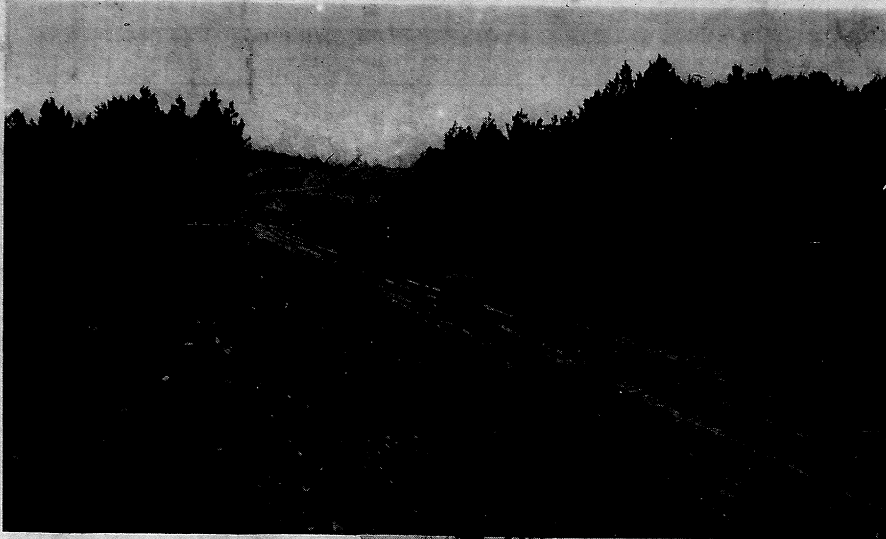


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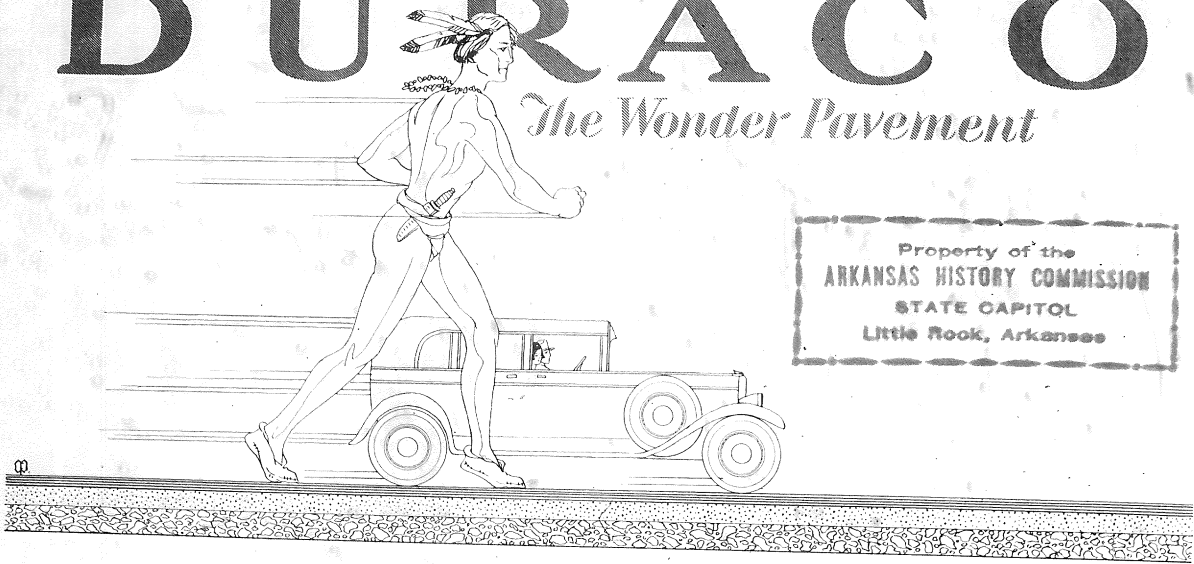
Vol. 7

MAY • 1930

No. 5

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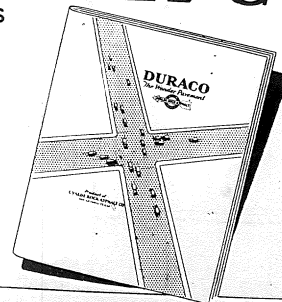
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WRITE FOR CATALOG

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 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. VII

MAY, 1930

No. 5

FLOOD DAMAGE

By Chas. S. Christian, Chief Engineer, Arkansas State Highway Department

A preliminary survey of the damage to the roads of the State Highway System in the south and southwestern districts of the State reveals the fact that approximately 1,250 miles of roads have either been completely inundated or have been seriously damaged by washing due to the torrential and unprecedented rains of Friday, Saturday and Sunday, May 16, 17 and 18.

Many streams have reached flood heights never before known in the history of the section through which they have their course. In many sections, the rains reached cloud-burst proportions, many records show a rainfall at the rate of one inch per hour for several hours resulting in a runoff from the drainage territory both unexpected and unreasonable in its volume; the result, naturally, has been that many drainage structures have been taxed beyond their capacity, overflowing the roads and cutting into them in numerous instances.

It is very difficult at this time to compute the damage resulting in dollars and cents, however, it is believed at this time that the total damage will reach approximately \$400,000. Damages considered are structures undermined and washed away, road washes, both in embankments and cut badly and scoured and surfacing material washed from the roads.

Traffic will be restored on all highways within two weeks time, with the exception of the section where the flood waters from the Ouachita, White, Arkansas and Red Rivers have covered the roads and the duration of the flood in each of these streams will naturally govern the period during which these roads will remain closed.

A force of approximately 1,000 men is now employed by the State Highway Department in restoring destroyed roadways in order to pass traffic. A complete restoration to its original condition will require about sixty days. Suitable detours are being constructed around the washed out places and destroyed points of the highways with markings to guide the traffic.

As rapidly as weather conditions will permit the efforts of this Department will be extended to the utmost to restore normal traffic conditions over the highways of the State.

CONTRACTS AWARDED

The State Highway Commission awarded contracts Thursday, May 15, calling for the construction of approximately 178 miles of highway and more than 28,000 feet of bridges at a total cost of \$2,678,702.66.

The contract for building a steel and concrete bridge across White River at Clarendon, and approximately three and a half miles of concrete trestle and earth dump approach from the western side of the river, was awarded to the Austin Bridge Company of Dallas, Texas, for \$1,532,572.50, which was the lowest bid received on the project. Ten contractors submitted bids on this project and the low bidder was approximately \$56,000 lower than his nearest competitor and the third bid was \$105,000 above the low bid.

The Clarendon bridge is the ninth and last of a group of State-owned toll bridges to be paid for with proceeds from the sale of toll bridge bonds authorized by the special session of 1928. The act authorized the sale of \$7,500,000 worth of bonds. All toll bridges will become free passageways after sufficient tolls have been collected to retire the bonds. The first bridge constructed across the Red River at Fulton, was opened to traffic a month ago. Other bridges now under construction are: White River, at Cotter, Newport and Augusta; Red River, at Garland City; Ouachita River, at Calion and Marie Saline; and Arkansas River, at Ozark.

Nearly 200 bids were submitted on the 30 projects on which the Commission awarded contracts Thursday and

with but six exceptions the low bidders received the contracts.

A list of the projects and the contractors to whom they were awarded follows:

Job No. 8128, State Highway No. 16, Van Buren County, 227 feet of timber, steel and concrete bridge over Weaver Creek and 673 feet of earth embankment approaches on the Shirley-Edgemont road, J. D. Forbett, Rogers, \$10,844.18.

Job No. 8126, State Highway No. 16, Van Buren County, approximately six miles of crushed stone surfacing on the Shirley-Edgemont road, Taylor & Taylor, Clarksville, \$5,649.45.

Job No. 7138, State Highway No. 115, Calhoun County, approximately 878 feet of reinforced concrete deck girder bridges over the Ouachita River and bottoms on the Hampton-Calion road, Peterson & Ernhart, Montgomery, Ala., \$57,134.47.

Job No. 5119, State Highway No. 16, Cleburne County, approximately four and a half miles of crushed stone surfacing on the Edgemont-Van Buren County line road, M. B. Lefler, Clinton, \$3,021.81.

Job No. 4135, State Highway No. 45, Washington County, approximately eleven and one-half miles of crushed stone surfacing on the Fayetteville-Prairie Grove road, T. L. Thogmartin & Son, \$20,556.73.

Job No. 3123, State Highway No. 8, Pike County, approximately four and a half miles of gravel surfacing on the Amity-Glenwood road, M. O. Weaver, Iowa Falls, Ia., \$5,999.17.

Job No. 181, State Highway No. 70, Monroe County, ten miles of grading and drainage structures on the DeValls Bluff-Wheatley road, Williamson & Williams, Batesville, \$65,445.97.

Job No. 10145, State Highway No. 67, Lawrence County, six miles of concrete pavement on the Hoxie-Alicia road, Porter Construction Company, Tulsa, Okla., \$87,382.94.

Job No. 11014, State Highway No. 70, Crittenden County, one and a quarter miles of concrete pavement on the Forrest City-West Memphis road near West Memphis, Hays Construction Co., Jackson, Tenn., \$24,706.16.

Job No. 5110, State Highway No. 14, Stone County, nineteen and one-half miles of gravel surfacing on the Mountain View-Independence County line road, T. L. Thogmartin & Son, \$24,695.64.

Job No. 182, State Highway No. 70, St. Francis County, approximately twelve miles of grading and drainage structures on the Wheatley-Forrest City road between Wheatley and Palestine, Yellville Construction Company, \$71,620.53.

Job No. 2124, State Highway No. 4, Drew County, approximately 549 feet of treated timber and steel bridges and 951 feet of earth embankment approaches on the Monticello-Tillar road, J. W. Covington, Benton, \$20,402.95.

Job No. 371, State Highway No. 67, Nevada County, approximately seven miles of grading and drainage structures and 105 feet of reinforced concrete



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bridge on the Prescott-Little Missouri River road, Britt & DeLaughter, Boughton, \$44,220.32.

Job No. 3126, State Highway No. 51, Clark County, approximately 752 feet of bridges over Caddo River and lowlands on the Hot Springs-Arkadelphia road, F. A. Gering & Co., Arkadelphia, \$47,692.57.

Job No. 3136, State Highway No. 67, Clark County, approximately two miles of grading on the Prescott-Gurdon road, J. S. Young, Texarkana, \$39,500.08.

Job No. 4131, State Highway No. 6, Montgomery County, approximately nine and a half miles of gravel surfacing on the Brushy Creek-Ouachita River road, Interstate Construction Company, Fort Smith, \$16,260.03.

Job No. 592, State Highway No. 17, Jackson County, approximately one and a half miles of grading, drainage structures and gravel surfacing and 284 feet of treated timber bridge on the Newport-Village road, Bunnell & Mack Constructing Company, Paragould, \$17,951.07.

Job No. 675, State Highway No. 30, Lonoke County, approximately twelve and one-half miles of grading and drainage structures on the Scott-England road, S. E. Evans, Fort Smith, \$45,767.92.

Job No. 6111, State Highway No. 10, Pulaski County approximately seven and a half miles of grading and drainage structures on the Little Rock-Perryville road, J. P. McNulty, Pine Bluff, \$23,224.15.

Job No. 8119, State Highway No. 10, Yell County, approximately 563 feet of reinforced concrete bridges and 837 feet of earth embankment approaches on the Havana-West road, M. H. Franks Construction Company, Leslie, \$51,808.61.

Job No. 8122, State Highway No. 64, Johnson County, approximately six miles of grading and concrete pavement on the Ozark-Clarksville road, Garrett Construction Company, Springfield, Mo., \$120,674.41.

Job No. 995, State Highway No. 5, Baxter County, approximately six miles of gravel surfacing on the Mountain Home-Calico Rock road. Bids will be received for furnishing approximately 7,234 cubic yards of gravel to be used on this project, Yellville Construction Company, \$5,795.77.

Job No. 5125, State Highway No. 67, Jackson County, approximately six miles of gravel surfacing on the Tuckerman-Newport road. Bids will be received for furnishing approximately 10,431 cubic yards of gravel for this job. Shultz Construction Company, Paris, \$6,693.70.

Job No. 644, State Highway No. 5, Pulaski County, approximately twelve and one-half miles of grading and drainage structures on the North Little Rock-Faulkner County line road, beginning at the end of the pavement eleven miles north of North Little Rock, B. F. Brooks Construction Company, Dallas, Tex., \$115,855.47.

Job No. 4130, State Highway No. 8, Polk County, approximately twelve and one-half miles of crushed stone surfacing on the Mena-Howard road, an Arkansas forest highway, T. L. Thogmartin & Son, Little Rock, \$27,794.20.

Job No. 2113, State Highway No. 3, Jefferson County, approximately five miles of asphaltic retread on

the Pine Bluff-Alzheimer road, R. B. Tyler Company, Inc., Louisville, Ky., \$17,091.75.

Job No. 6110, State Highway No. 70, Garland County, approximately five miles of asphaltic retread on the Hot Springs-Glenwood road, R. B. Tyler Company, \$18,321.99.

Job No. 1126, State Highway No. 2, Union and Ashley counties, approximately 1,335 lineal feet of reinforced concrete bridges in the Ouachita River bottoms on the Strong-Crossett road, Gauger-Korsmo. Construction Company, Memphis, \$117,853.29.

Job No. 11023, State Highway No. 16, Cross County, approximately ten miles of asphaltic retread on the Fair Oaks-Wynne road, R. B. Tyler Company, \$32,164.83.

HIGHWAY COMMISSIONERS APPOINTIVE

According to information compiled by the American Association of State Highway Officials, the highway commissions of every State in the Union are appointive by the Governor with the two exceptions of Michigan and Mississippi. It is maintained that the appointive method lifts the commissions out of the realm of politics and enables them to adopt and carry out programs of highway building covering a period of years. While on the other hand, under the elective system of commissions, much time is lost in acquainting the newly elected commission with the duties, plans and functions of the department and it is impossible to adopt and carry out a program of trunk highways throughout the State with connecting links in every county.

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BROADWAY AT FIFTH

Compiles Report On Highway Audit

State Comptroller Howard Reed has filed with the Governor, the State Treasurer and the Highway Commission copies of an audit of Highway Department records for the first year of the operation of the Martineau highway law, March 1, 1927, to February 29, 1928.

The comptroller made four typewritten copies of the report, which covers 1,050 pages, size 11 by 17 inches. Accountants and clerks in the comptroller's office now are engaged in completing and compiling audits of records for the second and third years of the present highway program. It is expected that audits for both years will be completed and filed before July 1, Mr. Reed said:

From one to fourteen employees have been working on the audit for the past twenty-three months, under the direction of Comptroller Reed and David H. Balfour, who made quarterly and annual audits of the Highway Department for several years before the present program was launched. He formerly was employed by the Federal Government as an accountant and was employed by the State following completion of the final audit of records at Camp Pike in 1919, where he had been in charge of the control account involving expenditure of \$25,000,000 a year in Federal funds, Mr. Reed said in a letter transmitting the report to Governor Parnell.

The audit shows total receipts accruing to the highway fund from all sources during the first year of operations under the Martineau law amounted to \$22,863,-

170.55 and that disbursements for that period totaled \$16,691,506.85.

VARIOUS RECORDS CHECKED

To obtain a complete record of sources of revenue, it was necessary to check records of the State Treasurer's office, the State Auditor's office, the State Revenue Department, the Railroad Commission, the Attorney General's office and the Highway Department.

Expenditure of every nature made from State highway funds, as revealed by records of the various disbursing and accounting agencies of the State, are shown in detail, including the date and purpose of the expenditure, the county, the amount and the service rendered.

Mr. Reed's letter of transmission said his department, in conducting the audit, adopted the same methods and plans used in checking activities of all other institutions, departments and agencies of the State, as well as 45 counties now being audited annually.

LETTER OF TRANSMISSION

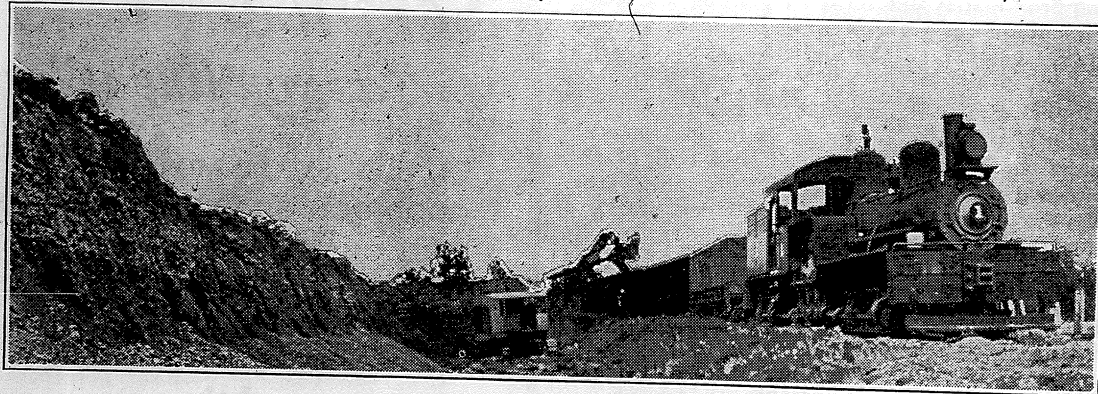
The letter said, in part:

"We submit to you and the taxpayers of the State a true and correct statement as revealed by the records mentioned above, that you and they may arrive at such conclusions as appear justified from a full statement of the facts and figures.

"We have no apologies of any nature to offer for this report, and stand ready to support all figures and sched-

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ules with the records of the various departments. These reports have been made possible by reason of a deficiency proclamation issued under authority of your office in the sum of \$11,000, which represents the total additional cost of the three-year audit to the people of the State. (Part of the work has been done by regular employees of the comptroller's office during the past two years.)

"We feel that upon completion of the third year of this report it will be of material assistance to the Highway Commission in a final solution of the question of parity between counties, as the fourth year of the program, which we now are entering, represents the last year of the original plan.

"From this information, should the commission be unable to arrive at absolute parity, the Legislature in January, 1931, will be in a position to plan for the future program of the State, and to correct in their plans any equalities or injustices, should any develop between the counties, and to supply them with correct and detailed information that they may intelligently plan for the future. It has been the constant aim of this department in compiling these figures to show the receipts and cost of operation of the Highway Department in such a manner that any citizen without accounting experience may thoroughly understand all details of the financial operation of that department."

Consolidated Statement of Receipts and Disbursements of Highway Office

This table gives a consolidated statement of receipts and disbursements by the Highway Department for the fiscal year ended February 29, 1928.

RECEIPTS			
Automobile License (Tax)		\$ 3,325,330.44	
Gas and Oil (Tax)		4,662,568.01	
Motor vehicle bus (Tax)		13,245.04	
Chauffeurs' license, transfers, etc. (Fees)		46,027.60	
Total revenue from license tax and fees			\$ 8,047,171.09
Fees, Land Office		9,374.11	
Total fees, Land Department			9,374.11
Refunded by paying agencies		112,179.21	
Erroneous and overpayments			112,179.21
Proceeds from sale of notes		13,235,625.00	
First issue, June 1, 1927			13,000,000.00
Premium on issue, June 1, 1927			235,625.00
Received from R. I. D. balances		205,059.53	
As per provisions as per Act No. 112 of 1927			205,059.53
Received from U. S. Government		1,285.58	
5 per cent sale of public land			1,285.58
Refunds on vouchers, bad checks, etc.		2,871.80	
Overpayments on vouchers, bad checks collected, sale of junk, and dividend defunct bank			2,871.80
Total receipts into State Highway Fund		\$21,613,566.62	\$21,613,566.62
Received from U. S. Government		\$ 454,186.92	
Federal Aid roads			454,186.92
Advances, county aid (banks)		\$ 795,417.01**	
Counties, municipalities and tolls			795,417.01
Total receipts		\$22,863,170.55	\$22,863,170.55
DISBURSEMENTS			
Administrative expense		\$ 251,189.05	
Maintenance, roads		2,483,397.31	
Bonds and interest R. I. D. bonds		6,237,749.58	
Bonds and interest paid by R. I. D.		205,059.53	
Bonds and interest overpaid (refunds)		112,179.21	
Interest on highway notes		292,500.00	\$ 9,582,074.68
Highway attorney and steno. (atty. gen. office)		5,100.00*	
Expense collecting bus tax, R. R. Com.		10,748.36*	15,848.36
Construction of roads (state aid)		7,514,109.58	
Return to counties (county roads)		1,288,854.75	8,802,964.33
Revision of records, Land Office		6,600.00*	
Expense Legislature Commission		3,543.00*	
Omnibus deficiency		8,344.56*	18,487.56
Refunds, gas and oil tax (Revenue Department)		405,361.14*	405,361.14
Total disbursements out of highway fund		\$18,824,736.07	\$18,824,736.07
Construction of roads, Federal Aid		283,870.23	
U. S. Government aid on State roads			283,870.23
Disbursed, county aid (banks)		582,900.55**	
County aid roads			582,900.55
Total Disbursements		\$19,691,506.85	\$19,691,506.85

*—Disbursements, supporting the expense of highway attorney, collection of bus tax, revision of records in Land Office, expense of Legislative Commission, omnibus deficiency of 1927, and the refund of gas and oil tax, are for the period of one year ending June 30, 1928.

**—Calendar year, January 1, 1927 to December 31, 1927.

When the Martineau law was passed the fiscal year of the Highway Department was changed from the customary period, July 1, to June 30 of the following year, to extend from March 1 to February 28, to avoid delay of four months in launching the new program. Mr. Reed said this difference in fiscal periods complicates the records considerably and that his office will recommend to the next Legislature that special appropriations to be made to carry on the department's work from March 1, 1931, to June 30, and that the regular biennial appropriations be based on the customary fiscal period, beginning July 1 of each year. The 1929 Legislature separated the Land Office from the Highway Department.

Assisting Mr. Balfour in making the audit were the following examiners or accountants: Charles M. Clerget, J. B. Owens, Vincent Addy, L. G. Selig, Clyde Connelly, A. S. Williams and J. E. Bain.

These examiners submitted with the report a brief summary, pointing out salient features of the audit and provisions of the highway laws.

AUDITORS' SUMMARY

This summary said substantially:

Revenue receipts to the State highway fund during the year, March 1, 1927, to February 28, 1928, totaled \$8,056,545.20, of which the gasoline and oil tax amounted to \$4,662,568.01; auto license tax, to \$3,325,330.44; bus tax to \$13,245.04, and fees from the land office and auto division, to \$55,401.71.

Non-revenue receipts to the highway fund came from proceeds of bond sales, deposits made in the State treasury by road improvement districts, refunds of vouchers and overpayments of bonds and interest, and from receipts from the United States Government. Non-revenue receipts for the fiscal year ended February 29, 1928, totaled \$13,557,021.42. The first bond issue of June, 1927 (\$13,000,000) brought a premium of \$205,059.53 and refunds of overpayments and adjustments of payments on road improvement districts bonds and interest amounted to \$115,051.01. Receipts from the Federal Government from sale of public lands amounted to \$81,285.88 and Federal aid for highways totaled \$454,186.92.

In addition to revenue from taxes and fees and the non-revenue receipts from sale of bonds and refunds, the Highway Department had at its disposal during the year \$1,219,316.16 representing tolls from the Harahan viaduct, and advances from counties and cities deposited in banks to be disbursed by the department. Of the total funds from such sources handled the first year of the present program, \$423,899.15 was on hand in banks January 1, 1927; deposits and transfers during the year amounted to \$795,417.01, and expenditures by bank vouchers totaled \$582,900.55.

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ADMINISTRATIVE EXPENSES

Of the \$275,000 appropriated for administrative expense, \$251,189.05 was disbursed as follows:

Salaries, regular	\$103,693.30
Salaries, extra help, tags	8,565.79
General office expenses and supplies	46,166.64
Expense of Commission	3,929.30
Expense of Hon. Commission	378.00
Travel expense of office employees	3,910.27
Premiums on bonds and insurance	3,054.52
Printing, auto division	6,941.65
Auto tags, badges, etc.	45,338.41
Office equipment	2,211.17
Total expended from administrative appropriation	\$251,189.05

The 1927 appropriation for repair and maintenance of roads was \$2,500,000. Of that amount the Little Rock office disbursed \$1,224,311.87 and the ten district offices disbursed \$1,259,055.44, making total disbursements of \$2,483,397.31 from the maintenance appropriation, as follows:

Labor, ten district offices	\$1,154,995.02
Salaries, ten district offices	104,090.42
Salaries, Little Rock office	123,513.35
Special services	1,034.00
General supplies and expense	210,868.80
Expenses of engineers, inspectors, et al.	29,487.08
Premiums on bonds and insurance	659.82
Materials for roads	172,264.73
Gas and oils	246,859.52
Equipment	210,841.40
Stock shop	228,783.17
Total expended from appropriation for maintenance of roads and bridges	\$2,483,397.31

The appropriation for construction for the fiscal year ended February 29, 1928, was \$13,000,000 of which \$7,514,109.58 was expended as follows:

Labor, ten district offices	\$1,683,858.55
Salaries, Little Rock office	125,145.30
General supplies and expense	587,681.06
Expense of Engineers, et al.	147,576.38
Premiums on bonds and insurance	427.65
Materials for roads	473,411.43
Gas and oils	64,622.79
Bond expense	25,219.34
Injured employees	18,000.00
Expense of right-of-way	3,792.67
Equipment	249,447.32
Estimates paid (contracts)	4,134,932.09
Total expended for construction of roads and bridges	\$7,514,109.58

Expenditures of Federal aid funds from the \$454,186.92 available during the fiscal year are shown in the following table:

Salaries of engineers, et al.	\$ 17,906.09
Expenses of engineers, et al.	2,698.34
General supplies and expense	19,526.45
Material (roads)	17,572.47
Gas and oils	543.04
Equipment	30,950.71
Estimates paid (contracts)	194,550.13
Total, expended from Federal aid fund	\$283,870.23

OUTSTANDING BONDS

The schedule of bonds and interest set up in the report showed that \$64,165,100 in road improvement district bonds was outstanding as of January 1, 1927, and that interest on these bonds between that date and maturity would amount to \$34,600,618, making a total of \$98,765,718 road district indebtedness assumed by the State

During 1927 the State paid on district bonds, \$2,-803,425; interest on district bonds, \$2,744,082; charges and claims, \$22,625, or a total of \$5,570,132. Road districts paid during the same period \$815,878, making a grand total of \$6,386,010 paid on district indebtedness during the fiscal year.

The appropriation for that year for payment of interest on State highway notes was \$585,000, of which only half was used, leaving \$292,500 to be carried forward to the next fiscal year.

The appropriation for county turnback was \$1,288,-854.75 and all that amount was disbursed to be used by county judges on local roads.

Unexpended appropriations for all purposes were carried forward at the end of the fiscal year into the appropriations for similar purposes for the succeeding year.

The balances (January 1, 1927) in banks to credit of deposits by counties for road aid as revealed by check of general ledger was \$423,899.15, and the receipts from counties, cities and tolls of Harahan viaduct for the calendar year was \$795,417.01.

The analysis of bank vouchers for the year shows \$582,900.55 disbursed and transfers and refunds to

amount of \$30,044.78 leaves balance on deposit in banks on January 1, 1928, \$606,370.83.

The bank vouchers analyze as follows:

Salaries of engineers, et al.	\$ 34,596.30
Expenses of engineers, et al.	2,692.27
General supplies and expense	59,729.41
Materials (roads)	37,085.64
Legal services	2,000.00
Equipment	1,774.31
Deposits and refunds	37,841.55
Estimates paid	407,181.07
Total bank vouchers	\$582,900.55

The report said the accounting system and office methods of the Highway Department, as installed by the comptroller's office several years ago, have been enlarged and modified to meet changed conditions, and that the records are well kept and reveal the true financial affairs of the department. Accountants said they received full co-operation of employees of the Auditor's office, Treasurer's office and the Highway Department.

— o —

Wasn't This Originally a Scotch Joke?

"Brother Jones," said the deacon, "can't you-all donate some small contribution to de fund for fencing in the cullud cemetery?"

"I dunno as I can," replied Brother Jones. "I don't see no use in a fence around a cemetery. You see, dem what's in there can't get out, and dem what's out sho' doan wanta get in."

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The more it is used the greater the value of properties abutting thereon.

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MEMPHIS, TENN.

Legible, Well-Placed Markers Distinguish Good Highway Construction

By James R. Griffith

Professor of Structural Engineering, Oregon State Agricultural College, Corvallis

In "Principles of Highway Engineering," Wiley has remarked, "The test of good marking is whether a total stranger can follow the route, using reasonable care, without hesitating or getting off of it." With the universal advent of the gas tax, the above criterion becomes more important, for the traveling public pays the bill.

I presume that highway markers came into existence when local inhabitants became tired of answering questions. As a boy I remember being guided on periodic bicycle trips by, what were then, adequate highway markers. We had plenty of leisure, while riding past, to read the sign directing us to our destination. The same signs were still adequate for travel in the one-cylinder Oldsmobile for which we purchased gasoline at the drug store.

Two items appear to me to be the essential factors governing the design of highway markers. These are: (1) speed of traffic, (2) congestion of traffic. Apply these factors to the criterion stated by Wiley and the formula is complete.

Let us assume that the driver is conservative and slows down to twenty miles an hour when approaching a marker. If that marker requires five seconds to read it should be legible during 147 feet of travel. Reduce

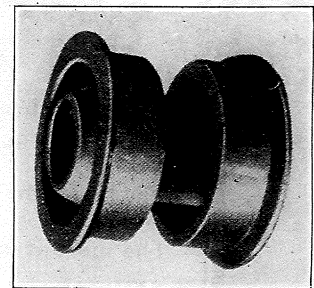
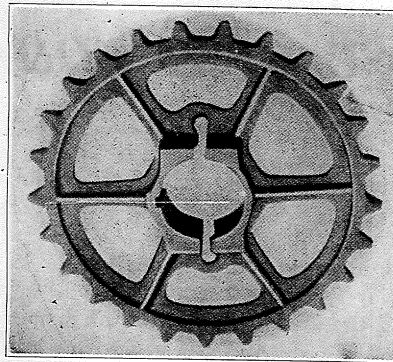
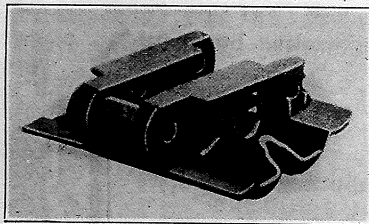
the safe time of reading by traffic congestion and you have the second factor.

The auto traveler of today has an opportunity, in the chaotic systems of marking to observe every known type of marker. In most cases the only factor used seems to be originality. In one Western State which is provided with plenty of markers, I found a type of marker adequate for only slow moving traffic. I frequently had to get out of the car in order to get close enough to the sign to read it. Legibility of this type of marker at night is of course greatly reduced.

There are three types of markers: (1) directional, (2) warning, (3) informational, and combining any of these into one marker adds to confusion.

Chicago has an informational marker, an architectural monument in metal, on Michigan Avenue at Jackson Boulevard. I have often wondered how many tourists have seen it, or hesitated and read it. The stranger does well to watch traffic at that location if he values his life and car.

The system of highway markers, now adopted in principle by many States, is by far the most adequate for present traffic conditions. This consists in a route number large enough to be easily read at any speed during



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day or night and turn warnings, independent of the number, given by letter or arrow.

The type of marking is, however, not sufficient by itself. Care should be exercised in the placing. Ample warnings of turns and verification after the turn is made are just as important. I well remember when driving from Detroit to Chicago the confusion of sign numbers at a major intersection in one city. While passing I was unable to find the number I wanted among all those posted. So I had to circle a block and come back for another look. Traffic congestion at intersections certainly warrants a warning. The worst congestion requires the most important warnings.

Many cities are lax in the placing of markers. A number placed in a location such that it can be blocked by parked cars is of no value. Many cities, too, seem to consider that marking of turns is adequate. Possibly it is adequate if the driver has not missed seeing the marker because of traffic interference. Because of the many systems of traffic control, the stranger has his hands full trying to observe the local law without searching for highway markers in obscure places. Reasonably frequent markers give constant assurance of the route. The better marked cities provide a marker in each block, yet there are States where a marker will not be found in a stretch of thirty miles. A tourist camp acquaintance once told me that he was forty miles beyond a turn before he discovered his mistake. I made this same turn only because I had my map in front of me and knew my approximate position by dead-reckoning. I have several times wished for a sextant with which to take a "Summer Line shoe and get a fix."

A detour deserves as good if not better marking as the main highway. But how few States provide adequate detour markings! I once came to a stretch of road realignment on the Lincoln Highway which had been opened to traffic with the markers still on the old road, and with not a gas station or traffic policeman within twenty miles of whom to ask questions.

Many highway officials will, of course, say that their signs are adequate for their speed laws. In fact, I know one highway engineer who advocates designing curve superelevations for local maximum legal speed of thirty miles an hour. Since many towns still have speed laws of ten miles an hour this contention may be true enough.

GASOLINE TAX SHOWS INCREASE

According to an announcement of David A. Gates, State Revenue Commissioner, gasoline tax collections for the month of April amounted to \$537,720.67 which amount represents an increase of \$135,000 over April, 1929.

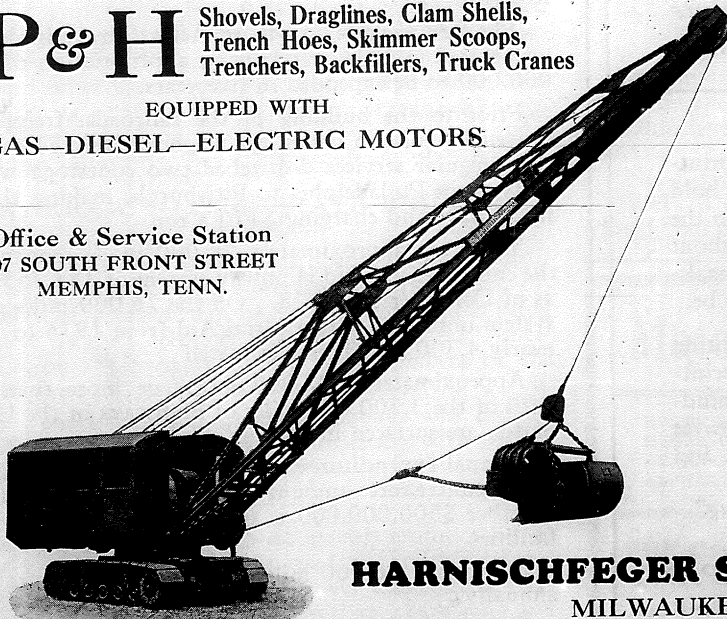
Approximately \$450,000 of the tax was paid by a dozen of the larger dealers during the past month. Payments included the following: Standard Oil Company, \$132,595; Magnolia Petroleum Corporation, \$68,840; Root Refining Company, \$46,510; Louisiana Oil Refining Company, \$53,528.56; Gulf Refining Company, \$43,471; The Texas Company, \$27,937; Continental Oil Company, \$26,066; Lion Oil Refining Company, \$20,506; Pierce Petroleum Company, \$14,622; Kettle Creek Refining Company, \$11,686.45; Transcontinental Oil Company, \$11,025.

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Arkansas, Missouri Adopt Fee Truck Plan

Difficulties Over Licenses To Be Eliminated By Amendment Between States

An amendment has been adopted to the reciprocal automobile license agreement between the States of Arkansas and Missouri which it is believed will eliminate any further inconvenience to business men of the two States operating motor trucks across the State line.

The amendment, approved by officials of the two States and Blytheville business men, in a conference held at Little Rock, is really a clarification, rather than a change in the agreement adopted last fall.

The amendment reads as follows:

"All trucks owned and operated by an individual, firm or corporation, hauling their own merchandise to, from and through the States of Arkansas and Missouri, shall operate said trucks if properly licensed under the laws of their home State. Any driver or operator of the trucks exempted above may drive or operate said trucks if he is licensed to drive or operate trucks in his home State."

Under this amendment, no exemption from license requirements is granted operators of trucking or dray lines who haul freight for others, but an informal agreement was reached under which such trucks making not to exceed one trip a month over the State line will not be required to buy licenses in both States.

HIGHWAY FACTS

New Jersey established the first State Highway Department in 1891.

New York State was the first to license motor vehicles, beginning in 1901, and collecting \$954 that year.

There are 6,579,826 miles of highways in the world, of which 3,000,000 are in the United States. This compares with 764,238 miles of steam railways in the world.

Governmental studies indicate that it costs an average automobile approximately 2.06 cents more per mile to drive on an earth road than on a hard-surfaced road.

The first important road in the United States was the old York Road between New York and Philadelphia, established by the colonies in 1711. The first company incorporated to build and operate a toll road was the Philadelphia and Lancaster Turnpike Company. It was incorporated in Pennsylvania in 1792 and had a road from Philadelphia to Lancaster, a distance of 62 miles. This was later taken over by the State in the public interest.

Federal road building for other than military purposes began with the "National Pike" or "Cumberland Road," said to have been the original conception of General Washington. On March 28, 1806, President Jefferson signed the bill appropriating \$30,000 for a preliminary survey, and actual work was begun not long after.

The predecessor of the present U. S. Bureau of Public Roads was the Office of Road Inquiry, established in the Department of Agriculture by the Act of March 3, 1893. The name was changed to Office of Public Roads in 1901.

The first Federal Aid Road Act as now administered was passed in 1916, carrying an appropriation of \$75,000,000 to be expended in five years.

Prior to the building of the railroads, freight was moved by road in conestoga wagons. In 1819 one of these regular services dispatched two conestoga wagons daily from Philadelphia to Pittsburgh, making the trip in 12 days and charging \$120 a ton.

There are approximately 20,000 grade crossings on the entire Federal Aid Highway system of 187,753 miles as of December 31, 1928. On the 76,000 miles of the system improved with Federal Aid from 1916 to 1928, nearly 4,300 have been eliminated.

Approximately 627,000 miles, or more than one-fifth of the 3,000,000 miles of highways in the United States, are surfaced in varying degree.

Annual expenditures for rural highway construction and maintenance amount to about \$1,500,000,000. Another \$500,000,000 is spent by the cities for street facilities.

More than 50,000 miles of new highways are built annually.

The highest motor road in the United States is on Pike's Peak in Colorado, 14,109 feet above sea level.



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Heavy Rainfall Causes Damage To Highways

Heavy rainfall throughout the State during the first week of May damaged the roads to the extent of an estimated amount of \$120,000. There was no single stretch of road or structure damaged to any large degree, the damage consisting mainly of shoulder washes, filled ditches, gravel washings and washings at bridge approaches. In many cases the amount of damage was minimized by the fact that bridge approaches were ripped. The amount of damage suffered by highways in the western division was considerably larger than that of the eastern division due to the hilly contour of the land. Generally speaking, there was no hindrance to traffic, the damage consisting mainly of minor items spread over the entire highway system.

As we go to press, the damage caused by the torrential rains which fell during the week of May 12-18 has not been estimated due to the fact that water is still standing over the highways in many places, but it is assumed that the amount will greatly exceed the amount of damage caused by the previous rains.

Bus service, railroad, telegraph and telephone service was demoralized. All roads leading to Camden and several other smaller cities were temporarily closed. Water stood over the approach to the new half million-dollar bridge at Fulton over the Red River, fourteen miles west of Hope. Several small wooden bridges were washed out and some bridge approaches were damaged. A score of highways in southern and southwestern Arkansas were rendered impassable and it was necessary in many cases to re-route traffic temporarily. Highway No. 70 at the Brasfield cut-off became impassable when flood waters overflowed the road, and traffic from Little Rock to Memphis was detoured by way of Des Arc and Cotton Plant. No. 70 was also under water east of Wheatley.

Repair work on the highways is being rapidly pushed by the Highway Department and reconstruction of damaged bridges, the filling of washouts on secondary highways and other necessary repair work will be completed as rapidly as possible and as the water subsides sufficiently to permit them to make repairs.

WARREN TO CELEBRATE BRIDGE OPENING

The celebration of the official opening and the dedication of the Saline River bridge on Highway No. 15, just north of Warren, will be held June 13 and is being sponsored by the Herbert B. Martin Post No. 32, American Legion. Governor Parnell and members of the State Highway Commission plan to attend.

The June issue of Arkansas Highways will contain a detailed account of the celebration along with photographs and a history of the bridge.

The shortest and narrowest paved motor road in existence is believed to be the road on Smith's Island, one of the little islands in the lower Chesapeake Bay, near Crisfield, Maryland. It is less than a mile long and just wide enough to permit the passage of one motor car at a time.



Klumseigh obtained a job as packer in a china warehouse. On the third day he smashed a big vase. On pay day he was called into the manager's office and was told that half his wages would be deducted each week until the vase was paid for.

"How much was the vase worth?" he asked anxiously.

"About \$300," replied the manager.

"Hurrah!" shouted Klumseigh.

The manager stared. "Why the merriment?"

"Well," said Klumseigh, "it looks as if I've got a steady job at last."—*Brooklyn Eagle*.

Employer (to applicant for a position, who has handed in testimonials from two ministers): "We don't work on Sundays. Haven't you a reference from someone who sees you on week days?"—*Hardware Age*.

Politician: "Congratulate me, dear, I got the nomination."

His wife: "Honestly!"

Politician: "Why bring that up?"—*Hardware Age*.

Have you heard the one about the Scotchman who was given a pair of spats and then went out and had them half-soled?—*Laffagaz*.

Madge: "How are you getting along with your automobile lessons?"

May: "Wonderfully! Today I learned how to aim the thing."—*Hardware Age*.

An Emporia man's car struck the rear of a car driven by a woman.

"Didn't you see me stick out my hand?" the woman asked.

"No, I didn't, Miss," he replied.

"Well, if it'd been my leg, you'd have seen it," she replied, and drove away. —*Wall Street Journal*.

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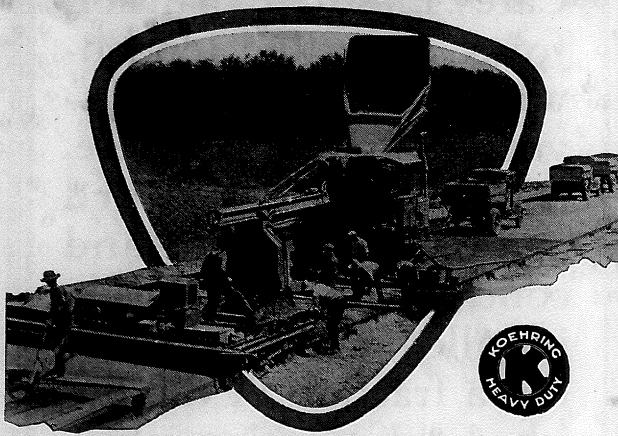
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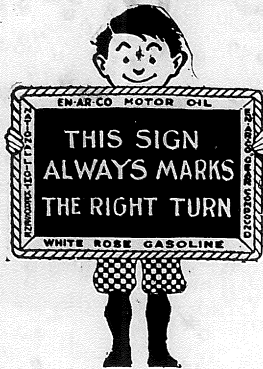


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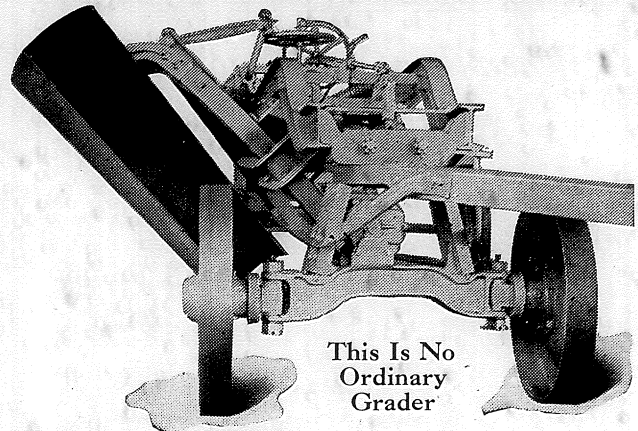
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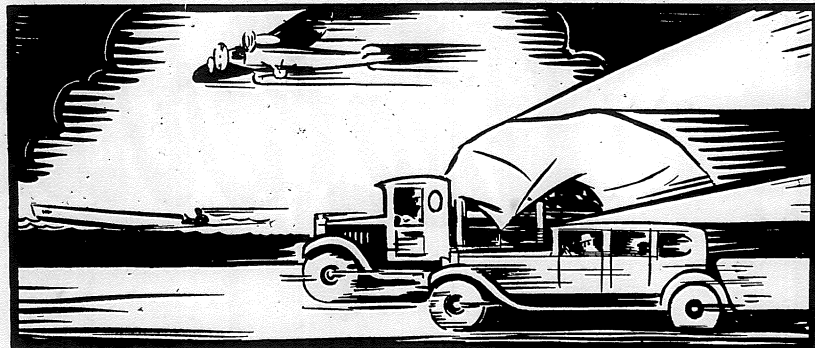
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An improved, dependable, powerful fuel for modern motors.

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This tough, enduring lubricant makes motors run better and last longer.

STANDARD OIL COMPANY of LOUISIANA



Refining A Super Service Institution

or What Constitutes A Good Railroad

STANDING STILL now-a-days is equivalent to going backward for almost everything is moving forward more and more rapidly and the person or the institution that stands still soon is left far in the rear of the procession. It is fortunate for America that great changes have occurred, especially in transportation and communication and particularly in railroading.

☐ These changes involve not only the courageous work of railroad managements in developing the railroad transportation plant and the marked increased efficiency with which our railroads are operated but also are noteworthy insofar as is concerned the attitude of the public toward the railroads and the attitude of the railroads and railroad employes toward the public.

☐ It is only a few years since the railroads announced a policy of unusual service. Their sincerity soon was demonstrated and quickly was accepted as a matter of course. That era was quickly followed by the present one. Efforts of railroad men now are directed toward further refinement of super-service institutions.

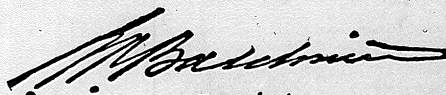
☐ "What constitutes a GOOD railroad?" is a question easily answered now. A GOOD railroad of course is one that has built up and is maintaining a splendid physical condition. But a GOOD railroad is much more than

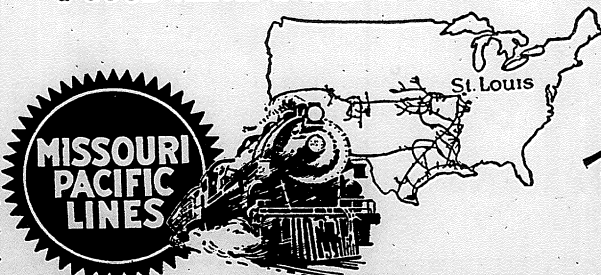


that! A GOOD railroad is one that collectively as an institution and individually through its officers and men and women lives up to what we are pleased to term the highest ideals of good citizenship. And that means more than merely supporting the government and obeying the laws. At least, so far as railroads are concerned, it does. It means recognition of the duty of all to participate in any worthy civic enterprise and aid wherever possible in the further development of our country—agricultural, industrial, economic, social and spiritual.

☐ The Missouri Pacific Lines as an institution and the entire army of nearly 65,000 employes of the System have a complete realization of the obligation and a clear vision with which to face the future. The Missouri Pacific Lines are the answer to the question, "What Constitutes a GOOD Railroad?" And with the understanding and help of the public we will make it an even better and greater one.

I solicit your co-operation and assistance.


President

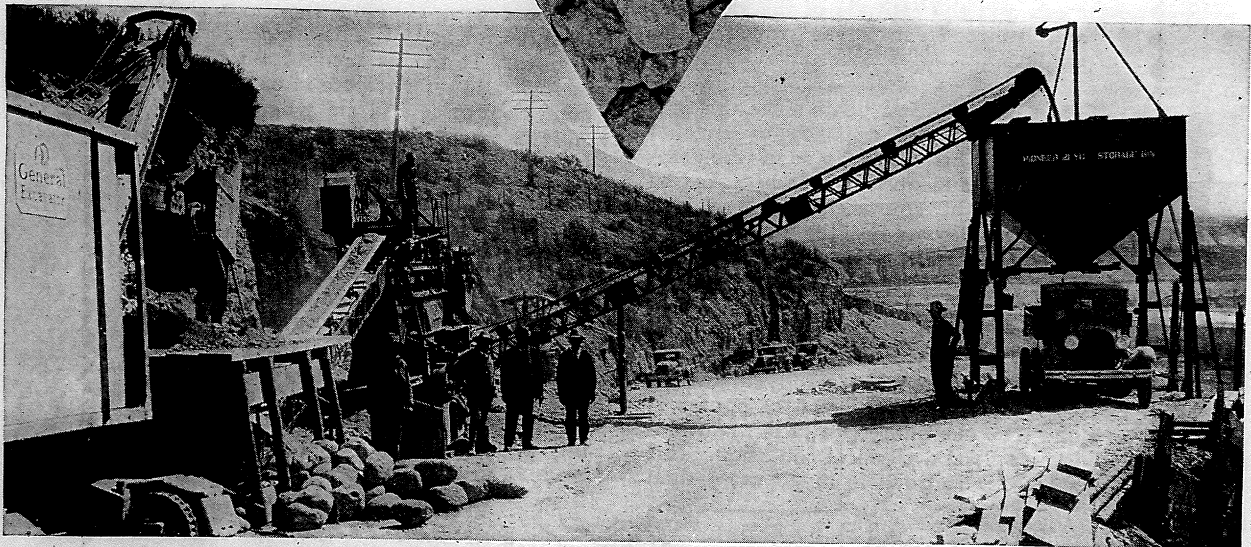


"A Service Institution"

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