

# ARKANSAS HIGHWAYS

"The Men Behind the Guns"



Tenth District Forces at Jonesboro

MAY  
VOL. 3 1926 NO. 5

# ONLY A **LEANING WHEEL** MOTOR GRADER CAN DO THIS



UNTIL you see a motor grader with leaning front wheels operate, you cannot fully appreciate the possibilities which lie in this type of machine. The front end of an ordinary grader is kept from slipping sideways by the tractor used to pull it. The front end of a motor grader, however, is not hitched to anything, and this tendency to slip sideways caused by the side draft on the blade can best be overcome by the use of leaning front wheels. Besides, they enable the machine to work on side slopes like the one illustrated above, where a straight wheel machine would be useless.

All in all, leaning front wheels are so important that you cannot afford to buy a machine that does not have them.

### *Built in three sizes*

Austin Motor Graders all follow the same general design, but are built in three different sizes using the Fordson, International (10-20) and International (15-30) for their power. All of these are furnished with plain steel wheels, rubber tired wheels, or Crawler Tread; and with center or rear scarifier.

A special catalog discusses Motor Grading in general, and Austin Motor Graders in particular.

Write for your copy today.

*I would like the Catalog*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **The Austin-Western Road Machinery Co.**

**400 N. Michigan Ave., Chicago, Ill., U. S. A.**

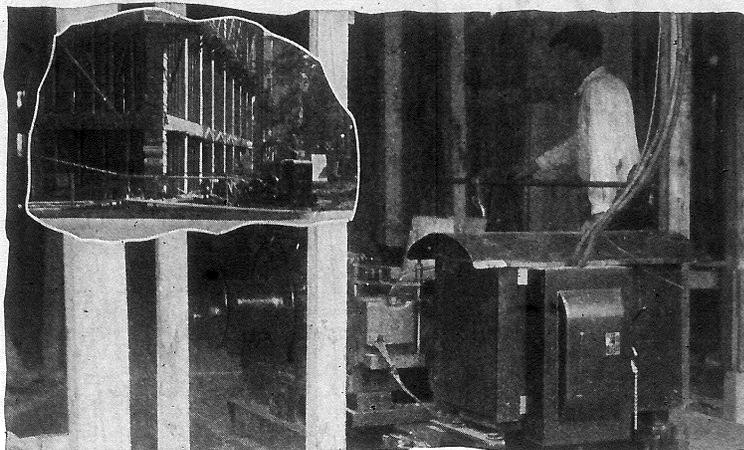
*Branches in all Principal Cities*

# NOVO ELECTRIC HOIST Runs Bucket and Elevator

**T**WO Novo Hoisting Outfits—a double drum LH Hoist with a Novo 18 H.P. four cylinder gasoline engine, and a double drum DH Hoist with 50 H.P. electric motor handled all material on a thirteen story hotel building job. The gasoline driven Novo hoist handled two automatic material skips and the electric driven Novo hoist operated material elevator and one-half yard concrete tower bucket.

Novo's recommended layout resulted in a considerable saving in the handling of material.

Let us help you on your hoisting problem.



**NOVO ENGINE CO.**  
 Clarence E. Bement, Vice-Pres. & Gen. Mgr.  
 LANSING ~ MICHIGAN

*Distributors*

CENTRAL SUPPLY CO., Little Rock, Ark.  
 PIGEON-THOMAS IRON CO., Memphis, Tenn.  
 DIXIE MACHINERY CO., Inc., Shreveport, La.

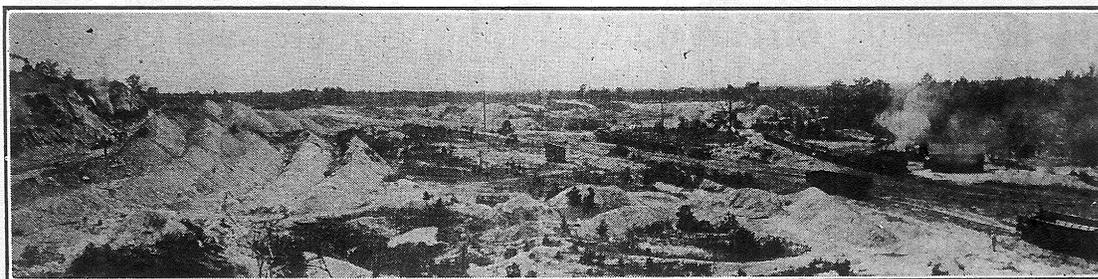
## Ball-Benton Gravel Company

J. J. BALL, President  
 CHAS. M. KING, Secretary

821 Home Life Bldg.

Little Rock, Ark.

W. D. CAMMACK,  
 Vice President & Treas.



**REAL GRAVEL—**

Plant: Benton, Ark.

**FOR HIGHWAYS—FOR RAILROAD BALLAST—FOR CONCRETE CONSTRUCTION**

Our road clay gravel, weighing 3,000 pounds per yard, is best by every test for road building purposes. Our capacity is from 50 to 60 cars per day, as a result of our separate road gravel loading organization using Bucyrus "70-C" shovels and Baldwin 50-ton locomotives.

Our capacity for washed ballast, washed concrete gravel or washed sand is from 60 to 70 cars per 12-hour shift. Our service to road districts, railroad projects and large construction jobs is of proven dependability.

Call us over Telephone 4-3788 or Long Distance 133, Little Rock, or Benton 93, for quick action.

# S. G. Adams Stamp & Stationery Co.

ST. LOUIS, MO.

Manufacturers of

ROAD MARKERS AND ROAD SIGNS—METAL TAGS—EMPLOYEES' IDENTIFICATION BADGES—RUBBER STAMPS—SEALS—STENCILS—  
AUTO LICENSE PLATES, ETC.

**A. G. LORENZ, Selling Agent**

2419 Battery Street

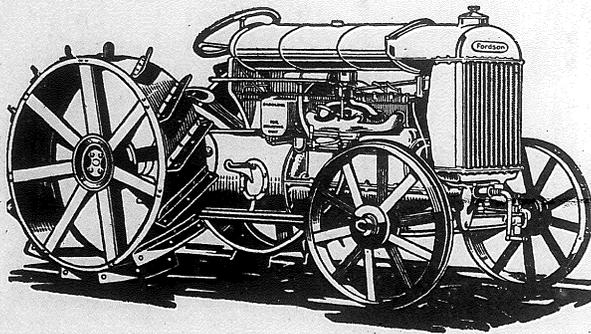
Phone 4-6558

LITTLE ROCK, ARK

*Write for Catalog.*

## SHOEMAKER-BALE AUTO COMPANY

601 West Markham Street



Largest and oldest Ford Dealers in the state. Fordson Tractors, together with road equipment of all kinds, including rubber-tired wheels, skid chains, graders, maintenance equipment and Crawler Tracks.

**Your Business Solicited**

**All approved in Highway Work Throughout the Country.**

# ARKANSAS HIGHWAYS



*Official Monthly Bulletin of the State Highway Commission.*

"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 The 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. III.

MAY, 1926

NO. 5

## "Arkansas Moves Forward"

An Address by E. E. Bonowits, District Highway Engineer, Before the Arkansas Engineers' Club.

WE are living in a wonderful day in Arkansas. Those who have had their vision wrapped up in their own individual affairs ought to take time to look about them and see the great strides the old State is making all along the line. Arkansas is moving forward, and her progress is more rapid and more substantial than anyone could reasonably have anticipated a few years ago.

In this progress, I am glad to note that the engineers have had a great part. It is only necessary to think of the great Rempel dam and kindred hydro-electric power projects still under way to visualize something of what the electrical engineer is doing for Arkansas.

Other branches of engineering have played their part in the past two years in the installation of water and sewer systems in 15 Arkansas cities that previously did not have them; in many extensions and improvements in the various public utilities of the State; in the great improvement in transportation facilities undertaken by the railroads, notably the Missouri Pacific system, under the leadership of L. W. Baldwin—double-tracking, enlargement of terminals, increased safety devices, and more adequate train service; in the development of the State's mineral wealth through proper surveys, and last, but certainly not least, in the great road building program under the leadership and guidance of the State Highway Department.

The improvements undertaken by the Missouri Pacific Railroad alone are so extensive in their scope that the average person can hardly hope to comprehend them; and they are being brought about by the genius of the new management in bringing into closer co-operation the various units of the subordinate organization of this wonderful company.

Many people do not yet realize the magnitude or the importance of the great road program now under way in Arkansas under the leadership of Herbert R. Wilson and the

organization he has gathered about him, under the new law.

They see a smooth and passable, all-weather road before their door, where until recently, in rainy weather, there was an impassable hog wallow. They know that road leads to the next town. They understand, many in a sort of hazy way, that it goes on and links them up with all parts of the State, once completely disconnected during seven or eight months of the year.

But very few realize the tremendous significance of the actual government statistics which show that during the past two years Arkansas has advanced from twenty-eighth to eighth place among the States of the Union, now having 5,007 miles of federal system roads, and pushing rapidly ahead of other States in all classes of highway building.

Statistics are more or less dry and uninteresting to the average man but in this case they show absolutely unparalleled development in road building. From twenty-eighth to eighth place! Is there not something to be proud of? Something to really entitle us to the name of "Wonder State?"

In all this the engineer has played and will continue to play his part. But he has not discharged all of his obligation to his State when he has completed his engineering duties. All of us must realize our responsibilities in the maintenance of the laws and public sentiment which make possible such progress. This is a real duty which we ought all to recognize.

Let us help to keep good laws on the statute books, and get bad ones off! Let us help to maintain healthy public sentiment, and stamp out unhealthy and destructive sentiment. Arkansas is moving forward. Let us, as engineers, help to keep her moving that way!

## Protecting Our Highways

*Hot Springs Sentinel-Record.*

WHEN we had just come into possession of the Little Rock and Hot Springs highway, perhaps the best paved highway in all the nation, we were exceedingly jealous of that splendid road being damaged or destroyed by excessive and unlawful loads being hauled over it, and there were a number of arrests, to let the haulers of the excessive freights know that the people were not to have their three-million dollar property damaged.

But as we became more accustomed to the highway, we were less zealous of encroachments upon it, and it is not uncommon these days to see trucks of average tonnage, loaded to the guards with green pine logs, which must prove a very severe test to the highway.

So long as the highway stands the test perhaps it is all right, but given an inch, most people will take a mile, and there is no telling where the limit will extend unless there is another checking up of the excessive loading of freights over this road.

The paved highway isn't the only one that is being abused by the haulers of heavy truckage. Out on Benton street a short time ago a small truck was seen plodding up a grade, far overloaded, and doing much damage to the gravelled highway. The Benton street pike, formerly the Little Rock road, is as entitled to protection from overloaded trucks, as any other.

Complaints have come in from several sources. The speeder may endanger himself and others on the highway, but at least he isn't selfishly trying to despoil the property that the people have been taxed heavily to establish.

### ROADS OPEN TRADE TERRITORY.

Oklahoma's state highway department is surveying a route for a new road from Bethel, McCurtain county, to Smithville, 20 miles distant in the same county. A road will be built with funds provided by a Smithville bond issue and by the state. It is planned to extend the road from Smithville east to the Arkansas line, connecting with Cove and with the DeQueen-Mena road.

This project will open a territory heretofore almost inaccessible to automobiles. Smithville is an old town with a colorful history, located in the rolling hills of the southern Kiamichis. The section around Smithville and Bethel is picturesque, but its picturesqueness has been lost to the outside world because it was inaccessible.

Every project such as this is of value not only to the immediate territory it opens but to the territory all around it. Commercial development is dependent absolutely upon the trade territory which can be reached, and good roads are constantly widening territories for every town and city in the Southwest.—*Fort Smith Southwest-Times-Record.*

## Playing Your Part In Your Community

What will your community be ten, fifteen or twenty years from now? Will it be more prosperous, more beautiful—a more desirable place to live and work in than today?

It will, if you play your part.

Look around you. Somewhere you have seen the magic of concrete roads—the tonic effect of concrete streets. Have seen business improved through buildings made fire-safe, sanitary and permanent with concrete. Have seen the greater sense of security and pride that comes from concrete schools, churches, theaters and homes.

If you are boosting for similar advantages in your own community—your home town—you are truly playing your part.

Portland Cement Association service helps anyone to play his part well.

It is a free service for the owner, the builder, the architect, the contractor, the engineer—for everyone interested in getting the greatest value from concrete construction.

The cement industry has made this service possible through the Portland Cement Association. It is a service, offered without any obligation.

Write us for any help you need in using concrete.

### PORTLAND CEMENT ASSOCIATION

Syndicate Trust Building  
St. Louis, Missouri.

*A National Organization to Improve and Extend the Uses of Concrete*

OFFICES IN 31 CITIES

## Automobile Accidents on State Highways

By O. L. Hemphill, Office Engineer, State Highway Department.

FOR the two-year period from January 1, 1924, to December 31, 1925, two hundred forty-one automobile accidents were reported to the State highway department by employes on the State roads. These are not the only accidents that occurred during the period, for a great many accidents on the State roads do not get to the attention of the maintenance foremen and are not reported to the State highway department, while those accidents which happen on other roads, not on the State highway system, are not reported to the department.

An analysis of these two hundred forty-one accidents disclosed some interesting information, both as to time of occurrence and cause of the accident.

More accidents were reported in August than in any other month, 36 of the reports sent in covering accidents happening in that month. The months of May and July were tied for second place with 35 each.

More accidents were reported for Sunday than for any other day of the week, the number of reported Sunday accidents being 55. Saturday was next with 43 accidents reported.

Ten of the accidents reported occurred between midnight and 6 o'clock a. m., 45 between 6 o'clock a. m. and noon, 93 between noon and 6 o'clock p. m., and 81 between 6 o'clock p. m. and midnight, while 12 reports did not give the hour of the accident.

As might be expected, this analysis shows the most accidents at the time of heaviest traffic, that is, on Sunday afternoons, although the time from 6 o'clock to midnight shows almost as many accidents as the afternoon period. Since the traffic is considerably lighter during this period it is probable that the higher proportion of accidents during the night period is due to defective and blinding lights.

The causes of these accidents and the number from each cause, as shown by the reports, are shown in the following tabulation:

1. Drunken Drivers .....	19
2. Careless and Reckless Driving and Speeding .....	115
3. Driver Asleep .....	3
4. Defective Equipment .....	45
5. Blinding Lights .....	17
6. Sharp Curves .....	11
7. Loose Gravel and Earth .....	4
8. Bridge Floor Failure .....	4
9. Narrow Embankment .....	2
10. Open Bridge—Missed Detour .....	1
11. Obscured Windshield, Snow and Fog .....	3
12. Collision with Pedestrians .....	5
13. Miscellaneous .....	12
TOTAL .....	241

In order to make the preceding tabulation more clear, it probably is necessary to make some explanation of the nature of the accidents in each classification.

Item 1—Includes only those accidents where the report showed definite evidence of drunkenness.

Item 2—It is probable that a number of these accidents should have been classed in Item 1, but where positive evidence of drunkenness was not shown, the accident was listed under this item.

Item 3—Needs no explanation.

Item 4—Includes such causes as leaving road because of blowouts, locked or broken steering gear, driving at nights without lights, etc. In many of these accidents there is no doubt but that excessive speed was a contributing feature.

Item 5—Needs no explanation.

Items 6, 7, 8, 9 and 10 are primarily defects in road construction or maintenance, although some of the accidents listed in these items should not have occurred if the driver had used reasonable care. For instance, sharp curves cannot well be avoided in mountain roads, and some of the accidents shown as caused by sharp curves are collisions which would not have happened had each driver been on the right side of the road.

In at least two of the accidents listed as caused by bridge floor failures, the failure was caused by overloaded trucks.

The accident listed in Item 10 was caused by a driver passing detour and warning signs and running into an open bridge which was under construction. In this case the barricades evidently were not properly placed, yet it is evident that the driver failed to exercise proper caution.

Item 11—Needs no explanation.

Item 12—Four of the five pedestrians struck were children at play, and in two cases, at least, the accident was unavoidable, the children darting across the road directly in front of the oncoming car.

Item 13—The accidents listed in this item were caused by such things as striking loose animals, avoiding loose animals, losing control of car on hill, skidding on wet and slippery surface and include one case where a man was seriously injured by leaping from a moving car.

A study of the causes of these accidents shows conclusively that fifty per cent of these accidents could have been avoided by the elimination of the careless, reckless and drunken drivers, and that twenty-five per cent of the accidents were due to defective equipment and blinding lights. About nine per cent were wholly or partially due to road conditions, although there is no doubt but that reasonable caution would have avoided part of the accidents listed in this nine per cent.

No road can be made absolutely safe, and the elimination of all danger points cannot be done at once. The number of danger points is being lessened, sharp curves are being eliminated where possible, and the remaining ones protected by guard fence supplemented with warning signs.

The one big thing necessary to make the largest reduction in the number of accidents is strict enforcement of adequate and reasonable traffic regulations, with adequate punishment of the willful violator.

## "The Road Must Go Through"



A Monroe County Cypress Break.

"Roads that go somewhere," the kind that are planned by the present highway administration for the entire State, sometimes have to go through some difficult and ticklish places before they reach "somewhere."

An example is to be found on State Highway "M19-B1" going through the White river bottoms in Monroe county. State forces under the direction of Herbert R. Wilson, highway commissioner, are pushing this important road to completion this summer.

The above picture gives some idea of the adverse conditions that are being met and conquered in order that the road may go through.

"A road is like a chain," Mr. Wilson says, "it is no stronger than its weakest or worst section. It may be a fine road until it gets to a cypress break like this, but it is of no use until the bad place is bridged. At least for travelers who do not happen to have aeroplanes. So the department is trying to 'bridge the gaps' so there will be no weak or bad sections on the entire system. How well we are succeeding I will leave it for others to say."

The Senate two weeks ago adopted a resolution originating in the House of Representatives extending the time for beginning the construction of the Arkansas river bridge at Dardanelle one year, and the period in which it must be completed to three years. This will relieve the anxiety of many who feared the project might fall through with by reason of unavoidable delays in the preliminary work. Construction of the bridge, which will be of concrete, was almost unanimously voted by the citizens of Dardanelle and Russellville last year, the cost to be divided between the property owners directly affected and the State Highway Department.

Completion of the bridge spanning the Little Missouri river at Star of the West, was celebrated recently with a ceremony which attracted more than 1,000 citizens of the surrounding county. There was a concert by the DeQueen Band and addresses by E. J. O'Neel, New Hope; Prof. R. H. Kolb, J. S. Montgomery and W. J. Holland of Dierks, and Judge Ridley of Pike county.

## The New Highway Law

IS GIVING US

## GOOD ROADS



## PARKE-HARPER PUBLISHING CO.

can give you

## Good Printing

209 Spring St.

Little Rock, Ark.

## Russell Motor Patrol

MADE IN TWO SIZES

**No. 2-Fordson Tractor for Power**  
**No. 3-Mc Cormick Deering 10-20 Tractor  $\frac{1}{2}$  Power**

Better Built Motorized Patrol Graders. They meet the need for more highly finished maintenance machines. Their popularity is growing daily and the demand is rapidly increasing. Russell Machines are built of oversize parts with the resulting low cost upkeep. They have highly finished machine cut gears, machined bearings, tight joints and rigid construction throughout. Scarifier is adjusted to work independently if desired.

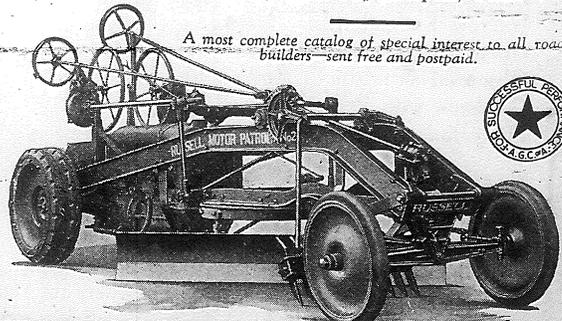
No. 2 Russell Motor Patrol weighs 8500 pounds. The No. 3 Motor Patrol has more speed and is heavier weighing 10250 pounds. Length of blades finished 8-10-12 ft. made of special carbon steel.

The complete Russell Line for road construction, road maintenance and road repairing includes—

**8 Sizes Road Machines—2 Sizes Elevating Graders—**  
**Maintenance Patrol Machines for both Motor and Horse Power, Scarifiers, Road Drags and Wheel Scrapers, Drag Lines, Gravel Screening, Crushing and Loading Equipment, Steel Beam Bridges, etc.**

RUSSELL GRADER MANUFACTURING COMPANY  
OF TENNESSEE, 489 Main St., Memphis, Tenn.

A most complete catalog of special interest to all road builders—sent free and postpaid.



## Death Again Visits The Highway Department

J. E. McDonald, Maintenance Superintendent, Killed by Auto.

ALMOST before the ink was dry on resolutions adopted by the members of the State Highway Commission lamenting the death of Theodore Maxfield, Batesville commissioner, there came to the department the sad news of the accidental death of J. E. McDonald, Mississippi county maintenance superintendent.

Mr. McDonald, who was 40 years old, and the father of a charming family, died May 7 as a result of injuries received when he was pinned under his car when it overturned in a ditch 12 miles east of Blytheville on the Dell road. Snapping of the steering mechanism of his car is thought to have been the cause of the accident, which occurred as Mr. McDonald was going home from his work.

The resolutions of the State Highway Commission on the death of Mr. Maxfield, who was memorialized in the April issue of "Arkansas Highways," were adopted at the

last regular meeting of the commission and read in part as follows:

"He never sought public office and his appointment as a member of the State Highway Commission marked the beginning of the only public office he ever held. Few people in distress who were worthy, ever appealed in vain to him for assistance.

"He was an exponent of progress and conscientiously and unselfishly exemplified this in his every act. His keen business judgment, reinforced by his years of business experience, made his services to the State inestimable. As a member of the commission his greatest ambition was to see a bridge span White river at Batesville, his native city, and he worked incessantly to that end. Almost immediately after his project had become assured, largely through his untiring efforts, he was called by death.

"This bridge will bear his name and will stand as a monument to his memory."

## Petitions For Additions to State System Postponed

Commission Takes No Action on Many Requests for New Roads.

WHEN the State Highway Commission held its last regular monthly meeting, a large number of requests for additions to the State system, coming from several different sections, were presented for consideration.

In order that the plans for maintenance and new construction worked out by Commissioner Wilson and Engineer R. C. Limerick might not be disrupted or delayed during the present working season, however, resolutions deferring any consideration of these requests until September was adopted.

At that time, the various proposals will be considered and sifted out and the meritorious projects placed in line for handling at the earliest opportunity. The postponement means no real delay on such of the roads as may finally be added to the system, since the program for road activity in 1926 already is made up, and actual work could not be done on any other roads, even if they were added to the official map at this time.

The commission awarded three contracts for new road

construction this spring and summer in Columbia, Union and Ouachita counties, as follows:

J. G. Newkirk of Prescott: Graveling six miles of the Magnolia-Village road in Columbia county, \$11,551.

Tarrent & Miles, El Dorado: Grading, small bridges and culverts, 18 miles El Dorado-Magnolia road in Union county, \$80,109.

J. G. Newkirk of Prescott: Grading, bridges, culverts and graveling eight miles Camden-Stephens road in Ouachita county, \$48,112.

### WHEN A MAN'S A MAN.

When a man's a man, he doesn't lie and he will not play the cheat,

And he doesn't look with a scornful eye at the beggar on the street;

And he doesn't brag of things he's done or talk of his lands of gold,

When a man's a man you will find, my son, that he's gentle with the old.

When a man's a man you will find his friends not of a chosen few,

He never talks of the help he lends or the good deeds he may do,

He never jests with a woman's name, never sneers at the men who fail,

And a dog, a pat from his hand may claim if only he wags a tail.

When a man's a man he will never shirk the task that his hand may find.

He is never too big for the long day's work, too busy to be kind;

He never sneers at the faith you hold, never needless hurt he gives—

When a man's a man it is plainly told by the gentle way he lives.

### VAN TRUMP TESTING LABORATORY

PAVING AND TESTING ENGINEERS

Plant and Street Inspection of Bituminous Pavements, Chemical Analysis, Physical Tests, Specifications, Bitumens, Portland Cement, Paints and Highway Materials.

2337 South Paulina Street, Chicago, Ill.

344 Gazette Building

Little Rock, Ark.

## Hot Springs and Good Roads

A very striking example of the value of good roads in the attraction of tourist business is to be found in the great increase in visitors to the Hot Springs National Park since the opening, last July, of the splendid new reinforced concrete highway from Little Rock.

Auto tourist travel, as soon as the new road was opened, jumped to unexpected proportions, and has continued through the winter and spring. The April registrations at the government's free tourist camp were virtually double the registrations for April, 1925, according to Dr. Joseph S. Bollen, supervisor, and the first four months of the year in the bath houses showed an increase of 15,589 paid baths over the same period of 1925.

Good roads bring the tourist and the tourist spends money. The more money he spends the greater the general prosperity. And so the gasoline tax, which makes the good roads possible under Arkansas' new road law, soon comes back to us all in many indirect ways.

Besides the pride and pleasure that comes from living in a State that can boast of "roads that go somewhere."

## A Difficult White County Job

One of the most difficult construction jobs with which the department is now wrestling is a rock cut on State Highway "B-17" between Searcy and Heber Springs, in District No. 5.

According to E. E. Bonowits, district engineer, who is no mean geologist, at least so far as his ability to handle jaw-breaking geological terms is concerned, the rocky ridge through which the new highway is going is "of crystalized sandstone, belonging to the Pennsylvania age of the carboniferous period."

At any rate, the going is as rocky as 'Bonny's' vocabulary, and the progress is slow. However, the cut will shorten the distance between Searcy and Heber Springs by more than two miles, so it is worth while.

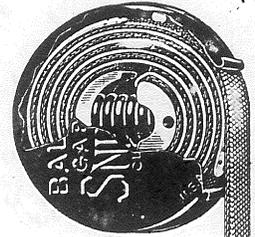
The highway department forces are using a portable Schram compressor outfit, with a standard Fordson tractor for motor power, with old army dump carts secured from the War Department.

"Bonny" expects to complete this job during the next few weeks, if his compressed air, dynamite and vocabulary hold out.

## ARKANSAS "UP IN FRONT."

A map before us shows Maine, New Hampshire, Vermont, North Dakota, South Dakota, Louisiana, New Mexico, Nebraska, Montana, Wyoming, Idaho and Nevada to have less than one hundred miles of concrete roads each; Tennessee, Alabama and Carolina have between one hundred and two hundred miles of concrete roads each, while Arkansas has between four hundred and five hundred miles of concrete roads.—*Rector Independent.*

Bad Roads  
ARE  
Good Roads  
AND  
Good Roads  
ARE  
Better Roads



*When Your Car  
Is Equipped with*

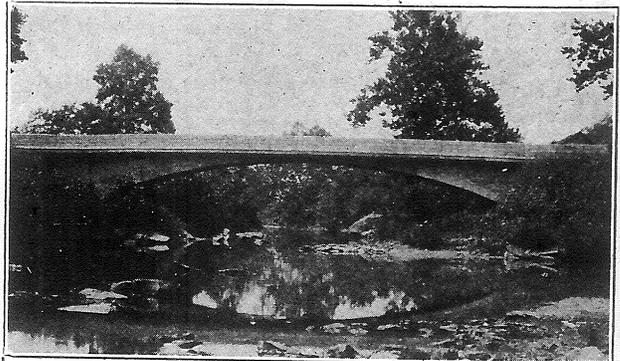
# Gabriel Snubbers

Forty-one manufacturers equip their cars with Gabriel Snubbers; 30 drill their car frames for Gabriels. Let us prove to you that Gabriel Snubbers will give you greater riding and driving comfort.

## 555 Tire & Service Co.

3RD AND BROADWAY

LITTLE ROCK



**Built by Lutén Bridge Company**

**When you think of Bridges—think in terms of concrete. They are Economical, Permanent and Artistic.**

*Write us for Plans and Estimates.*

**LUTEN BRIDGE COMPANY**

Little Rock, Ark.

Knoxville, Tenn.

Charlotte, N. C.

## Building "Protection Ditches" to Save Roads in Lincoln National Forest

By Tom Charles, Special Correspondent for "The Highway Magazine."

**R**OAD officials are watching with much interest two types of road drainage in the mountain section of the Lincoln National Forest, New Mexico. The older type of parallel drainage, in which the ditch runs along between the road and the bank, is being compared with a new system of "protection ditches," in which the runoff is accumulated in converging gullies which carry it to natural drainage centers, and then under the road through good sized metal culverts.

On account of the shortage of soil covering, due to drouthy conditions and overgrazing, there is an excessive runoff which causes the little parallel drainage ditches to grow in a short time into deep gullies. The highway department finds that many of their 12-foot road surfaces along the mountain sides have narrowed down to eight feet or less, with a dangerous ditch on one side and a steep precipice on the other. Such roads become very hazardous, especially under slippery weather conditions.

To prevent the formation of these drainage gullies along the upper side of the road, the United States Forest Service is trying out what is known locally as "protection ditches." A few furrows with an ordinary plow, and a trip or two with a ditcher, protects from serious erosion 100 to 200 yards of highway. With these protection ditches used liberally the only water to which the road is subjected is that which falls directly upon it, and on the area, a few feet wide, between the ditch and the road. This small area is drained back to the bank and small Armco culverts are installed every 250 feet. If funds are short, as is not infrequent, temporary "dip drains" are installed. That is, a dip or low place is made in the road over which light drainage is permitted to flow until money is available for culverts.

Much of the damage to mountain roads in this section having parallel drainage is really due to faulty maintenance rather than to improper construction. Natural drainage courses are permitted to clog, culverts to fill up, and dykes to wash out. And this is frequently due to limited forces and funds rather than laxity.

There is no way to provide against, and no one is responsible for those extreme occurrences known in law as "An act of God," but sometimes occurrences are placed in

that class which do not rightfully belong there, and for which some provision can be made. Many damaging floods, for instance, are classed that way that might have been prevented or their effect minimized by a little study and resourcefulness. The protection ditch in its short trial in the Lincoln National Forest has already done much to reduce the damage done to what some people chose to consider as beyond human control. One of the forest roads for which \$1,000 was set aside for maintenance last year, was amply restored for \$130. Another which went into the rainy season before it had time to settle came out of one of the worst flood periods in the history of the southwest without damage. The secret is in preventing erosion by properly handling the runoff before it encounters the road.

In marked contrast to these cases were the roads, where drainage was taken care of between the road and the bank. Even the roads which seem to be solid rock washed badly and were both aggravating and expensive to traveler and highway department alike.

The cost of the protection ditch is almost negligible, and its value will be inestimable, especially in years that follow droughts, which usually experience destructive floods.

### TO IMPROVE DANVILLE ROAD.

The State highway department is this week unloading machinery at Danville and within the next few days a big road crew will be put to work on the upper Danville road and work through to Dardanelle.

This popular highway, which until recently was one of the best in the State, has deteriorated, due to the fact that the appropriations of the highway department had become exhausted.

New appropriations were available the first of this month, and State Highway Commissioner Herbert R. Wilson expects to put all State highways in the county in first class condition just as soon as possible.

The highway department has a splendid program mapped out for Yell county, the Fort Smith road and the highways paralleling the Rock Island railroad being samples of what is contemplated, and under the able direction of Mr. Wilson it will not be long until all of the principal highways of the county will be in excellent condition.

—Dardanelle Post-Dispatch.

**Phone**  
**6116**

**GUNNELS COMPANY-LITTLE ROCK**

**Tires, Tubes, Accessories**  
**Painting and Upholstering**

**ROAD SERVICE**

## Work Progressing Well in District No. One

By A. W. Buford, District Engineer.

STATE highways in Lee county, District No. 1, are fast being converted from delta gumbo to high class gravel roads. Lee county had no gravel roads until the passage of the Harrelson Act and the reorganization of the State highway department.

Due to the fact that Lee county is mostly in the Mississippi river delta, the roads are impassable about one-half of the year. However, during the last year the State highway department has made plans for the improvement under Federal aid of the entire original State highway system in Lee county, one-half of the cost being paid locally by a road bond issue.

This work is fast nearing completion. Of the original sixty-five miles on the State highway system in Lee county, there has already been completed to United States government standards about fifty miles of gravel roads, and the balance of the construction is now being pushed to such an extent and the entire original State highway system of Lee county will be completed this summer.

This work necessitates the building of a new bridge with vertical lift span over the St. Francis river near Cody, and the construction of a steel bridge over the L'Anguille river near Haynes. All of the drainage structures except these two are of concrete.

The new alignment of the State highways caused the elimination of many unnecessary and hazardous railroad crossings. For instance, from Marianna to Forrest City, the new alignment and construction by the State highway department will eliminate seven unnecessary crossings. There will be a concrete viaduct over the railroad at Caanan. All of this work will be completed this summer.

### ROAD TYPES DETERMINE COST OF MOTOR VEHICLE OPERATION.

Research work conducted by the Pennsylvania Highway Commission, the findings of which have been reported to the Good Roads Board of the American Automobile Association, brings out in a striking fashion the difference in motor vehicle operating costs over improved and unimproved roads.

It is shown that the cost of operation for all types of motor vehicles over hard surfaced roads is 25 per cent less than the cost of operation over dirt roads, while the operating cost on gravel roads is 10 per cent less than on dirt roads. These are average economies and apply to tires and other equipment. The result of this study and other similar investigations are now being effectively used by the Bureau of Public Roads and the various highway departments to determine on a scientific traffic basis which roads should have precedence in improvement.

## Planters Lumber Company

Good Lumber

Good Service

410-424 East Washington Avenue

North Little Rock, Ark.

Phones 4-2550, 4-2551

"Look for the Mo-Mile Sign"



## More Miles Per Gallon

Others Claim it--  
We Guarantee it!

**E. R. Russell Oil Co.**  
Little Rock, Arkansas

## STATE HIGHWAY MEN IN WALDRON.

Herbert R. Wilson, highway commissioner; R. C. Limerick, State highway engineer, of Little Rock, and W. W. Mitchell, district engineer, of Fort Smith, were in Waldron Wednesday looking over the highway work in Scott county, and planning the work so as to finish it in the shortest possible time.

In speaking of the work on the road north toward Mansfield, it was stated that they were speeding up this work as fast as possible. A crew has been at work at the Narrows for almost two weeks, blowing off the bluff over the railroad dump and the work there is coming in fine shape.

The grading crews on both ends of the road are making good progress and it is thought this work will be completed in good time to take care of the heavy summer traffic.

—*Mansfield Messenger.*

"Elimination of grade crossings, either by relocation of highways or rail lines or by grade separation, constitutes the only perfect solution of the grade crossing problem. It should be carried on under a proper program, first eliminating the most dangerous crossing on thoroughfares carrying heavy traffic. Relocation of highways offers many possibilities not yet fully developed by the State authorities, in co-operation with the railroads.

"The elimination and protection of grade crossings are of such importance and involve to such an extent the public safety as to require that priority be given to them, in the allocation of capital funds by the railroads and of public monies for highway building, over expenditures for other safety measures designated to protect the public."—*Excerpts from report of Hoover Conference on Street and Highway Safety.*

Travelers should give highway workers the right of way whether it is to the right or the left. It makes bad work where the scraper or plow crosses the road. Often the maintainer or patrolman has two or more horses on the wide machine. Whether driving a motor vehicle or a team it is easier and quicker to give the road than to try to hold it. A little matter of courtesy and accommodation on the road, coupled with common sense will save a lot of trouble sometimes, and also avoid endangering lives. Keep in mind that the highway employes are working for you—are in your pay.—*Arizona Highways.*

**DREW GRAVEL COMPANY**  
ROAD SURFACE GRAVEL  
furnished in any quantity

Pits and shipping point (Ozman  
Bluff) Monticello.

Offices

**MONTICELLO AND McGEHEE**  
**ARKANSAS**

M. E. SHERLAND, Sec.-Treas.  
McGEHEE, ARKANSAS

## RURAL DEVELOPMENT.

Following a period of several years in which rural development has been practically on a "standstill," land clearing and building activities have taken on new life in this section. Along the highway between McGehee and Arkansas City the work of clearing land and building farm houses has been undertaken on a rather large scale. Other sections of the county also show considerable activity along this line of endeavor, which will add several hundred acres to the crops of Desha county for the present year.

One thing that is particularly gratifying to note is the marked improvement of the type of farm homes that are being built today over those of other days, which has had much to do with the slow migration into this section of the better class of white farmers.—*McGehee Times.*

## STUDY OF LAND SLIDE PROBLEMS.

The U. S. Bureau of Public Roads has assigned Dr. George E. Ladd, Geologist, to a study of the problems involved in land slides in West Virginia and Ohio, with particular reference to the effect of slides on road construction.

A preliminary survey has been completed in two states. For the future it is planned to make a field study of the geographical and topographical conditions involved, and a detailed study of the different types of slide which are about equally divided between the side-hill and fill slides. Possibilities of surface drainage will be investigated and field experiments will be conducted. In addition to the field work, laboratory experiments will be made on average samples of slide material from different localities.

**For Concrete Roads---**  
**For Gravel Roads**

Solvay Flake Calcium Chloride may be used with equal success in the building of concrete roads and the maintaining of gravel roads.

Solvay Flake Calcium Chloride is unexcelled as a curing agent for concrete roads, doing away entirely with the old ponding method, with a distinct saving in time and money.

**SOLVAY**

CALCIUM CHLORIDE

For the gravel or water-bound macadam road, Solvay Flake Calcium Chloride is the ideal dust layer and surface binder; while harmless to horses' hoofs, automobile finishes, etc., it will positively kill weeds and give a perfect, dustless road surface.

*Solvay Flake Calcium Chloride is free from  
Magnesium Chloride.*

Send for Descriptive Booklet No. 7251.

**The Solvay Process Co.**

WING & EVANS, Inc., Sales Department.  
704 Laclede Gas Bldg. St. Louis, Mo.

## Confidence

What can defeat a strong man who believes in himself and cannot be ridiculed, talked down, or written down?

Self-reliance is the best capital in the world.

Self-depreciation is a crime.

Every child should be taught to expect success. If others can do such wonderful things, why can't I?

He can who thinks he can.—*Orison Swett Marden.*

That type of souse, with only one horsepower couldn't have been so bad. The boys who cause the trouble are those who take likker aboard and try to manage 40 horsepower at the same time.—*Washington Star.*

### TUCKER SAND AND GRAVEL CO.

Benton, Arkansas

WASHED AND SIZED GRAVEL  
CONCRETE SAND AND  
CONCRETE MIX

We furnished Sand and Gravel for  
the construction of 26 miles of the  
Little Rock-Hot Springs Highway.

### CROW CREEK GRAVEL COMPANY



High grade sharp sand,  
washed and screened

Washed binder gravel

Road surface gravel our  
specialty

Write or wire us for prices



Madison, Ark.

Phone 919F2-3

Road improvement continues throughout Arkansas despite the alleged hard times caused by road legislation and road taxation. Communities that a few years ago were organized to resist the encroachments of road improvement are now using the same organization to secure the very thing they organized to prevent. The magic of good roads has wrought changes and improvements never before dreamed of. Good roads have eliminated the "backwoods" districts and brought the advantages of better schools, better homes, better moral conditions and better living conditions. Other communities seeing the good effects of road improvement have joined the good roads forces, and now it is a rare thing to find a community anywhere that is not working to secure good roads.—*Brinkley Citizen.*

Road surveyor for the State highway department, O. E. Otis, has been at Cass this week making the final location for the highway from that point to near St. Paul. It is authoritatively stated that construction will be resumed on this part of the road immediately and that the grade will be pushed to completion during the coming summer.—*St. Paul Mountain Air.*

Herbert R. Wilson, State Highway Commissioner, warmed the hearts of the property owners of eight counties when he accepted the toll system for building the Harahan Viaduct instead of burdening the adjacent property with a heavy tax for the purpose. There is no good reason why the people who use the bridge should not pay for it.—*Jonesboro Journal.*

## STEEL FOR BRIDGES AND BUILDINGS

### REINFORCING BARS

Fabricated Structural Work

WROUGHT IRON RAILINGS, PIPE RAILINGS,  
WIRE GUARDS, GRILLES, FIRE ESCAPES,  
WINDOW GUARDS.

Bars	Sheets	Nuts
Beams	Plates	Bolts
Angles	Shafting	Rivets
Channels	Tool Steel	Babbitt

Bridge Bolts and Hardware

Always Get Our Prices.

### Arkansas Foundry Company

1500 East 6th Street

Little Rock, Arkansas

"We Repair Contractors' Machinery"

## Road Maintenance

By D. B. Cutler, Maintenance Engineer.

The past winter has been hard on roads, for although the rainfall has been about the average in amount, it has occurred at such constant, regular intervals that most of the winter has seen the roads thoroughly soaked all of the time. Just about the time the roads began to dry out enough so that it appeared they would be dry enough to work tomorrow, it rained again. Gravel roads became saturated—surface, subgrade and embankment—so that some of those roads carrying a traffic of heavy vehicles began to cut up in places. Some of the earth roads became so thoroughly soaked that a car needed a propeller instead of wheels to get through.

On the whole, however, we went through the winter very well, when we consider what a small amount of money was available for maintenance. This is especially true of the gravel roads. Necessarily some of the dirt roads were more or less neglected.

At this time I must remark upon the changed attitude of the public. Two years ago the public in general was surprised at being able to get over any roads except the surfaced ones during rainy weather. Now, the same public expects to get over every road at any time, and feels very much aggrieved when unable to do so, no matter what the circumstances are. This is significant of the good work that has been done.

Quite naturally, our superintendents and foremen, like

and get more and more new road constructed. This is a commendable ambition, but it must not lead to any neglect of the sections of road already built.

Ditches must not be allowed to fill up, shoulders must not be permitted to wash, and dragging must be done often enough to keep the surface smooth and easily drained, for drainage is the real secret of dirt road maintenance.

In this connection, the department urges upon each of its foremen the importance of the plain ordinary shovel in maintenance work. This modest implement should be with the outfit at all times and used when necessary to get the water away from the road. It should be used in draining and filling up low spots where water has been found to stand.

Another important feature that is constantly kept before maintenance foremen is the smooth approach to bridges and culverts. Unless watched, these places on a dirt road tend to become rough. Our objective is to keep such places so smooth that the traveling public does not even know they are there.

All in all, in spite of the increasingly critical eyes of a public that is better and better educated to look for flaws in the highways, the reports that come in show the maintenance work of the highway department is meeting with popular approval.

But our forces are doing better and more effective work every day as they gain in experience, and as the equipment in their charge becomes more adequate, as it is doing all the time.

## Meyer & Greenwald Construction Company

General Contractors



Monroe, Louisiana  
and  
Meridian, Mississippi

## To Have Good Roads Requires Lasting- Efficient-Equipment

The  
JOE LYONS MACHINERY  
COMPANY

The Contractor's Supply House

Has everything that conforms to  
quality, good roads and high-  
way specifications.

Let Us Prove It

120 N. Louisiana St. Marion Hotel Bldg.  
Little Rock, Arkansas

## The Palace

When I was a King and a Mason—a Master proven and skilled,  
I cleared me ground for a Palace such as a King should build.  
I decreed and dug down to my levels. Presently, under the silt,  
I came on the wreck of a Palace such as a King had built.

There was no worth in the fashion, there was no wit in the plan,  
Hither and thither, aimless, the ruined footings ran—  
Masonry, brute, mishandled, but carven on every stone;  
“After me cometh a Builder. Tell him, I too have known.”

Swift to my use in the trenches, where my well-planned ground-works grew,  
I tumbled his quoins and his ashlar, and cut and reset them anew.  
Lime I milled of his marbles; burned it, slackened it, and spread;  
Taking and leaving at pleasure the gifts of the humble dead.

Yet I despised not nor gloried; yet, as we wrenched them apart,  
I read in the razed foundations the heart of that builder's heart.  
As he had risen and pleaded, so did I understand  
The form of the dream he had followed in the face of the thing he had planned.

When I was a King and a Mason—in the open noon of my pride,  
They sent me a Word from the Darkness—They whispered and called me aside.  
They said—“The end is forbidden.” They said—“Thy use is fulfilled.  
“Thy Palace shall stand as that other's—the spoil of a King who shall build.”

I called my men from my trenches, my quarries, my wharves, and my sheers.  
All I had wrought I abandoned to the faith of the faithless years.  
Only I cut on the timber, only I carved on the stone:  
After me cometh a Builder. Tell him, I too have known!

### Are You a Contractor?

Here is the place to get your supplies  
—Wheelbarrows, Scrapers, Plows, Singletrees, Hoisting Engines, Pumps, Air Compressors, Concrete Mixers, Shovels, Spades, Picks, Structural and Concrete Steel, Bar Cutters and Benders, Hose, Pipe, Roofing and Tools of all kinds.

**CENTRAL SUPPLY CO.**  
LITTLE ROCK, ARK.

# Firestone

## HEAVY DUTY TRUCK TIRES

### Yantis-Harper Co.

1201 Garrison Avenue  
FT. SMITH ARK.

Western Arkansas  
Representatives

## PRINTERS to ARKANSAS!

Gradually through the years there has been built up a State-wide appreciation of what the “Calvert-McBride” mark means on printing—

Quantity Production  
Highest Quality  
Prompt Delivery  
Lowest Price

*These Things Tell the Story*

**CALVERT-McBRIDE PRINTING CO.**  
Fort Smith Arkansas

# give your family 7 days fun at Hot Springs National Park

# ARKANSAS

Lock up the desk and load up the car. Come to the Nation's finest playground right here at home. Only a few hours by the nearest highway and every mile a delight. Loaf in the sunshine or play golf over one of the South's finest courses. Ride horseback, stroll through the lovely parks of the Government Reservation. Play tennis if you're strenuous. Splendid orchestras—daily concerts and dancing—pleasant social diversion. The change will do you good. Come along!

**HEALTH-GIVING BATHS** Combine rest with a course of health-giving baths in these

healing thermal waters. Especially beneficial in all forms of neuritis, rheumatism, high blood pressure and allied ailments. Also regularly patronized by many business executives, athletes and sportsmen

as an invaluable aid to physical conditioning.

**SPLENDID HOTELS** The splendid hotels shown below afford the finest of accommodations and cuisine, including in their service the convenience of completely equipped bath houses, operated in each hotel under Government supervision. Write any one of them for interesting literature and rates. All guests are accorded full privileges of the Hot Springs Golf and Country Club.

*Reduced round trip fares on all railroads*



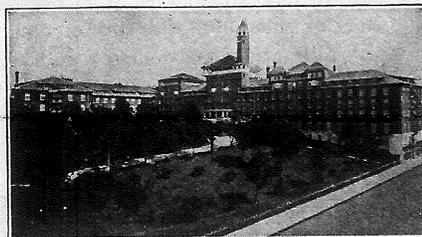
The ARLINGTON HOTEL and BATHS  
European Plan



The MAJESTIC HOTEL and BATHS  
American Plan



Hot Springs' Waters are owned and controlled by the U. S. Government



The EASTMAN HOTEL and BATHS  
European Plan

HOT SPRINGS NATIONAL PARK, ARKANSAS

## That's What Caesar Did

When Caesar took a westward ride  
And grabbed the Gauls for Rome,  
What was the first thing that he did  
To make them feel at home?  
Did he increase the people's loads,  
And liberty forbid?  
No! he dug in and built good roads—  
That's what old Caesar did.

He built good roads from hill to hill,  
Good roads from vale to vale,  
He ran a good-roads movement  
Till Rome got all the kale;  
He told the folks to buy at home,  
Built roads their ruts to rid,  
Until all roads led up to Rome—  
That's what old Caesar did.

If any town would make itself  
The center of the map,  
Where folks will come and settle down  
And live in plenty's lap,  
If any town its own abodes  
Of poverty would rid,  
Let it go out and build good roads—  
Just as old Caesar did.  
—*Kansas City Journal-Post.*

Independent  
Oils

Independent  
Greases

LITWOOD MOTRGAIN  
OILS

100% PARAFFIN

LITWOOD OIL AND SUPPLY CO.  
Fort Worth, Texas

*A Grade for Your Machine*

## GOOD ROADS GRAVEL COMPANY

dealers in

### ROAD SURFACING AND STREET PAVING GRAVEL

Our gravel and clay mixture, proportion 78 and 22 per cent, weighing 3,000 pounds per cubic yard, is unsurpassed for road and street surfacing purposes.

Our facilities for loading, one No. 60 Marion Steam Shovel, 2.5 yards' capacity; one 60-ton Baldwin Locomotive and other equipment, enables us to handle 75 cars in ten-hour shifts.

In our seven years of operation, in which 900,000 tons have been shipped, we have had no lawsuits or squabbles with any of our customers.

Our prices are quoted f. o. b. the cars at Newark, Ark., per ton basis, with railroad weights to govern. Information on any part of our business will be furnished on application.

Office and headquarters, Room 26, Wishon Bldg., Newport, Ark. For quick action, call us—  
Telephone No. 402, Newport, Ark.

R. J. HUGULEY, L. L. BOWEN, A. M. EDGAR, A. N. PETERS, Co- Partners.

JOHN T. THARP, Manager.

GRAVEL HILL, NEWARK, ARK.

OFFICE, NEWPORT, ARK.

## Southern Material & Construction Co.

624-27 Southern Trust Bldg.  
Little Rock, Arkansas.

When you employ this firm to build your streets and highways, you get the services of an experienced organization owning more construction equipment than any other Arkansas firm of contractors.

We own and operate the largest sand producing plant in the state, furnishing Arkansas river, washed, channel sand exclusively.

A combination of the material production with the construction business means an ultimate economy to the purchaser.

A. C. BUTTERWORTH,  
President.

CHAS H. MILLER,  
Vice President.

J. A. GREGORY,  
Vice President.

R. S. WILSON,  
Secretary and Treasurer.

## GAY OILS and GREASES

—used where nothing but the BEST  
can be relied upon for safety and all-  
round satisfaction!

*There's a GAY PRODUCT  
FOR EVERY NEED!*

## GAY OIL CO.

Little Rock

Memphis

*Service and Distributing Sta-  
tions in All Parts of the State*

## DIXIE CULVERT MANUFACTURING CO.

# ARMCO CULVERTS

*Look Under Your Roads for the Proof*

there can be--there is only one  
**"PURE IRON" for Culverts**

In almost every State and in Canada there are many ARMCO Culverts that have been in use from 10 to 18 years. Can other culverts claim as much?

There can be *only one* purest and most uniform iron made for culverts. The chemist, the metallurgist, the microscope ALL say this is genuine ARMCO Ingot Iron and NO OTHER. In every other culvert metal impurities are either purposely left in or purposely added. In ARMCO Ingot Iron the Microscope shows a *uniform* ferrite grain structure—a solid, unbroken wall against corrosion.

If you want corrugated culverts exactly like those which have definitely established the economy of this construction during the past 18 years you will look for the Blue Triangle Trademark. They can be found under NO OTHER BRAND.

**"ALWAYS AT HOME"**

## DIXIE CULVERT MANUFACTURING CO.

Armco Ingot Iron Culvert Pipe  
Calco Automatic Drainage Gates  
Armco Ingot Iron Tanks  
Welded Gas and Oil Tanks

LITTLE ROCK,  
ARKANSAS

Smith Concrete Mixers and Pavers  
Great Western Slips  
Plows, Wheelers and Fresnos  
Page Hy-Way Guard

# Voss-Hutton Co.

Wholesale Distributors

Little Rock, Arkansas

Klaxon Horns

South Bend Lathes

Walden Wrenches

Wright Hoists

Raybestos

Black & Decker Drills

Pedrich Rings

Timken

Weaver Equipment

Hyatt

Welding Equipment

New Departure Bearings

## Automobile Accessories Garage Equipment

214-16-18-20 W. Fourth St.

Long Distance Phone

4-0433, 4-0434

**“A Friend Of  
Good Highways”**

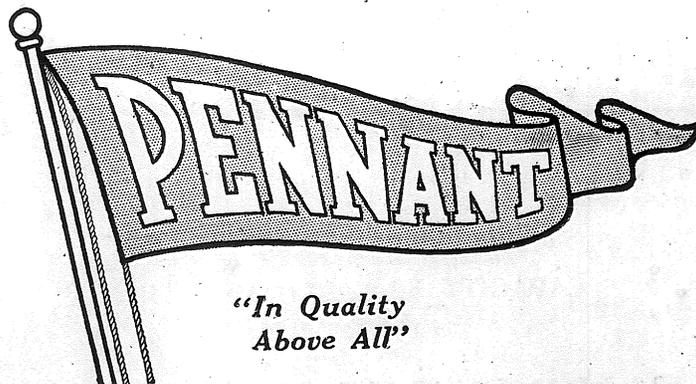
# Hermitage Portland Cement-- SAND-GRAVEL-STONE

TRUSCON  
STEEL  
ROAD  
MESH

*Our facilities for supplying  
road building materials  
are unexcelled.*

CAREY'S  
ELASTITE  
EXPANSION  
JOINT

**FISCHER LIME & CEMENT COMPANY**  
MEMPHIS



*"In Quality  
Above All"*

**WHY RUIN A GOOD AUTOMOBILE** experimen-  
ting with trick lubricants? "Safety First" use  
**PENNANT "In Quality above All" GASOLINE,  
AUTOMOBILE OIL AND GREASES.**

**PIERCE PETROLEUM CORPORATION**



*We Carry in Stock For Immediate Shipment*

**ROAD SCRAPERS  
VULCAN ROAD PLOWS  
PICKS, SHOVELS AND ALL ROAD TOOLS.**

*Hercules Powder and Dynamite*



**FONES BROS. HARDWARE CO.**

**LITTLE ROCK, ARKANSAS**



**Big Rock Stone Co.**

*Office, 111 Center Street*

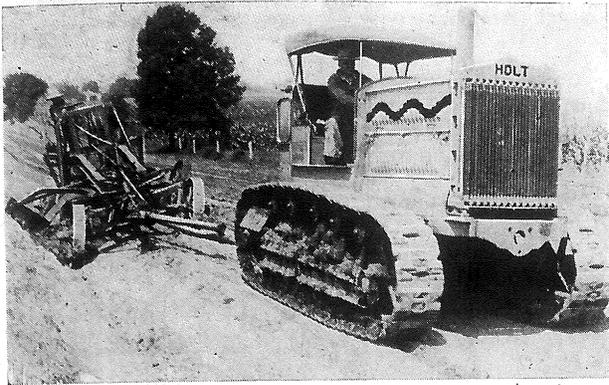
*Little Rock, Ark.*

**CAPACITY 50 CARLOADS DAILY**

**FAMOUS BLUE TRAP ROCK**

**All sizes of Crushed Stone, Rip-Rap and Sand—Best material produced in the South for Macadam, Concrete and Reinforced Concrete construction.**

*Write for prices and full information.*



## For Better Roads

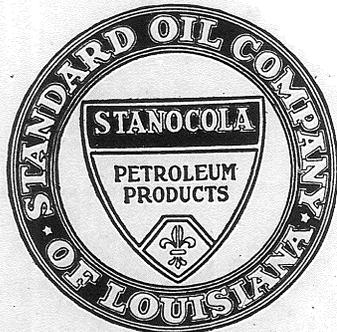
More rapidly and smoothly rolls the high-speed motor traffic of America. Truck transportation increases. Bus lines reach out to new territories. Farms are no longer isolated. The automobile industry grows apace. Better roads!

Thank shrewd and far-sighted road officials of town and county and state. Thank those who have wisely invested the public money in sturdy modern road machinery. Thank "Caterpillar" Tractors.

A mighty task has been done! There is a mightier task yet to do! "Caterpillar" Tractors are road builders.

Five models of "Caterpillars" on display at Memphis:  
 "SIXTY" "THIRTY"  
 "10-TON" "2-TON" "5-TON"

**HALLORAN TRACTOR COMPANY - Memphis, Tenn.**



*"Better Stick  
 to the  
 Standard"*

## Stanocola Polarine

THE "STANDARD" MOTOR OIL  
*and*

## Stanocola Gasoline

THE "STANDARD" MOTOR FUEL

are the two Motor necessities so essential to the efficient operation of your Automobile or Motor Truck—Look for the dealer displaying Stanocola signs and call for Stanocola Polarine or Stanocola Gasoline by name.

**ASPHALT**—The Standard Oil Company of Louisiana, with its modern Refinery at Baton Rouge, is the largest manufacturer of Asphalt and Asphaltum products in the South.

Asphalt and good roads are synonymous and you will find it used on better Highways from Maine to California and from Canada to the Gulf of Mexico.

**Standard Oil Company of Louisiana**  
 New Orleans, Louisiana

# WARRENITE-BITULITHIC PAVEMENT

—“A WARRENted Product”—

**Built, Sold and Guaranteed on a  
Foundation of Honor**

More binding than the legal bonds that accompany every Warren job are the bonds of honest workmanship and honest materials that for twenty-five years have distinguished products built, sold and guaranteed on a foundation of honor.

The service rendered in the past by products so built and so guaranteed is sound assurance of the performance today, and tomorrow, of products created by an organization pledged to maintain such standards and such quality.

## Warren Brothers Company

*A national organization to build good roads.*

### EXECUTIVE OFFICES:

**BOSTON, MASS.**

### DISTRICT OFFICES

New York, N. Y.  
Portland, Ore.  
St. Louis, Mo.  
Winnipeg, Man.  
Harrisburg, Penn.  
Chicago, Ill.

Washington, D. C.  
Phoenix, Ariz.  
Birmingham, Ala.  
Memphis, Tenn.  
Los Angeles, Cal.  
New Orleans, La.

Charlotte, N. C.  
Dallas, Tex.  
Utica, N. Y.  
Minneapolis, Minn.  
Oakland, Cal.  
Salt Lake City, Utah  
Oklahoma City, Okla.

Toronto, Ont.  
Sydney, Australia  
Melbourne, Australia  
Tokyo, Japan  
Vancouver, B. C.  
Buenos Aires, R. A.