NEW
TRACTORS AND
REPAIR PARTS

FACTORY-
TRAINED
SERVICE MEN

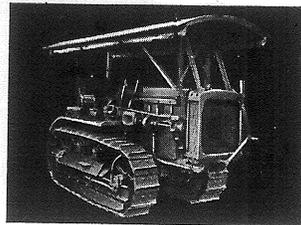
COMPLETELY
EQUIPPED
SHOP

REPAIRING
OVERHAULING
REBUILDING

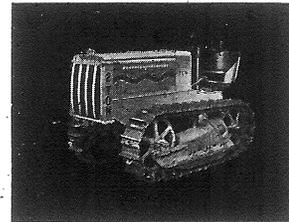
All three models of "Caterpillar" Tractors are carried in Stock at Little Rock, as well as at Memphis—thus insuring you immediate delivery.



←
"Caterpillar"
Sixty
Tractor



→
"Caterpillar"
Thirty
Tractor

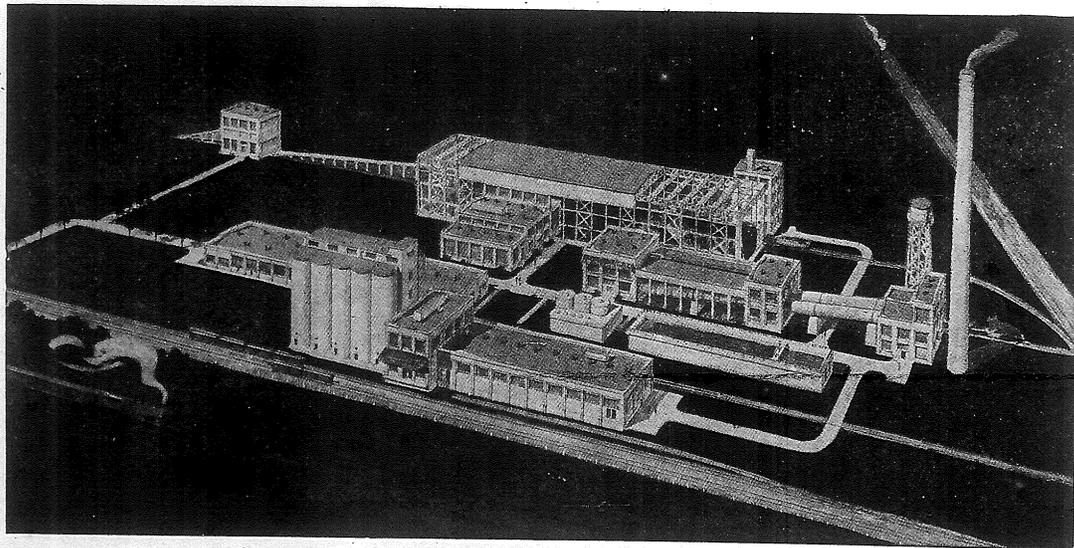


←
"Caterpillar"
2-Ton
Tractor

HALLORAN TRACTOR COMPANY, *Distributors* MEMPHIS, TENNESSEE

PHOENIX PORTLAND CEMENT CORPORATION

Manufacturers of High Early Strength Portland Cement



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SALES OFFICE:
ALABAMA POWER BUILDING
BIRMINGHAM, ALABAMA

The South Is Coming Back! And the Missouri Pacific Lines Will Continue to Help

CONTRARY to what is general opinion in many quarters, the Mississippi Valley is far from damaged irreparably as a result of recent floods and storms. It is true that property damage in many localities has been enormous and many individuals have seen the savings of a lifetime swept away in the rising waters. And the Missouri Pacific Lines, along with other interests in the affected area, have suffered tremendously. **But the country is coming back—stronger and better than ever before—and the Missouri Pacific Lines have established an enviable record in their own recovery.**

Gigantic work remains to be done. But it will be done—it is being done. And the "silver lining" to this particular cloud lies in the fact that as a result of this greatest disaster in the history of our country, something will be done—to prevent a similar devastation ever again occurring.

In order to understand the question it is well to remember that the trouble really began last fall when general and heavy rains swelled the tributaries of the Mississippi and that river itself and after putting the weight of rising waters against the levees, kept it there unceasingly until the pent-up waters, further augmented by unusually heavy and general spring rains, tore over and through the weakened barriers.

It must be remembered, too, that virtually all tributaries of the Mississippi reached flood levels and higher almost simultaneously in April and May. And, on the west side of the Mississippi river a great part of the damage resulted from overflows of the tributaries, in addition to the damage wrought by breaks in the Mississippi levees.

The South is coming back. A great part of the affected area will come back this year. But this is a national problem and it must never be permitted to happen again. Whatever is necessary to prevent a recurrence must be done.

Meantime it has been demonstrated again that the best friend a people can have at a time like this is a railroad like the Missouri Pacific Lines, in a position to render the emergency help so urgently needed when trouble of this kind descends on a community or a region.

We are naturally pleased with the part the Missouri Pacific Lines have played throughout the troubles, and we are glad we were in a position to aid and help direct rescue work, furnish thousands of cars as temporary refuge for flood sufferers, play a leading role in handling relief workers and relief supplies, and take the lead in rehabilitation work such as disease and epidemic prevention and agricultural rehabilitation. We did not fail those dependent on us for transportation in their time of greatest need. And we are gratified with the speed and effectiveness with which our tracks have been put back in use and our service restored to its former high level of regularity and dependability.

And, just as we played a leading part in the emergency work incident to the floods, so we want and expect to continue to do our part in the complete rehabilitation of the damaged regions and the prevention of similar occurrences ever happening again.

I solicit your co-operation and suggestions.



"A Service Institution"

President
Missouri Pacific Lines

BUSINESS IS
PICKING UP

Be Ready!

*Prompt Shipment on Contractors'
and Road Builders' Equipment*

REX mixers and pavers
CLYDE hoists and derricks
BLAW KNOX curb and gutter, road and side-
walk forms, bins, batchers, truck turntables
RED EDGE shovels and picks
RED STAR wheelbarrows
C. H. & E. hoists, pumps, saw rigs
ADVANCE RUMELY road tractors
NORTHWEST shovels, cranes, draglines

Joe Lyons Machinery Co.
120 North Louisiana Street
Little Rock, Arkansas

Warrenite-Bitulithic Pavement

—“A WARRENted Product”—

Because its smooth surface stays smooth so long, this pavement cannot damage automobiles or tires. Because its sturdy body is surprisingly rugged, automobiles cannot damage this pavement. Such a combination means fewer repair bills for cars and road. Such economy means a lot to all concerned.

Warren Brothers Company

International Highway Engineers and Contractors

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Vancouver, B. C.	Memphis, Tenn.	Melbourne, Australia
Chicago, Ill.	Los Angeles, Cal.	Oklahoma City, Okla.
Phoenix, Ariz.	New Orleans, La.	Salt Lake City, Utah

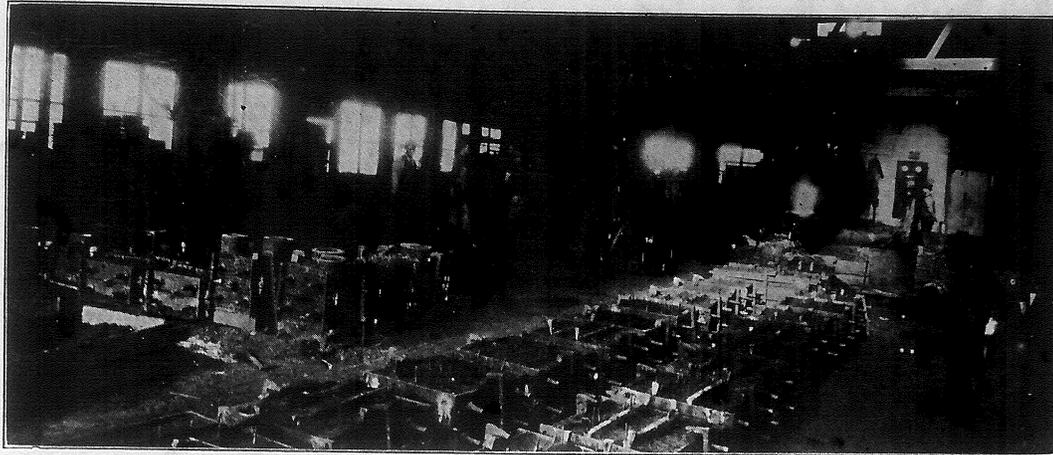


*“In Quality
Above All”*

PIERCE PENNANT GASOLINE IS FULL OF “PEP AND GO”

PIERCE PENNANT AUTOMOBILE OILS AND GREASES
ARE LASTING

Pierce Petroleum Corporation

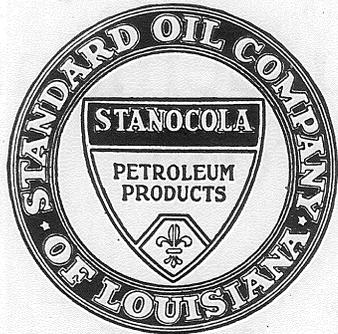


SECTION OF EAST END OF STEEL FOUNDRY SHOWING FURNACE
WE MANUFACTURE

IRON and STEEL CASTINGS

KNOWING HOW MORE THAN A HALF CENTURY
WE SERVE WITH STRICTLY MODERN EQUIPMENT

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PINE BLUFF, ARKANSAS



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Russell Motor Patrols are built in four sizes—

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- No. 3 for 10-20 McCormick-Deering tractor for power
- No. 4 for "Caterpillar" 2-ton tractor for power
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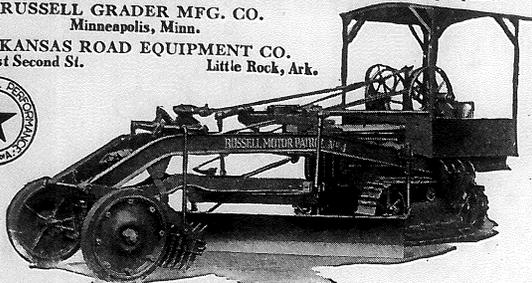
Each of the four models No. 2—No. 3—No. 4—No. 5 is equipped with scarifier—worked with blade or independent of blade, as desired.

The complete Russell Line for Road Construction and Road Maintenance includes—
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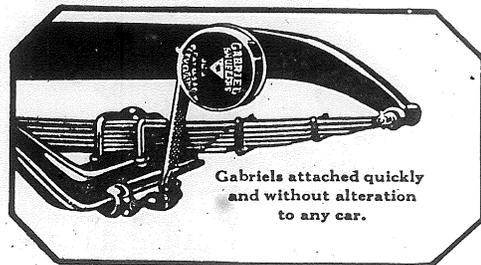
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Field investigation of some 18,000 culverts indicates the five principal types of culvert failures are:

- 1 **CRACKING:**
Due to load of traffic and fill on brittle material. Can be avoided by using elastic materials.
- 2 **DISJOINING:**
Caused by lateral soil movements and poor foundations. Can be minimized by using culverts having a positive bond between adjoining sections.
- 3 **BREAKING:**
Due to impact of traffic on culverts under shallow fill. Can be avoided by using flexible type culverts.
- 4 **UNDERMINING:**
Caused by erosion of foundations. Can be minimized by using a type of culvert adaptable to unusual conditions.
- 5 **DISINTEGRATION:**
—Of Porous Materials
Caused by freezing and thawing. Can be avoided by using a non-porous material.
—OF Metallic Materials
Caused by electrolytic action due to the presence of impurities in the metal. Can be minimized by using culverts made of a metal containing a minimum of impurities—**AEMCO INGOT IRON.**

Armco culverts provide protection against the greatest number of destructive elements

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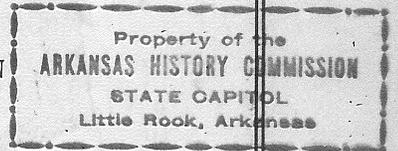
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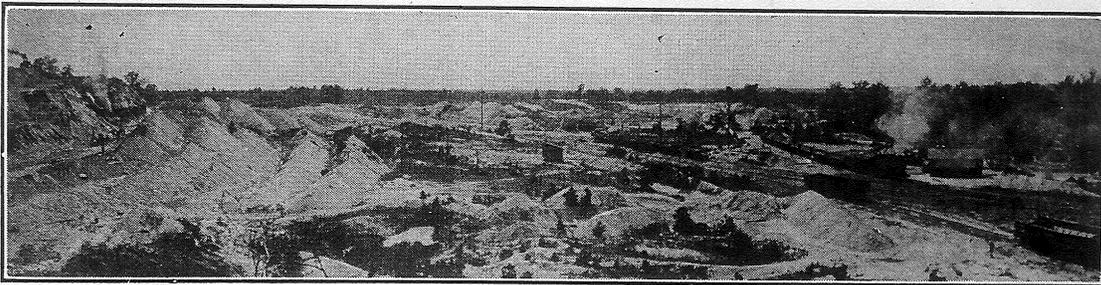
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