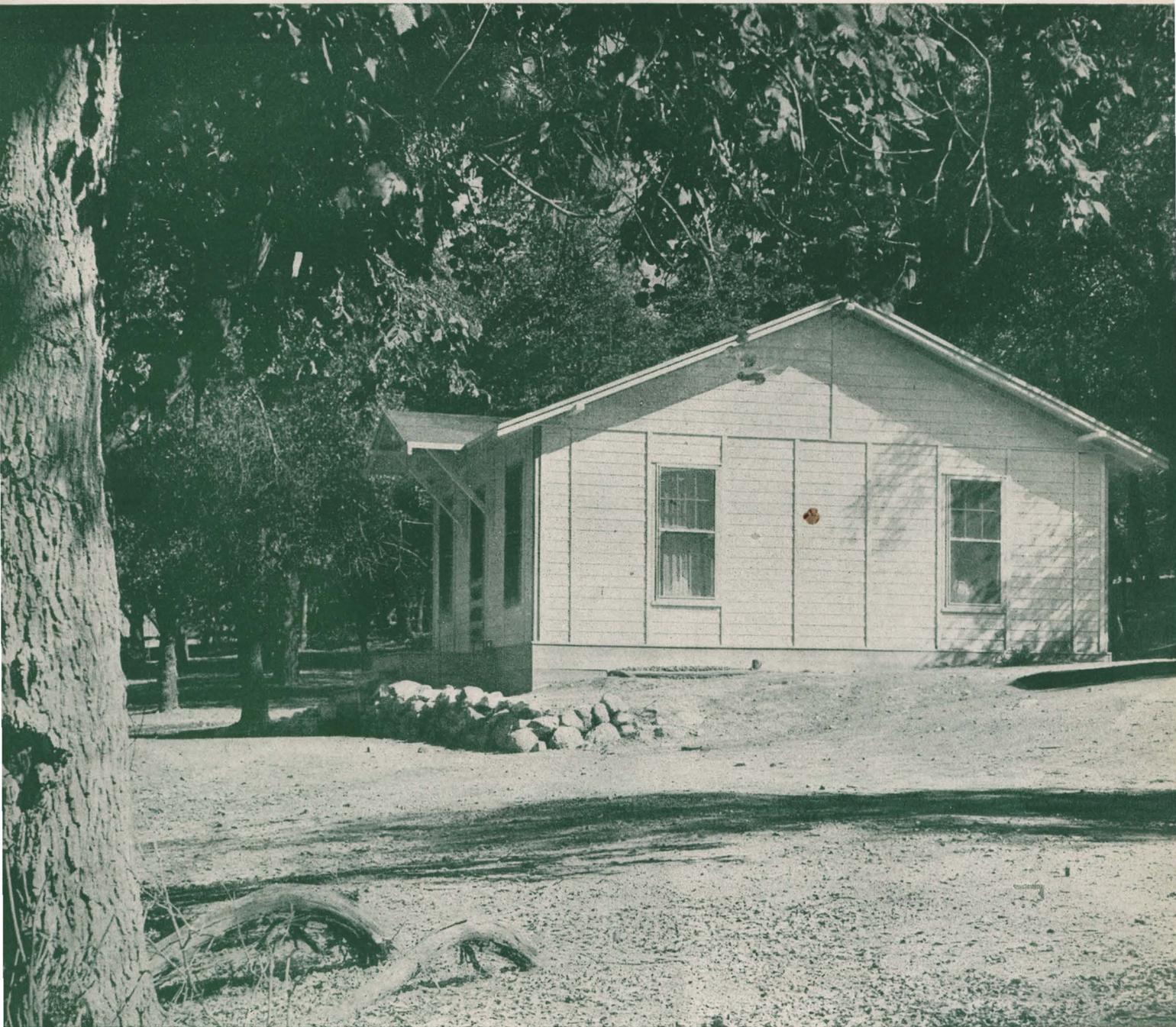


Arizona Highways



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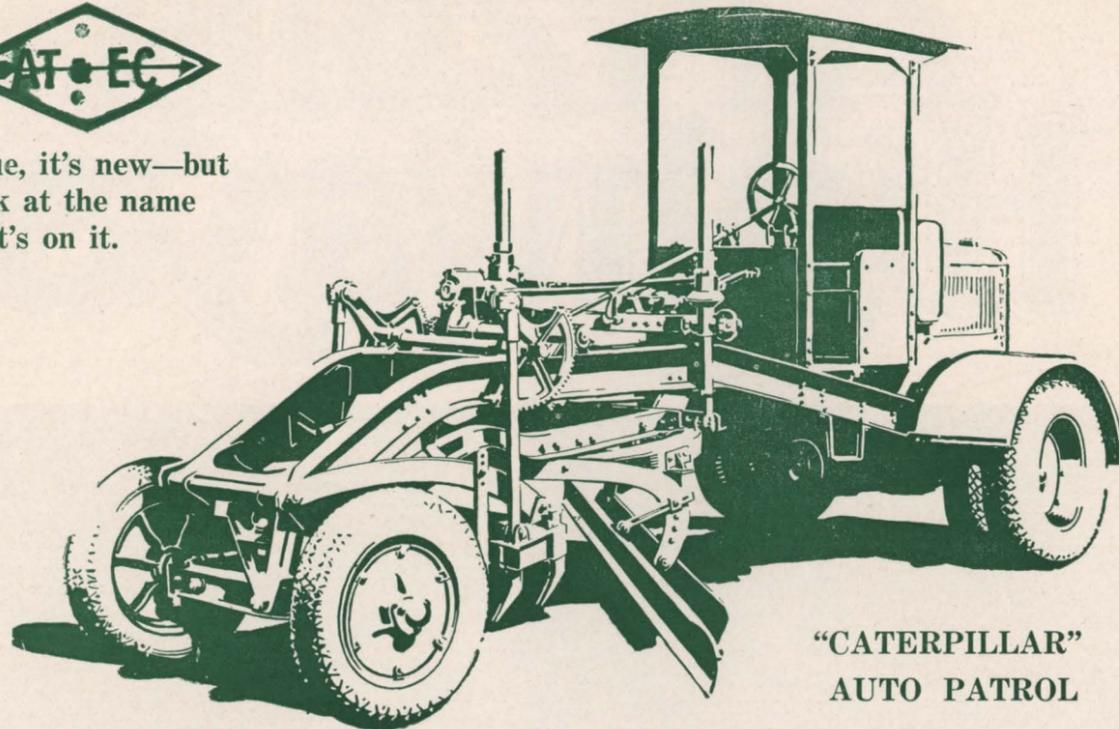
Volume 7
Number 9

September

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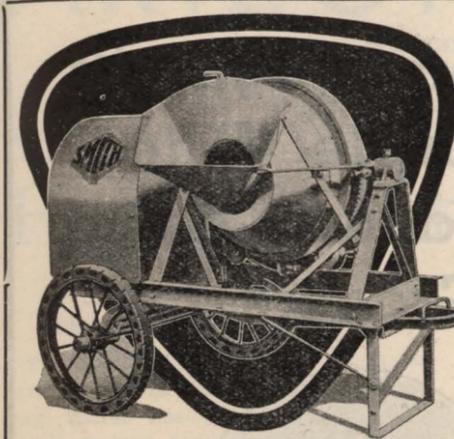
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Arizona Highways

September, 1931

Table of Contents

HIGHWAY PATROL GETS DOWN TO BUSINESS.....	Page 3
By James M. Hall, Patri Superintendent	
TRAFFIC IS BIGGEST POLICE PROBLEM.....	4
By Prof. August Vollmer	
ARIZONA SETS EXAMPLE IN COPPER PLATES.....	5
LABORATORY BUILDS MORTAR TEST ROOM.....	6
By Julian Powers, Engineer of Materials	
EQUALITY IN OUR TRANSPORTATION INDUSTRY.....	7
By Byrle A. Whitner	
RAINS CAUSE MAINTENANCE WORRIES.....	8
By Harry Duberstein, Ast. Maintenance Engineer	
EDITORIAL	10
THERE IS SAFETY IN SIGNS.....	11
By E. V. Miller, Engineer of Plans	
COMMISSION HAS BUSY AUGUST SESSION.....	12
STATE PROJECTS UNDER CONSTRUCTION.....	20
BUREAU OF PUBLIC ROADS PROJECTS.....	22
ROAD CONDITIONS IN ARIZONA.....	24

ADVERTISERS

APACHE POWDER COMPANY	Page 1
ARIZONA TRACTOR & EQUIPMENT CO.	Cover
BABBITS, GENERAL MERCHANTS	24
H. M. CLARK OFFICE SUPPLY CO.	22
BEN D. COOLEY	23
CALIFORNIA CORRUGATED CULVERT CO.	15
CORVA CEDAR PRODUCTS CO.	24
GILMORE OIL CO. OF ARIZONA	21
W. & L. E. GURLEY	21
GLOBE HARDWARE COMPANY	23
VIC HANNY CO.	22
HEINZE, BOWEN & HARRINGTON, Inc.	24
HULSE & DICK	24
INTERNATIONAL HARVESTER COMPANY	13
MOMSEN, DUNNEGAN & RYAN	20
PAVING DEVELOPMENT & SALES CO.	17
PACKARD PHOENIX MOTOR CO.	19
PHOENIX BLUE PRINT CO.	22
PRATT-GILBERT HARDWARE CO.	1
RIO GRANDE OIL COMPANY	21
ROME MANUFACTURING CO.	2
RONSTADT HARDWARE & MACHINERY CO.	19
THE O. S. STAPLEY COMPANY	2 and 19
SEASIDE OIL COMPANY	23
SHELL OIL COMPANY	25
THE COLORADO BUILDERS SUPPLY CO.	20
VEATER & DAVIS	19
WESTERN METAL MANUFACTURING CO.	15

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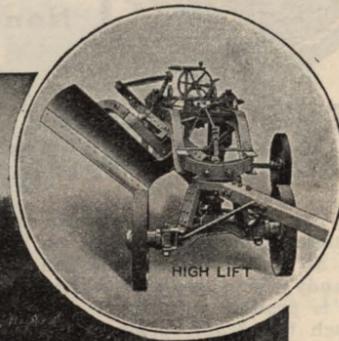
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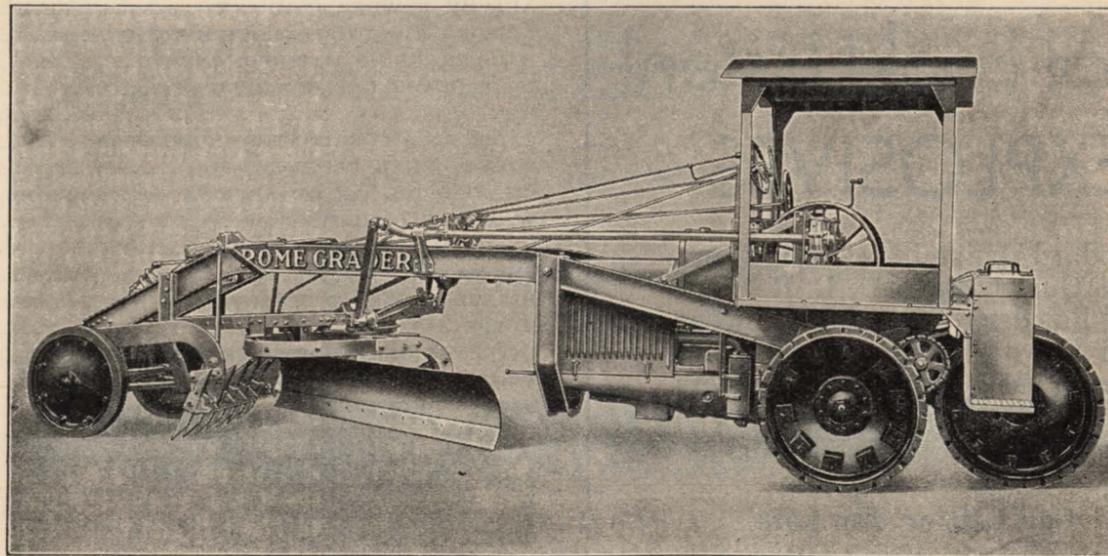
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Volume VII.

SEPTEMBER, 1931

No. 9

Highway Patrol Gets Down to Business

By JAMES M. HALL

Highway Patrol Superintendent

The proof of the pudding is in the eating. Arizona's newly organized Highway Patrol has justified itself as a highly trained body of officers in their first month's operations on the highways of the state. Averaging the citation of one motorist, for some infraction of the state's motor vehicle laws, every 20 minutes of the working day for each patrolman on the highway has been their enviable record from August 3, the day they took to the highways, until August 31.

The fact that these fourteen patrolmen were able to step into their duties in patrolling the highways of the state and set such a high record for their first month's operations proves conclusively two things. First, the wisdom of the month's intensive training which they were given previous to their taking up their duties on the highways. Secondly, the great need for these patrolmen to enforce the motor vehicle laws of the state, which the public were ignoring in many phases.

In every county of the state the effect of having this handful of state patrolmen on the highways is showing in the operation of the motor vehicles. During the month they inspected 1894 cars for defective lights and brakes and cited the operators to get them properly adjusted. A few months of such operation and the glaring headlights that have been so apparent on our highways, and that have been the cause of many accidents, will surely cease to exist.

Foreign Licenses Detected

Citations were issued to 515 operators of foreign licensed vehicles that should have had Arizona licenses. These operators that were cited to properly register their cars were residents of Arizona that should have had Arizona licenses on their cars but were operating cars with licenses from other states. Their length of residence in this state ranged from one to 15 years and one operator of such improperly registered car had been a resident of Arizona for the past 30 years. The big majority of these cars had California registra-

tion. Texas licenses were second and the balance came from most of the states of the Union.

Improper Registrations

Improper registrations caused 448 citations during the month. The majority of

Safety Congress Opens In Chicago October 12

The most important general conference of the year for the consideration of safety problems of municipalities, and especially relating to street and highway traffic, will be held at The Stevens Hotel in Chicago from October 12 to 16 as an important part of the Twentieth Annual Safety Congress and Exposition.

This program will include special sessions on Community Safety, Street and Highway Traffic, a four-day Traffic School, a Traffic Demonstration, and a Traffic Observation Tour. There also will be related sessions on Child Education; Home Safety; Delivery, Taxicab and Bus; and a consideration of public safety in the sessions of the Electric Railway, Steam Railway, and Public Utilities sections.

Interest in these sessions has been quickened by our steady national increase in accident fatalities, with a total of 99,000 for 1930—32,500 of which were automobile fatalities.

There will be hundreds of delegates from municipal and state and government departments, and the speakers will include many national authorities in their respective fields. The program will center in the sessions of the Street and Highway Traffic Section, which is one of the most important and most rapidly growing co-operative Sections of the National Safety Council. This program will begin on Monday afternoon, the first day of the Congress and will carry through until Friday noon, the last day of the Congress.

WHEN OPTIMIST NEEDS OPTICIAN

An optimist is a guy who thinks his wife has quit cigarettes when he finds cigar butts around the house.—Fritz-Cross Service.

these offenders were cases where commercial cars bore pleasure car licenses. Checking of these infractions is one of the hardest tasks that confronts the Highway Patrol due to the conflict of the old law and the new regulations that took effect on June 13 of this year. Many cars were registered before the taking effect of the new law and their registrations are good for the remainder of the year.

Cars being operated without license plates, or with windshield stickers that were past the 10 day period granted for the securing of registration, brought 1030 citations requiring the immediate licensing of the vehicles. Other infractions of the vehicle law caused 3387 reprimands from the patrolmen. These causes ranged from only one plate on a vehicle to operator's licenses, hidden plates and registration certificates. The patrol's operations in Maricopa county alone during the month caused over 17,000 operators to secure operators' licenses from the county assessor's office. This shows the number of drivers that had been previously operating a car illegally.

Detect Stolen Cars

Sixteen stolen automobiles were picked up by the Patrol during its operations in August. One of the cars had been stolen in Cincinnati, Ohio, in July of 1930. The party apprehended with the car waived extradition and was returned to the Ohio authorities.

Only eleven arrests were made by the patrolmen during the month. These arrests were for six different causes and in every instance resulted in the conviction of the person arrested.

August is the first month, since records have been kept of the reportable accidents in the state, that has shown a decrease in serious automobile crashes. The presence of these patrolmen on the highways of the state besides running to earth the operator who is getting by in the illegal use of his car is also acting as a great restraining force and influence on the reckless and careless drivers, thus the patrol is justifying itself in its greatest duty of all to the public, the protection of life and limb.

Traffic Is Greatest Police Problem

By PROF. AUGUST VOLLMER

Department of Police Administration,
Chicago University, and Chief of
Police, Berkeley, California

In general, we may safely divide the police problems into crime, vice, and traffic, and it is difficult at the outset for any person to say which is the more important.

As we observe the trend of crime we note that the number of crimes increase in proportion to the population. Vice conditions are always exactly what the people of the community want. If they want a clean city it is not difficult to have the law enforced.

When it comes to traffic, however, we have an altogether different picture. We have noted a gradual increase in the total number of deaths and injuries ever since automobiles began to be used, until we now have reached the point where the figures for deaths and injuries are appalling. Everybody seems to know just what to do about reducing the number of accidents and many rules and regulations have been instituted, but after putting these thousands of ideas into practice, no appreciable results have been obtained.

Traffic Needs Intelligent Handling

This can only be done when policemen recognize that the work which has been thrust upon them must be handled in a more intelligent manner than in the past and that they must seek the assistance of the very best experts available.

The National Safety Council has provided the means for pooling our efforts and our information. They have also supplied the police departments with an opportunity to compare the figures of deaths and injuries in their own city with the figures for deaths and injuries in other cities. This is but the beginning. Before we can proceed to eliminate any of our social diseases we must first know the extent of the evil. We should next proceed by scientific methods to determine the cause. Obviously, there is a place for enforcement in the program, but long experience in this field by police officers has shown that enforcement of itself is futile. Regardless of the amount of energy put into an enforcement program, if it is not accompanied by a thoroughly scientific engineering program and intensive educational work in the community, the enforcement must fail.

It behooves the police officers of this country to build up a well-rounded plan

and proceed intelligently to reduce the number of deaths and injuries that occur in their cities every year. This is one of our major problems because there are more than four times as many deaths from automobile accidents as there are from crimes committed in our country. The mere fact that these are so-called unavoidable accidents has led the police to accept the situation complacently without applying the same amount of force and intelligence that they apply to their other police problems.

Education And Discipline

Experience has shown that the men and women responsible for most of the accidents are the people who are constantly coming in conflict with the traffic regulations and who are repeatedly involved in accidents. Therefore, at the very outset it seems necessary for all police departments to organize an educational program which would have for its purpose the elimination of all drivers from public thoroughfares who are not fully qualified to operate a motor vehicle; the temperamentally unfit, alcoholics, drug addicts, persons suffering from epilepsy, heart disease, defective vision, and other defects which reduce their driving efficiency to the point where they are a menace should be disqualified by an examination before they are permitted to operate a motor vehicle. More care, too, should be given to the record of persons involved in accidents and every person who is thus involved should be compelled to prove that he is not negligent before being again permitted to drive a vehicle.

Some people believe that when they have insured their car they have done all that is necessary, and from that time on they may drive recklessly about the community. These persons can only be stopped from operating with utter disregard of the rights of others by depriving them of the privilege if they fail to conform. But it is clear to the police officers that this cannot be done by legislation unless it is preceded by an educational campaign.

Must Keep Careful Records

The most careful type of records must be maintained in order that the facts concerning drivers may be elicited at every investigation. The burden of proof of one's ability should be placed upon the indifferent driver. Too much attention has been devoted to the physical factors underlying accidents, such, for illustration, as defective brakes, defective headlights, steering gear and whatnot,

when, as a matter of fact, most of the contributories to accidents are psychological in character.

Inattention for a fraction of a second is sufficient to cause an accident. Emotional instability, if only for a brief period, dulls the faculties and prevents the mind and muscles from coordinating. Therefore, in any scheme designed for the elimination of unfit drivers much consideration must be given to psychological factors that underlie practically all of our accidents.

Several years ago Clarence Taylor, now assistant traffic engineer for the state of Massachusetts, conducted a survey on a typical corner in a western city. In the course of that survey he had a number of high school students observe what drivers were doing as they crossed or approached intersections. He also had another group of high school students observe what pedestrians were doing as they crossed intersections. At the conclusion of his study it was perfectly clear that some great power was protecting these persons, because so many things were done that must of necessity have otherwise led to disaster.

Inattention Is A Factor

To give a few illustrations—one man as he approached the corner driving at a rapid rate of speed turned around and lifted something from the bottom of his car to the rear seat; another automobile approaching that intersection happened to be driven by a careful driver, otherwise a collision could not have been averted. In the same study pedestrians ran out into the street without looking to the right or left, and just how they avoided being killed was a mystery to the students making the study. On two occasions the attention of the drivers was attracted by a revolving sign. This fact made it difficult for them to bring their automobile to a stop in time to avoid a collision, and so on through many of the different types of things occurring at that corner.

People Must Be Aroused

Suffice it to say that the study revealed that people generally seem to be unaware of the danger that exists at intersections and that despite the fact that every effort has been made to give publicity to the danger that exists at these corners. In fact, most of the people who were injured at that corner studied by Mr. Taylor had heard from storekeepers and others of the accidents that occurred there. It is evident that

(Continued on Page Eighteen)

Arizona Sets Example in Copper Plates

Arizona has set all the states of the Union an example of patronizing home industry as a means of ending the depression. This state produces more copper than any other state. The red metal has suffered greater during the present depression than any of the industries, copper having reached a lower price level than at any time since it has become one of the great commercial metals. The result has been that all of the copper mines in the state have either gone on a greatly curtailed basis of production or have entirely closed down, thus throwing thousands of miners out of work, with the result that the entire state has been seriously affected.

The Arizona Highway Commission decided it would do its part in helping the demand for copper by making its license plates for 1932 of copper. Plans and specifications were adopted calling for copper plates. It was decided that a smaller plate than had been heretofore used in Arizona could serve the purpose just as well, if not better, and in this manner the cost of the plates, in using copper instead of steel, would not be seriously affected. By substituting two letters for numbers it was found that an attractive plate could be made with dimensions of five by ten inches.

Bids were opened on August 24 by the state engineer, and the contract for the 1932 plates made of copper was awarded to the low bidder at a price of fourteen and three-quarters cents per plate for the automobile owner plates, delivered to the county assessor of the various counties. This price compares favorably with prices of former years for steel plates.

Before making the award, the sample plates submitted were subjected to a baking for 36 hours at a temperature of 170 degrees and a water bath of 24 hours to determine if the lacquer would protect the plate from the weather and prevent tarnishing. The plates accepted stood the tests perfectly, showing the copper plate should meet service conditions without being affected by the weather.

Seventy thousand pounds of Arizona copper will be needed to produce the state's 1932 plates.

The Highway Commission has communicated with many of the other states urging them to use copper license plates in 1932. If some of the larger states should adopt the red metal, several mil-



Miss Arizona 1932, holding a sample of the copper license plates that will be used in Arizona next year.

lion pounds of copper could be used in this way, doing away with the oversupply of this metal and putting the copper mines of the United States back to work.

Idleness consumes. Employment produces. A stabilized fair wage and a short working day will minimize employment.

HIGHEST LANDING FIELD

The highest airplane landing field in the United States has just been opened at an elevation of 9,000 feet on South Fork Meadows in Inyo National Forest, states a forest service report.

The man who appears to be a 5-ton truck downtown may be just a trailer at home.—Azuride.

Laboratory Builds Mortar Test Room

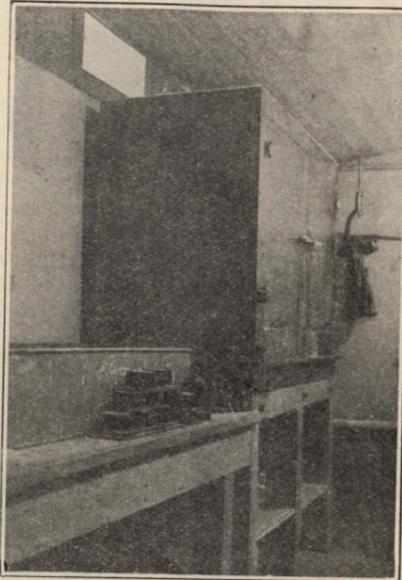
By J. W. POWERS
Engineer of Materials

For some time past in this Division attempts were made to control the temperature of the moist closet and storage tank for curing and storing cement and sand mortar specimens with tap water. However, after trying unsuccessfully for several summer seasons to keep within the ranges set up by the American Society for Testing Materials—it was decided to build a separate room and refrigerate it.

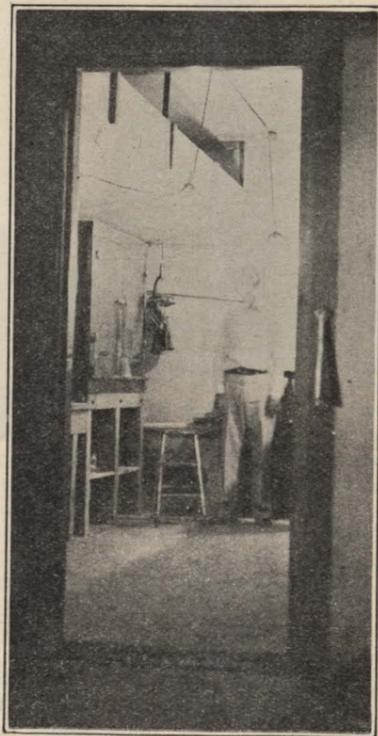
A portion of the laboratory was set apart and a room, 9x14 feet with 8 foot ceiling, was built of hollow gypsum tile. It was plastered with a hard finish plaster on the inside and ordinary lime plaster on the outside. After drying and setting, the inside was finished with two coats of white vitralite enamel. A small window and a refrigerator door comprise the only two openings. Ventilation has not proved a serious problem as only one person works in the room and then usually not more than four or five hours a day. No attempt was made to insulate the concrete ceiling or floor as they were fairly thick reinforced slabs.

Unique Equipment

The room contains the following equipment: Tensile strength machine, work table, storage tank and moist closet. The moist closet is of our own design and made of soapstone. The method of supplying moisture is unique and gives a very high humidity. In the center of the moist closet are two solid soapstone partitions set approximately three inches apart with only a small opening at the top and at the water level. The partitions also act as supports for the tinned grating shelves, having cleats set to give approximately a 2½ inch clearance. In this way every shelf can be used for briquettes and on taking out every other one the moist closet can be used for 2x4 inch cylinders. In between these partitions is a water jet whose stream, using full city pressure, is directed against an onyx knob to break it up. The breaking up of this spray creates a very humid condition in the moist closet without any water except some condensation actually coming in contact with specimens. All excess water falls into the basin below and flows on into the lead lined storage tank. After flowing through the storage tank, the water goes on into the sewer. This method keeps the water constantly



Moist closet in Laboratory "cold" room. The storage tank can be seen to the left.



A glimpse through the doorway of the mortar testing room gives an idea of compactness of this testing division. On hot summer days its 70 degrees is quite refreshing. Probably in the winter time the Laboratory employees will be wanting to work in it to keep warm.

changed in both the moist closet and storage tank. A one-half horsepower compressor supplies the cooling unit for the water. The water is supplied at a temperature of 70° F. with a rated capacity of 25 gallons per hour. At the present time there are approximately thirteen gallons per hour flowing through the moist closet and storage tank. A tap take off from the line supplies cooled water for mixing purposes. A one horsepower water cooled Frigidaire compressor supplies the necessary cooling unit for cooling the room. Both compressors are outside of the room.

The two cooling coils inside the room are near the ceiling and placed end to end thus extending nearly the whole length of the room. Below the coils and for the full length of the room is a sloping baffle—three feet, two inches wide. On the intake side it is thirteen inches from the ceiling and on the outlet side twenty-seven inches. The warm air rising is forced over the cool coils, and due to its greater density on being cooled, slides on down the baffle and out on the outlet side. The arrangement does not interfere with head room and maintains the room within 2 degrees Fahrenheit, plus or minus.

Traffic In City Streets Governed Mostly By Width

Streets should have a minimum width of 36 feet with two lanes of traffic and parallel parking according to M. O. Eldridge, chairman of the traffic committee of the city officials' division of the American Road Builders' Association.

"Angle parking should not be permitted," said Mr. Eldridge, "and parking lanes should be 10 feet wide to provide for lanes of traffic when cars are not parked.

"The frequency of street intersections affects street capacity and short blocks often do not provide for vehicles waiting.

"The relative capacity of 2, 3 and 4-lane traffic appears to be in the ratio 1:1½:3½. For two lanes the capacity is 1000 vehicles per hour, in both directions, passing a given point; for three lanes, 1600 vehicles; for four lanes, the capacity was not reached at 3200. These capacities were established by actual test by A. N. Johnson," he concluded.

Equality in Our Transportation Industry

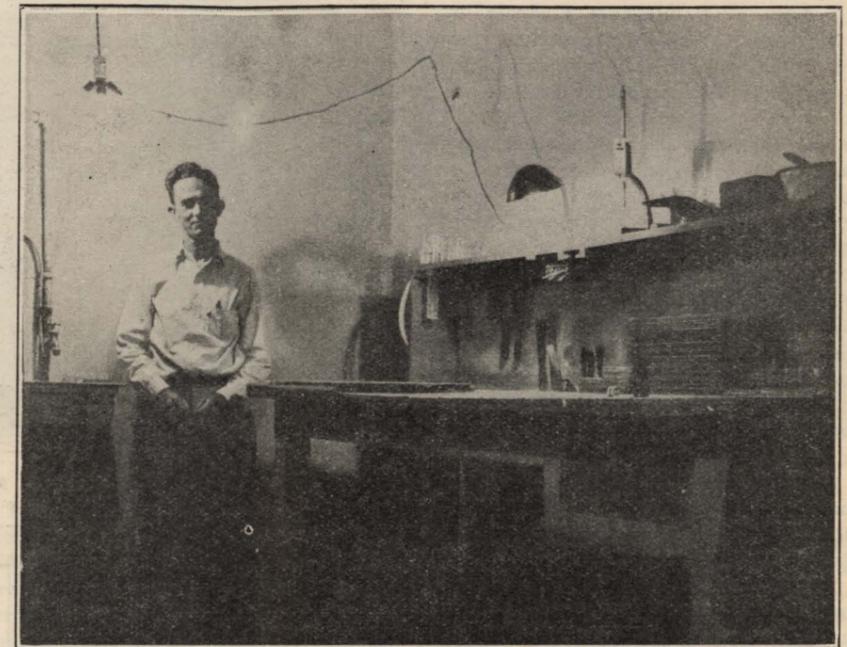
The following is a part of an article by Byrle A. Whitner, director of the Educational and Research Bureau, Brotherhood of Railroad Trainmen, which appeared in a recent number of *The Railroad Trainman* magazine. It points out many of the serious competitive ailments of our modern transportation systems, especially from a trainman's point of view and while doing so furnishes food for much serious thought by the businessman, taxpayer and public officials, all of whom are vitally concerned not only in the transportation problems involved but in the future demands that will be made on the public highways.—Editor's Note.

In the past years when our existing transportation laws were enacted, little thought was given to any form of transportation but the railroads because, in those days, the nation's transportation system was synonymous with the railroads and adequate regulation of the railroads was equivalent to adequate regulation of the transportation industry. However, the situation has now changed greatly, which results in unfair and one-sided transportation laws applicable to the railroads only. The public has rightly considered that the transportation industry is an industry affected with a public interest and accordingly it has imposed strict regulations upon the railroads. Even the amount of income which the railroads may make is limited and the legislative principle of price-fixing which is generally considered as bad legislation, is strictly applied to the only commodity which the railroads have to sell, transportation service.

Regulation for All Alike

This strict regulation of the railroads has imposed upon the public the duty to protect the railroad industry from any unfair advantages taken by other business enterprises which have not been similarly regulated and if the public is to be consistent in its rightful attitude of regarding the nation's transportation system as being affected with a public interest, it must impose equal legislative restrictions upon all forms of transportation. To date our legislators have not done this.

Of course, the public is entitled to the most efficient and the most economical form of transportation that modern science has made available and if this means that the railroads are now antiquated, then they must go the way of the pack-horse and the river and canal barge. But we all know that the time has not yet come when rails are unnecessary in our transportation system.



Mr. Powers describes the testing machines in the Laboratory Mortar Testing Room. At the right is seen the work bench where materials are prepared.

The railroads have been well described as the backbone of our nation. Life insurance companies and various financial institutions have placed their financial foundation upon railroad securities, and the evils attendant upon a collapse of our railroads can scarcely be imagined. It has been said that railroad interests are seeking to regulate the truck and bus out of existence. Anyone having an understanding of the serious problems confronting our transportation system today cannot fail to be impressed more with the vindictiveness than with the reasonableness of this contention. Furthermore, having a due regard for the tendency of the railroads to occupy the motor vehicle transportation field, the contention that railroads are seeking to regulate the bus and truck out of existence does not seem consistent. Rather, there would seem to be a greater cause for alarm resulting from the abandonment of standard public rail service to the bus and truck service offered by railroad companies, thereby increasing the congestion on the already overcrowded public highways, while the rails stand idle.

Public Welfare Involved

As a measure of public welfare, therefore, and without being persuaded by the vindictive and unreasonable contentions

of the rival transportation interests, we must carefully consider the problem and so conduct the legislative program that the railroads can compete in an orderly and fair transportation system, thereby destroying the temptation for railroad companies to substitute busses and trucks for the standard and reliable rail service. The guiding principle in the solution of this important problem should be to insist that if the public service which the railroads offer is to be diminished or abandoned, it must be only by the orderly processes of progress and not by artificial and unequal legislative barriers. If we fail opportunely to realize this, we may find that these artificial and unequal legislative barriers have violated economic laws and, figuratively speaking, have choked to death a great public utility which Dame Progress has not yet ceased to court.

The most that any sincere friend of the railroads can demand is that the railroad be permitted to function as freely as their competitors under the dictates of economic laws and fair competition in the nation's transportation system. Without any consideration of the justification for them, let us examine some of the legal provisions now applicable to the railroads, but which are

(Continued on Page Nine)

Rains Cause Maintenance Worries

By HARRY DUBERSTEIN
Assistant Maintenance Engineer

We have just passed our annual summer rains, with their torrential swelling streams, cloudbursts and floods. We now survey and review the damage done. Most of our highways lie more or less in a direct path across some water course or stream bed, which in flood times overruns its banks and is destructive. Large streams such as Santa Cruz river, Rillito Creek, San Pedro River, San Simon Creek and a good many others that are normally dry stream beds, have been known to raise to 10,000 cubic feet per second in less than one hour.

The destructive forces are tremendous; could carry an automobile in suspension as if it were a piece of paper.

All streams, however, do not carry maximum floods at the same time nor do floods occur in different parts of the state at the same time.

This year's floods were severe and lasted longer. The damage to the highway was greater this year. In summing up damages done to the highways, it would cost in the neighborhood of \$50,000 to make the necessary repairs and possibly \$50,000 more to make such improvements for the protection and prevention of similar damage in the same sections in the future.

Approaches to bridges were washed out; oiled roads were washed away in some places; dips were filled up with debris, sand, muck and rock; side hills above some roads weakened and subject to slides while bridge supports were weakened in other instances.

Over the entire state some part or another was damaged this summer by floods. Traffic was held up for short intervals while repairs were being made or where running waters through dips or over the road made them impassable. The structures over streams, both large and small, are figured on a basis of normal flood or the drainage area tributary to that stream. It would be difficult to figure on a bridge, dip or culvert large enough to carry the maximum cloudburst floods and it would be exceedingly expensive and beyond the means of the state.

Cloudburst Conditions

It is a peculiarity of cloudbursts that they happen at widely separated periods in the same localities. There are certain drainage areas that carry excessive flood waters every year from some part of their drainage areas. These streams average about the same flood conditions



Here is an example of flood water force, where banks of "Borrow Pit" were eroded by summer floods.



When the dips are full the wise motorist will wait. Usually the water only lasts an hour or so, as the drainage areas are small.

and are easily provided for with adequate drainage structures, but thunderstorms of cloudburst proportions, like lightning, choose unusual localities as well. Several instances of this kind caused some of the most costly road repairs this year.

One such instance is on the Apache Trail at Fish Creek. The highway in this section has stood for years unbothered. The highway running beside the creek with ample stone protection has

not been molested by the highest water, yet this summer one afternoon's rain turned the creek into a torrent of such size as to eat into the road for several miles and drainage structures that have been ample at all times were completely washed out.

Just south of Prescott on the White Spar the creek has heretofore had ample capacity without endangering the highway. This summer a storm on one of its lesser tributaries put enough water in it to attack the highway in several places, carrying out 15 foot rock fills half way across the oil surfaced highway.

At Quartzsite a two-hour storm was followed by a rush of water that not only over-ran the road but placed most of the town itself in the riverbed. Old residents of the district say the water in this stream has not approached such a condition in 15 years.

River Without an Outlet

In the Casa Grande valley one of the most serious drainage conditions in the state exists. The troublesome Santa Cruz river, always a storm center in Nogales, here empties its flood waters 100 miles from their source. It has no fixed outlet, but largely loses itself in the desert. This drainage problem is one greater than should be involved in the building of highways. It should be a special state work to provide a channel for this river to the Gila river, into which it should flow. In constructing the new highway from Picacho to Casa Grande, the engineers attempted to place ample bridges to take care of the water anticipated. The result this year has been that, with the road scarcely completed, the flood

waters from the Nogales district swooped down upon this district, and hemmed in by the new highway and forced to flow through the bridges provided, made serpentine channels along the roadside, flowing through one bridge from one side, then changing and passing out through the next bridge and so on down the highway. It required a gallant fight to save the highway.

Unexpected Floods

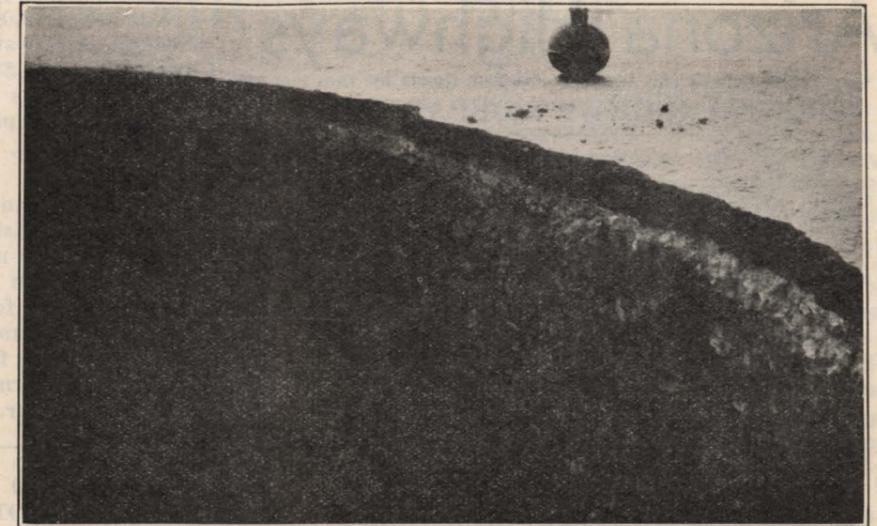
Most flood damages occur where there has been little need for drainage before. Waters rush down hillsides and across the desert where little drainage exists in normal conditions. In these unprotected spots the highways are washed, shoulders carried out and in some instances roadbeds are lost.

The best part of the damage is taken care of by the regular maintenance crews. This work often requires long hours of heavy work, at all times of day or night, but the byword of the maintenance man is, "the highways must be protected and the traffic uninterrupted. While such unusual storm conditions prevail it is only natural that general maintenance work suffers. The crews cannot keep up their regular blading and repairs that make Arizona's roads of the general excellence usually noted. This often brings criticism from the raveling public which little realizes the work the crews have been doing. However, this condition is short lived and soon after the storm period the highways are in better shape than before. Where the road is damaged in places, yet on the whole the system benefits from the rainfall.

During the flood stages the first duty of employees is to look after the safety of life and property. Every one employed by the state is supposed to stand by and do all in his power to help make such repairs so as to expedite the resumption of traffic. During such times our forces have proven themselves worthy of the highest commendation. During a flood, when traffic is stalled, times are trying, the public hard to please and the work hazardous. Suggestions are offered and while some are sound, most of them are impractical and ridiculous.

After temporary repairs are made, traffic is generally helped through bad places with caterpillars or highway trucks. Some roads are closed for several days and another route has to be used. It is sometimes necessary to build detours over some other route. All this can happen during the thunder storm season, which usually lasts from two weeks to one month.

Each year the flood losses are suffi-



One spot on the Coolidge to Picacho highway where the water decided to parallel the highway, resulting in damage to roadbed and oil surface.

cient to attract the attention of our engineering department. Problems for the proper protection work and studies of remedies are constantly considered. Each year brings to our knowledge certain facts pertaining to the improvement of drainage facilities and flood protection.

Equality in Transportation

(Continued from page seven)

not applicable to motor vehicle carriers and which must be made applicable to the latter if fair and orderly competition is to govern the conduct of our transportation industry.

Demands Equal Opportunity

Fair competition demands the freedom of every trader to meet the prices of his competitors, in so far as legal restrictions are concerned. There are situations, where great public interest is involved, when it becomes necessary for the public to regulate prices and prevent cutthroat price-cutting, secret rebates and other unfair business practices. The public has decreed that such a situation exists in the transportation industry, but very unfortunately it has so far failed to apply this principle to the entire transportation industry. Without any explainable logic or reason it has applied the principle only to the railroads, except in a few cases of intrastate transportation where states have required the establishment and publication of rate schedules and the adherence to them by bus and truck companies.

The unequal application of this principle has made it exceedingly difficult for the railroads to meet their competi-

tors. Railroads are unable to foresee competitive threats and reduce rates at once in order to retain their traffic, and once traffic is lost it does not readily return. Railroads have only recently been given permission to lower passenger rates, in certain localities, though busses have been wearing away at their passenger traffic for years. This is not an argument for the abolition of railroad rate regulation, but it is contended that reasons which exist for regulating rail rates, also exist for rate regulation of other forms of transportation. The regulation of rates and the requirement of the establishment and publication of rate schedules should be imposed upon motor vehicle carriers in order to protect the interests of the public, the railroads and the motor vehicle transportation industry itself. Considerable cutthroat competition and price-cutting now exists in the motor vehicle transportation industry, with the resultant economic loss to the public as well as to the victims within the industry. Rate regulation will prevent these losses.

Skim Traffic Cream

Another problem, closely related to the unequal rate regulation problem, arises from the freedom which trucks enjoy in accepting only "the cream of the traffic." Railroads, as common carriers, must accept any and all traffic properly offered by the public. There are many free lance truck drivers who skim over the offerings of the public, select the most desirable and most profitable traffic and leave the unremunerative traffic for the railroads to carry. This results

(Continued on Page Eighteen)

Arizona Highways

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Arizona Highway Department Phoenix, Arizona

EMERGENCY WORK IS DONE—NOW WHAT?

Last December Congress passed legislation creating a highway fund of \$80,000,000, known as Emergency Federal aid, to be divided among the states as loans against their regular Federal Aid, for immediate use in building highways on the Seven Per Cent systems. The purpose of this loan to the states was to relieve the unemployment situation by giving extra employment on the highways.

Arizona took full advantage of this Emergency aid offered her, and in anticipation of just such help had plans, specifications and surveys already made so that she was able to call for bids and get the work under way before the money was actually available.

The result was that the Arizona State Highway Department put over 3,000 Arizona citizens to work on the highways of the state. But this Emergency aid had to be spent by August 31. The work is done and these citizens who were given relief through the highway department are again jobless. What now?

Since the first of the year nearly 17,000 applications for employment have been received by the department. These applications have all been filed, indexed as to vocations, ability and counties from which they were received. Industry in the state has not improved. This army of Arizona citizens still need assistance and the highway department is prepared to give it to them whenever funds are available for the work.

Plans, specifications and quantities already have

been prepared by the highway department for approximately \$3,000,000 of new construction on the Federal Aid system. The department could carry on approximately \$800,000 worth of construction per month, if funds could be made available, and under such a plan employment for approximately 6,000 citizens per month, working on a half-time basis, would be possible.

The chairman of the Arizona State Highway Commission has asked the state's representatives in Washington to urge the appropriation of \$5,000,000 to be spent on the Federal Aid highways in this state each year for the next two years. Our highways need it. Our unemployed require it. It is the most logical solution for the situation in this state, whose copper and farming interests are the greatest employers of labor.

WE FED THE BELGIANS! WHY NOT GIVE AMERICANS WORK?

Not so many years ago we were in a state of hysteria over the starving Belgians. We had meatless and wheatless days, and our sugar was restricted; we had Liberty Loan and Thrift Stamp drives, ten-minute speakers, dollar-a-year men, and other nuisances, and as a nation we met the problems of an abnormal and stressful time and solved them.

Today the nation, from the present outlook, may be facing as serious a crisis in its history as in 1917 and 18. We have an unemployment condition on our hands unequalled in the history of the country, although there is a vast amount of which in which the services of these jobless men and women could be utilized—roads to be built, parks and other public improvements. Instead of a dole to pauperize our people, why not handle the situation with the same forthright and aggressive measures we used in the days of 1917? We spoke of a billion-dollar Liberty Loan as casually as though we really knew how much money a billion dollars really was. A quarter part of a billion dollars today would relieve an intolerable situation, give us much-needed improvement, and, we believe, would be subscribed as quickly.

The highway dollar is a round dollar that finds its way into everybody's pocket, from the corner groceryman's to the capitalist's, either directly or from the returns of improved transportation.

The summer storms took a hard whack at our highways this year, but they found the improved highways had been made to resist them.

The drivers who have always regarded the motor vehicle laws as something for the other fellow to observe are having a hard time with the new state highway patrolmen.

The courtesies of the road which we used to enjoy seem to have gone out of fashion as much as long hair, taking off your hat in an elevator, giving a lady a seat in a street car. You only meet up with it occasionally.

There Is Safety in Signs

By E. V. MILLER
Engineer of Plans

One of the practical means by which highway safety can be increased is by the education of the public in the use of the highway signs. These signs are erected and maintained only for the benefit of the traveling public; there is no other reason for them. Each sign tells its own story to you as an individual driver. Maybe you are the type who thinks that signs, rules or regulations are meant for the "other fellow," but did it ever occur to you that the "other fellow" may feel the same way? It is just too bad when two of these "other fellow" types happen to meet on a sharp curve or at an intersection. Of course, signs are not a "cure all" for highway accidents, but if we all would interpret the signs for what they mean and act accordingly there would be less accidents. Compare the railroad signal system of today with that of a few years back. Today there seldom is an accident from misinterpretation of signals. The engine men know what each sign and signal means and control their trains accordingly.

On the other hand, do you as a driver know the meaning and intent of the signs and signals which are placed along the roads? You should know; the system is so simple that even though you could not read the wording you would

know the intent of the message by the shape of the sign. For instance, the diamond-shaped sign means "slow," no matter what the symbol or wording may be. It means that you are approaching some inequality of the roadway which demands an absolute controlled speed. If you are traveling 20 or 30 miles an hour it is likely that the inequality will not hinder you, but if you are traveling 45 or 50 miles per hour then it behooves you to pull your car down to a speed that is safe within the stopping limits of your brakes.

Diamond shaped signs cover hazards apparent to the driver, such as the "Turn, Curve" or "Hill." These signs are relative to the alignment and grade of the road; the "Dip," "Narrow Bridge," etc., relating to the more or less permanent inequalities; "Loose Gravel," "Soft Shoulders," etc., relating to a temporary condition. There are also such signs as "Detour," "Road Closed," "Fresh Oil" and others relative to the construction and repair work. All of these signs mean "slow" and each one is self-explanatory. In many instances a warning sign will be superseded by a slow sign. Such a condition may be at a washout where the first signs seen is "Slow," the next "Road Closed" and then "Begin Detour 400 Feet." Signs are placed at such distances in advance of points of potential danger so that the driver has ample warning and time to control his speed. Remember, every diamond sign means "slow."

Caution Signs

The square shaped yellow signs are a caution sign, but not necessarily a slow sign. They are intended for use where the need for caution arises from some condition not inherent in the road itself but due to contiguous conditions. This group of signs includes "Cross Road," "School Zone," "Hospital Zone," etc.

Then there are round yellow signs for Railroad Grade Crossings. One bar for single tracks and two bars for double or

multiple tracks. The burden of responsibility is with you; the warning is there for your benefit.

The "Stop" sign is always an octagon and means what it says.

Possibly you have noticed there has been no mention made of a so-called "Danger" sign. The theory is that no dangerous condition exists except by the will of the driver. A boulevard can be made dangerous by an inefficient driver, and a crooked mountain road is perfectly safe for sane drivers. Road conditions themselves are not apt to be dangerous except to those who do not believe in signs.

The Arizona Highway Department spends thousands of dollars to warn the traveler of conditions where the exercise of caution is apparent. Nearly 4,000 signs of all types are kept on hand as stock and since January 1, 1931, we have used 1,384 of the caution or warning type as replacements or new installations, as well as 3,043 markers, directional and miscellaneous signs, the total amounting to \$7,082.74.

Remember, then, that these signs have been put there for you, and that

- the  means slow,
- the  means caution,
- the  means railroad, and
- the  means stop.

Believe what they say and act accordingly, for there is safety in signs for the driver who heeds them.

WARNINGS UNHEEDED

That motor vehicle accidents in traffic are preventable is indicated in the recent report of the state railroad commission showing that 52 per cent of the grade crossing fatalities in California last year occurred at crossings where warning signals notified motorists of approaching trains.

No man's opinion is entirely worthless. Even a watch that won't run is right twice a day.

Well Done!

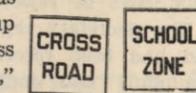
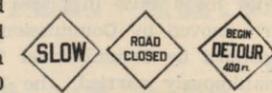
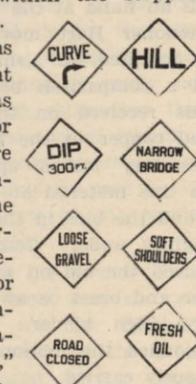
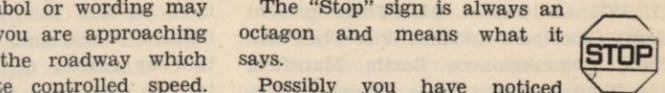
BEVERLY HILLS
INSURANCE AGENCY
Beverly Hills, California
9-11-31.

Arizona Highway Patrol:
I wish to congratulate your department for having a man such as Wm. J. Dunne, Patrolman No. 2, on your staff.

While driving between El Paso and Phoenix my car was stuck in the sand. Patrolman Dunne came along and after a great deal of effort on his part drove my car up on the road.

If all your men are as courteous and efficient as Patrolman Dunne, your department should be proud.

Sincerely,
R. B. DONNERFIELD.



Commission Has Busy August Session

The Arizona State Highway Commission met in regular session in their offices in the Highway Building August 17, 1931 at 10:00 A. M. Those present were: Chairman Addams, Vice-Chairman Hart, Commissioners Barth, Mansfield and Trengove, also State Engineer, Secretary.

On the motion of Commissioner Trengove, seconded by Commissioner Hart, the official minutes of July 16th were unanimously approved without reading.

The State Engineer recommended the contract on the Casa Grande-Picacho Highway, A. F. E. 8402, be awarded to the low bidder, N. G. Hill and Company, Phoenix, stating they had qualified and were responsible bidders. It was regularly moved by Commissioner Mansfield, seconded by Commissioner Hart and unanimously carried that the recommendation of the State Engineer be approved and the contract be awarded to the low bidder, N. G. Hill and Company, in the amount of \$54,244.82, which does not include 10% for engineering and contingencies; provided, said contractor meets all requirements including the employment of local Arizona Citizens, pays a minimum wage of \$4.00 per day for laborers, furnishes good and sufficient bond, and, provided further, that requirements of bond include the payment of total amount of damages the State may sustain by reason of the contractor failing to complete the contract within the time limits as provided for.

As there was no representative of N. G. Hill and Company present, Chairman Addams stated if the contractor would give a written statement that he would comply with this bond, the Engineer could proceed in signing the contract with N. G. Hill and Company.

Winslow Bid Awarded

The State Engineer recommended that contract on the Winslow Streets, A. F. E. No. 6620, be awarded to the low bidder, Lewis Brothers, Winslow, stating they had qualified and were responsible bidders. It was regularly moved by Commissioner Barth, seconded by Commissioner Hart and unanimously carried, that the recommendation of the State Engineer be approved and the contract on Winslow Streets be awarded to the low bidder, Lewis Brothers, in the amount of \$8,321.78, which does not include 10% for engineering and contingencies; provided, said contractor meets all requirements including the employment of local Arizona Citizens, pays a minimum

wage of \$4.00 per day for laborers, furnishes good and sufficient bond, and, provided further, that requirements of bond include the payment of total amount of damages the State may sustain by reason of the contractor failing to complete the contract within the time limits as provided for. State Engineer was authorized to sign said contract.

The Secretary read bids received on old equipment, junk and waste materials on hand at the Tucson Yards. Commissioner Hart moved the highest bid be accepted. Chairman Addams requested a comparison be made between the bids received on the aluminum, brass, and copper in the Phoenix yards. The Secretary looked up the bids received on this material at Phoenix and it was found the bids in the Tucson yards were slightly under. Commissioner Mansfield moved the bid on scrap aluminum, copper and brass be awarded to Efron and Co., high bidder. Commissioner Hart seconded the motion and it was unanimously carried.

The Secretary read the bid of Nat Bosnos, Tucson, on Lot 4, one carload of junk iron, \$15.00; Lot 7, one Schramm Compressor, \$20.00; Lot 8, one steam boiler, \$35.00; Lot 16, one pile of solid rubber tires, \$3.00. After discussion, in which the Commissioners expressed themselves as these bids were too low and it would be better to hold the material for a raise in prices, it was regularly moved by Commissioner Mansfield, seconded by Commissioner Trengove and unanimously carried, the bid on scrap iron be rejected.

On the motion of Commissioner Hart, seconded by Commissioner Barth, it was unanimously carried the bid on the Schramm Compressor be requested.

On the motion of Commissioner Trengove, seconded by Commissioner Hart, it was unanimously carried the bid on the Steam Boiler be rejected.

On the motion of Commissioner Mansfield, seconded by Commissioner Hart, it was unanimously carried the bid on solid tires be rejected.

The Secretary reported that only one bid had been received for the obsolete equipment and junk in the Holbrook yards. The one bid was submitted by Whitney Brothers, Holbrook, on one Ford Model TT Dump Truck, No. C-12, in the amount of \$25.00. Chairman Addams stated he believed the Department could get more than \$25.00 for this equipment

as a trade-in on new equipment. Commissioner Barth moved the bid on the Model TT Dump Truck be rejected; the motion was seconded by Commissioner Mansfield, and unanimously carried.

On the recommendation of the State Engineer that the two obsolete Wehr graders in the Holbrook shops be turned over to Navajo and Apache counties, it was regularly moved by Commissioner Barth, seconded by Commissioners Trengove and Hart, and unanimously carried that one Wehr grader be sold to Navajo county and one Wehr grader be sold to Apache county for the nominal sum of \$5.00.

Lauds Commission

Senator G. W. Nelson, Navajo county, spokesman for a Navajo county delegation, appeared before the Commission and stated Navajo County wished to express their deep appreciation for the awarding of the grading and oil surfacing of Winslow Streets from the end of the pavement to the city limits joining the State highway from Flagstaff to Winslow. The Senator stated that they had striven to have this work done for many years and this was the first time the Commission had given any consideration to this highway in the North.

A delegation representing the East Van Buren Improvement Association appeared before the Commission. Mr. Jules Vermeersch stated a committee from his Association had completed obtaining title to right of way for the widening and improvement of East Van Buren Street with the exception of two or three easements, which could be readily secured with the help of the Department as soon as the people involved were certain the improvements were going to be made; that their committee had waited on the Telephone Company, the Light Company and the Water Users' Association and had been assured that these companies would cooperate and have their poles removed from the right of way as soon as notified.

Mr. Charles Martin, member of the committee came to report what had taken place and to ask Mr. O'Connell to grant an appointment with these people, or appoint someone to take up the details necessary to entirely clear up the right of way involved. He stated further that he would like to see the work done by force account. On being asked what the controversies were con-

cerning right of way easements, Mr. Martin stated that it was merely a question where some people were sitting out too far and they wanted to know definitely how far back they should move as they did not want to move until it was necessary for them to do so, and they wanted to move the proper distance. The State Engineer stated it would be impossible to do the work by force account as the law limits the spending of \$50,000.00 or under on force account projects and it was estimated this improvement would cost \$90,000.00.

A report was read from Mr. Wagon, Right of Way Agent, as to the mapping of the right of way and the positions occupied by the Telephone, Light and Power Companies.

Chairman Addams asked Vice-Chairman Hart to take the chair. Commissioner Addams, moved that the State Engineer get in touch with the East Van Buren Improvement Association and work out with their committee and the Light and Power and Telephone Companies agreements for entirely clearing up the right of way involved in the improvement of this Street, and to get in writing from these utility companies their agreement to remove their poles from the highway right of way so that when funds were available, the work

could proceed. The motion was seconded by Commissioner Trengove and unanimously carried.

Damage Claim Referred

Mrs. Mary Conover appeared before the Commission concerning damages claimed on the property belonging to Mrs. Sadie Richardson, just South of the Duncan Townsite on Duncan-State Line Highway 88-C. The State Engineer submitted a report, map and pictures made by Alfred C. Seiboth, Assistant Right of Way Agent, who had been designated to personally investigate this claim and report. Mr. Seiboth's report recommended that, in his opinion, the premises in question had not been left in as good a condition as should be by the construction forces and a proper approach should be made, making it easily accessible from the road, estimating that \$100.00 would cover the cost of trimming the hill to a workmanlike condition and the material gained may be used to fill the depressions in front of the service station.

Mrs. Conover stated her power of attorney was recorded and that she was only asking justice for her Mother's property, that she considered the property had been damaged to the extent of \$3,000.00 and she thought that amount a fair estimate of the damage done her

Mother's property.

It was regularly moved by Commissioner Hart, seconded by Commissioner Mansfield and carried, that the matter be taken under advisement and referred to the Attorney General for advice and consideration.

Chairman Addams asked Vice-Chairman Hart to take the chair and stated "If this woman has a warranty deed and all we have is a quit claim deed, I move you Mr. Chairman, we get together and thrash this thing out with the Attorney General and all persons concerned." This motion was seconded by Commissioner Barth and unanimously carried.

A resolution was presented by the Secretary authorizing Smith-Booth-Usher Company to bring suit against Gribble and Burke for rental of equipment. On the recommendation of the State Engineer, it was regularly moved by Commissioner Mansfield, seconded by Commissioner Hart and unanimously carried, that the resolution be adopted.

The Secretary stated that Dick Richards, custodian of the State Fair Grounds, had requested the Commission to rent, for a short time at a nominal sum, one dump truck for the use of removing some material in the State Fair grounds. It was regularly moved by Commissioner

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Barth, seconded by Commissioner Hart and unanimously carried, that one FWD Dump Truck be rented to the State Fair Commission for the nominal sum of \$1.00 per month, provided, the Fair Commission agree to use a State Highway driver on the truck and to pay any repairs necessitated by the use of the truck.

The Secretary brought to the attention of the Commission that a copy of the Duncan and Darrow Audit had been mailed to each Commissioner. The receipt of these copies was acknowledged by the Commissioners.

Copper Plates Approved

Chairman Addams asked Vice-Chairman Hart to take the chair and inquired of the State Engineer as to what had been done concerning the motor vehicle license plates. The State Engineer stated that specifications had been sent out asking for bids to be submitted on August 24th, stating the specifications called for 5x10 plates made of 12 ounce copper. Mr. Addams stated this would require about 70,000 pounds of copper and that he understood New Mexico was interested in copper plates. Chairman Addams resumed the chair.

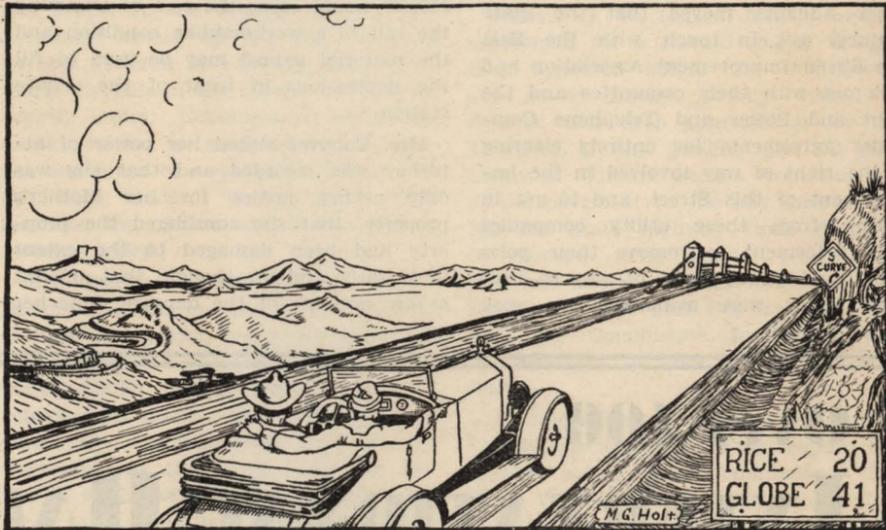
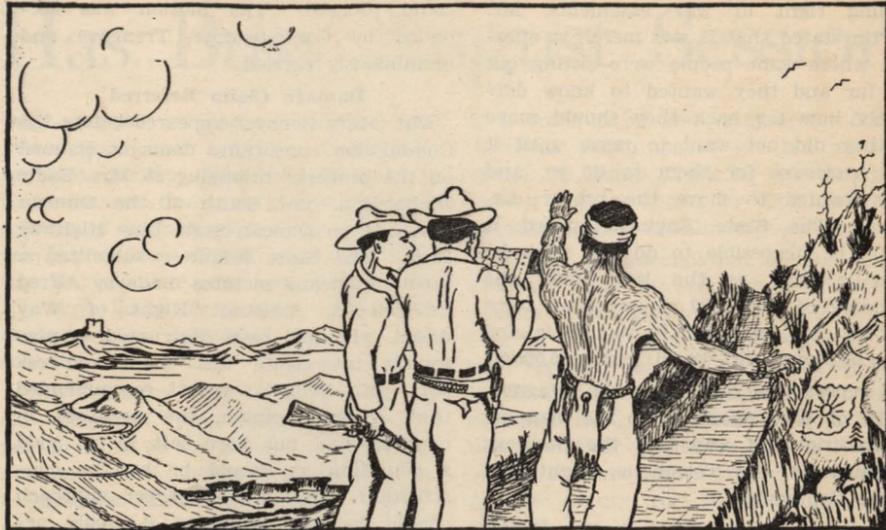
State Engineer O'Connell reported he had appointed Mr. J. R. Hall Superintendent of the Highway Patrol to fill the vacancy caused by the resignation of James Walden; that Mr. Hall was recommended for the position by Inspector Yoder, who had been in charge of the patrol during their training period. It was regularly moved by Commissioner Hart, seconded by Commissioner Mansfield and carried, that the appointment of Mr. Hall Superintendent of the Highway Patrol be approved.

It was regularly moved by Commissioner Barth, seconded by Commissioner Hart and unanimously carried, the Commission recess at 11:55 A. M., August 17, 1931, to reconvene at 2:00 P. M.

The Commission reconvened at 2:10 P. M., August 17, 1931, all members present.

It was regularly moved by Commissioner Mansfield, seconded by Commissioner Trengove and unanimously carried, that the call for bids on license plate specifications as sent out by the State Engineer be approved.

It was brought to the attention of the Commission by the Secretary that bids had been opened on July 20th for junk pneumatic tires and junk scrap iron located in the Phoenix yards, that on the telephonic confirmation of Commissioners Mansfield and Trengove, and the personal consent of Chairman Addams, the pneumatic tires had been sold to the high bidder, Phoenix Firestone Company,



Our pioneers followed the Indian trails. They found them marked with heiroglyphics which the modern Indian did not know how to interpret. Today modern highways follow many of these trails, but they are marked with signs that all can read.

Phoenix, in the amount of \$205.00; that the high bidder on scrap iron was Eifron and Company, Phoenix, in the amount of \$61.00.

Chairman Addams stated he did not believe the Commission was justified in selling this scrap iron at \$2.00 a ton. It was regularly moved by Commissioner Mansfield, seconded by Commissioners Barth and Hart, and unanimously carried, the bid on malleable and cast iron junk be rejected.

Action on Verde Bridge

The Secretary read an opinion from the Attorney General stating he had examined the records and was of the opinion that Yavapai County has the right of way across the Verde river at the proposed bridge site.

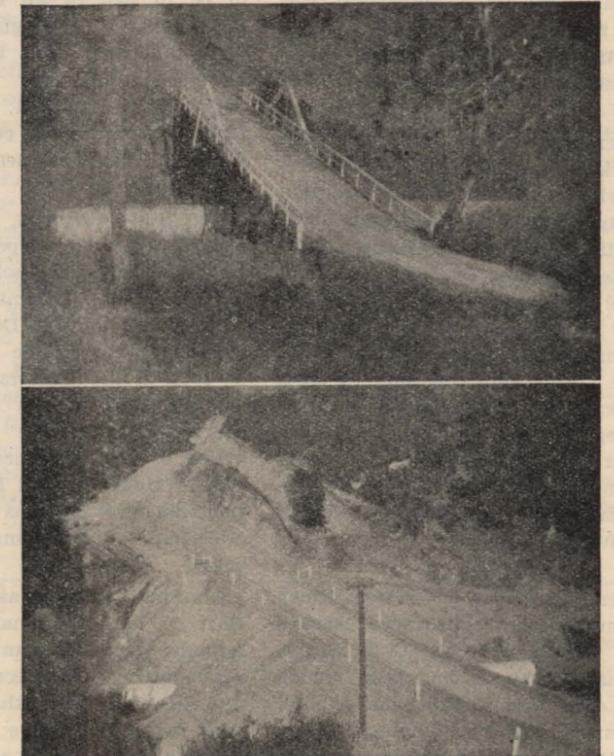
State Engineer stated that according

to law he had sent the agreements properly signed by the Yavapai County Board of Supervisors, the Secretary of Agriculture and himself to the State Auditor and the State Treasurer and that, inasmuch as the Verde Irrigation and Power District has threatened an injunction, it was his recommendation to put a small crew to work consisting of three or four men so as to start the work and clear up any legal procedures before letting a contract which might involve the State in law suits if injunctions were issued against the contractor.

The State Engineer was instructed to communicate information to the people in Parker contained in letters received by him from the California Department of Public Works and the United States

Large Diameter Armco Culverts Make Small Bridge Locations Safe

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Where large diameter Armco Corrugated Culverts are installed, traffic flows without interruption, the danger of collision is lessened because of the uniform width roadway. There is no maintenance expense. Numerous pipes placed in service twenty-five years ago are in good condi-

tion today, ready for an equal additional period of service. The 84" Armco pictured at the left was installed in 1911. Today it seems to have only begun its service life.

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California Corrugated Culvert Co.

Los Angeles

c/o VIC H. HOUSHOLDER
District Sales Manager
1330 E. Brill Street, Phoenix, Arizona

West Berkeley

Department of Interior regarding House Bill 91, passed by the 10th Legislature, providing negotiations for a bridge near Parker.

The Secretary presented a claim from Mr. R. V. Leeson, Consulting Engineer on the Tempe Bridge, for services incurred in carrying on the construction of this bridge. The claim had been okayed by State Engineer O'Connell and Assistant State Engineer Small in the amount of \$650.69. The State Engineer stated the claim was in accordance with the contract with Mr. Leeson. It was regularly moved by Commissioner Hart, seconded by Commissioner Trengove and unanimously carried, the claim be approved.

The Secretary read a letter from Mr. E. F. Parks, Superintendent of the Pacific Greyhound Lines calling attention to highway hazards on the Yuma highway and the detour on the Bisbee grade. The State Engineer stated he would investigate the condition of the detour on Bisbee grade.

A communication was read from W. G. Keiser asking for a permit to cross the highway with underground conduits for a telephone line between the Colorado River and Aguilla. The State Engineer recommended nothing be done until our Engineers had checked up on each individual request.

Land Title Lacking

The Secretary read a letter from Riney B. Salmon, Assistant Attorney General, regarding the claim of Mr. C. L. Suggs, stating that Mr. Suggs had been unable to give a clear title to the land. Chairman Addams asked Vice-Chairman Hart to take the chair and stated that he had gone to Douglas and had looked at the plant; that as long as Mr. Suggs had no title to the land, he did not think the agreement of the Commission should stand. Personally, he thought the amount of money which had been awarded was too much; that as long as he had no clear title, he certainly would not vote \$3,000 for it. Commissioner Addams moved that "the matter of compensation to Mr. Suggs be held in abeyance until we get further information from the Attorney General and if we cannot get suitable ownership showing Mr. Suggs owns it, I am in favor of cutting the price." The motion was seconded by Commissioner Barth and unanimously carried.

A letter was read by the Secretary from the Gila County Attorney, Globe, Arizona regarding the sub-contractor of Willis and Sons, whose name is Axeman, complaining of hiring of labor by the hour.

A letter was read from W. S. Cunningham, Dairy Husbandman, University of Arizona College of Agriculture, Tucson, concerning easement through the University Farm and stating that the money that had been paid by the state, had been done so for the purpose of building fences and changing irrigation culverts, that it hadn't been included in the easement as payment for easement through the property. Commissioner Mansfield stated it was his belief that this payment of \$2,000 was not intended to be in lieu of an easement through the property although the agreement read that way, and that an injustice had been done the University which ought to be rectified; that he was in favor of furnishing a certain amount towards a tractor to leave on the other side of the farm.

The State Engineer recommended one of the Highway Department's tractors be put in shape and sold to the University for \$1.00. Commissioner Mansfield moved that if the Department had a tractor that could be fixed up, that it be sold to the University Farm for the sum of \$1.00 in lieu of damages done the University. The motion was seconded by Commissioner Hart. Commissioners Mansfield and Hart voting "Yes", Commissioners Addams and Barth voting "No", and Commissioner Trengove not voting. Motion lost.

Chairman Addams asked Commissioner Hart to take the chair. Commissioner Addams stated he wanted to explain his vote stating the agreement was entered into in good faith, that the University knew what they were doing when they signed the agreement and he maintained they should be held to that agreement. That is the only reason why he voted against the motion. He stated that if we were going to fix a tractor up that would cost five or six hundred dollars, he was not in favor of it.

Commissioner Hart stated the Department could sell a tractor to the University for \$1.00 and get rid of it. Commissioner Addams stated that was different motion "If you want to make another motion to sell another piece of equipment." It was regularly moved by Commissioner Mansfield, seconded by Commissioner Hart and unanimously carried, that a used Cle-Trac tractor be sold to the University College of Agriculture Experimental Station, Tucson, for the sum of \$1.00.

Wants Pit Located

The Secretary read a letter from the Superintendent of Equipment showing the rental received from maintenance houses and the expenditures on maintenance

houses for the past five months.

A communication was read from Mr. F. M. Gold, Attorney at law, Flagstaff, Arizona, concerning a gravel pit supposed to be located in the SE¼ of the SE¼ of Section 4, Township 18 North, Range 16 East, Navajo County, Arizona. The State Engineer stated he had received a copy of the letter and had asked Mr. Small to investigate the claim of the pit being incorrectly located.

A letter was read by the Secretary concerning the employment of W. E. McCallum. The State Engineer stated there was no opportunity to give Mr. McCallum a job at the present time.

A letter was read by the Secretary from Mr. C. M. Zander, Secretary of the Board of Directors of State Institutions, regarding two lathes in the Phoenix shops. The Secretary was instructed to write Mr. Zander the lathes were operating successfully and no purchase of new lathes was contemplated.

A letter was read by the Secretary from the Tucson Trades Council regarding standardizing of wage scales throughout Arizona and regarding the laying off of men in the Tucson shops. The Secretary was instructed to communicate with the Tucson Trades Council stating the reason for the laying off of Tucson men was due to the lack of work in the Tucson shops.

A letter was read from Mr. G. A. Mauk asking the bronze plate on the old state bridge at Tempe containing his name be given to him as a souvenir. It was regularly moved by Commissioner Hart, seconded by Commissioner Mansfield and unanimously carried that Mr. Mauk be given the copper plate, provided he removed it.

The Secretary read a letter from Mr. E. V. Miller, Engineer of plans, regarding a safety campaign throughout the State. After considerable discussion, it was decided that each commissioner and the State Engineer and his staff would consider plans for inaugurating the safety campaign to be presented at the next meeting of the Commission.

A letter was read from Miss Grace Sparkes requesting the privilege of working on a dedication program for the Wickenburg-Ehrenberg highway. Commissioner Trengove moved that Miss Grace Sparkes be permitted to go ahead and work in conjunction with the State Engineer on a dedication program. The motion was seconded by Commissioner Mansfield and unanimously carried.

A communication was read by the Secretary from Miss Grace Sparkes, Prescott, concerning the fencing of the White Spar highway. State Engineer

stated that fences were needed but, inasmuch as the cattlemen leased this land from the forest service, he believed the forest service should fence the right of way.

Protest Sale of Wye

A communication was read concerning the sale of the land in the wye formed between the junction of the Ash Fork-Prescott and Ash Fork-Flagstaff highways, which land has been offered for sale by the Santa Fe Railroad Company. Chairman Addams was instructed to write the Santa Fe Railroad and ask them to withdraw the land for sale or give the Highway Department an opportunity to purchase it.

A letter was read from the Governor enclosing a letter from Mrs. E. H. Rhodes, Dome, Arizona, asking the State to resume maintenance on this section of the highway. On the motion of Commissioner Mansfield, seconded by Commissioner Trengove and unanimously carried, the Secretary was instructed to notify Mrs. Rhodes this section of the State Highway had been abandoned.

A letter was read from the Buckeye City Council requesting maintenance on the pavement through the City of Buckeye. It was regularly moved by Commissioner Trengove, seconded by Commissioner Barth and carried, that the Sec-

retary notify the City of Buckeye that it was against the policy of the department to maintain highways through incorporated cities.

A petition was read relative to Highway 60, adopted by the Phoenix Chamber of Commerce, Glendale Chamber of Commerce, Mesa Chamber of Commerce, Central Arizona Highway Association and U. S. Highway 60, Arizona Division.

A petition from the Citizens in the vicinity of Lakeside, Arizona, asking that the routing of Highway 60 between Carizo and Vernon be considered, was read to the Commission. Commissioner Barth asked if this section of the proposed road had been considered. The State Engineer stated he had asked the Chief Locating Engineer, Percy Jones, to look it over and that he had instructed him to further consider the routing of this highway, as requested by the petition.

Commissioner Barth moved the communications concerning Highway 60 be filed. The motion was seconded by Commissioner Hart and unanimously carried.

To Attend Road Opening

An invitation was read from the Nogales Chamber of Commerce inviting the Highway Commission to attend the opening of the International Pacific Highway from Nogales to Magdalena on Sunday, September 13th. Commissioners Mans-

field and Addams and State Engineer O'Connell signified their intention of attending.

Commissioner Barth called the attention of the State Engineer to a piece of road out of Eager, Arizona, stating he wished the State Engineer would cooperate with the people of Eager and the Forest Service toward the building of the highway through the Town of Eager; stating to do so would increase the length of the road about one-fifth of a mile.

It was regularly moved by Commissioner Hart, seconded by Commissioner Barth and unanimously carried, the Commission adjourn at 4:20 P. M., August 17, 1931, to meet again at the call of the Chairman.

FORGET TO REMEMBER

Indifference or lack of knowledge on the part of car owners concerning certain simple and fundamental rules for keeping their automobiles in running order is the principal cause of cars stalling along the roadside, rather than any major troubles.

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Equality In Transportation

(Continued from Page Nine)

in a grave injustice to the railroads and seriously disturbs the stability of our transportation system. What would become of this undesirable traffic if railroads were permitted the same freedom that motor vehicle carriers enjoy. It makes one realize that motor vehicle carrier service is tolerable today only because the public still has the railroads to fall back on or standard and reliable transportation service. A proper regulation of private and contract motor vehicle carriers will correct this disturbing situation.

Railroads Maintain Right of Way

Legislation should be enacted imposing a tax on motor vehicle carriers for the purpose of requiring a fair payment or rental for the use of the public highways. The railroads spend approximately 25 per cent of their gross earnings on interest, maintenance and taxes on their roadway. Rail freight rates could be lowered considerably and profits to the railroads increased if the public furnished the right of way for the railroads as it does for motor vehicle carriers. Pavements must be made much thicker and more substantial and highway bridges must be built much stronger, all of which greatly increases the cost to the public of highway construction, which additional cost is incurred in order to accommodate heavy trucks and busses that daily pound away at our public highways. Taxes should be imposed on motor vehicle carriers on a basis that would be reasonably compensatory for the use of the highways. Such a tax could best be levied on a basis of a ton-mile or passenger-mile tax, or possibly on a gross receipts tax. The railroads will not be given a fair opportunity to compete until other forms of transportation are made to bear the expense of constructing and maintaining their own right of way as the railroads now must do.

Laws Demand Public Safety

The subject of safety to the employes and the general public has been a source of much railroad legislation. The railroads have spent millions of dollars and are continuing to spend large sums in the interest of safety. The elimination of grade crossings is no greater, if as great, a safety measure to the railroads as to motor vehicle carriers, yet the railroads are spending millions of dollars on this one item, while the motor vehicle carriers contribute to this expense only on the same basis as every other taxpayer.

There are many safety regulations which should be made applicable to busses and trucks but motor vehicle carriers are comparatively free from restrictions in this regard. In fact, these heavy and inherently dangerous vehicles are, for the most part, subject to no more or different safety legislation than the private motor car. Safety legislation should include the prohibition of the use on public highways of extremely heavy vehicles or vehicles of extreme length and long trains of trailers should be prohibited. Provisions should be made requiring adequate brakes and frequent brake inspection, and heavy vehicles should be strictly limited as to speed upon the public highways. Drivers of heavy, and accordingly more dangerous, vehicles should be required to take an examination similar to that required by the railroads for their employes and they should also have the necessary rest periods between working hours. In most jurisdictions motor carriers are permitted to work their employes unreasonable hours, but if the railroads retain their men on duty in violation of the hours of service laws, a heavy fine is imposed upon them. The fact that motor vehicle carriers are not obligated with justifiable requirements for the welfare and safety of their employes and the further fact that, in many cases, they are paying unreasonably low wages, creates an added inequality from which the railroads suffer, for the railroads are required by law to spend considerable sums for safety and on the whole they pay much higher wages.

When one considers the many legislative restrictions that have been placed upon the railroads, while their competitors in addition to being comparatively free from such legislative and economic restraints, are enjoying public subsidies, the conclusion is forced that only the superior efficiency of the railroads as a transportation agency has prevented them from losing far more traffic than they have thus far lost. However, this efficiency can be strained to the breaking point, and unless laws are enacted which will equalize the opportunity in the transportation field, serious consequences may ensue.

AND HERE IS A SUGGESTION FOR NEWSPAPERS

Safety authorities say that the driver who cuts in and out of the line of traffic is responsible for many motor accidents. Why not assign a reporter to count the number of these offenders on the most highly traveled thoroughfares in your city during a given time some

Road Building Is Best Relief For Unemployed

Road building has been tested during the past year as a means of relieving unemployment and has been found most satisfactory, according to W. R. Smith, president of the American Road Builders' Association. More than a million men have been employed on roads and streets. Two other men are busy furnishing each road worker with supplies, he estimated.

"Money spent on public roads is spread over a wide area in both country and city. The dollar spent in road and street construction has double value; it pays the bills of the worker, and thereby aids in creating a stronger market for commodities, and it has a permanent value in decreasing the cost of highway travel that affects every one," continued Mr. Smith.

"A man out of a job needs it where he lives, and road and street work bring the job to him. Highway work readily absorbs men from all classes of industry temporarily inactive," he said.

"The public can buy highways at a bargain now—the savings in cost probably will more than offset the interest charges on road bonds. Relief of unemployment might well be concentrated on road and street construction that has been well tested and found efficient," he concluded.

Traffic Is Greatest Police Problem

(Continued from Page Four)

some method must be designed by police officers that will arouse the people and make them constantly aware of danger when they are on public streets. This applies not only to the drivers of motor vehicles but also to the pedestrians.

Therefore, to sum up the position of the police in the future, he must first discover what the problem is through every known device—records, maps, and charts—then institute a first-class educational campaign to acquaint the people with the facts and obtain their cooperation, and finally put into effect the proper legislation, and enforce that legislation fairly and evenly, without favor to the selected ones. Nothing can so destroy confidence in the efficacy of traffic enforcement as tag-squaring or the non-enforcement of desirable laws.

Sunday afternoon? If you wish, send two reporters—one to be a corroborating witness—and let them take down the numbers and publish them. It might be the means of saving a life.—Editor and Publisher.



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At present constructing Arizona F. A. P. 604-95B, which consists of grading and drainage of forty miles of U. S. Highway 89. Beginning at the suspension bridge across the Little Colorado River at Cameron and extending northward toward the Lee's Ferry Bridge on the Flagstaff-Fredonia Highway.

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State Projects Under Construction

DISTRICT NO. 1

Geo. B. Shaffer, District Engineer

Schmidt & Hitchcock have the oil surfacing of 17.8 miles beginning at the Cononino-Yavapai County line and extending west, F. A. P. 57, 80-C, 89-B and 4.3 miles Ash Fork south, F. A. P. 62-A, 90 per cent complete. F. J. Beehley, resident engineer.

Martter & Bock have the grading, draining and sub-grade stabilizer on nine miles, beginning at Crookton and extending west to Seligman, F. A. P. 80-B, 45 per cent complete. Floyd J. Beehly, resident engineer.

Canyon & Francis have the grading, draining and placing of subgrade stabilizer of 5.7 miles of the Wickenburg-Blythe road, F. A. P. 98-B, which begins at 1 1/4 miles east of Aguilla and extending toward Wickenburg, 79 per cent complete. Geo. E. Lang, resident engineer.

V. R. Dennis Construction Co. have construction on grading, draining and placing of subgrade stabilizer, mineral aggregate and oil surfacing 14 1/2 miles, which begins 1 1/2 miles east of Quartzsite and extends east toward Salome, F. L. H. P. 1-A, four per cent complete, Percy Jones, resident engineer.

Lee Moor Construction Co. has the construction of 7.2 miles, grading, draining, surfacing and oil processing, F. L. H. P. 1-C, beginning near Gonzales well and extending towards Quartzsite, 13 per cent complete. Percy Jones, resident engineer.

Ralph Pleasant has construction of Section E. and F. of F. A. 98, 24 miles grading and draining, beginning 16 miles east of Quartzsite and extending east, 37 per cent complete. Barney Hodgins, resident engineer.

Geo. H. Oswald has the construction of F. A. 59-1 Reo., which consists of

grading, draining and placing of sub-grade stabilizer and oil processing 10.3 miles—Wickenburg to Castle Hot Springs Junction—93 per cent complete. Geo. Lang, resident engineer.

DISTRICT NO. 2

F. N. Grant, Resident Engineer

Everly & Allison have completed the oil processing of 22 1/2 miles, F. A. 83-A, Sanders to Lupton, H. Pinney, resident engineer.

H. L. Royden has completed the construction of 5 1/2 miles on U. S. Route 70, beginning at Holbrook and extending east, F. A. No. 78-F, J. P. Flynn, resident engineer.

O. F. Fisher has the grading, draining and surfacing of 7.8 miles, beginning 1 mile east of Williams and extending east to Pitman Valley, F. A. 89-D, 56 per cent complete. W. T. Halloran, resident engineer.

Packard, Tanner and Morse have the grading, draining and surfacing of nine miles, beginning at Pitman Valley and extending toward Flagstaff, F. A. 89-E, 54 per cent complete. R. C. Pond, resident engineer.

Veater & Davis have the construction of F. A. 95-B (Cameron to Ridge, 40 miles on U. S. Route 89) 80 per cent complete. H. D. Alexander, resident engineer.

W. E. Callahan Construction Co. has the oil surfacing of 11 miles, beginning at Winslow and extending east, F. A. 40-B. and C., 88 per cent complete, M. Kisselburg, resident engineer.

Lewis Brothers have the construction of grading and oiling of 1450 feet of Winslow streets 13 per cent complete, M. Kisselburg, resident engineer.

DISTRICT NO. 3

R. C. Perkins, District Engineer

Western Gunite Co. has the surfacing and oiling of 30 miles from Florence to Superior, F. A. 23 A. and B. and 23 C., D. and F., 89 per cent complete. A. W. Newhall, resident engineer.

Robert McKee has the grading, and draining of 13.7 miles, F. A. 87-E, Geronimo East, 91 per cent complete, L. C. Bolles, resident engineer.

Chas. Willis & Sons have the construction of 10.8 miles of the Globe-Showlow highway, beginning 1/2 mile east of Globe and extending northeast, F. A. P. 99-B, 27 per cent complete. Carl Brannen, resident engineer.

Lee Moor Contracting Co. has the grading, draining and sub-surfacing of 11 1/2 miles of the Globe-Showlow highway, beginning at the Salt River and extending south, F. A. P. 99-A, seven per cent complete. Gus Rath, resident engineer.

State forces under J. B. Hedgpeh, engaged in tearing up and re-imixing eight miles of oil surfacing from Cutter to Coolidge Dam.

DISTRICT NO. 4

W. R. Hutchins, District Engineer

William Peper has completed the construction of 10 miles, which begins ap-

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proximately 22 1/2 miles south of Tucson and extends south to the county line. Sid Smyth, resident engineer.

Stanley Jaicks Co. has the construction of F. A. Projects 25-B and 86-D, 9.2 miles extending south from the Pima, Santa Cruz county line, 66 per cent complete. Sid Smyth, resident engineer.

Ralph Pleasant has the construction on the oil processing of F. A. P. 94-E which begins at the Pima-Pinal County line and extends south 8.3 miles, 90 per cent complete. C. S. Benson, resident engineer.

R. H. Martin has the construction on F. A. Project 18-A, which begins approximately 22 miles S. E. of Tucson and extends east 2 3/4 miles, grading, draining, surfacing and oil processing, 84 per cent complete. C. S. Benson, resident engineer.

Skeels & Graham have the grading, draining and placing of sub-surfacing of 13 miles, F. A. P. 97-B, beginning at the south end of the Sacaton Bridge and extending south, 41 per cent complete. Joe de Arozana, resident engineer.

Skeels & Graham have the surfacing and oiling of five miles, beginning at the north end of the Sacaton Bridge and extending northwest, 63 per cent complete. Joe de Arozana, resident engineer.

Skeels & Graham have the surfacing and oiling of two miles beginning at Coolidge and extending north, F. A. 94-B, 49 per cent complete. Joe de Arozana, resident engineer.

N. G. Hill & Co. have been awarded a contract for the surfacing and oiling of approximately 17 miles from Casa Grande to Picacho, J. R. Van Horn, resident engineer.

William Peper has the construction of 2 1/2 miles, beginning approximately five miles north of Bisbee and extending north, F. A. P. 79-G, 19 per cent complete, E. A. Bickley, resident engineer.

All Supply Orders Are Passed Through Stock Room And Warehouse

By W. M. Murray, Warehouse Superintendent

The Phoenix warehouse and stockroom forms a necessary part of the State Highway system.

The workings and full importance of these departments cannot be appreciated by one not thoroughly informed of the great volume of business and the many different items that necessarily must be kept in stock for the operation of a state highway department.

These departments serve as a medium between the outside projects and the accounting department. Supplies are requisitioned from the warehouse, where an adequate amount of such materials are kept on hand. Requisitions are received from the District Engineer's office, where they are sent by the Field Men for approval. When the requisitions are received in the warehouse, they are carefully checked against the stock cards, and a list of the material or parts not in stock is requisitioned from the Purchasing Agent. Through all this process, the requisition and purchase order numbers are closely allied with each purchase, so there will be no confusion when several articles, from two or three different vendors, are delivered at the same time.

Only material and parts that are called for repeatedly are stocked, all other items that are called for occasionally are ordered through the purchasing department, a requisition being sent to that department from the warehouse ordering several different articles, they in turn getting bids on same. In a few minutes the articles begin to arrive at the warehouse and are then disbursed to the men ordering them. The close co-operation between these two departments saves much time, and no delay

is caused when the articles can be bought locally.

The cataloguing and disbursement of all this material and parts require trained employees, who keep a record of all transactions made in the warehouse and the charges for the material are then passed on to the accounting department, where they are charged against the project or department using them and the bills of the vendors are audited for payment.



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Bureau of Public Roads Projects

UNDER CONSTRUCTION

C. G. Willis & Sons have the grading of Forest Highway-Oak Creek Hill Section 7-C. The project begins at the top of the Oak Creek Canyon—13 miles south of Flagstaff—and extends to the bottom of the hill, a length of 2.8 miles. Estimated cost of construction is \$187,000 and project is now 82% complete. E. J. McCracken, resident engineer.

Jasper Stacy Company has the contract for grading the 8.4 miles of Section B, Houserock Canyon National Forest Highway, Kaibab National Forest, Coconino County, Arizona, at an estimated cost of \$162,000. W. J. Nelson, resident engineer.

Lord & Bishop have the contract for oil surfacing 26 miles of the Grand Canyon Route 3 from Bright Angel Point to Cape Royal, at an estimated cost of \$285,000. This project is located on the North Rim of the Grand Canyon National Park and in Coconino county. W. J. Nelson, resident engineer.

O. A. Lindberg has the contract for grading the 13 miles of the Three Lakes Section of the Fredonia-Grand Canyon Highway, on the north side of the Colorado River at an estimated cost of \$55,000. W. J. Nelson, resident engineer.

Portions of Sections "A" and "C" of the Payson-Holbrook Forest Highway Route 11 are under Betterment and Improvement work by day labor. Portions to be so improved total ten miles in length and will cost approximately \$12,000. J. W. Chason, resident engineer.

Henry Galbraith completed, during the first week in September, the contract for the grading of Project 7-D, Upper Canyon Section of the Oak Creek Forest Highway. The project begins at the foot of the Oak Creek Hill, adjoining the Willis contract, and extends down the

Canyon to the "Call of the Canyon" resort. The length of the project is 2.9 miles. E. J. McCracken, resident engineer.

Harry Hagen has the contract for the grading of 5.6 miles of Section 2-D, Swift Trail Major Forest Development Road, in Crook National Forest, Graham County. The total estimated cost is \$68,000, and L. G. Watters is the resident engineer. Contract time started April 20th and project is now 65% completed.

Jack Casson has the contract for the surfacing by the plant mix method of 28 miles, Section "A" and "B", of the Grand Canyon-South Approach Road in Coconino County. Total estimated cost of construction is \$160,000. V. G. Watson, resident engineer. Project is now 50% completed, very little work having been done during the past month on account of moving plant and equipment to a new location.

Everly and Allison of Des Moines, New Mexico have the grading and draining of 16 miles through the Petrified Forest National Monument in Apache and Navajo counties. Estimated cost of construction is \$115,000 and work is now 28% complete. E. F. Strickler, resident engineer.

The W. E. Callahan Construction Company has the contract for the construction of the Rio Puerco and Dry Creek Bridges within the Petrified Forest National Monument at an estimated cost of \$155,000. No work other than that preliminary to construction has been completed to date. A quantity of materials and supplies have been placed on the job but actual construction of the bridges will not begin until after the summer rains are over. E. F. Strickler, resident engineer.

Hodgman and MacVicar were awarded

the contract for the grading and drainage of 20 miles of the Pine-Winslow Forest Highway Route 10, beginning approximately seven miles north of Clint's Well and extends northeast to a connection with the south end of the 20-mile project under construction by Hodgman & MacVicar. Estimated cost of construction is \$48,000 and contract is now 12% complete. C. R. Dalton, resident engineer.

Bids were opened September 1 for placing a seal coat on 19 miles of the Grand Canyon-Desert View Route within the Grand Canyon National Park. Heitsch & Bitten were low bidders and award has been recommended. Estimated cost is \$14,000. V. G. Watson, resident engineer.

Bids were opened August 20 for grading and draining two sections, Units 4 and 5, of the Payson-Holbrook Forest Highway. Lengths of the units are 0.5 mile and 1 mile respectively. Rogers Bros. were low bidders on Unit 4 and H. I. Turley was low bidder on Unit 5. Award has been recommended. Estimated cost of construction for the two Units is \$5400. J. W. Chason, resident engineer.

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NOTICE TO CONTRACTORS

Prescott-Phoenix Highway F. A. Project
No. 72-A Reo.

Bids Opened September 29, 1931

Sealed bids for the Construction of the above named Project will be received until 2:00 P. M. on the above date, and then publicly opened and read at the office of the Arizona State Highway Commission, Phoenix, Arizona. No bids will be received after the time specified.

All bids must be marked upon the outside of the envelope "State Highway Contract, Prescott-Phoenix Highway, F. A. 72-A Reo," and MUST CLEARLY SHOW THE NAME OF THE BIDDER ON THE OUTSIDE OF THE ENVELOPE.

The work, which is located approximately Eleven (11) Miles N.E. of Congress Junction, consists of the Grading, Draining and placing of Subgrade Stabilizer on approximately one and one-tenth (1.1) Miles of roadway, being a change in the alignment of the present Highway, and is to be completed on or before February 29, 1932.

Approximate Quantities

- 25,000 C. Y. Roadway Excavation.
- 200 C. Y. Drainage Excavation.
- 50 C. Y. Slides and Overbreakage.
- 300 C. Y. Structural Excavation.
- 2,300 C. Y. Borrow.
- 16,300 Sta. Yd. Earthwork Overhaul.
- 2,050 C. Y. Subgrade Stabilizer.
- 70 Lin Ft. 24 in. C.M.P.
- 2 Cattle Guards.
- 1,550 Lin. Ft. Cable Road Guard.
- 3,550 C. Y. Mi. Subgrade Stabilizer Haul.
- 240 C. Y. Concrete.
- 19,200 Lb. Reinforcing Steel.
- 1,800 Lin. Ft. Reconstructing Fence.
- 2 C. Y. Removal of Old Concrete.

Bridges

- 140 C. Y. Drainage Excavation.
- 130 C. Y. Structural Excavation.
- 104 C. Y. Class "A" Concrete.
- 10,500 Lb. Reinforcing Steel.

No contractor shall be eligible to submit a bid until his attested statements, made on forms supplied by the Arizona Highway Department, of financial resources and construction experience and equipment have been approved. Bids will be made only upon the bidding form contract in the Pamphlet and supplied by the Department, and which form will be supplied only to contractors whose statements show sufficient financial resources and construction experience and equipment to properly construct the work.

All bids shall be accompanied by an unendorsed, certified or cashier's check only, of not less than five (5%) per cent of the gross amount of the bid payable to the State Treasurer of Arizona.

The right is reserved, as the interest of the State Highway Commission may require, to reject any and all bids, to waive any informalities in bids received, and to accept or reject any bid unless

Jesse DeWitt completed about September 1, the contract for grading 1.2 miles (Units 2 & 3) of the Payson-Holbrook Highway. Projects begin ½ mile southwest of Heber in Navajo County and extend toward Holbrook. J. W. Chason, resident engineer.

SURVEYS

Payson-Indian Garden-Colcord Survey, Forest Highway Route 11, beginning at Payson and extending eastward for an approximate distance of 40 miles, to a connection with the Young-Holbrook Highway near the Gila-Coconino county line. Survey began March 15th. J. H. Brannan, locating engineer.

Strawberry Hill Survey, a portion of Pine-Winslow Forest Highway Route 10. Approximately 8 miles in length. Survey began June 10th. J. H. Brannan, locating engineer.

Hermit Rest Survey and Hermit Rest to a connection with Bass Camp Survey. Located on the South Rim of the Grand Canyon in the Grand Canyon National Park. Approximately 12 miles in length. F. H. Horton, locating engineer.

BIDS TO BE OPENED

Bids were opened in Phoenix September 10 for the grading of four units of the Payson-Holbrook Forest Highway totalling 1.6 miles in length.

Bids will be opened at the Grand Canyon September 15 for placing a seal coat on 11.25 miles of the Grand Canyon-South Approach Road adjacent to the Grand Canyon National Park.

Plans and specifications have been prepared for the placing of subgrade stabilizer and oil treated crushed rock or crushed gravel surfacing (by the plant mix method) on 17 miles of the Grand Canyon-South Approach Road. Bids will be opened at the Grand Canyon September 24.

VEHICLES ARE SAFE

Nearly 89 per cent of the 32,500 persons killed in automobile accidents in 1930 were the victims of motor vehicles that were apparently in good mechanical condition at the time of the mishap. This means that in the death of more than 28,000 persons, the cars involved had nothing wrong with them which contributed to the cause of the accident.

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such bid is qualified by specific limitations.

STANDARD SPECIFICATIONS—Copies of the Standard Specifications, Issue of October, 1930, may be purchased for Three (\$3.00) Dollars the copy. Checks should be made payable to T. S. O'CONNELL, State Highway Engineer.

PLANS — PAMPHLET (For Bidders ONLY)—Copies of the Plans and Pamphlet may be issued to qualified contractors having a copy of the Standard Specification of above issue, and upon deposit of Ten (\$10.00) Dollars. Deposit will be refunded should Plans and Pamphlet be returned within ten (10) days after opening of bids.

PLANS & SPECIAL PROVISIONS (For Non-Bidders)—Copies of the Plans and Special Provisions, without Bidding Schedule, may be obtained upon deposit of Ten (\$10.00) Dollars. Deposit will be refunded should plans and special Provisions be returned within ten (10) days after opening of bids.

The Standard Specifications of the issue of October, 1930, shall be used for all Projects until July, 1931, or until notification that a new issue is ready for distribution.

The bidder will be required to comply with the provisions of the Specifications and contract in bidding and the award and execution of the Contract.

T. S. O'CONNELL,
State Highway Engineer.

Phoenix, Arizona, September 15, 1931.

Ben D. Cooley

COMMERCIAL PHOTOGRAPHER

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Road Conditions, Arizona State Highway System

These conditions were reported as of Sept. 4th. Changes will occur on roads under construction according to progress of the work.—(Editor's Note).

U. S. Route 80, Yuma to Rodeo, 518 Miles: All paved, oil surfaced or graveled. Condition good. Two and a half miles under construction west of Benson, short detour, good condition, 0.18 mi. long.

U. S. Route 66, Topock to Lupton, 396 miles—Gravel surface, oiled or paved. Condition good excepting nine miles under construction east from Seligman, three mile detour, good condition. Sixteen miles under construction east of Williams, three mile detour, good condition.

U. S. Route 180, Florence Jct. to State Line, 183 Miles—Gravel or oil surfaced—Condition good. 13 miles under construction east of Geronimo, two short detours. Eight miles of oil surfacing, Solomonville to Duncan completed.

State Route 88, Apache Jct. to Globe, 83 Miles. — Gravel surface. Condition good, excepting between Fish Creek and Roosevelt Dam badly washed and under repair. Drive carefully.

State Route 73, Cutter to McNary, 104 miles—Gravel Surface Cutter to Rice and White River to McNary, other unimproved. Fair condition.

State Route 71, Clifton Jct. to Spring-

erville, 157 Miles—Gravel and partly surfaced. Condition good, Clifton Jct. to 40 miles north of Clifton. Cherry Lodge to Hannigan good except when raining. Alpine to Nutrioso good. Nutrioso to Springerville good excepting caution by 7.3 miles under construction near Springerville.

U. S. Route 89, Nogales to Fredonia, 660 Miles—Gravel, oil or paved surface to Flagstaff, graded and drained to Cameron! unimproved Cameron to Jacob's Lake; 40 miles under construction north of Cameron; gravel Jacob's Lake to Fredonia. Condition good excepting 26 miles under construction between Nogales and Tucson. Use precaution. Oil surfacing nearing completion. Hot Springs Junction to Wickenburg and 4.3 miles of oil surfacing south from Ash Fork completed.

U. S. Route 70, Holbrook to State Line, 109 Miles—Gravel surfaced, condition good to excellent excepting five miles east from Holbrook, under construction and nearing completion. No detours.

State Route 79, Prescott to Flagstaff, 91 Miles—Gravel or oil surfaced to Sedonia, graded and drained Sedonia to Flagstaff. Condition good excepting for construction in Oak Creek Canyon which at times is impassable. Sedonia to Flagstaff slow in wet weather.

State Route 74, Wickenburg to Ehren-

burg 721 miles—Surface low type improved. Fifty-one miles under construction from Gonzales Well east. Detours slow when wet.

State Route 81, Douglas to Safford, 128 miles—Gravel surfaced. Condition good.

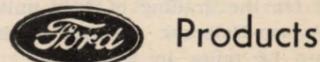
State Route 187, Sacaton Dam to Casa Grande, 13 Miles—Gravel surfaced. Condition good.

State Route 83, Vail Junction to Sonoita, 28 Miles—Gravel surfaced. Good.

State Route 82, Nogales to Tombstone Jct., 70 Miles—Gravel surfaced. Good.

State Route 84, Tucson to Gila Bend, 124 Miles—Oil surfaced Tucson to county line, gravel surface to Casa Grande. Part surface to Gila Bend. Road under construction Picacho to Casa Grande.

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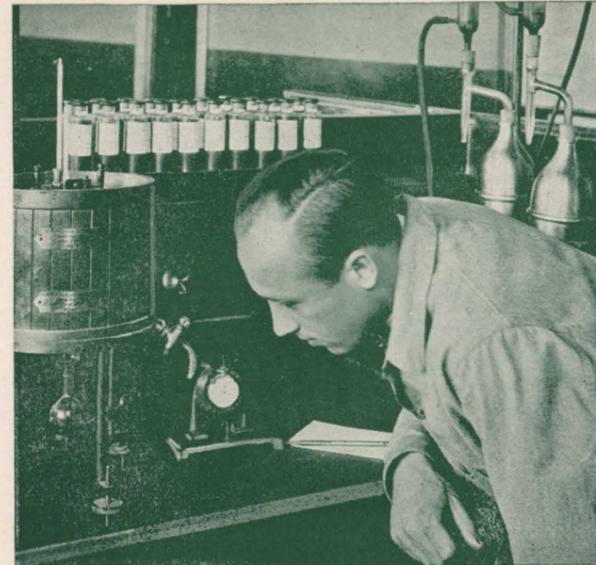
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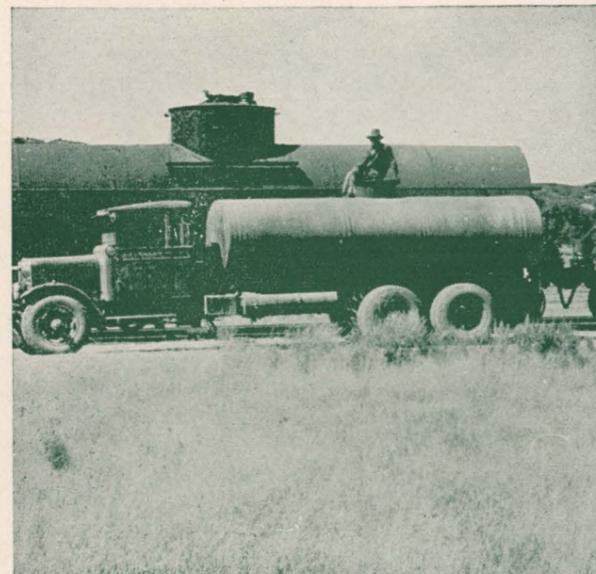
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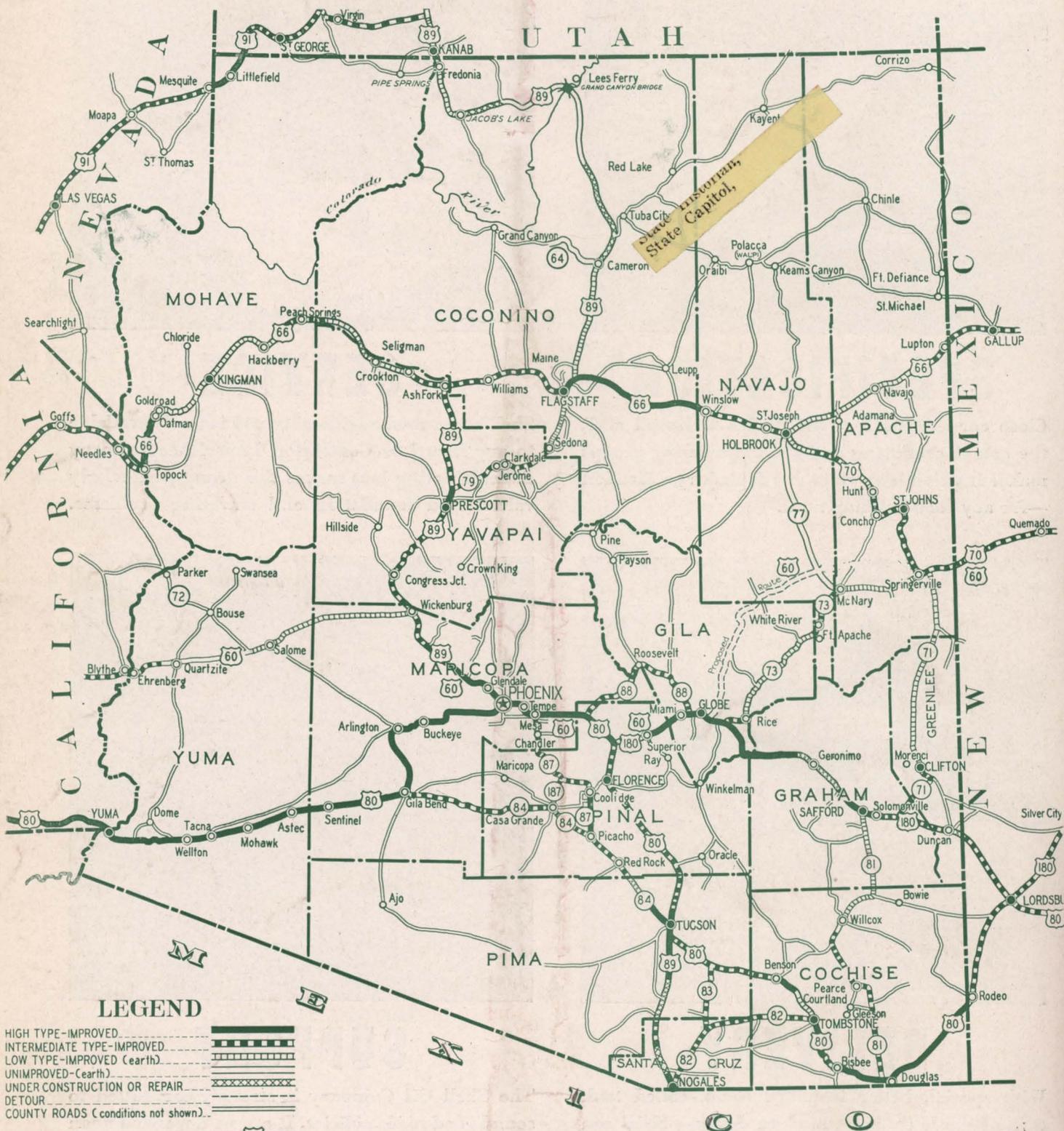
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The Shell Oil Company is strongly committed to sound good-roads policies. It can be depended upon to support the local and regional efforts of groups interested in road development.

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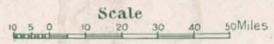
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LEGEND

- HIGH TYPE-IMPROVED
- INTERMEDIATE TYPE-IMPROVED
- LOW TYPE-IMPROVED (earth)
- UNIMPROVED (earth)
- UNDER CONSTRUCTION OR REPAIR
- DETOUR
- COUNTY ROADS (conditions not shown)
- U. S. ROUTE No.
- STATE ROUTE No.

ARIZONA HIGHWAY DEPARTMENT CONDITION MAP OF STATE HIGHWAY SYSTEM



STATE ROUTE MARKER



FEDERAL ROUTE MARKER

39978