

Vol. 9 # 9

Occidental College Library ✓

CALIFORNIA  
DOCUMENT

# CALIFORNIA HIGHWAYS and PUBLIC WORKS



*Conserve This Water!!!*

*This photograph was taken at Burney Falls, Shasta County*

OFFICIAL JOURNAL OF THE DEPARTMENT OF PUBLIC WORKS, STATE OF CALIFORNIA  
SEPTEMBER, 1931

---

---

## Table of Contents

---

	PAGE
\$1,500,000 for Extra Work for Unemployed This Winter.....	1
<i>By Walter E. Garrison, Director, Department of Public Works</i>	
Secret Service Corps to War on Incendiarism.....	2
Western State Water Engineers to Meet Here in October.....	4
Termites Causing Great Loss in California.....	5
<i>By C. H. Kromer, Chief Structural Engineer, Division of Architecture</i>	
Maintenance Shops Establish Enviably Record.....	6
<i>By Al Banks, Assistant Deputy Director</i>	
Highway Commission Chairman Travels All Over State.....	8
Sacramento-San Joaquin Water Problems Analyzed.....	10
Editorial Urges More Publicity for State Water Plan.....	11
Three Shifts Rush Work of Moving Phone Cables for Bridge.....	12
Contract to be Let for Bridge Foundation Borings.....	14
All Roads Lead to California for Tenth Olympiad.....	15
<i>By G. T. McCoy, Principal Assistant Highway Engineer</i>	
Department Exhibit Attracts Crowds at State Fair.....	18
Ceremony Held at Opening of Bartlett Springs Road.....	22
How Highway Department Removes Fire Hazards.....	23
Long Fight Over Colorado River Water Brought to End.....	30
Engineer Reports on Water Resources of California.....	31
What Is Done With the California Highway Dollar.....	32
Vital Statistics on Dam Construction.....	34
Woman's Garden Attracts Attention at Boulder Creek.....	35
Contractors Buy Airplane to Fly to Different State Jobs.....	39
Highway Bids and Awards for August.....	40
Water Applications and Permits Granted.....	42
Who Gets the Tourist's Dollar; How It's Divided.....	41

---

---

# \$1,500,000 *Allotted for Extra Work This Winter*

**Heads of Families Will Be Given Employment for Five Months By Department of Public Works—Men to Be Used Near Community in Which They Live**

By COLONEL WALTER E. GARRISON, Director of Public Works

**I**N FURTHERANCE of State Administration's plan to speed up all public work for the alleviation of unemployment, the Department of Public Works will provide part-time employment for an additional 3800 men during the winter months.

The larger part of the work will fall under the immediate direction of the maintenance service of the Division of Highways. Something like \$1,500,000 has been appropriated for pay rolls.

The plan calls for men and hand tools. It represents work that under any condition or at any time would call for man power. It is not a machine job; there is discrimination neither for nor against machinery. The work schedule has been simply advanced by a year or more in order to give to the unemployed jobs at a time when jobs are most needed.

#### NOT CHARITY WORK

The work will not be done haphazard. It will not be created as a charity. The expenditure has been well planned. The emergency simply meets the work. The various jobs will be as carefully laid out and as carefully supervised as any done in the usual efficient construction and maintenance service.

It is the intention of the Department of Public Works to distribute the improvement work over the State. As far as possible each locality will profit some from the wage returns; and each section will have its share of the improvement benefits.

#### FOR NEEDY MEN

The semiofficial relief agencies of the several counties and cities will be recognized in proposing work for needy men. In due time, they will be informed as to the quotas that can be cared for, and of the procedure necessary to contact the personal officers.

The invariable rule of employment will be that married men come both first and last.

Preference will positively be given to them. But single men who can prove that they are the sole support of dependents will not be excluded from consideration.

The plan contemplates three days work each week for the men, the crews being divided and working in alternate periods. The wage will be the going wage for laborers, which will probably be \$4 per day.

#### THROUGH THE WINTER

The Highway Division and its district aids are now working out the state-wide plan. It is expected that the organization will be ready for action by October 15th. Present indications are that the Division will be able to spread the work over a five months' period. This will carry many families through the winter.

This expenditure of \$1,500,000 will not be in the nature of a gift by the State to the unemployed. The men will earn their money. The State will get dollar for dollar in the betterment of roads and highways.

In pressing the departments for action like that being taken by the Public Works Department, Governor Rolph is doing more than provide work for several thousands of men. He is pointing out to industry everywhere a wise plan to pursue—that of advancing work schedules to meet unemployment and showing confidence in the innate stability of our institutions.

#### DOING THEIR BIT

I do not doubt that our community leaders will cooperate with us in getting the best results in distributing the benefits of our extra labor program.

We do not for a minute fancy that these few thousand men at work will do more than assist in solving the big problem that lies ahead.

But Governor Rolph and the Department are determined to do their bit, and to do it.

(Continued on page 33)

# Secret Service Corps Wars on Fires; Incendiarism Blamed for Big Losses

1 1 1 1 1 1 1

**A**DDRESSING the "Stop Forest Fires" Committee at its recent session in Los Angeles, Chairman M. B. Pratt, in reporting for the work being done by the Division of Forestry, told the members present that, considering the acute fire menace of the year as warned against last May in the fire proclamation issued by Governor James Rolph, the fire situation had been kept quite well in hand.

The assertion of the State Forester is evidenced by the splendid low fire record maintained through the strenuous season in the southern portion of the State and the few fires occurring in the national forests prior to the July outbreak of incendiarism.

#### INCENDIARY ORIGIN

**"Were it not for fires of incendiary origin in northern and central parts of the State,"** says Pratt, **"the entire fire record of the year would have been held to one of the lowest in the history of fire prevention work."**

Pratt contributes the causes of the incendiary outbreak this year to unemployment, boys craving excitement during periods of fires and the long standing desires of selfish interests to rid certain areas of brush for definite purposes.

Carelessness of fires along highways, railroads and stage routes, in logging operations and by sportsmen and recreationists along streams and in the forests, as direct causes of grain, brush and forest fires, has been greatly reduced in the opinion of both State and Federal forest officers, leaving incendiarism at the top of the list of man-caused fires in California this year as well as throughout the great Northwest.

#### PUBLIC EDUCATED

Forest officers openly express the opinion that the activities of the Department of Public Works in converting the highways into first lines of defense against fires and in educating the traveling public against throwing lighted materials from moving vehicles are getting direct results of a far-reaching nature.

With all man-caused fires, except incendiary origin, actually reduced to almost a minimum by the forces coordinated by Governor

Rolph, the California Fire Emergency Committee through the State Chamber of Commerce is now conducting a stringent campaign to wipe out incendiarism by changing public sentiment.

#### SECRET SERVICE

The backbone of the campaign in each county is the Vigilante Committee formed by the County Fire Emergency Committee along lines developed by the Placer County Fire Emergency Committee.

The secret service part of the campaign as outlined includes:

- (1) State Forester Pratt has appointed a State Chief of 32 years' experience in law enforcement work in charge of the campaign.
- (2) Each County Fire Emergency Committee has named a County Chief.
- (3) Each County Chief has named a Secret Service Corps, limited in number and deputized as peace officers.
- (4) The Vigilante Committee.
- (5) A contact man named by the State Chamber.

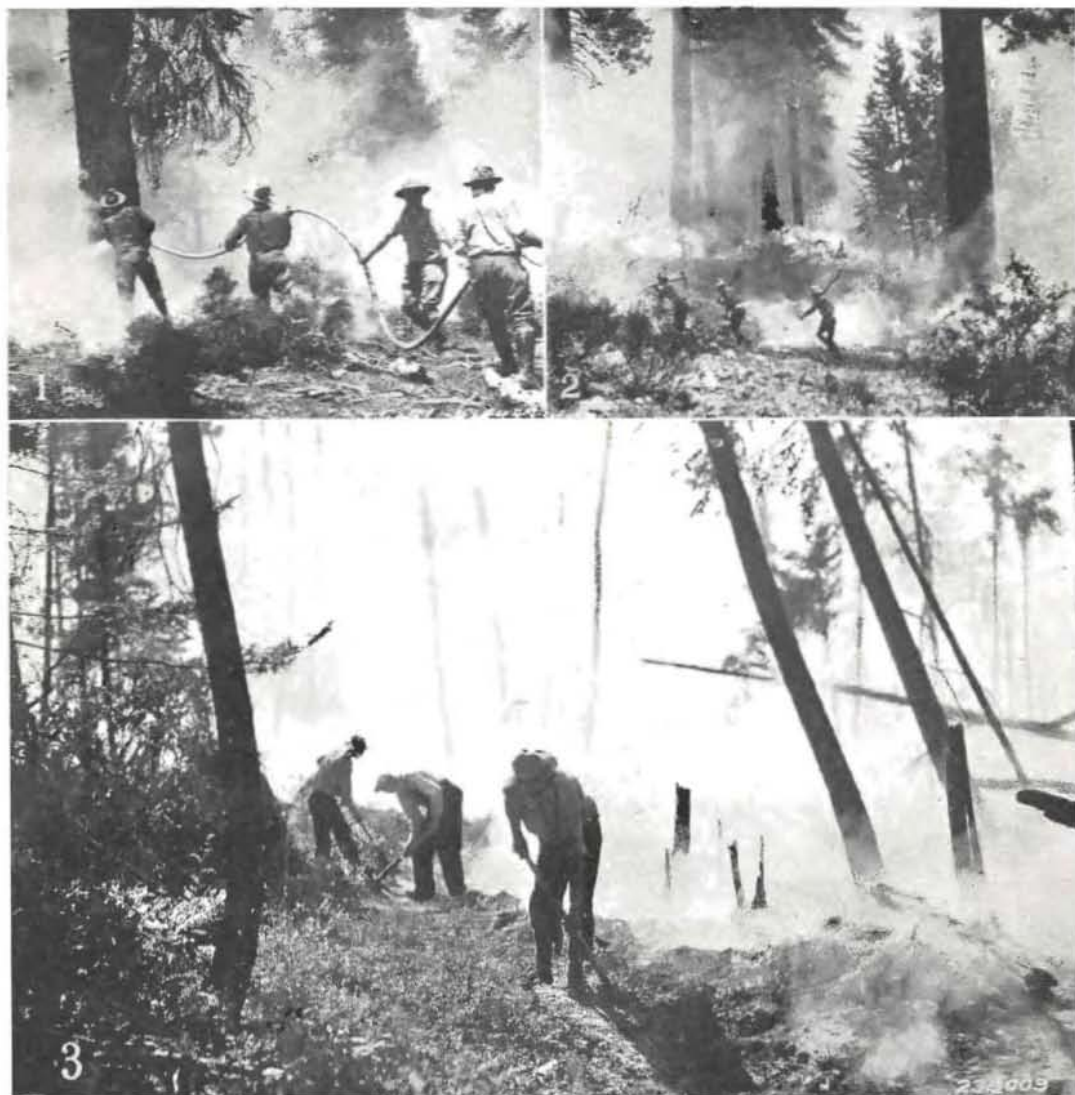
#### DRASTIC MEASURES

The latest methods of modern police tactics in secret shadowing, secret patrol and secret signaling will be established between the secret service corps operating in the forests and the vigilantes operating throughout the county.

"I feel this is the most effective method of stopping incendiary fires that has yet been evolved," said the State Forester. "The people demand drastic measures, and the recent arrests and convictions already secured lead me to believe that public opinion will soon have the incendiary situation well under control.

"In the fire problem of California, public opinion must consider the depletion of the State funds in the budget for fire suppression; the deep inroad made on the State Emergency Fund badly needed for other purposes; the losses to counties in assessable valuations; the hindrances to future lumbering operations; destruction of valuable watersheds; destruction of wild life and keeping tourists out of the recreational grounds of the State."

## Firebugs Cause Havoc Like This!



**RED TONGUES OF DESTRUCTION.** Three remarkable close-up photographs taken by the United States Forestry Service showing their men battling against forest fire. Number 1 is a crew of men advancing on the flames with hose attached to a pump engine at nearby stream. No. 2 shows what must be done when water is not available. The three men, armed with shovels, are rushing to a new point of attack, risking their lives to halt the devastation. In No. 3 the men are building a trail down to mineral soil in advance of the fire and throwing dirt on smouldering logs and brush to prevent spread of sparks. And incendiaries have caused most of this summer's fires!

## Western State Water Engineers Meet In Sacramento Conference Oct. 28th

**T**HE FOURTH Annual Conference of the Association of Western State Engineers will convene in Sacramento October 28th. It promises to be one of unusual interest not only to the Federal and State representatives, but to the public as well.

Conflicts between Federal and State jurisdiction over the use and control of water which have arisen in recent years will receive attention, as will conservation and administration of the public domain, forethought in the planning of water resources development, and a multiplicity of other subjects which are of vital interest and concern to public officials charged with the responsibility of administering the water resources of the western states and to all thoughtful citizens.

### TO EXCHANGE THOUGHTS

The Association originated in the need of western state water officials for some agency or medium for exchange of thoughts and experiences on water matters. The seventeen states having membership are Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming—all of which are arid or semiarid and have many common problems arising from that fact.

Because a solution of these problems requires ready contact with and cooperation of the U. S. Bureau of Reclamation, the Division of Agricultural Engineering of the Department of the Interior, the U. S. Forest Service, the U. S. War Department, the Federal Power Commission, and the U. S. Geological Survey, those Federal offices each have named a representative to serve with the Association as associate member.

### LENGTHY PROGRAMS

The Association first met during the Colorado River Conference at Denver in the fall of 1927, and there have since that time been three annual conferences, at Salt Lake City, Reno and Denver. This fourth conference which convenes in Sacramento, will meet October 28th, 29th and 30th.

The programs of previous conferences have included discussion of proper State control

and protection of individual appropriators of underground water, the relation of the Federal government to the states in the matter of control of water, interstate compacts, national legislation of common interest to arid states, duty of water with special reference to adjudication and administration, laws governing construction and operation of dams, measuring devices for apportionment of water, ownership status of return flow, the forecasting of run-off by the snow survey method, future reclamation policy, the proposal to cede unreserved Federal lands to the states, flood control and stream regulation, and many other related subjects.

The benefits of the Association have not been restricted to those intangible values arising out of discussion. The Association has moved with telling effect in connection with a number of important matters vital to the West. Its action in connection with the delay in publication of cooperative stream flow data and topographic maps of the U. S. Geological Survey has had a very tangible result in speeding up this work. Whereas, publication of stream flow data was formerly three and one-half to four years in arrears, the Survey now promises that at the close of this fiscal year, Water Supply Papers will be current. Progress is also being made in reducing arrearage in the publication of topographic maps and it is expected that very shortly one and one-half to two years will be cut from the time heretofore required for publication. The benefits to users of these data can scarcely be overemphasized.

### LICENSE FEES

The Association also interested itself in the matter of Federal Power Commission license fees, which it appeared were not being distributed to the states in accordance with the allocation prescribed by the Federal Water Power Act. It has since been ruled by the Comptroller General of the United States that the fees were being erroneously distributed and California alone has already received some \$109,000 in fees which it would not otherwise have received. The allocation to the U. S. Reclamation Fund, which affects

## If Your House Gets Shaky, Look Out! It's the Little Termite Eating Dinner

Termites, deadly enemy of all things wooded and many that are not, are causing tremendous loss throughout California. The writer of this article, an authority on this insidious White Ant, tells a highly interesting and entertaining story of the destructive work of the insect and at the same time sets forth the remedies best fitted to halt the ravages of its attack.

By C. H. KROMER, Chief Structural Engineer, Division of Architecture

**I**NSECT infestation of the wooden portions of certain of the State's buildings, has, within the past few years, given considerable concern to the Division of Architecture, especially since we have every reason to believe that these insects are increasing at an alarmingly accelerated rate. I refer particularly to termites, "or so-called White Ants," which attack the softer woods such as pine and, to a limited extent, redwood, and incidentally to the wood beetles which attack hardwood as, for example, maple or oak.

Timber is subject to the attack of numerous pests such as marine borers, fungus growths, and rot, but this attack is more or less in the open and controllable, whereas, the ravages of the termite are so insidious that often the first indication of their presence is a collapse of some portion of the structure. On the other hand, while the wood beetle is very unlikely to cause serious structural damage, it is rather aggravating to find hardwood floors or furniture reduced to dust. The termite works along the grain of the wood thereby providing passageways for his activities, whereas the wood beetle cuts across the grain of the wood remaining at the point of activity until it reaches maturity.

### WOOD BECOMES POWDER

The wood beetles with which we have come in contact, such as the "Powder Post Beetle" and the "Death Watch Beetle," confine their attack almost entirely to the hardwoods, reducing them to a characteristic wood pow-

der. Their attack is entirely local and, since they spread very slowly, can usually be very easily controlled. However, very material damage may be done when they have been present in the wood for a long period of time.

Westminster Abbey, London, is an outstanding example where very serious damage was done by the "Death Watch Beetle." The hammer beam trusses and other structural framing were so badly eaten that very extensive repairs had to be made.

The adults are dark brown in color, about one-fifth inch or more in length, while the larvae are pale yellow in color and curled in shape. It is the larvae that do the damage to the wood. Each beetle has its own individual opening to the surface. Both the adult and larvae are a species of "Coelostethus," probably "Quadrulus."

The Powder Post Beetles belonging to the genus "Lyctus" are considered to be of the most economic importance. They can be eliminated by forcing Ortho or Parachlorobenzene into their workings through openings in the wood or by fumiga-

tion. A liberal application of pure kerosene oil is quite effective. Best results are obtained by removing infected wood and burning it.

### EAT THROUGH TIMBERS

Contrary to popular belief, the small, blackish, white-winged insects swarming in large numbers in the Spring and Fall, after the first warm rains, are not ants or even distantly related to them. They will very prob-



HE'LL GET YOU if you don't watch out. It's the Termite or so-called "White Ant" that is doing so much damage to buildings.

# What Makes the Wheels go Round? Highly Organized Maintenance Shops

By AL BANKS, Assistant Deputy Director

**F**AR UP in the big hills, far out on the desert stretches and far along the broad thoroughfares of valley and coast, the motor vehicles of the Highway Division sing their song of unceasing activity. Anywhere and everywhere in the great State, the motorist meets them. These French gray machines travel far; and are work driven. Yet, always, they radiate power and purpose.

Four hundred and fifty passenger cars, eight hundred trucks and nearly two thousand pieces of equipment—these are some of



**JUNK?**—Well maybe it looks like it but the Highway Patrol won't be minus a car long—not after the boys at the Maintenance Shop get busy on "fixins."

the tools used by the brain and brawn of the Division.

Back of the efficiency of the motorized fleet are the mechanics of maintenance; and back of maintenance is a shop system.

## BUSY AS BEEHIVES

The shop and the system are centered in the Headquarters Shop in Sacramento. Around it are grouped the shops of the ten divisions. In the Headquarters Shop there is service all the way from adjusting a carburetor to building a great forest fire fighting machine. The Sacramento Shop site comprises 117,500 square feet of space, of which 52,000 feet are under cover. It carries an annual pay roll of nearly a quarter of a million and hundreds of thousands of dollars in equipment purchases passed through the shop during the year.

**The Headquarters Shop is something more**

**than a garage or repair station. It devises new tools for the road builders. It adapts or rebuilds equipment to suit their particular needs. It is a self-sustaining industry.**

## FIRE TRUCKS "DELIVER"

During the last 18 months the shop has built 25 motorized fire trucks, ranging all the way from the Ford type up to the heavy six-wheel Moreland. These trucks carry tanks of considerable capacity; their pumps are strong and they are equipped for every emergency. Speed and power, pressure and supply are combined to a marked degree. The power plants, the wheels and framework of the original trucks remain, but the whole purpose of the equipment has been made to serve the fire fighting service. The reconstructed trucks represent careful planning and expert mechanical service; and, best of all, those already in service have "delivered the goods" against the fire fiend of the hills.

The Equipment Department or shop system had its inception at the close of the World War when the Federal government distributed vast quantities of motor vehicles and other

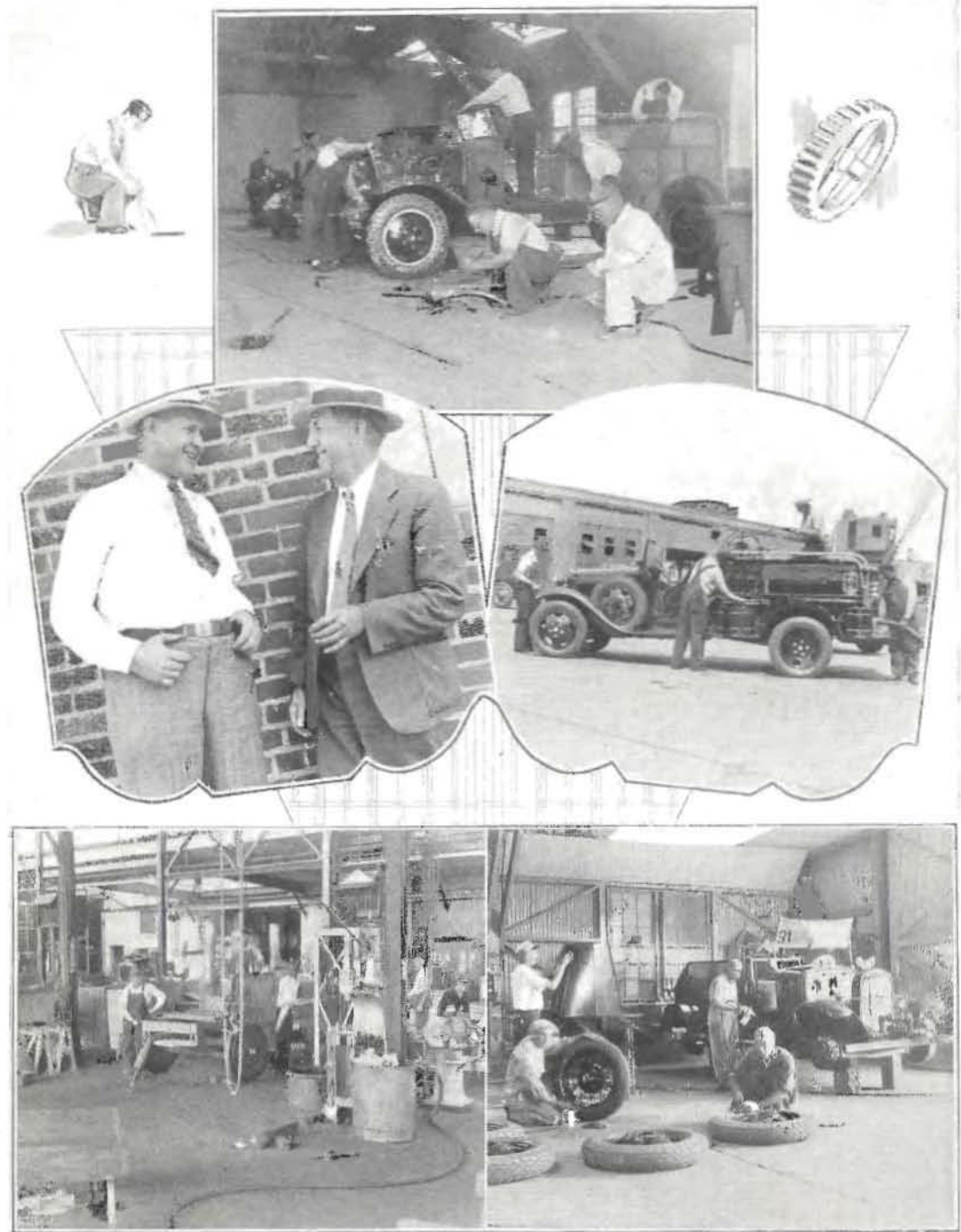


**PRESTO!**—Here it is, just like new and Inspector Morrison can not understand how 'twas done as he and Officer I. C. Kimball take delivery from Al Montijo.

road building equipment and supplies to the several states. The original cost to the government of the equipment distributed was approximately \$5,000,000. Much of it, however, was received in a used condition and its actual value at the time of delivery was much below the cost. During the time this stock was being distributed, the principal

(Continued on page 24)





**VERSATILE THESE CHAPS**—They'll fix your carburetor, build you a fire wagon, turn out a snow shovel or—what have you. The scenes are at the Sacramento Maintenance Shop. The top picture is a corner of one of the repair departments. Left center, F. E. Burnside, Superintendent, is telling R. H. Stalnaker, Equipment Engineer, that one about the Austin and the Buick. Next, a crew putting finishing touches to the twenty-fifth fire wagon built at the yards. Below, the heavy Equipment Shop, and right, the Paint Shop.

## Federal Aid Money For Highways Paid When Work is Done

THE PREVALENT idea that Federal aid money for highways is an unconditional gift to the State is not true. The checks from Washington do not come in like Christmas gifts. The payments are on work already finished and paid for in the first instance by the State. They represent an approval payment on work initiated and carried through by the Highway Division under Federal approval. Always, the State must first earn the money by making its exhibit of work accomplished.

Up to August 1st of this year, the allocations of this fund to California had reached \$37,899,055, of which \$33,077,154 has been paid. Sometime in December, the balance, about \$4,500,000 is expected to reach the Division Treasury.

Federal aid for highways began in 1916 as a result of the government's recognition of the need of interstate and local roads for the movement of commerce in time of war. It was first predicated on the assumption of Federal interest in post roads, but was gradually developed to its present wide and liberal application. It was really not until 1921 that the system was raised to its present status of well defined policy and liberality.

Not alone the money, but the cooperation of the Federal engineers is invaluable to the great program. The coordination of Federal and State agencies is so well accomplished that their programs move in helpful unison.

### STAKES OR STEAKS

This is just what happened, not so long ago, At the Highway Office, District I, you know.

The surveyors needed, stakes from redwood trees, (By the way, what others are as good as these?)

So phones Mr. Cramer to the Scotia Mill, "Have you any stakes there, and if so what will—?"

"Just a minute, mister," comes back the reply, "We'll get you the butcher. He has a supply."

W.H.W.

The auto is a great moral force; it has practically stopped horse-stealing.

"You seem to have had a serious accident."  
"Yes," said the bandaged person. "I tried to climb a tree in my motor car."  
"What did you do that for?"  
"Just to oblige a lady who was driving another car. She wanted to use the road."—*Wheel*.

## By Poetry and Song He Moves Along, Does Chairman Earl Kelly

"WHICH three in that group of kids are our youngsters, dear?"  
It's Earl Lee Kelly, talking to his wife. He's just returned from a highway tour as Chairman of the California Highway Commission.

And he's away from Redding so much since becoming a Governor  
Rolph lieutenant that, with characteristic caution, he doesn't want to pick up and hug the wrong youngsters.

But seriously, Kelly is inspecting every mile of the California highway system and has covered more than half of it in seven months.

### CARRIES FIVE SUITS

And his office force, running his private business for him, clocked him last month and found that he had spent 58 per cent of his working hours outside his office, busy in the affairs of his nonsalaried commissionership.

He's quite systematic in his travels. He carries at least five suits of clothes (who has five suits of clothes these days?) in a trunk on the back of his car and is quite an adept quick change artist.

Drives his own auto, mostly alone and composes his speeches while reeling off the miles. Loves poetry and generally, unless restrained by his friends, manages to inject two or three into every speech he makes.

### PIPE THE PANTS

Is an ornament to the Rotarians because he's a singer and all Rotarians love to sing—or sing *at* something. He has an eight years' perfect membership in the Rotary Club.

And all the above is the peg upon which to hang the picture on the opposite page, taken of Mr. Kelly when he was quite, quite young and a student at U. C., pants and all. This snapshot was stolen in true "yellow journal" style by a certain Shasta County politician and "sold" in true Scotch style to the editor as a "scoop" of the first water and importance.

Automobiles in unfit mechanical condition for driving are being removed from the highways of Delaware. By direction of the Secretary of State and the Delaware Safety Council, a greater part of the registered automobiles in the state were inspected and a warning issued that all drivers of cars not displaying the official windshield sticker of inspection will be stopped by the traffic officers.

THE SPANIARD THAT BLIGHTED MY LIFE..



HE WAS IN THE U. C. GLEE CLUB, CLASS OF 1915



HE ALSO TOTED THE BALL A BIT

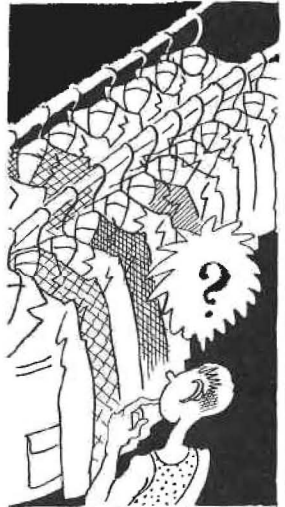


IN THE BOSOM OF HIS FAMILY - WHICH DOESN'T LOOK LIKE THIS

# Then...



WHAT A MAN he was in those days with the peg top college pants and all. It's the dignified and distinguished Earl Lee Kelly, Chairman of the California Highway Commission, the snap being taken many years ago. Mr. Kelly is traveling over every mile of State Highway and will then begin on county roads. He was once Mayor of Redding and has a host of friends in Northern California. As a poet his acquaintances declare he's a good singer.



THE NUMBER AND VARIETY OF HIS SUITS AMAZE THE WORLD

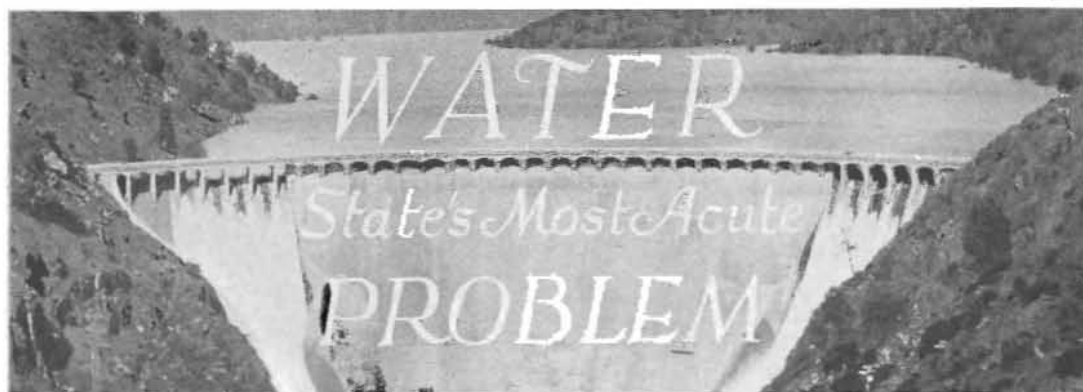
THAT REMINDS ME OF THE IMMORTAL WORDS.. "YOU TAKE THE HIGH ROAD.."



HE WORKS A POEM OR TWO INTO EVERY SPEECH



HE KNOWS THE HIGHWAYS BY THEIR PET NAMES



This is the second of a series of articles on the State's water problem. The first article, printed in last month's issue of *California Highways and Public Works*, dealt with the Governor's call to the citizens of the entire State to unite for a successful solution of the problem. This article deals with the Sacramento Valley and Sacramento-San Joaquin Delta situation. Like analyses will follow.

The Sacramento Valley and the Sacramento-San Joaquin Delta comprise the northerly part of that extensive mountain-girdled area known as the Great Central Valley of California. Due to favorable climatological conditions throughout the Sacramento Valley, dry farming has been more successfully carried on in the past than in the San Joaquin Valley and southern California. However, during the past two decades the irrigated area has greatly increased, and nearly 500,000 acres have been added to the irrigated acreage.

A great variety of crops are now produced in the Sacramento Valley. Many thousand acres of barley, wheat and oats are grown. In a great deal of the valley and foothill area conditions are especially favorable for growing many kinds of fruit. Peaches and pears are produced in large quantities. Thermal belts make possible the production of sub-tropical fruits including oranges, lemons and grapefruit. Almonds, prunes, vegetables, sugar beets and alfalfa are also important crops. The diversity of crops is indicative of the fertile soil and equable climate.

#### RECLAMATION AREA

The Sacramento-San Joaquin Delta is a reclaimed area of wonderfully productive soil; a vast vegetable garden with almost every known American vegetable, produced in immense quantities to supply the nearby markets and canneries. Ninety-five per cent of the world's supply of canning asparagus is grown in the delta.

The water problems of these two regions are closely related, as a large part of the water supply of the delta comes from the Sacramento River. During the past decade, in its investigation of the water resources of the State, the Division of Water Resources has made an inventory of all the waters within the State. In this work, committees of eminent consulting engineers familiar with the water problems of the Sacramento River Basin and the Sacramento-San Joaquin Delta have given their advice in outlining the investigations and have given their counsel on all phases of the problems. During the past two years the members of the committees were, G. A. Atherton, B. A. Etcheverry, J. D. Galloway, H. L. Haehl, F. C. Herrmann, W. L. Huber, J. B. Lippencott, T. H. Means and F. H. Tibbetts.

The mountainous drainage area of the Sacramento River Basin contains 21,369 square miles and contributes 34.8 per cent of the stream flow of California. In determining the water supply of the Sacramento Basin, study was made of a forty-year period from 1889 to 1929. This period starts with several wet years, contains both wet and dry cycles and including one of the longest and driest cycles of record. The mean seasonal run-offs are estimated to be as follows:

	<i>Acre-feet</i>
40-year mean—1889-1929.....	24,801,000
20-year mean—1909-1929.....	20,593,000
10-year mean—1919-1929.....	17,920,000
5-year mean—1924-1929.....	19,027,000

(Continued on page 20)

## "State Water Problem Still Needs Adequate Broadcasting"

*From San Francisco Chronicle, September 1st*

**T**HE GOVERNOR'S State-wide Water Committee has before it and within its powers the first essential before any positive action can be expected on the water question. This is to make the people of California realize their interest in action.

The facts in the California water problem are clear. The State has a good deal of water—but not in the right places. In some parts of the State is more water than is needed—in other parts not enough. Three-fourths of the State waters, to quote from the Governor's message, lie within the northerly third of the State, while three-fourths of the ultimate demand lies in the southerly two-thirds of the State.

Irrigation now absorbs the summer flow of the streams of southern California and of those entering the San Joaquin Valley. Irrigation from wells in both southern California and in the San Joaquin Valley has in many places lowered the underground supplies below the pumping limit. Irrigation absorbs the summer flow of the rivers entering the Sacramento Valley to an extent that barely leaves enough for navigation of the Sacramento River and not enough to prevent encroachment of ocean brine on the Suisun Bay towns and industries and on the farm lands of the river delta.

Most of these rivers run high in winter and spring with water which wastes to the sea. This is especially true of the Sacramento-American-Yuba-Feather-Pit system, which is the big river layout of California, with the watershed of most rain and snowfall.

The problem is to hold these winter and spring floods and distribute the water throughout the summer where it is needed. Schemes have been proposed to put storage dams on all these rivers. This would be ideal but is a large order at the moment. Besides, many or most of these streams offer no suitable reservoir sites over and above the ones now utilized by dams.

The largest unit of all, likewise the one with the greatest storage possibilities, is the Sacramento-Pit system, which now has no storage reservoirs. It is obviously the one for the first reservoir, the river on which the

most water can be stored for the money. After that probably comes the American River. At the southern end of the State the Hoover Dam will create an immense supply, which has only to be conveyed across the thirsty cultivated slope on the ocean side.

These are elements of the situation which are easily seen by anyone who will look around.

The problem now before the State is not to find these facts. It is to make the people of California understand the vital need of handling these facts to put the surplus waters to work where the lands are now going dry. Only a minor part of the population of California now realizes the case. This is composed principally of the people of the districts directly affected. They know. But the greater part of the citizenry of California either does not know or imagines it is not affected. Everyone in California is vitally affected, but it will take some work to get that fact home.

The Governor has appointed a very large and very representative advisory committee. For any ordinary purpose this committee would be too unwieldy. But for the first object confronting the State—to wake the people to the importance of prompt action—this body seems excellent. Individually its members have an opportunity—and a duty—to spread knowledge of the water problem and the pressing need of action.

### TO BEAUTIFY ROADS

Beautification of 28 major boulevards in Los Angeles and vicinity is announced by the Division of Forestry of the Los Angeles County Park Department. The program calls for the planting of 26,135 trees within the next three months, which will mean the beautification of nearly every main thoroughfare leading into the metropolis. Such action will further beautify the highways for the 1932 Olympic Games visitors. Tens of thousands of these will come from Europe, where highway beautification is made a study, and their reaction to California's beauty doubtless will be influenced by the appearance of its roadsides.

Signboard at a railroad crossing: Go on and take a chance. You're unimportant.—*Exchange.*

"Officer—"What do you mean, young lady, driving down the street at fifty miles an hour?"  
Sweet Young Thing—"Oh, sir, you must be mistaken—I only left the garage half an hour ago."

## Three Shifts Moving Telephone Cables To Permit Bridge Boring in October

**T**HREE shifts of men, working night and day since June 30th on the emergency job of moving twelve huge telephone cables out of the path of the San Francisco-East Bay Bridge, are advancing with swift precision toward the goal set for September 30, when the work is to be completed.

"Seven down and five to go." That, in the language of golf, is the score in this difficult, somewhat spectacular game which these thirty-three men of The Pacific Telephone and Telegraph Co. are playing, if one of the most difficult jobs in western telephone history may be called playing, out in San Francisco Bay.

These three squads of men are right on schedule at the present writing. Seven cables have been cleared from 15 feet of mud at the bottom of the bay, lifted 100 feet to the surface of the water, and shifted 1000 feet north of the route held by telephone lines for nearly a half century.

### BORINGS IN OCTOBER

As a result, unless unforeseen difficulties spring up between now and the end of September, the path of the great bridge will be cleared, ready for the next move in the work of erecting the \$75,000,000 structure, and completing it in 1937. This next move is the

start of borings for the bridge foundations. Borings will begin in October.

The ninety-day task has thus far lived up to the telephone company's expectation that it would be an extremely difficult one and that every precaution should be taken to pre-

vent interruption to the telephone service of a million and a half people in the bay area. Extreme care taken in planning and executing the work resulted in only two of the seven cables giving serious trouble when they were raised and moved under a strain for which they were not designed. Minor injuries to several other cables came at such times and in such ways as to cause little difficulty.

### 1200 WIRES IN CABLE

Of the two cables giving serious trouble, one was the largest size submarine cable now in use, carrying in its 1200 wires a peak capacity of 60,000 words a minute. All lines put out of commission by the two breaks were replaced in from fifteen minutes to

about an hour by hooking up spare "stand-by" wires held for such an emergency in other of the twelve cables, while repair crews, working through flood and ebb tides, had the voice ways mended with as little delay as possible.

When the huge 1200-wire cable went out, diver William Reed was prevented for four

### BRIDGE BOARD TO MEET

**T**O DISCUSS the San Francisco-Oakland Bay Bridge and the controlling factors in the design of the structure, the Consulting Engineering Board will meet during the first week in October.

The conference will be held at the San Francisco bridge headquarters which were opened the middle of September.

The Consulting Board is being called together by Charles H. Purcell, State Engineer. It is composed of the following men, eminent in their profession:

Chairman, Ralph Modjeski of New York City; the firm of Moran & Proctor, Foundation Consultants, New York City; Leon S. Moisseiff, Consulting Structural Engineer; C. Derleth, Jr., Dean of Engineering at the University of California; H. J. Brunner, Consulting Engineer, San Francisco; Charles E. Andrew, State Bridge Engineer, and Charles H. Purcell.

## Hero of War Works On Bottom of Bay Moving Big Cables

hours from descending to the bottom of the bay to locate the trouble, because of a swift tide racing past the telephone company's barge "Pacific," the "flagship" of the telephone fleet of five large and five small boats used for the cable moving.

Reed is a war hero. As a member of a squad of divers in the World War he went out from New York and repaired a hole in the side of a hospital ship returning from France with wounded soldiers. The ship had been rammed by another vessel. Reed

### LINE'S BUSY



**QUICK SERVICE**—The Telephone Company putting finishing touches to a big job of moving phone cables out of the way of the Bay Bridge. At top, Diver William Reed (see the top of his helmet in the water) receiving telephoned instructions from Construction Superintendent F. O. Edmunds on the barge. And below, Edmunds has hooked up on a cable being spliced, to talk with headquarters ashore from the middle of San Francisco Bay.

also helped in the raising of the American submarine S-51, which sank off Providence, Rhode Island.

Down in the captain's cabin of the telephone barge, a large chart shows the telephone cables between San Francisco and Yerba Buena Island. These are the lines now being moved and Division Plant Manager E. E. Perkins and Division Construction Superintendent F. O. Edmunds watch with satisfaction as small colored wires, representing the cables are moved on this chart,

until now seven have been transferred, with five to go.

#### MUST DECLARE RADIOS

Motorists with radios attached to their cars must announce this fact to customs officers in going into Canada, and also pay a fee of \$1, according to an announcement by the Touring Bureau of the Automobile Club of Southern California. The fee is required for all radios in the northern country. It may be paid through postmasters in the larger cities and towns. After touring Canada, motorists should call attention to the radio so that it may be checked off their customs permit.

# Proposals Asked for Investigating Foundation Sites for S. F. Bay Bridge

**S**EALED proposals will be received at the office of the Chief Engineer of the San Francisco Bay Bridge, 500 Sansome street, San Francisco, California, until 2 o'clock p.m., on October 7, 1931, at which time they will be publicly opened and read, for investigating the foundation sites for the San Francisco Bay Bridge, in accordance with the specifications therefor, to which special reference is made as follows:

**Performing all necessary work and furnishing materials and equipment for investigating foundation sites for the San Francisco Bay Bridge consisting of diamond drill and jet borings, driving casings and test piles and leadng piles with test loads.**

#### HERE IS ESTIMATE

The Chief Engineer's estimate follows:

- Item 1. 1550 lineal feet diamond drilling through bedrock.
- Item 2. 5000 lineal feet jet drilling from mean high water to bedrock.
- Item 3. 3300 lineal feet dry sample holes through 8-inch casing (casing to be furnished by the State).
- Item 4. 1 only, 9-pile cluster, loading platform and loading material.
- Item 5. 1 only, 42-inch diameter steel cylinder and one timber pile driven inside cylinder and loaded.
- Item 6. 2 each, timber piles driven to thirty (30) ton bearing capacity and loaded.
- Item 7. 2 each, timber piles 110 feet long, driven and loaded.

The State will furnish casings as more explicitly set forth in the special provisions.

#### RIGHTS RESERVED

The foregoing quantities are approximate only, being given as a basis for the comparison of bids and the Department of Public Works does not, expressly or by implication, agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work as may be deemed necessary or expedient by the said Department of Public Works.

All bids are to be compared on the basis of the Chief Engineer's estimate of the quantities of work to be done.

In accordance with the provisions of Chapter 397, Statutes of 1931, the State has ascertained the general prevailing rate of wages applicable to the work to be done, which list may be obtained, together with plans, forms of proposal, bonds, contract and specifications at the office of the State Highway Engineer, Sacramento. They also may be seen at the office of the Chief Engineer, 500 Sansome street, San Francisco, and at the office of the District Engineer of the Division of Highways at Los Angeles; and at the office of the Associated General Contractors in San Francisco.

#### MUST BE LICENSED

Proposal forms will be issued only to those contractors who have furnished a verified statement of experience and financial condition in accordance with the provisions of Chapter 644, Statutes of 1929, and whose statements so furnished are satisfactory to the Department of Public Works.

Bids will not be accepted from a contractor who has not been licensed in accordance with the provisions of Chapter 791, Statutes of 1929, or to whom a proposal form has not been issued by the Department of Public Works.

A representative of the Chief Engineer will be available to accompany prospective bidders for an inspection of the work herein contemplated and contractors are urged to investigate the location, character and quantity of work to be done, with said representative. It is requested that arrangements for joint field inspection be made as far in advance as possible.

#### FORMS FURNISHED

No bid will be received unless it is made on a blank form furnished by the Chief Engineer. The special attention of prospective bidders is called to the "Proposal Requirements and Conditions" annexed to the blank form of proposal, for full directions as to bidding, etc.

The Department of Public Works reserves the right to reject any or all bids.

Gasoline tax receipts amounted to \$22,110,961 in the United States in 1930, as compared with \$448,183,249 in 1929 and \$318,041,556 in 1928.



## All Roads Will Lead to California For Olympiad; 250,000 Cars Expected

Phew! Winter may be coming and the vacation season going but—

When one reads of the beauties of California seen along the numerous fine highways of the State, the urge to crank up the old car and hie out is on again. Scenery, romance, history—all touched upon in this article showing California's road preparation for the Tenth Olympiad at Los Angeles. And written by an engineer who, should he tire of building highways, seems well qualified for the Tourist Bureau or some other booster organization.

By G. T. McCOY, Principal Assistant Highway Engineer

**T**HE WATCHWORD of the Caesars in 32 A. D. was "All roads lead to Rome." In 1932 the watchword of the world will be "All roads lead to California and the Tenth Olympiad in Los Angeles."

From July 30 to August 14, 1932, the world of amateur athletics will trek to the City of the Angels to witness the competition in this ancient classic performed beneath the sunny skies of California's southland.

In 1932 California expects to entertain fully three times the normal number of an-

**DON'T KID** McCoy on highways of California. He knows 'em from end to end. In the picture he's thinking of a real good boost thought for the next paragraph of the accompanying story.



nual visitors. This will mean that approximately two hundred fifty thousand foreign cars, carrying some seven hundred fifty thousand tourists, will come to California during the year of the Olympic Games.

### NETWORK OF ROADS

To greet this caravan of thousands, California will spread before them a network of smooth, easily traversed highways, the main stems and laterals of which comprise the State highway system.

The forward-looking program of the Division of Highways has pushed construction on transcontinental routes and connecting roads within the State that they might be in excellent condition to care adequately for the increased traffic of 1932.

A comprehensive report of the improvements and proposed condition during the summer of 1932 is not the purpose of this article, but rather to place before the reader a panorama of the routes within the State highway system which lead into Los Angeles, with brief statements as to the type and condition of each.

Los Angeles is approached by modern highways which fan to all parts of California. On

## Many Routes Open for Olympic Games

(Continued from preceding page)

any angle of approach the motorist will find wide, smooth, paved or surfaced roads through the entire State leading to the metropolitan center of southern California.

The most southerly route from the eastern states into California is the transcontinental highway, U. S. Route 80, from Savannah on the Atlantic seaboard through Shreveport, Dallas, El Paso and Phoenix to the California line at Yuma. Within California this route is in excellent condition. It passes from the crossing of the Colorado River at Yuma to the heart of the fertile Imperial Valley at El Centro. The highway is entirely paved and surfaced over this portion of the route with Portland cement or asphalt concrete or with bituminous treated crushed rock. Between the State line and El Centro two contracts covering 28 miles of asphalt concrete surfacing are now speeding towards completion, and a third, 6 miles in length, has just been completed.

### VARIETY OF SCENERY

At El Centro the motorist has a choice of two routes on State highways into Los Angeles. The one, along the Mexican border to San Diego and thence northward along the coast, is a wide, smooth pavement throughout its entire length and presents a variety of scenery as well as the opportunity for a stop at California's most southern seaport—beautiful San Diego. The alternate route is more direct and traverses the desert east of the coastal range to San Bernardino. This road is also paved throughout its length and presents long stretches of straight highway with minimum grades.

Entering California by way of U. S. Route 66, which extends from Chicago through St. Louis, Tulsa and Albuquerque to Needles, the motorist will cross the southeasterly portion of the Mojave Desert with its captivating mystery of iridescent color on one of the finest desert highways in the West. During the past three years construction has been carried eastward on this route from San Bernardino. The construction of the last two unimproved sections, covering the 30 miles from Essex to one mile south of Klinefelter, now under construction, and the eight-miles between Devore and Alray, just south of Cajon Pass, which will be built this year, will bring this road to modern standards. This

desert highway has a roadbed width of 36 feet with a surface of bituminous treated crushed rock 20 feet wide.

### MODERN STANDARDS

Connecting with U. S. Route 66 at Barstow is U. S. Route 99 which comes from Salt Lake City by way of Las Vegas, Nevada. In California, this road is a unit of the State system and has been brought to modern standards over nearly its entire length. Of the 118 miles between the State line and Barstow, 81 miles have been completed to modern standards or are now under construction. The same types of high grade desert construction have been used on this highway as have been so successfully used between Needles and San Bernardino.

Arriving at San Bernardino by one of the three routes above described, the State highway system offers the choice of two routes over the 70 miles into Los Angeles.

One is the Foothill Boulevard, which skirts the base of the Sierra Madre through Glendora and Monrovia to Pasadena. The other State highway lies a few miles to the south and passes through Pomona directly into Los Angeles.

### BEAUTIFUL HOMES

Both of these routes are fast traffic boulevards with wide pavements of the highest standards. They pass through the very heart of the southern California citrus section and present the tourist with views of beautiful homes set among orange groves with purple ridges of lofty mountains to the north as a background.

The visitor to California, traveling over the southern route may, upon reaching Phoenix, Arizona, elect to reach the California line at Ehrenberg and cross the desert via the Blythe-Mecca lateral which connects with the El Centro-San Bernardino road north of the Salton Sea. This State highway is a good desert road with the 50 miles west of Blythe of modern construction having a bituminous treated crushed rock surface 20 feet wide.

The visitor, laying his course to the Olympic Games by way of San Diego, has a drive of 135 miles from San Diego to Los Angeles which is rich in beauty and historical interest.

From San Diego to San Juan Capistrano the State highway skirts the shore of the blue

## Romance, Beauty, History on Highways

(Continued from preceding page)

Pacific following "El Camino Real" where, in the days of Spanish California, the sandaled feet of Franciscan Padres trekked the day's journey from one mission to another. This route is another of California's intercity boulevards, of which the State is justly proud. Paved with Portland cement or asphalt concrete, from 20 to 56 feet in width, with long radius curves and easy grades, this highway makes a delightful finale to a trip to the Pacific Coast.

Recent construction on this route has been of considerable aid in maintaining it to the highest standards and includes the construction of several grade separations, the new reinforced concrete bridge across the San Luis Rey River at Oceanside, the construction and paving of the Rose Canyon cut-off at the northerly city limits of San Diego and a large paving contract, now under way, between San Mateo Creek and Serra, in Orange County.

### ROMANCE OF GOLD

An interesting approach to Los Angeles through central Nevada may be made by way of Reno and Carson City, entering California through West Walker Pass, north of Mono Lake. Or the entrance to California may be made through the old gold mining centers of Nevada, in the vicinity of Tonopah, by way of the Montgomery or Westgard passes south of Mono Lake.

All these approaches bring the motorist over improved roads into the long Owens Valley where they connect with the splendid State highway which runs the length of this valley and passes through the grotesque Red Rock Canyon into the northerly end of the Mojave Desert. This highway then circles the Tehachapi and connects with the central artery of the State highway system at Saugus, a few miles north of Los Angeles. Through the Owens Valley and as far south as Mojave this route is of recently constructed bituminous treated crushed rock. From Mojave to Los Angeles the highway is paved with Portland cement concrete.

From the eastern and middle western states the Lincoln Highway extends from Washington D. C., via Cincinnati, St. Louis, Kansas City and Pueblo through the Rockies to Salt Lake, thence to Carson City and into California along the south shore of azure Lake Tahoe.

Within California this route passes over the Sierra Nevadas at Echo Summit and drops down their western slopes through the beautiful canyon of the South Fork of the American River to picturesque Placerville, the historical old "Hangtown" of gold rush days in California, and thence over the broad Sacramento Valley to Sacramento, where it joins the smooth ribbon of the Golden State Highway which connects the State Capital with Los Angeles.

From the State line to Placerville this route has, within the past few years, been constructed to modern standards of mountain highway construction with a wide roadbed surfaced with bituminous treated crushed rock 18 to 22 feet wide.

### ANOTHER POPULAR ROUTE

Between Placerville and Sacramento the road is paved with Portland cement and asphalt concrete.

The most popular northern route into California is over U. S. Route 40, the transcontinental highway from Baltimore via Columbus, Indianapolis, St. Louis, Kansas City, Denver, Salt Lake and Reno. This route enters California via Truckee just to the north of Lake Tahoe and crosses the Sierras over the beautiful Donner Summit. From here it winds down the western slopes of timber clad mountains, the finest of California's mountain highways, reaching Sacramento via Auburn.

The past several years have seen large reconstruction projects change this road from the winding wagon trail of the early fifties to a modern high-speed mountain highway. Seven railroad grade crossings have been eliminated and the road reconstructed on new alignment between the airport west of Emigrant Gap and Soda Springs, and new surfacing or pavement has been or is now being placed between Truckee and Hinton, Colfax and Gold Run, Newcastle and Auburn, Roseville and Rocklin and Sacramento and Sylvan School.

Some of the more adventurous tourists may elect to come to California via Yellowstone National Park. From the park the most direct route to this State is through Twin Falls, Boise and Ontario, entering California through Fandango Pass east of Alturas.

(Continued on page 26)

## U. S. Officials will Attend Conference Here on October 28

(Continued from page 4)

all western states, has been increased to even a greater extent.

Through the action of the Association at the Denver meeting the publication of Misc. Publication No. 103 of the U. S. Department Agr. (Summary of Irrigation District Statistics of Western States) was made possible and expedited in such way as to make it available to the recent sessions of the Congress and State Legislatures.

### OFFICIALS TO ATTEND

Attendance of Dr. Elwood Mead, U. S. Commissioner of Reclamation, Vice Chairman Ralph P. Williamson of the Federal Power Commission, and Lieut. Col. Thos. M. Robins of the U. S. War Department, at the Sacramento meeting, and their participation with State representatives in the discussion of Federal and State policies with respect to reservoirs, power development, flood control, and navigation, gives promise of a particularly interesting and informative program on the opening day of the Conference.

Meetings of the Association are open to the public and in addition to the members and many Californians who have already indicated their intention to attend, there is the possibility of attendance by officials from some of the eastern states who are interested in the work of the Association.

Provision is being made for the entertainment of the wives of visiting delegates and guests, and Sacramento Section of the American Society of Civil Engineers will entertain at a dinner and social evening on Wednesday, October 28th. A motor trip as guests of the Pacific Gas & Electric Company is planned for Friday afternoon and Saturday, October 30th and 31st.

The officers of the Association are:

Edward Hyatt, State Engineer of California, President; George M. Bacon, State Engineer of Utah, Vice President; and Everett N. Bryan, Hydraulic Engineer of California State Division of Water Resources, Secretary. The Executive Committee is composed of the President, Vice President and Junior Past President M. C. Hinderlider, State Engineer of Colorado.

Many a man who is a five-ton truck at the office is nothing but a trailer at home.—*Motor Land.*

## Pessimism Jolted By Great Success Of 1931 State Fair

**P**ESSIMISM surely received a jolt when the State Fair of 1931 passed into history as one of the most successful in a half century of the institution. Animated Californians and out-of-state visitors thronged the grounds by the tens of thousands.

The big show was excellent in every department. The stock and agricultural features were aggressively prominent, but the manufacturers and commercial interests spread their wares most attractively. Informative displays and good salesmanship will undoubtedly return dividends.

### ALL ARE REPRESENTED

Practically all departments of the State government were represented. The object was to bring to the people information as to the character of service being performed, and to encourage them in a more general use of the services which the State has in operation for their material and social welfare.

The Department of Public Works, embracing the Divisions of Highways, Architecture and Water Resources, had a large booth in the Western States Building. It was visited by thousands. The minimum estimate was 20,000.

### MAP DRAWS CROWD

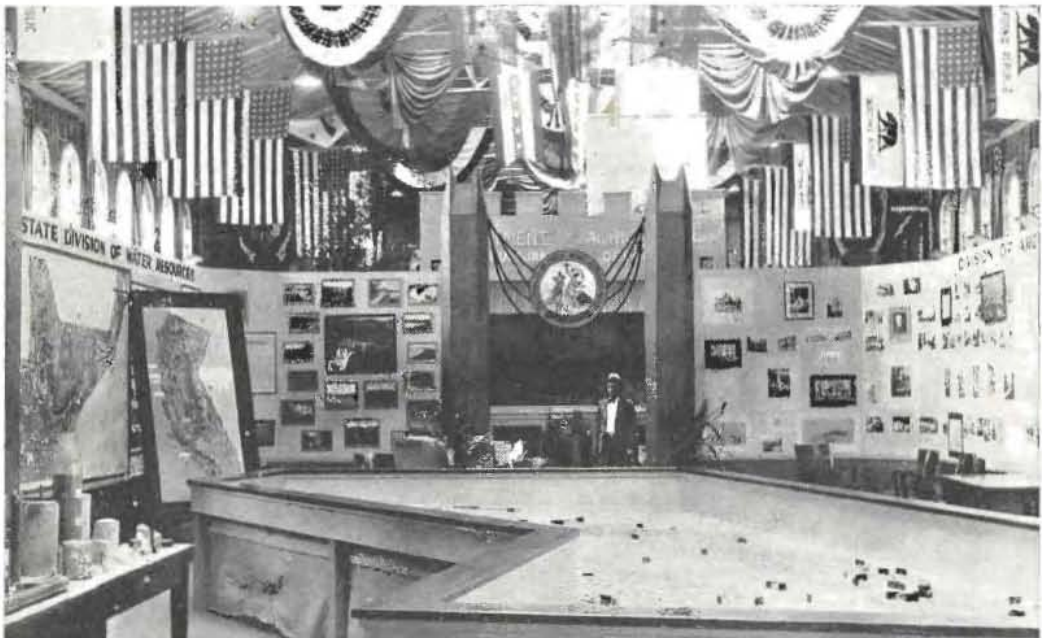
The walled enclosure, scenically decorated and with four entrances, was located at the main entrance. In the center was a topographical map showing the highways, location of State institutions, county lines and waterways. It was a real center of attraction. This map—nearly 40 feet in length—brought home to visitors the magnificent expanses of the Golden State and proved to be one of the features of the Fair.

The interior walls of the booth were pictorial. Photographs of highways completed and under construction featured the Highway Section. The Architecture Section showed State institutions, and the Water Resources pictured everything from irrigation scenes up to the Hetch Hetchy dams. Many of the photographs were colored and framed.

Headquarters Shop activities were shown in pictures, laboratory work in exhibits of test results, and financial phases of the great department's work in statistical statements in concise form. A large topographical map of the State showing the State-wide Water Plan was under examination all day long.



**CALIFORNIA AT A GLANCE** attracted considerable attention at the State Fair. Despite the fact the Department of Public Works lost practically all its exhibit material during the recent fire on the grounds, a highly creditable exhibition was prepared for the recent exposition. A large relief map, showing the mountains, rivers, lakes, highways and towns of this State, was the magnet for thousands. The astonishing feature was that the majority of those inspecting it were adults. This photograph shows the map and a section of the exhibit devoted to the Division of Highways.



**IN THIS CORNER** the Division of Water Resources on the left and that of Architecture, on the right, gave visual proof of the important work being done by these branches of the Department of Public Works. With maps, photographs and statistics these divisions told their story of achievement to multitudes that daily thronged the joint exhibits at the Fair.

# Sacramento Valley Problem Analyzed

(Continued from page 10)

The uses of water in the Sacramento River Basin include those for municipal and domestic supplies, irrigation, industrial use, power development, navigation, the prevention of invasion of saline water into the delta, hydraulic mining and recreation. Of these, the use for irrigation purposes does, and probably will continue to predominate, and has, therefore, been used as the basis for estimating the water requirements of the basin.

In order to determine the ultimate requirements of the Sacramento Valley and the Sacramento-San Joaquin Delta, a classification survey was made of all lands in the valley and adjacent foothills to determine their adaptability for irrigation. More than merely a soil survey, the classification considered the effect of topography, alkali, and soil texture on the probable use of water on the land. Nearly nine million acres were classified, and from this work the net areas of irrigable lands in the valley and foothill areas and mountain valleys were determined. Of the 6,435,000 acres of agricultural lands, there is a net irrigable area of 4,266,000 acres that may at some time require a water supply. In comparison with this only 1,076,000 acres including the mountain valleys were irrigated in 1929.

## WATER ESTIMATED

At the same time that the land classification was being made, a crop survey was carried on to determine the areas most suited for various crops. Estimates then were made of the areas which might ultimately be planted to certain crops or groups of crops. Water requirement for each crop was determined, both the amount of water actually used and the amount which it would be necessary to divert to supply this use.

By these means an estimate was made of the total amount of water required for each section of the Sacramento River Basin including the delta.

In addition to the water required for consumptive use in the delta, a sufficient supply of water flowing into Suisun Bay must be provided in order to repel the effect of tidal action in advancing salinity. In order to limit the increase of salinity at Antioch to a mean degree of not more than 100 parts chlorine per 100,000 parts of water, with decreasing salinity upstream, the annual amount of water required would total 2,390,000 acre-feet. This would be made up in large part from waste waters.

The ultimate annual gross water requirements for the Sacramento River Basin and Sacramento-San Joaquin Delta including requirements for salinity control would amount to 15,864,000 acre-feet.

## STATE WATER PLAN

The State Water Plan for ultimate development of water resources of the Sacramento River Basin includes construction of ten reservoirs in the basin and one on Trinity River with a diversion from this stream to the Sacramento Valley. The operation of these reservoirs for flood control is contemplated in the State Plan, and would not materially impair their value for conservation purposes, nor materially decrease the amount or value of the electric energy generated by water released from them. An increased degree of protection to the areas subject to overflow, particularly those within the Sacramento Flood Con-

trol Project, and a substantial reduction in flood flows with decreased potential annual flood damages would result from the operation of these reservoirs for flood control.

In order to determine the amount of surplus water available in the Sacramento River Basin under conditions of ultimate development, a study was made covering the driest period of record, that from 1918 to 1929. Operations of all ultimate major units of the State Plan in the Sacramento River Basin were coordinated for several purposes; regulation of run-off to meet irrigation demands, reduction of flood flows, improvement of navigation and control of salinity.

## HERE ARE RESULTS

The results of coordinated operation of these units shows the following results would have been accomplished:

1. A full and dependable supply would have been made available for the irrigation of every acre of irrigable land in the Sacramento Valley, foothills and mountain valleys.
2. Flood flows would be reduced from one-quarter to one-half at the dams.
3. Navigation would have been improved on the Sacramento River.
4. There would have been an annual flow into the delta of 6,000,000 to 15,000,000 acre-feet per year, depending upon the season, which would be more than sufficient for full use on the delta lands, and control of salinity to harmless amounts at the lower end of the delta. After supplying all these needs, there would have been a minimum surplus available in the driest year of 2,000,000 acre-feet and an annual mean surplus of 6,000,000 acre-feet for beneficial uses.

## SALINE WATER INVASION

The most important water problem in the Sacramento River Basin is the invasion of saline water into the upper San Francisco Bay and delta channels. In addition to this, the increased irrigation development has caused such heavy drafts on the rivers during the summer months that navigation has been hampered and in some years there has been a serious shortage of irrigation water. All these problems, salinity control, navigation and deficiency in irrigation supply along the Sacramento River are closely allied.

The State Water Plan proposes for initial development in the Sacramento River Basin the construction of the Kennett Reservoir. The Kennett Dam would be 420 feet high, creating a reservoir of 2,940,000 acre-feet capacity. The estimated cost, including an afterbay and power plants is \$24,000,000. This is the most favorable and economic unit of the State Water Plan in the Sacramento River Basin adjudged feasible of construction when consideration is given to the number and extent of the benefits that would result from its operation.

## CONTROL FLOODS

The reservoir could be operated to attain the following accomplishments:

## What State Water Plan Proposes for Sacramento Region

1. Control floods in Sacramento River to 125,000 second-feet mean daily flow on day of flood crest, measured at Red Bluff, exceeded once in fourteen years on the average. The controlled flow exceeded once in 100 years on the average would be 187,000 second-feet, due to the uncontrolled run-off between Kennett Reservoir and Red Bluff. Flood flows in excess of 125,000 second-feet would be of short duration.
2. Maintain a navigable depth in the Sacramento River of five to six feet from the city of Sacramento to Chico Landing, with a substantial increase in depth from the latter point to Red Bluff.
3. Furnish in the Sacramento River an irrigation supply for the lands above Sacramento, without deficiency, up to 6000 second-feet in July, thus furnishing a supply in all years to all lands under irrigation along the Sacramento River above the delta. There would have been over 700,000 acre-feet more water available for these lands in 1924.
4. Furnish an irrigation supply, without deficiency, for the present requirements of the Sacramento-San Joaquin Delta.
5. Control salinity to the lower end of the Sacramento-San Joaquin Delta by release of water to maintain a fresh water flow past Antioch into Suisun Bay of not less than 3300 second-feet.
6. Make available in the delta a water supply, without deficiency, for the developed industrial and agricultural area along the south shore of Suisun Bay in Contra Costa County.
7. Make available an irrigation supply, without deficiency, in the delta sufficient in amount to fully supply the "crop lands" now being served from the San Joaquin River above the mouth of the Merced River. This would be conveyed to these lands by the San Joaquin River pumping system and would make possible the exportation of all the available supply in the San Joaquin River at Friant. This is not believed essential as an immediate step.
8. Generate 1,581,100,000 k.w. hours of hydroelectric energy per year on the average incidental to other uses, the sale of which would help defray the cost of the unit.

### U. S. TAKES HAND

An independent investigation of the Sacramento, San Joaquin and Kern rivers, California, covering navigation, flood control, power development and irrigation is being made by the United States War Department. A partial report was submitted to Congress in February, 1931, and a complete report is expected to be submitted soon after Congress convenes in December. In the partial report, Major General Lytle Brown, Chief of Engineers, recommends that the Federal government contribute \$6,000,000 to the construction of Kennett dam in the interest of navigation.

The State's investigation has been made by the Department of Public Works, Col. Walter E. Garrison, Director, under the general direction of State Engineer, Edward Hyatt. The investigations have

## HERE'S UNSUNG HERO! HE'S THE MAN DOING JOB OF MAINTENANCE

THE FOREST ranger, and the Canadian mounted police are lauded alike in printed romance and the silver screen, but there remains one hero of the west who is unsung. This is the highway maintenance workman, and he has a rough, dirty and unpleasant job. His work, often at inconvenient hours, many times is dangerous. When a road is washed out, day or night, he must be on deck working like mad that traffic may continue next day. Snowslides, cloudbursts, windstorms, or extremely high temperatures, find the workmen guarding and repairing your road. The sentinel waving the lantern late at night, the gang deep in the water of a swollen wash holding a bridge, the grimy man astride a scorching tractor seat when the thermometer is 120 each wears the invisible badge of courage.—*Palo Verde Valley Times.*

## Howe Secretary of Highway Commission

John W. Howe has been named by Governor Rolph Secretary of the California Highway Commission, which position he assumed September 22d.

A Los Angeles newspaperman for sixteen years, during which time he occupied the positions of Assistant City Editor on the Los Angeles Examiner, Sunday Editor, Telegraph Editor, and recently Automobile Editor, Howe will become Editor of the CALIFORNIA HIGHWAYS AND PUBLIC WORKS BULLETIN starting with the next issue.

Prior to coming to California in 1915, Howe served on several New York newspapers, being eight years Day City Editor of the New York American.

Eric Cullenward who has been Secretary of the Commission for four months, recently was made Chief of the Bureau of Publications and Documents, a new bureau created by an act of the last Legislature to supervise and control publication of State documents other than those prepared by elected officers.

Husband—Good Heavens! Our daughter says in this telegram that she has eloped with a contortionist.

Wife—So that's what she meant when she said she was going to get something for the rumble seat.—*Motor Land.*

been outlined and supervised by A. D. Edmonston, Deputy State Engineer, and the investigation for the Sacramento River Basin has been executed under the immediate direction of T. B. Waddell, and salinity investigation of the Sacramento-San Joaquin Delta under the direction of Raymond Matthew.

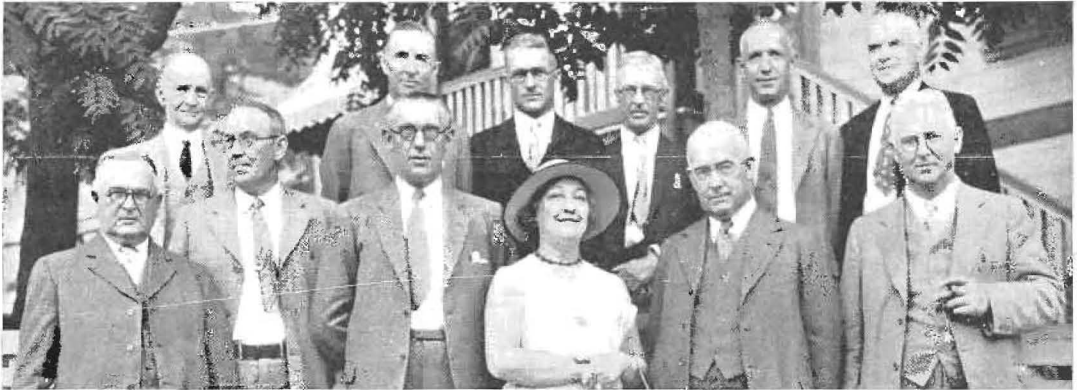
## Opening of Bartlett Springs Road Proves Signal for Community Dinner

WITH A LONG name and rejoicing over the opening of a long and whimsical road, the National Forest-Upper Lake-Bartlett Springs Highway Association members foregathered with invited guests at Bartlett Springs, Lake County, August 29th.

A safe road, a drivable highway, now threads the green draped mountains of Lake County between Upper Lake and the famous old resort. It is not a speedway, but it is

The officers of the association, J. A. Youngreen, President; and Roy Bucknell, Secretary, and Mrs. McMahan, were active hosts.

Present were: Congressman and Mrs. Lea of Santa Rosa; L. Brown, Highway Engineer, San Francisco; Chas. D. Hafferty, President Lake Co. Chamber of Commerce, Lakeport; Ben Bow, National Automobile Club; W. T. Smith, Supervisor, Lake County, Lakeport; J. A. McMinn, Redwood Empire



**EVERYBODY HAPPY!** They've just opened a new Lake County road and feel "mighty good." Rear row (left to right): Al Banks, Frank Crayton, Don Youngreen, Lon Eichler, Roy Bucknell and H. H. Dunning. Front row: W. P. Mariner, W. T. Smith, Jack Frost, Mrs. Cal McMahan, James K. O'Brien and J. A. Youngreen.

no longer a trail; and it is such an improvement as to be a distinct achievement.

Thanks to the Federal Forest Aid Fund and the cooperation of the State Highway Division, the small sum of \$25,000 has been made to work wonders. It is a road of many, many curves, but it has a smooth and safe base and will improve under travel. Lake County folk and their neighbors feel "mighty good" over it. The work is practically finished.

### COMMUNITY SPIRIT

The dinner at the springs brought together a representative company. Everybody was happy, and the addresses reflected a fine community spirit. Congressman Lea, a native of the section, made the principal address. State Senator Ingels spiced the program with some localized humor. Nearly every man present responded to the call of Chairman Youngreen.

Association, and Mrs. McMinn, Healdsburg; Victor Eicholf, *The Press*, Lakeport; Mrs. Eicholf, Yacht Club, Lakeport; Senator and Mrs. Ingels, Potter Valley; J. Frost, Manager of Bartlett; Arthur T. Poheim, Bartlett; Don Youngreen, Upper Lake; Lon Eichler, *Appeal-Democrat*, Marysville; Frank Crayton, President Colusa Chamber of Commerce, Colusa; W. P. Mariner, Supervisor, Lake County; Ed Enzenauer, Chairman Sonoma Board Supervisors, and Mrs. Enzenauer; H. H. Dunning, Marysville; Clyde Edmundson, General Manager Redwood Empire Association, and Mrs. Edmundson; Mrs. Cal McMahan, Vice President Bartlett Springs Co.; Jas. K. O'Brien, President Tahoe-Ukiah Highway Association; A. L. Banks, Department of Public Works, Sacramento; Roy Bucknell, Postmaster Uuuper Lake; J. A. Youngreen, Banker, Upper Lake.



# Oil Spraying and Burning Clean Roadsides, Eliminate Fire Perils

**D**URING the past three years the Division of Highways Maintenance Department has made a systematic effort to conserve California's watershed, grazing and agricultural lands by the elimination of fire hazards adjacent to the roadways. The 1931 program, covering 1150 miles at a cost of \$80,000, extended into 46 counties of the State.

Prior to 1928 this work was on a somewhat limited scale and was mainly for the purpose of improving the appearance of the roadsides and only incidentally as a fire precaution. The serious fire losses of 1927 brought the matter forcibly to attention, and during the 1928 season the work was extended to include some major clearing of right of way as a fire precaution measure. The work that season covered 660 miles of roadsides.

## MODE OF TREATMENT

The areas selected for treatment are generally opposite grain fields, pasture and heavy brush lands. The treatment is not applied through built up areas, orchard country or adjacent railroad rights of way which, in effect, constitute a natural firebreak.

The treatment consists of Diesel Oil of 27+ gravity applied to a nine-foot strip either side of the roadway at the rate of one-tenth to one-sixth gallon per square yard of surface treated. This is allowed to stand for a week after which the vegetation is fired. The application is made during the months of February and March while the vegetation is green so that when the treated area is burned fire will not spread to the adjacent fields.

## EVERY PRECAUTION

The burning operations are conducted under very specific instructions and the crews so engaged are expected to use every precaution to protect traffic as well as trees, shrubs, fence posts and other inflammable property.

The development of proper equipment to spray considerable area at reasonable speed has required considerable experimenting. It was necessary that the spray be applied adjacent to the fence lines and that it be sufficiently flexible to use on cut and fill sections

of the foothill roads as well as the level-going valley turnpike sections.

The present outfit is a detachable trailer carrying pump and engine in addition to a turn-table and platform for the operator. The turn-table supports a telescopic outrigger arm which in turn carries a three-fourths-inch hose and spray bar consisting of a nine-foot section of three-fourths-inch steel tubing carrying eight orchard type spray jets. The outrigger may be extended or drawn in and may also be raised or rotated at the will of the operator. The spray bar also may be raised or lowered as desired.

## 13,000 GALLONS A DAY

The trailer and hose connections are so designed that transfer from an empty truck to a full one is only a matter of minutes. Outfits of this type are capable of spreading 13,000 gallons of distillate per eight-hour day.

The work of the Division of Highways in spraying and burning roadside vegetation to reduce fire hazards is supplemented by clearing in forest areas. Each fall and winter crews are engaged in cutting and burning slash and down timber within the State highway right of way. During the past winter a considerable sum was expended for this purpose out of the allotment made to relieve the unemployed, and it is expected to continue the work this winter with the relief forces which will be placed at work in October.

There are 7,947,000 miles of motor roads in the world.

Poor motorist—His life is full of unnecessary hardships. Just think, he has to wait until 1932 for a 1932 model car.

"What is a pedestrian?"  
"It is a person with a wife, daughter, two sons, and a car."

An infernal machine is any kind of motor vehicle that ambles along the middle of the road at just about ten miles per hour.

Another reason why everybody wants a powerful car is to be able to get out of a parking place—by pushing half a dozen cars that have the brakes locked.  
—Motor Land.

American products control approximately 90 per cent of the demand in Finland for automobile replacement parts, accessories and service appliances, according to Department of Commerce reports.

## \$1,931,266 Income for Year in Shops

(Continued from page 6)

functions of the Equipment Department were the receiving and distribution of this second-hand equipment.

### SELF-SUPPORTING

It is far different now. The responsibility has been gradually extended until at the present time the equipment service is a self-supporting subdivision of the Public Works Department.

The shop is not a factory. It maintains equipment, and it adapts it to special service. In building oilers, scrapers and fire trucks it has given evidence of ingenuity. It paints, repairs and services cars but it does not undertake body building or production in competition with specialized service. R. H. Stalnaker, the Equipment Engineer, who has developed the service, is not alone alert in delivering mechanical efficiency, but has a keen eye to the business angle. He is quoted as saying:

"The Equipment Department is self-supporting, subsisting solely upon the revenue it receives from the rental to other departments and divisions of its own possessions. The rentals collected cover an adequate depreciation reserve to retire all equipment at the end of its useful life, as well as to keep it in repair during the period of its use. These rentals are adjusted from time to time on the basis of experience.

### YIELD SMALL SURPLUS

"During the past three fiscal years the rentals collected have yielded a small surplus over and above the expenses of the department and the depreciation reserve set aside. This surplus, after making a small deduction for contingencies, has been returned to the district responsible for its accumulation."

The average personnel of the department is about 350 men. There is a close system of inspection throughout, and the Accounting Department carries the cost and working history of every piece of equipment. Identified primarily with the Highway Division, the Headquarters Shop is, nevertheless, a State shop, serving every branch of the motorized service.

### BUSINESS PROPOSITION

During the last fiscal year the Equipment Department collected in rentals for equip-

ment \$1,929,229. Miscellaneous revenue received amounted to \$2,037, bringing the total income of the department up to \$1,931,266. The operating expense of the department for the year was \$922,335. **There was set aside for depreciation and reserve \$892,178, and returned to the districts \$116,753.**

It is interesting to note that during the first 30 months of operation of the rental system and the control of equipment by a central headquarters 56.2 per cent of the rental received was expended for repairs to equipment and 13.2 per cent for administration and miscellaneous expenses, leaving 30.6 per cent available for depreciation reserve, while in a recent annual report there was shown to have been expended for repairs only 37.5 per cent and for administration and miscellaneous expenses 10.3 per cent, while the portion available for depreciation reserve had increased to 52.2 per cent.

### HIGHLY ORGANIZED

The inventory value of the rental equipment in the hands of the Equipment Department at the end of the fiscal year amounted to approximately \$3,500,000. The replacement value of this equipment would be considerably higher as the appraised values are in all cases considerably below not only the original cost, but the replacement cost at this time, to the State.

F. E. Burnside, Shop Superintendent, has his men under close supervision, there being a foreman to the average group of twenty. He insists on study and improvement, and the smoothness with which work proceeds quickly attracts notice. He says, "Our work ranges from small instruments to gas shovels and fire trucks. It is up to us to adjust and adapt machinery to the Division's peculiar and varied needs, and to maintain it up to the most efficient point possible."

So immersed are men like Stalnaker and Burnside in their work that they have absorbed its many angles; and they are often called on to produce technical papers before societies interested in the vital phase they represent in Maintenance Service.

—

It must have been something of a blow to the father of six lovely daughters who, while reading a telegram from home announcing the birth of a seventh lovely daughter, looked up and saw the sign: "If you want a boy, call Western Union."—*Exchange*.

## Build Roads NOW While Cost is Low And Men Need Work

**E**XPENDITURES on highways are profitable now because of the needs of the unemployed and the low cost of accomplishing needed road and street improvements, according to W. R. Smith, president of the American Road Builders' Association.

"Road building readily absorbs men engaged in all industries that are temporarily inactive. No special training is required for common labor on the roads and streets and, therefore, highway building is an ideal public work for the relief of unemployment. A man who is given a job does not lose his self-respect like one who is forced to accept charity.

"The recent statement of a representative of the American Society of Automotive Engineers that within a decade road speeds of 100 miles an hour are to be expected gives an idea of the additional burdens that are continually being placed on the highways. We may expect under such speed conditions express highways with marginal roads for slow traffic, much elimination of both highway and railroad grade crossings, and the relocation and widening of many highways to fit them to handle high speed traffic. The formula for highways, safe drivers plus safe vehicles plus safe roads equals safety, states the three elements that must be considered.

"Roads for the public can be built now at a much lower cost than in past years and it is highly improbable that the present conditions of depressed prices will continue indefinitely. The public can buy roads and streets now to advantage.

The expansion of the highway program needed to bring roads and street facilities up to the standard of motor vehicle improvement will do much to stimulate business."

### BRIEF AND TO THE POINT

If people would whistle more and whine less; work more and worry less; boost more and beef less; give more and grab less; business would be better darn fast. (Signed) *Galen Starr Rose.*

A man who had been waiting patiently in the post office could not attract the attention of either of the girls behind the counter.

"The evening cloak," explained one of the girls to her companions, "was a redingote designed in gorgeous brocade, with fox fur and wide pagoda sleeves."

At this point the long-suffering customer broke in with "I wonder if you could provide me with a neat red stamp with a dinkey perforated here, the tout ensemble treated on the reverse side with gum arabic? Something about two cents."—*Wall Street Journal.*

## CALIFORNIA HIGHWAYS AND PUBLIC WORKS

Official journal of the Division of Highways of the Department of Public Works, State of California; published for the information of the members of the department and the citizens of California.

Editors of newspapers and others are privileged to use matter contained herein. Cuts will be gladly loaned upon request.

COLONEL WALTER E. GARRISON.....Director  
ERIC CULLENWARD.....Editor

Address communications to California Highways and Public Works, P. O. Box 1103, Sacramento, California.

Vol. 9 SEPTEMBER, 1931 No. 9

### THE ROAD PROGRAM

Programs of Federal, State and county governments for 1931 road construction call for a total expenditure of \$1,616,000,000, which is an increase of \$15,000,000 over the 1930 appropriations. The Federal contribution of \$249,897,000 is \$150,000,000 over 1930.

The problem of unemployment has been the most important factor in California for the increase in road budgets, and the farm-to-market movement has been another important issue for the State road program.

From the tourist standpoint Modocers travel the Alturas-Redding lateral can readily see how a part of the 1931 State appropriation is being spent.

Those who have lived here for the past five years have seen the road evolve from a wagon trail to a smooth and safe highway.

It might be said that the money we spend for roads gives us a better return than almost any other form of government tax expenditures. Quick and economical transportation of goods and persons is vital to social and economic progress. Particularly is this true of the rural areas where roads have been in essentially the same state of unimprovement since the horse and wagon days. Only by building inexpensive, but good roads, can farming sections be given a place in the march forward.—*Alluras Times.*

"Really, I can't play golf," the sweet young thing said. "I don't even know how to hold the caddy."

"Where's the car, Dad?" asked the son of an absent-minded professor.

"Why, dear me, I really don't know," he said, scratching his head in an effort to recall the past, "did I take it out?"

"You certainly did. You drove it downtown this morning."

"Well, now, that is quite remarkable," said the professor. "I remember now that after I got out I turned round to thank the gentleman who had given me the lift and wondered where he had gone!"

—*Motor Land.*

## State Prepared for Olympiad Traffic

(Continued from page 17)

Within California this route passes through an interesting volcanic country, replete with memories of the famous Modoc Indian War, to the head of the Sacramento Valley at Redding. The Redding-Alturas lateral is an improved oiled road well maintained and its scenic beauty well repays for its lack of pavement and high speed qualities.

From America's great northwest of Washington and Oregon connections are made with two main arteries of California's State highway system.

### SCENIC ENTRANCE

The one enters California in the Siskiyou Mountains between Ashland, Oregon, and Yreka. This highway is of highest standards and, with the new construction just being completed along the rim of Shasta Canyon, presents a scenic entrance into the State. From Redding south the central artery of the State road system traverses the broad Sacramento Valley, with a choice of routes, equally well paved, on either side of the river, to the capital city.

From Sacramento the motorist may travel to Los Angeles by way of San Francisco and the Coast Route or he may take the shorter Valley Route known as the Golden State Highway. This section of the central stem of the highway network is a modern intercity boulevard of the highest type. Its reconstruction, throughout the fertile San Joaquin Valley with its thousands of acres of fruit, grain and vineyards, has been steadily pushed ahead.

### FINE WIDE PAVEMENT

There are few stretches where the pavement is less than 20 feet wide or the roadbed less than 36 feet. The road is straight and smooth through the valley and crosses the Tehachapi Range by the famous Ridge Route which, in its present condition, presents wide pavements and broad curves and is all that could be desired of a mountain highway.

From the base of the mountains into Los Angeles this artery is, for the most part, a wide, three-lane pavement of Portland cement concrete.

The other route from Washington and Oregon enters California either by way of Marshfield on the coast, or by Grants Pass in

the mountains, to Crescent City, California's most northerly seaport.

### "MOST" BEAUTIFUL

There is probably no more beautiful trip in California than this drive along the high bluffs overlooking the Pacific and through the famed redwood groves of Del Norte and Humboldt counties. This scenic highway extending along the 400 miles of coast from the Oregon line to San Francisco Bay has been graded, surfaced and paved so that it may be safely traversed by the most cautious of drivers. The past two years have seen a vast amount of construction over its entire length, both north and south of Eureka and throughout Marin County. It is not often that a highway of this high type can be found along a mountainous coast which offers the outlooks and vistas of beauty as found along California's Redwood Highway.

From cosmopolitan and enchanting San Francisco, the most obvious route to the southern metropolis of the State is the beautiful Coast Route.

### ALONG SEASHORE

This intercity highway follows the San Francisco Peninsula to San Jose; thence through the peaceful Santa Clara and broad Salinas valleys, over the Coast Range and down to the broad shores of the Pacific at San Luis Obispo. From here the road skirts the ocean and passes through charming Santa Barbara and into Los Angeles, either by turning inland south of Ventura and entering the southern city through Hollywood, or by following the rugged shore line between Oxnard and Santa Monica.

Throughout its length this highway is a high-speed arterial.

The web of California's traffic lanes into the West's largest metropolis is of the highest type of modern construction, and the Administration and entire State point with pride to the forty-five hundred miles of paved and surfaced State highways which bind California into a unit. The visitor to the Olympic Games in southern California will enthusiastically verify our premise: "All roads lead to Los Angeles and the Tenth Olympiad."

## Clever, Curious These Ants, and Deadly Workers

(Continued from page 5)

ably be found to be termites, and, if so, precautions should at once be taken to keep them away from frame structures, or, if they are already present, to get them out and keep them out. Numerous State buildings have already become badly infested to such an extent that, for one building located in the southern part of the State, the structural timbers were reduced to a mere shell and the building had to be condemned.

In this incidence, it was the "Kaloterms" or Dry Wood Type that was responsible.

Our principal problem, however, is one of prevention. Accordingly, certain requirements are being laid down in our specifications which will, we think, reduce the possibility of infestation to a minimum.

### HARD TO CHECK

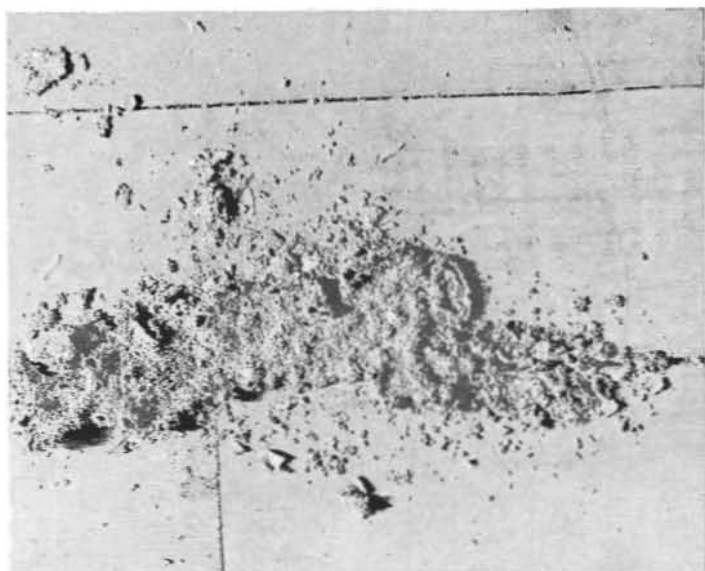
The writer has, for a number of years, been keenly interested in a study of the habits of the various species, common to the Pacific Coast, as it is only through such a knowledge that the type can be distinguished and the proper methods of control be used. Control is about all that can be hoped to be accomplished, and, even then, it is very doubtful whether certain types, such as the dry wood species, can be effectively checked.

We are informed by entomologists that the termite has existed for many millions of years, coming up through the different geological ages, and that they have probably existed ever since there has been any kind of carbonaceous growth in the world. Geologists as well as entomologists have identified them embedded in fossil amber. Traces of them have been found in the secondary as well as the tertiary geological periods. They are the most ancient of all existing life. Their civilization is not only the oldest, but the most curious, complex and intelligent that has ever appeared on this earth with the possible exception of man. It has certainly shown itself to be the best fitted to adapt itself to the difficulties of existence.

### MANY KNOWN SPECIES

In spite of its misnomer, the White Ant, the termite, except for the reproductives which are black, approximate the color of the earth that it lives in, varying in size from 3 to 12 millimeters, according to the species. Entomologists state that there are 1200 to 1500 known species, of which forty-two have been found in the United States.

Thirteen species divided into four general classifications are common to the Pacific Coast. They have been exceedingly destructive in the tropical and subtropical countries for many years but it is only during the past decade that they have been cause for any concern in this country. This is due, primarily, to the destruction of our forests and the great increase of dead wood so that, conditions becoming more favorable to their growth, they have now reached the



**LEUCOTERMES FLAVIPES**—That's what they are. They've come up through the cracks between boards of infested floor and made crater-like openings. They're bad, real bad, these termites.

point where the damage to pole lines a one has run into hundreds of thousands of dollars.

The termites have been especially active in Pasadena, Pomona and other southern California cities. From southern California they have spread to Arizona and Texas. The pole line has probably been the infection center from which they are spreading to the buildings. They are also rapidly spreading northward.

### HAS PECULIARITIES

Sacramento is becoming quite badly infected with the subterranean type and the writer has found one dwelling here which had been attacked by the dry wood type. He has found rotted wood termites as far north as Plumas County. The termites thus far found on the Pacific Coast are divided into the following general classifications, each class having its own peculiarities which must be considered in any measures taken to eradicate them. These classes are as follows:

1. Rotted Wood Termites "Genus Termopsis" which attack decayed or rotted wood. The termites of this class are the largest species in size.
2. Sound Wood or Dry Wood Termites "Kaloterms" which are divided into three varieties. They live in sound, dry wood and need no ground connections or moisture.
3. The Subterranean Termites "Reticulitermes" which live in the earth from which they come to attack timber, returning to their termitaries in the earth through tubes which they build from the ground to the point of attack. This type is the one that constitutes our greatest problem in the North.
4. The Desert Type "Leucotermes" which occur in the southern part of the State. They build tubes similar in character to those constructed by the Subterranean type.

There are many varieties in these types, as well

## Dead and Rotted Wood Termites' Food

(Continued from preceding page)

as in the other types not found on the Coast. Cellulose or woody material constitute their sole food supply. They also use this material to line the walls of their tunnels and construct their termitaries, adding sand and other material strongly cemented together. In the Orient these structures cover as much as an acre of ground and are often 16' or more in height.

While the smaller varieties of termites are about the size of an ant, they are distinctively different in shape, entirely lacking the wasp-shaped body of the ant. They are soft-bodied, consisting of head, thorax and abdomen. Common with other insects they have six legs. They keep entirely out of the light, except during colonizing periods, always remaining concealed within the wood, their termitaries, or their shelter tubes.

### EXTREMELY DESTRUCTIVE

The wood is frequently honeycombed, nothing being left but a shell of tissue paper thickness.

As far as is known, termites do not attack living timber but confine themselves to dead wood, rotted wood lying on the ground, or wood that has been cut preparatory to use, or that is being used by man. Having once gained access to a wooden structure, they continue to feed on the wood until it is a mere shell and collapses. It is said that they have completely destroyed wooden buildings in the Orient within two or three years.

It is the ant who is their greatest enemy, and at the same time, is responsible for their greatest development. There is a strong resemblance to the ant in the organization of their colonies and in their highly developed social instincts, with cast divisions of Queen, King, Alates, Soldiers and Workers. Their evolution from the lower to the higher forms can be very readily traced in the existing species.

### KING AND QUEEN RULE

It has been observed that there are certain favorable locations that become infection centers for the termites and that at regular periods the reproductive castes swarm, growing wings and flying in large numbers from the colonies. New colonies are established by each pair, King and Queen, where conditions are favorable to their growth. After getting the initial start, they increase very rapidly. It has been estimated that a Queen Termite lays over a million eggs in one year, continuing at this rate for about three years when a new Queen takes her place. We are informed that in the absence of a reproductive, a new Queen can be created from one of the sterile castes.

The Subterranean Termites live almost entirely in the ground with which they maintain a connection while attacking timber. They usually first attack sound or decaying timber left on the ground as carpenters' refuse or as forms for basement walls and foundations. Either through form lumber or by means of earthlike tubes, very easily distinguished by one familiar with them, they crawl up and infest the main portion of the building. Of course, if the main structure is built very close to the ground, their entry to the timber is that much easier. They also penetrate masonry walls where a poor grade of mortar has been used and then work up through interior of the walls.

### POISON IS USED

The Division of Architecture requires, for new con-

struction, that all form lumber and carpenters' refuse shall be entirely removed from the basement area, that frame construction in the basement area shall be treated by combined wood preservative and termite poison, and that, in addition, the ground area under the building shall be treated so as to provide a poison zone through which the termites would have to pass either to reach the wood above or to return to the ground from the structure above. Where old structures are found to have been attacked, infected wood is removed and burned and the ground surface, both inside and immediately adjacent, is thoroughly impregnated with sodium arsenite, borax or other termite repellants.

The Subterranean Type can be positively controlled by eliminating moisture or dampness. Therefore, if their tubes are broken so that they are cut off from the ground, those present in the structure will die since they can not get back to the earth to obtain moisture. Of course, if there is leaky plumbing in the building, the termites can continue to live and multiply as long as the condition exists.

### DON'T LIKE GASOLINE

When in doubt as to whether there are Subterranean Termites present in the locality in question, wood stakes can be driven into the ground to a depth of about 6 inches. Inspection of these stakes in about five or six weeks will tell if they are present.

It is known that termites have an aversion to gasoline and asphalt products. Certain poisons will destroy them and, as some varieties consume their dead, the effect of poison is far reaching. For this reason any poison used in combatting them should be in a somewhat dilute form so that they will live long enough after coming in contact with it to return to their termitaries and thereby reach the reproductive center.

The Dry Wood Termites are the most difficult of the types common to California to combat successfully due to their nondependence on a moisture supply. They have no ground contacts. They enter a structure in the upper portion through cracks, nail holes, etc., and immediately penetrate the wood.

### OCCUPY LARGE AREAS

While they prefer sapwood, they also work to a certain extent in the heartwood of the timber. Consequently, their presence is not discovered until after the colony or colonies have spread over large areas and very material damage has been done.

In order to control them, all infected wood should be removed and burned and, where this is impossible, Orthodichlorobenzene should be forced into the workings, or Paris Green introduced by bellows. This last method is quite effective due to the habit of the termites of grooming one another. The Los Angeles Building Department recommends treating the wood with creosote or with a 25 per cent solution of sodium arsenite. Wood so treated should, however, be painted after the poison is applied if one is to be sure that the treatment will be permanently effective.

The highest airplane landing field in the United States has just been opened at an elevation of 9000 feet on South Fork Meadows in Inyo National Forest, states a forest service report.

## They Eat Fire, These "Highwaymen"

Mr. S. V. Cortelyou,  
Division Engineer,  
Los Angeles, California.

Dear Sir:

I wish to call attention to the good work of your foreman, Mr. James A. Stauff, at a recent fire we had on the Roosevelt Highway near Las Flores Canyon. Two beach cabins were on fire which threatened to spread to other cabins in the vicinity, and although this was after hours, the fire occurring at about 5.30 p.m., Mr. Stauff very kindly offered his services and did some very excellent work in helping us put out the fire.

I wish to take this opportunity in saying that Mr. Stauff has always cooperated with our department in every way, and wish to thank him and your organization for the hearty cooperation shown us.

Very truly yours,

**SPENCE D. TURNER,**  
County Forester and Fire Warden,  
Los Angeles.

Mr. Frank Burnside,  
Division of Highways,  
Sacramento, California.

Dear Mr. Burnside:

I wish to take this opportunity to express to you my appreciation of the excellent work done on the Rubicon fire on the El Dorado Forest by the following men who were sent out from your shops:

Ed. Shick, Fred H. Dodson, Paul Fenwick, R. G. Russel, Tom Ceccattini, Jack Rowe, Graham Rider.

Ranger Morris reports that the above men rendered most excellent service and it was through their energy and enthusiasm that this fire was checked in the small acreage that it was. I might add that the mere fact of man power in a country like Rubicon Canyon is not an indicator of how soon a fire will be checked, but the push and snap and determination of the man power is the factor that counts, and these men showed all of these.

Very sincerely yours,

**EDWIN F. SMITH,**  
Forest Supervisor, Placerville.

## State Irrigation Districts get O. K.

California irrigation districts are in comparatively healthy shape and far from general collapse.

That is the statement of State Engineer Edward Hyatt contained in a bulletin, No. 21-B, dealing with irrigation problems throughout the State.

Ninety-three per cent of 1930 bond payments due were paid, says the bulletin, despite the fact that, in general, the returns from the land did not exceed 75 per cent of those of 1929.

The report says that certain districts, intrinsically solvent, should have an extension of credit or a reduction in interest rates or both, and that districts in bad financial condition will require adjustment of debts in comparison with the ability of the land to pay.

Falling off of returns from farm operations during 1930 are blamed by the Division of Water Resources for the poor financial condition of a few of the irrigation districts.

Mrs. Bleep—Are you a back-seat driver?

Mrs. Bleep—Indeed I'm not! I sit right where I can grab the wheel if he doesn't do what I tell him!

—Motor Land.

## Watch Auto Lights! Here's Law Digest

Do the lights on your car comply with the law?

All vehicles must carry lights from one-half hour after sunset to one-half hour before sunrise. Two headlights are required in front and one red light in the rear. Red tail lights are also required on trailers. Red lights which are visible from the front are prohibited on private automobiles. A red tail light is always required on the rear of vehicles which are stopped on the open road in the nighttime, and also in a city, unless there is sufficient light to reveal substantial objects for two hundred feet.

Glaring headlights are prohibited. Headlights are deemed to be glaring or dazzling when any part of the main bright portion of the beam strikes an object higher than the lamp center twenty-five feet or more ahead of the vehicle.

Americans are forgetting how to walk. But those who still can walk are learning to jump, and that helps some.

Gunston: "How do you spend your income?"

Durkee: "About 30 per cent for shelter, 30 per cent for clothing, 40 per cent for food and 20 per cent for amusement."

Gunston: "But that adds up to 120 per cent."

Durkee: "That's right."

**ARCHITECTURAL AWARDS**  
For Month of August

List of projects handled by the Division of Architecture for which contracts were awarded by Colonel Walter E. Garrison, Director of Public Works, during the month of August, 1931.

August 4, 1931—H. E. Pynn—Cottage for caretaker, Mount Diablo State Park-----	\$3,167 00
August 6, 1931—Raymond Concrete Pile Co.—Pile foundation work, water tower at Farm, Agnews State Hospital---	3,885 00
August 6, 1931—Otis Elevator Co.—Plunger electric sidewalk elevator, new dining room, San Quentin State Prison	947 00
August 6, 1931—Pacific Elevator and Equipment Co.—Alterations to passenger elevator, State Capitol-----	2,750 00
August 6, 1931—Anton Johnson—General work, Detention Building, California Institution for Women-----	72,490 00
August 6, 1931—Hickman Bros.—Plumbing work, Detention Building, California Institution for Women-----	11,990 00
August 6, 1931—George L. Patterson—Electrical Work, Detention Building, California Institution for Women---	2,355 00
August 6, 1931—E. J. Mattocks—Drilling and testing water well, Agnews State Hospital---	6,285 00
August 7, 1931—J. B. Welsh—Heating Work, Detention Building, California Institution for Women-----	10,964 00
August 7, 1931—Oliver S. Almie—Border Inspection Station, Department of Agriculture, Crescent City-----	8,738 00
Total-----	<u>\$123,571 00</u>

No advertisements for bids have been issued since July 17, 1931, pending the wage scale act becoming effective and establishing a prevailing wage scale.

**TO BUILD IS TO PROSPER**

Idle money will remain as long as men are kept idle, and a state, county or city without good roads is behind the times, said A. P. Greensfelder in an address before the annual convention of the American Road Builders' Association at Washington.

"Are we going to stand still or help our communities to climb out of the depression?" he asked. "Construction is the balance wheel of American industry and follows closely the trend of industrial conditions. The laborer in building highways demands gloves, shirts, shoes, bacon, bread and other necessities."

Grocer: You want a pound of ochre? Is it red ochre for painting bricks?

Small boy: No, it's tappy ochre wot Maw makes puddin' with.—*Exchange.*

A small crowd of taxpayers of perhaps 100, more or less, had called upon the county board to protest the condition of a certain road. After all had been heard, the chairman of the board in a polite manner said: "From all reports, I'd say the road was fairly good, taken as a whole."

"True," said the spokesman for the complainants, "but we want to use it as a road, not as a hole."

## Long, Bitter Battle For Colorado Water Brought to an End

**V**ICTORY for the Department of Public Works in settling the long battle over allocation of the waters of the Colorado River, was announced at the last meeting of the Governor's Council by Colonel Walter E. Garrison. His report which tells the story, follows:

It is with keen satisfaction that I am able to report settlement of the long fight over allocation of the waters of the Colorado River.

The agreement ends an extended and bitter battle between agricultural interests and big cities of southern California.

**RECORD BREAKER**

The accord reached might be called the most important settlement of a water controversy since the Colorado River Compact was signed in 1922.

In the amount of water involved, it far transcends anything which has hithertofore ever been done in the history of this or any other state of this country.

The agreement affects the so-called agricultural group, comprising Chuckawalla, Palo Verde, Imperial and Coachella irrigation and water districts on the one side and the metropolitan group composed of the city of Los Angeles, the Metropolitan Water District of southern California, the city of San Diego and the county of San Diego on the other.

**WASHINGTON'S REQUEST**

This accord was worked out by the Department of Public Works at the request of the Secretary of the Interior. It had been impossible, apparently, for the interested parties to come to any understanding on division of the Colorado waters.

In November, 1930, we received a request from Washington, that the Department of Public Works adjudicate the matter and try to reconcile the views of those interests desiring to use the water.

As a consequence a series of conferences were held between the groups named above, Northcutt Ely, Executive Assistant of the Secretary of the Interior, legal and engineering representatives of the United States Bureau of Reclamation, and our department.

A complete set of priorities and amounts of water to be used by each of the interests whose plans are definite enough to be considered at this time was established.

The agreement does not allocate specifically all the water which California may expect under the Boulder Dam Act and the Colorado River Compact. But it does state that all the water not allocated by the agreement, shall be used for agricultural interests east of the Coast Range and therefore, leaves some water for possible future developments.

A magnetic road sweeper or nail picker operating over 1200 miles of state highways in North Dakota during a period of 60 days, collected almost 7 tons of metal. This is an average of about 12 pounds per mile of road.

The curfew tolls the knell of parting day,  
A line of cars winds slowly o'er the lea;

A pedestrian plods his absent-minded way  
And leaves the world quite unexpectedly.

—*Exchange.*





That the immediate crisis in water shortage in the Sacramento-San Joaquin territory is over, is indicated in the regular monthly official report of the Division of Water Resources under Edward Hyatt. Many new low records were established during August, particulars concerning which are included in the report. Details of flood control and reclamation activities, tabulation of dam applications and news of the irrigation districts also are included:

During the past month the regular field work has continued in the Sacramento-San Joaquin district, comprising measurements of all diversions, stream flow, and return water throughout the territory.

The draft on the Sacramento River due to irrigation diversions reached its peak during the past month, averaging approximately 4000 sec. ft. from Red Bluff to Sacramento. With the reduced inflow at Red Bluff this draft took not only the inflow but practically all of the return flow in the lower stretches as well. Within the past few days there has been some reduction in the draft and it is thought that the crisis in water shortage has passed. Some of the rice fields have reached maturity and have already started to drain off the water.

The past month has witnessed the establishment of many new low stream flow records. The low flow at Verona, 20 miles above Sacramento, apparently was reached on July 23 and 24 when the flow was only 260 sec. ft. At this time the irrigation draft between Verona and Sacramento considerably exceeded the Verona plus the small American River inflow so that there was no flow in the river at Sacramento. Tidal cycle measurements of flow at Sacramento were made July 9-12, 15-16, 20-23. During the measurement July 9-12, a maximum upstream discharge at high tide of 3850 sec. ft. was measured. In this cycle of measurements also it was found that there was an upstream flow for a total of practically 12 hours. A float placed in the stream showed a total upstream movement of 6 miles.

**GRADUAL DECREASE**

Due to the recent reduction in draft, flow at Verona has now come up to about 600 sec. ft. At Red Bluff there has been a very gradual decrease with a new record low of 2600 sec. ft. on August 10, and no indication of a rise. The minimum flow of the San Joaquin River near Vernalis apparently appeared on July 28, with 200 sec. ft. flow. There has been a slight increase since that date. At the end of July, therefore, there was a flow to the delta of not more than 200 sec. ft. from the Sacramento and San Joaquin rivers. When it is considered that 3300 sec. ft. is needed at the lower end of Sherman Island to control salinity in the delta, and 3700 sec. ft. is

needed to supply the consumptive use in the delta at the peak of summer, making a total of 7000 sec. ft. needed to prevent salinity encroachment and supply delta consumptive use, the extent and rapidity of this season's salinity encroachment will be more readily understood.

**USERS ANXIOUS**

The salinity sampling in the delta has continued as in the past month, and has been extended where necessary to completely record the encroachment. The delta water users have been greatly concerned as to the results of the salinity tests and bulletins giving the results have therefore been sent to a mailing list of over 200 water users at approximately four-day intervals.

Many special samples have also been reported. Special salinity sampling traverses have been made from Paintersville Bridge to Sacramento at regular intervals to establish clearly the rate of encroachment. The traverse of August 10 showed that the point reached by salinity of 100 parts of chlorine per 100,000 was one-half mile above Courtland, and that the point where it was just beginning to show was two miles above Hood Ferry. Probably two-thirds of the delta area now lies below the line of 100 parts of chlorine per 100,000 used as the rough figure for the danger line in irrigation. Where the high salinity exists, practically all the irrigation has stopped except that for celery. Two special investigators have been placed in the field to determine, one in the delta and the other in the up-river territory, all facts which will furnish a definite report for the present season on the actual damage which may have been or will result from the water shortage.

The water conservation campaign along the river above Sacramento has continued and has been successful in keeping waste to practically nothing. The accompanying table shows the comparison between the 1931 and 1924 stream flow and salinity data.

Station	Discharge in sec. ft.	
	1931	1924
Sacramento River at Red Bluff.....	8/10 2600	8/10 2900
Sacramento River at Butte City.....	8/11 1130	8/11 1680
Sacramento River at Colusa.....	8/11 902	8/11 1650
Sacramento River at Knights Landing.....	8/10 597	8/10 1150
Sacramento River at Verona.....	8/12 788	
Sacramento River at Sacramento.....	8/12 550	8/12 1010
Feather River at Nicolaus.....	8/12 46	8/12 0
American River at H St. Bridge.....	8/13 38	8/13 9
San Joaquin River near Vernalis.....	8/10 260	8/10 422
Combined flow of Sacramento River at Sacramento and San Joaquin River near Vernalis.....	8/12 810	8/12 1432

**Salinity Tests Sacramento-San Joaquin Delta**

Station	Salinity in parts of chlorine per 100,000	
	8/10/31	8/10/24
U. and A. Ferry.....	1320	1290
Colliersville.....	1190	985
Emmston.....	900	656

(Continued on page 36)

## The California Highway Dollar

### WHERE IT COMES FROM

	<i>Amount, cents</i>
Motor Vehicle Fees.....	12.27
Gasoline Tax.....	75.00
Transportation Companies Franchise Tax.....	1.61
Federal Aid.....	11.12
Total .....	100.00

### WHERE IT GOES

	<i>Amount, cents</i>
New Construction.....	41.55
Reconstruction .....	23.39
General Maintenance.....	11.62
Special Maintenance.....	7.54
Administration .....	3.55
Surveys and Plans.....	3.83
Right of Way.....	6.51
Buildings, Plants and Equipment.....	1.12
Joint Highway Districts.....	0.89
Total .....	100.00

## Car's Serial Number Needed for License

The serial number of the car and number of cylinders will hereafter be required on all applications for auto license renewal and transfers of second-hand cars or registration of new cars.

This information will be required says Russell Bevans, Acting Registrar of Motor Vehicles, in order to comply with the new provisions of sections 37 and 41 of the Motor Vehicle Act effective August 14th.

New certificate forms for 1932 will have spaces in which this information will be inserted.

As licenses are renewed and transfers made on the old certificates which do not have these spaces it will be necessary for the motorist to write in the information on the face of the old certificate of registration.

Captain Elmer Little: "Did you get that fellow's number?"

Unnamed Patrolman: "Naw, he was too fast for me."

Captain: "But, gee, that was a pretty brown-eyed gal he had with him sitting in the rumble seat."

Nameless One: "She sure was."—*Earth Mover.*

## Not One Complaint Received on Oiling

A little praise now and then is relished by the best of men.

The Department of Public Works was very pleased with the reaction of press and public to Governor Rolph's executive order halting oiling operations on all State highways during the Independence Day holiday period.

Now comes C. C. Cottrell, manager of the Highways Bureau of the California State Automobile Association, who, in a letter to C. H. Purcell, State Highway Engineer, has this to say:

Dear Mr. Purcell:

I am very happy to advise you that so far this year we have not received a single complaint of your oiling operations.

In view of the nature of the work and oftentimes an impatient motoring public, we think this is an excellent record and therefore wish to compliment the men in your department having charge of this work.

Laws of practically all states prohibit traveling down grade with gears in neutral.

## Dollar for Dollar Return Assured in Winter Relief Plan

(Continued from page 1)

during the months when labor will be under its greatest stress.

Statistical data compiled under the direction of C. H. Purcell, Chief of the Division of Highways, reveals that during the year 1931 State highway construction in California will amount to \$37,200,000.

During the first seven months of the year, January 1st to July 31st, contracts were awarded for road construction amounting to \$14,400,000. Contracts awarded the first seven months of 1930 amounted to \$11,000,000.

By December 31st additional contracts will be awarded and projects advertised for bids amounting to \$15,350,000. In addition to work let by contract, the State will spend \$7,450,000 for maintenance and minor improvements.

The following tabulations, arranged according to the classifications of the American Association of State Highway Officials, show the progress of the State's highway program for the year:

### MILEAGE OF HIGHWAYS COMPLETED AND LET TO CONTRACT

	January 1, 1931, to July 31, 1931	
	Miles completed	Miles contracted
High Type (Pavement).....	91	144
Low Type (Bituminous Treated and Untreated Rock Surface).....	116	348
Graded .....	45	56
<b>Total .....</b>	<b>252</b>	<b>548</b>

Oiled to Lay Dust..... 1,685

### PROGRAM OF HIGHWAY CONSTRUCTION

August 1, 1931, to December 31, 1931

	Miles to be contracted
High Type.....	158
Low Type.....	156
Graded .....	53
<b>Total .....</b>	<b>367</b>

Total to be contracted for in 1931..... 915

To accomplish this task of highway construction an average of 8000 men are continuously employed by the State and con-



Col. Walter E. Garrison

tractors. The maximum number employed at one time during the first seven months of the year was 8550.

"Children should be seen and not heard," grandpa warned little Willie.  
"You let that child say anything he wants to," bristled his mother. "I sold three of his bright sayings last month."—*Forbes*.

Deacon Callahan took his wife to the races. Just as the horses were lining up at the barrier Mrs. Callahan grasped the deacon nervously by the arm, and in a voice which was filled with emotion asked him for a safety pin, meanwhile grabbing frantically after something that seemed to be slipping around the knees. Just then some one near by, shouted: "They're off!" And Mrs. Callahan fainted.—*Labor*.

During the day Mrs. Brown discharged her old maid and hired a new one, who answered the door bell when Mr. Brown arrived home in the evening. He carried a bunch of roses which he handed to the maid, saying:

"Present these to Mrs. Brown, telling her I want to see her at once."

"All right," said the maid, "but you better make it snappy, because she expects the old man any minute now."

## Vital Statistics on Dam Construction

Applications for approval of dams built prior to August 14, 1929, filed with the State Department of Public Works, Division of Water Resources during the month of August, 1931.

**NEVADA COUNTY**—Donner Lake Dam No. 301. Donner Lake Company, San Francisco, owner; buttress dam, 13 feet above streambed with a storage capacity of 11,000 acre-feet, situated on Donner Creek tributary to Truckee River in Sec. 18, T. 17 N., R. 16 E., M. D. B. and M., for storage purposes, for recreation use.

**LASSEN COUNTY**—Jessen Dam No. 252. Mrs. M. L. M. Cone, Red Bluff, California, owner; earth dam, 4½ feet above streambed with a storage capacity of 1600 acre-feet, located in Sec. 17, T. 34 N., R. 9 E., M. D. B. and M., for storage purposes, for stock use.

Applications for approval of plans and specifications for construction or enlargement of dams filed with the State Department of Public Works, Division of Water Resources, during the month of August, 1931.

**SANTA BARBARA COUNTY**—La Patera Dam No. 751. Sherman P. Stow Co., Santa Barbara, California, owner; earth, 14.7 feet above streambed with a storage capacity of 52 acre-feet, situated on La Patera Depression in Sec. 7, T. 4 N., R. 28 W., S. B. B. and M., for storage purposes, for irrigation use. Estimated cost \$11,000, fees paid \$110.00.

**SAN MATEO COUNTY**—Cascade Creek Dam No. 697-2. Humphrey Estate, Inc., Pescadero, owner; hydraulic fill, 52½ feet above streambed with a storage capacity of 52 acre-feet, situated on Cascade Creek tributary to Pacific Ocean in Sec. 21, T. 9 N., R. 4 W., M. D. B. and M., for storage purposes, for domestic and irrigation use. Estimated cost \$5,750, fees paid \$57.50.

**TUOLUMNE COUNTY**—Bigelow Lake Dam No. 550. Tuolumne County, Sonora, owner; gravity dam, 8 feet above streambed with a storage capacity of 460 acre-feet, situated on East Fork of Cherry River tributary to Tuolumne, located in Sec. 35, T. 4 N., R. 21 E., M. D. B. and M., for storage purposes, for fish conservation use. Estimated cost \$650, fees paid \$20.

**TUOLUMNE COUNTY**—Buck Lake Dam No. 550-2. Tuolumne County, Sonora, owner; gravity dam, 8 feet above streambed with a storage capacity of 360 acre-feet, situated on Buck Meadows Creek tributary to West Fork Cherry Creek in Sec. 24, T. 4 N., R. 20 E., M. D. B. and M., for storage purposes, for fish conservation use. Estimated cost \$700, fees paid \$20.

**PLACER COUNTY**—Pulp Mill Diversion Dam No. 97-106. Pacific Gas and Electric Company, San Francisco, owner; arch, 25 feet above streambed with a storage capacity of 3 acre-feet, situated on Canyon Creek tributary to North Fork American River. For diversion purposes, for power use. Estimated cost \$2,500, fees paid \$25.

**SISKIYOU COUNTY**—Iron Gate Dam No. 91-3. California-Oregon Power Company, San Francisco, owner; arch, 165 feet above streambed with a storage capacity of 59,000 acre-feet, situated on Klamath River tributary to Pacific Ocean in Sec. 9, T. 47 N., R. 5 W., M. D. B. and M., for diversion and storage purposes, for power use. Estimated cost \$1,500,000, fees paid \$6,000.

Applications for approval of plans and specifications for repair or alteration of dams filed with the State Department of Public Works, Division of Water Resources, during the month of August, 1931.

**TUOLUMNE COUNTY**—Kincaid Dam No. 97-72. Pacific Gas and Electric Company, San Francisco, owner; earth dam, situated on small creek tributary to Curtis Creek in Sec. 3, T. 1 N., R. 15 E., M. D. B. and M.

**SHASTA COUNTY**—Baldwin Dam No. 97-85. Pacific Gas and Electric Company, San Francisco, owner;

earth dam, located in Sec. 33, T. 31 N., R. 1 E., M. D. B. and M.

**FRESNO COUNTY**—Florence Lake Dam No. 104-9. Southern California Edison Company, Los Angeles, owner; multiple arch dam, situated on South Fork San Joaquin River tributary to San Joaquin River in Sec. 1, T. 8 S., R. 27 E., M. D. B. and M.

**PLACER AND SACRAMENTO COUNTIES**—Diversion Dam No. 324. North Fork Ditch Company, Sacramento, owner; gravity dam, situated on North Fork American River tributary to American River, located in Sec. 23, T. 12 N., R. 8 E., M. D. B. and M.

**RIVERSIDE COUNTY**—Mockingbird Dam No. 814. Gage Canal Company, Riverside, owner; earth, situated on Mockingbird Canyon in Sec. 20, T. 3 S., R. 5 W., S. B. B. and M.

**SHASTA COUNTY**—Buckhorn Lake Dam No. 97-86. Pacific Gas and Electric Company, San Francisco, owner; earth, situated on North Canyon Creek tributary to Sacramento River in Sec. 18, T. 33 N., R. 2 E., M. D. B. and M.

**SOLANO COUNTY**—Lake Madigan Dam No. 14-2. City of Vallejo, owner; earth, situated on Wild Horse Creek tributary to Green Valley Creek in Sec. 9, T. 5 N., R. 3 W., M. D. B. and M.

Plans for the repair or alteration of dams approved by the State Department of Public Works, Division of Water Resources, during the month of August, 1931.

**YUBA COUNTY**—Lake Francis Dam No. 97-3. Pacific Gas and Electric Company, San Francisco, owner; earth, situated on Dobbins Creek tributary to Yuba River in Sec. 5, T. 17 N., R. 7 E., M. D. B. and M.

**NEVADA COUNTY**—White Rock Dam No. 97-49. Pacific Gas and Electric Company, San Francisco, owner; earth and rock dam, situated on North Creek, tributary to Fordyce, in Sec. 22, T. 18 N., R. 14 E., M. D. B. and M.

**ALPINE COUNTY**—Twin Lakes Dam No. 97-59. Pacific Gas and Electric Company, San Francisco, owner; arch dam, situated on branch of Silver Creek tributary to South Fork American River in Sec. 22, T. 10 N., R. 17 E., M. D. B. and M.

**SANTA CLARA COUNTY**—Lower Howell Dam No. 622-2. San Jose Water Works, San Jose, owner; earth dam, situated on Russell Creek tributary to Los Gatos Creek in Sec. 31, T. 3 S., R. 1 W., M. D. B. and M.

**FRESNO COUNTY**—Florence Lake Dam No. 104-9. Southern California Edison Company, Los Angeles, owner; multiple arch, situated on South Fork San Joaquin River tributary to San Joaquin in Sec. 1, T. 8 S., R. 27 E., M. D. B. and M.

**PLACER AND SACRAMENTO COUNTIES**—Diversion Dam No. 324. North Fork Ditch Company, Sacramento, owner; gravity, situated on North Fork American River tributary to American River in Sec. 23, T. 12 N., R. 8 E., M. D. B. and M.

**TUOLUMNE COUNTY**—Kincaid Dam No. 97-72. Pacific Gas and Electric Company, San Francisco, owner; earth, situated on a small creek tributary to Curtis Creek in Sec. 9, T. 1 N., R. 15 E., M. D. B. and M.

EDWARD HYATT, State Engineer.

September 1, 1931.

A Chinese editor inclosed a rejection slip, when returning contributions, which read as follows:

"We have read your manuscript with infinite delight. Never before have we reveled in such a masterpiece. If we printed it the authorities would take it for a model and henceforth would never permit anything inferior to it. As it would be impossible to find its equal within 10,000 years, we are compelled though shaken with sorrow, to return your divine manuscript, and for so doing we beg 10,000 pardons."

—Pittsburgh Chronicle-Telegraph

## In the Realm of Women—With a Hoe



**SOCIETY SECTION!** Having to do with the activities of the wife of a Maintenance Superintendent, Mrs. Tremper. Without expense to the State she has turned the place on the left into the beautiful home on the right. Some gardener!

### Flowers and Blooms Win Recognition for R. A. Tremper's Wife

R. A. Tremper is the Maintenance Superintendent for District II. As such, he's pretty hard to beat.

But Mrs. Tremper—there's a Maintenance Superintendent!

When Mrs. Tremper moved into the cottage shown in the picture in 1927—well, it was a shelter alright but little else.

And now, four years later, the gardens surrounding her home are among the show places of Boulder Creek and its vicinity.

By constant work and perseverance, diligence and care, Mrs. Tremper has turned the grounds surrounding the Maintenance Yard into a veritable forest of bloom and color. Especially in the spring and the greater part of summer is to be found a riot of beautiful flowers and blossoms.

Under direction and advice of State Landscape Engineer H. D. Bowers, Maintenance Yard foremen and State highway employees are being encouraged to beautify State property. In several sections of California are to be found attractive gardens and lawns planted in spare time by State employees.

Mrs. Tremper's effort stands out, however.

"Do you know Vandewater has eleven children?" "He's gone stork mad, hasn't he?"—*Exchange*.



**SHADY NOOKS**—Another view of the Boulder Creek home of the Tremper's, giving a further idea of the intensive work done to beautify the place.

"Times certainly have changed," sighed Carleton. "How so?" asked Herz. "Why, at a little family party last night, the women talked politics, while the men got off in a corner and exchanged recipes."

Small boy (to his father): The world is round, isn't it?

Father: It is.

Boy: Then if I wanted to go east I could get there by going west, couldn't I?

Father: Yes, and when you grow up you will be a taxicab driver.—*National Motorist*.

A stranger applied at the police station for a lodging, and when asked his name, replied that it was Smith.

"Give me your real name," he was ordered.

"Well, said the applicant, "put me down as William Shakespeare."

"That's better," the officer told him. "You can't bluff me with that Smith stuff."—*Tit-Bits*.

# Water Masters Regulate Rivers' Flow

(Continued from page 31)

Salinity Tests Sacramento-San Joaquin Delta—Continued

Station	Salinity in parts of chlorine per 100,000	
	8/10/31	8/10/24
Three-Mile Slough Bridge.....	760	578
Rio Vista Bridge.....	700	572
Isleton.....	510	300
Howard Ferry.....	400	81
Walnut Grove.....	200	42
Hood Ferry.....	8	46
Jersey.....	700	550
Webb Pump.....	520	
Central Landing.....	370	180
Middle River Post Office.....	180	82
Williams Bridge.....	52	

The Feather River situation has called for considerable activity. The river went dry at Nicolaus on July 10 with several large diversions below Marysville depending on its flow. Conditions were investigated by the Water Supervisor's office and a meeting of a number of the lower water users was held in the State Engineer's office on July 21, and the State Engineer conducted a similar meeting at Oroville on July 22 at which the larger water users and representatives of the Sutter-Butte Canal Co., Western Canal Co., Pacific Gas and Electric Co., and the Railroad Commission were present.

## ECONOMIES MADE

As a result of these meetings the Pacific Gas and Electric Co. released additional storage from Bucks Reservoir, the Sutter-Butte Canal Co. and Western Canal Co. made certain cuts in their diversions and water was sent down the river to a point below the Nicolaus bridge.

An agreement providing for a State Water Master to regulate diversions in accordance with reasonable duty of water and crop requirements was presented to the water users and signed by them. This water master under the direction of the Water Supervisor's office began work July 23. A schedule of rotation among the general crop diverters was placed in effect. Subsequently it was found that additional storage releases would be necessary to reach the pumps of the Sutter Basin Co. below Nicolaus, and through representations of this company to Pacific Gas and Electric Co., and in view of the fact that the distribution of water was under the control of the State Water Master, the power company released a large additional flow from Lake Almanor beginning July 30, 1931. This flow reached the Sutter Basin pumps.

Up to the present time through close regulation by the water master and cooperation on the parts of the Sutter-Butte Canal Co. and Pacific Gas and Electric Co., the water users have been successfully supplied. It appears probable that the Feather River situation may lead to an action for ultimate adjudication of the water rights on the river below Oroville.

## CALIFORNIA COOPERATIVE SNOW SURVEYS

A small amount of office work has been done in continuation of that reported last month in relating snow survey and precipitation data to run-off. Other office work included the preparation of plans and

specifications for standard frame and log shelter cabins. A trip was made in cooperation with officials of Nevada Cooperative Snow Surveys to inspect the snow courses of the Walker River Basin. Many of the courses required clearing and all of them were re-marked with the new California cooperative signs and accurate sketches and descriptions of the courses were secured.

## FEDERAL COOPERATION

In connection with the Federal-State cooperation for irrigation investigations a review was made of the report of 1930 work in the Sacramento-San Joaquin Delta. The report has been prepared for incorporation in the regular 1930 report of the Water Supervisor. There has been some discussion relative to the conduct of the investigation to determine the consumptive use of aquatic plants, and the results up to August 1, 1931, for the tule and cattail tanks have been received and reviewed.

In connection with the Federal-State cooperation for stream-gaging, a tentative program for the quality of water investigation throughout the State has been outlined and submitted to the U. S. Geological Survey for an estimate of cost. A trip was made to the Pit River Basin for the inspection of gaging stations that have been maintained up to the present under the State's Pit River Investigation. Four stations were selected for permanent maintenance by the U. S. Geological Survey after the close of the Pit River Investigation.

A trip was made for the selection of sites for permanent gaging station installations on the Feather River at Nicolaus (replacing present weekly recorder) and on the Sacramento River just below Wilkins Slough. These two stations will be built by the U. S. Engineers, Second District, in accordance with cooperative arrangement between the State and Federal departments.

## SACRAMENTO FLOOD CONTROL

The weir in the Wadsworth Canal, built for the Reclamation Board, has been completed and water is now being held to about one-half full height. An additional week will be allowed for the concrete to attain full strength before water will be carried to the final elevation. The pavement over the fills at the ends of the dam will not be placed until the fill is completely settled.

## RUSSIAN RIVER JETTY

Bids were received for the construction of 225 feet of trestle for the railroad tract to extend the jetty, and contract was awarded to the Healy-Tibbitts Construction Company at a price of \$9,743. The contractor has commenced work and piles are being driven. This contract provides for the use of steel piles.

# Irrigation Cooperation is Outlined

(Continued from preceding page)

## DAMS

To date 771 applications for approval of existing dams have been filed; 76 for approval of plans and specifications for construction or enlargement; and 170 for approval of repairs or alterations.

### a. Applications Received for Approval of Plans and Specifications for Construction of Dams.

Dam	Owner	County
North Side Water Company	North Side Water Co.	Los Angeles
San Vicente Creek	Coast Dairies and Land Co.	Santa Cruz
La Patera	Sherman P. Stow Co.	Santa Barbara
Cascade Creek	Humphrey Estate Co.	San Mateo

### b. Applications Received for Approval of Plans for Repair or Alterations.

Dam	Owner	County
Lower Howell	San Jose Water Works	Santa Clara
White Rock	Pacific Gas and Electric Co.	Nevada
Florence Lake	Southern California Edison Co.	Fresno
Mocking Bird	Gage Canal Co.	Riverside
Kincaid	Pacific Gas and Electric Co.	Tuolumne
Baldwin	Pacific Gas and Electric Co.	Shasta
Diversion	North Fork Ditch Co.	Placer and Sacramento

### c. Plans Approved for Repairs or Alterations.

Dam	Owner	County
Pert Costa Balancing Reser.	California Water Service Co.	Contra Costa
Spaulding No. 1	R. D. Craig	Modoc
Alta Forebay	Pacific Gas and Electric Co.	Placer
Lake Strawberry	Pacific Gas and Electric Co.	Tuolumne
Relief	Pacific Gas and Electric Co.	Tuolumne
Duke Reservoir	Royal E. Williams	Modoc
Lake Francis	Pacific Gas and Electric Co.	Yuba
White Rock	Pacific Gas and Electric Co.	Nevada
Twin Lakes	Pacific Gas and Electric Co.	Alpine
Lower Howell	San Jose Water Works	Santa Clara

## Orders Authorizing Use

Orders authorizing use of the following dams pending formal approval, have been issued by the State Engineer.

Dam	Owner	County
Whittier	City of Whittier	Los Angeles
Sunset Canyon	L. A. Co. Flood Control Dist.	Los Angeles

## WATER RIGHTS

### a. Applications to Appropriate.

During the month of July, 36 applications were received for the appropriation of water; 8 were canceled and 20 were approved; 9 permits were revoked and 16 licenses issued.

Applications which were of special interest received during the month included one from the East Side Canal and Irrigation Company seeking the appropriation of 75 cubic feet per second from McCoy Spillway, Arena Spillway, Livingston Drain, Bear, Owens, Duck and Deadman creeks for the irrigation of some 50,000 acres in Merced County; and another from C. L. Brown, 600 S. Madison street, Pasadena, seeking the appropriation of 100 cubic feet per second

from Canyon Creek at a point some 12 miles northwest of Weaverville for mining and domestic purposes, the estimated cost of this latter project being \$150,000. During the month a second project for mining and domestic purposes and estimated to cost \$150,000 received a permit. This latter project involves the appropriation of 150 cubic feet per second from various small tributaries of Trinity River in the vicinity of Willow Creek.

### b. Adjudications.

*Shasta River (Siskiyou County)*. Case pending in the Superior Court of Siskiyou County.

*Whitewater River (San Bernardino and Riverside Counties)*. Case pending in the Superior Court of Riverside County awaiting developments in regard to the proposed All American Canal from Colorado River.

*North Cow Creek (Shasta County)*. A hearing on the exceptions to the Division's report as referee has been set by the Superior Court for October 5, 1931.

*Los Alamos Creek (Santa Barbara County)*. Division's report as referee has been submitted to the Superior court and a decree is expected in the near future.

*Mill Creek (Modoc County)*. All but two of the water users have signed a stipulation for consent judgment.

*Deep Creek (Modoc County)*. Distribution of the waters of Deep Creek was continued throughout the month in accordance with the trial schedule of allotments which was adopted for the 1931 season.

## WATER DISTRIBUTION

*Cedar, Davis, Deep, Emerson, Franklin, Mill, New Pine, Owl, Pine and Soldier Creeks (Modoc County)*. Water master service on these streams was continued throughout the month.

*South Fork of Pit River (Modoc County)*. Supervision over diversions from the South Fork of Pit River was commenced August first, under authority of an agreement signed by all of the water users involved.

*Parker Creek (Modoc County)*. Supervision over diversions from Parker Creek was commenced August fourth, under authority of a court order issued July 31, 1931, directing water master service under a former court decree.

*North Fork of Cottonwood Creek (Shasta County)*. A petition for water master service within the North Fork of Cottonwood Creek Water District was received on August sixth. Supervision over diversions from the stream was commenced immediately thereafter.

## WATER RESOURCES

*b. Santa Clara Investigation*. The Santa Clara Valley Water Conservation District with which the division is cooperating in the Santa Clara Valley Investigation is contemplating an election upon the issuance of bonds with which to finance the construction of conservation facilities. An engineer has been

# State Water Plan Meetings Held

(Continued from preceding page)

employed and work of preparing estimates is in progress. The district has, however, expressed a desire that the division continue with the investigation along the lines of the past 18 months. Well readings taken throughout the valley early last spring indicated a recession of some 76½ feet in the ground water during the past 16 years, 12 feet of which occurred during the last 12 months. This recession of ground water it is estimated indicates a gross depletion of underground storage amounting to 700,000 acre-feet during the past 16 years, of which 110,000 acre-feet occurred during the last 12 months.

## WATER RESOURCES REPORTS

During the month, the following has been accomplished on the publications of the Division of Water Resources under Chapter 832, Statutes of 1929:

Work has progressed on the preparation of manuscript of bulletins No. 26, "Sacramento River Basin"; No. 27, "Variation and Control of Salinity in Sacramento-San Joaquin Delta and Upper San Francisco Bay"; and No. 29, "San Joaquin River Basin." Manuscript on Bulletin No. 28, "Economic Aspects of a Salt Water Barrier below Confluence of Sacramento and San Joaquin Rivers," has been completed and transmitted to the Consulting Board for final corrections and revisions.

Bulletin No. 33, "Rainfall Penetration and Consumptive Use of Water in Santa Ana River Valley and Coastal Plain," has been printed. This bulletin is a progress report of cooperative activities carried on by the Division of Agricultural Engineering, Bureau of Public Roads of the U. S. Department of Agriculture. The report was prepared by H. F. Blaney, assisted by A. A. Young and C. A. Taylor under the supervision of W. W. McLaughlin, Associate Chief. The publication contains some 160 pages written in two parts. Part I deals with "Rainfall Penetration and Consumptive Use of Water on Valley Floors," and gives outlines of methods of procedure and the data collected to July 1, 1930, on numerous plots of varied vegetation in the Santa Ana Valley. Part II deals with "Evaporation and Transpiration Losses from Moist Areas," and sets forth the results of tank and field experiments carried on in the Santa Ana Valley. The work outlined in this bulletin is being continued under Chapter 656 of the Statutes of 1929 to obtain more complete data on the needs for and the conservation of the water resources of the Santa Ana Valley, with particular reference to rainfall and its uses and losses from cultivated and native vegetation.

The following bulletins are now printed and are available for distribution:

Bulletin No. 25—"Report to Legislature of 1931 on State Water Plan."

Bulletin No. 28A—"Industrial Survey to Upper San Francisco Bay Area With Special Reference to a Salt Water Barrier Below Confluence of Sacramento and San Joaquin Rivers."

Bulletin No. 31—"Santa Ana River Basin."

Bulletin No. 32—"South Coastal Basin."

Bulletin No. 33—"Rainfall Penetration and Consumptive Use of Water in Santa Ana River Valley and Coastal Plain."

Bulletin No. 34—"Permissible Annual Charges for Irrigation Water in Upper San Joaquin Valley."

Bulletin No. 35—"Permissible Economic Rate of Irrigation Development in California."

Bulletin No. 36—"Cost of Irrigation Water in California."

## LEGISLATIVE COMMITTEE

Authorized under Chapter 71, Senate Concurrent Resolution No. 38, the Joint Legislative Committee on Water Resources, consisting of fourteen members, Senator B. S. Crittenden, Chairman, met in a series of public hearings and executive sessions in the State Building, Civic Center, San Francisco, from August 6th to August 15th, inclusive, during which time a large number of individuals appeared to submit views and opinions on the State Water Plan.

## WATER STORAGE DISTRICTS

Of the large number of laws passed by the 1930-31 Legislature, affecting California irrigation districts and similar organizations throughout the State, the most important was the California Districts Securities Commission Act, which repealed the Bond Commission Act of 1913. The securities act provides for a commission of five members, consisting of the Attorney General, State Engineer, Superintendent of Banks and two members to be appointed by the Governor, each of whom shall have had at least five years' experience in irrigation district affairs as an officer or employee. The act defines the duties of the Commission in relation to the bonds of irrigation districts, and under what condition such bonds may be issued and certified as legal investments for public and trust funds. It also provides for certain activities of the Commission in the refinancing of districts and in the readjustment of the financial affairs of insolvent irrigation districts. The Commission as now constituted consists of U. S. Webb, Attorney General; Edward Rainey, Superintendent of Banks; Edward Hyatt, State Engineer; M. J. Dowd, Chief Engineer of Imperial Irrigation District; and H. E. Vogel, Director of Fresno Irrigation District.

An initial and organization meeting of the Commission was held at San Francisco on August 19th, at which Attorney General Webb was elected permanent chairman. At this meeting the refunding programs of the Oakdale and South San Joaquin irrigation districts were given consideration and approval. The action of the Commission does not carry with it the authority for the issuance of bonds, which authority is conditioned on the approval of the plan by the voters of the district at special bond elections.





**CONTRACTING THE AIR.** Hemstreet & Bell literally drop in on their men nowadays. For they have purchased an airplane and do their inspecting of contract work via this modern medium. The photograph shows (left to right) D. A. Hemstreet and J. W. Bell with Mr. Allen, the pilot, taking a breather before embarking again on a scheduled trip to their various projects.

**N**OW COMES the contractor who frankly admits he's "up in the air" most of the time.

Of course there are engineers who think most contractors are "up in the air" ALL of the time.

But Hemstreet & Bell of Marysville do most of their work while up in the air.

For they have purchased an airplane for the contracting business.

**Thus is demonstrated a modern means of increasing efficiency by permitting closer supervision of scattered jobs and giving directing heads of the organization more time for active and constructive work.**

For example:

Hemstreet & Bell have an asphalt plant at Singley, near the bar on the Eel River. Here asphalt treated crushed gravel is being produced for a surfacing job between Loleta and Eureka.

For the purpose of inspecting and directing the operations on this contract and to make field studies of a project adjacent to Crescent City and another near Scotia, upon both of which the firm desired to prepare bids, the contractors left headquarters at Marysville after breakfast one morning last week.

They landed at the Eel River Bar at 9.30 a.m. At eleven o'clock, they left for Crescent City, spent two hours inspecting the proposed

job there and landed at Singley again at 3.30 p.m. One hour and a half was spent inspecting the proposed work at Scotia and some additional time at the Singley plant.

The contractors left about 5.30 and reached Marysville again before seven o'clock.

**Moral—Nothing to do till tomorrow.**

#### CARE BY DRIVERS

Constant watchfulness against the possibility of injuring a person or causing property damage is required of motorists, according to a ruling of the Supreme Court in an eastern state received by the California State Automobile Association. The decision held that a motorist who sees a car stop at the side of the highway must bring his own car immediately under control and take every reasonable precaution in passing the parked car to avoid injuring any person who might get out of the machine, or who might attempt to cross the highway in front of the motorist.

#### AUTOS IN FRANCE

While still ranking third in the total number of automobiles, France last year achieved the greatest percentage of increase in registration. France made an increase of 13.5 per cent, as compared with 0.5 per cent for the United States. In car totals the United States headed the list with 26,691,000, followed by Great Britain with 1,558,000, and France with 1,500,000. There is one car in France to every 28 persons and one to every 4.6 persons in this country.

The Golfer: They're all afraid to play me. What do you think my handicap is?  
The Girl: Oh, I don't know. It may be your face.

# Highway Bids and Awards for August

**AMADOR COUNTY**—Between Amador City and Martell, stockpiling crushed gravel. Dist. X, Rt. 65, Sec. B, C. E. Reed, Tracy, \$9,600. Contract awarded to Adams Construction Co., Angels Camp, \$8,100.

**BUTTE COUNTY**—Between Shasta Union School and 6 miles north, 6.6 miles to be widened with bituminous treated crushed gravel or stone. Dist. III, Rt. 3, Sec. D, Hemstreet & Bell, Marysville, \$30,290; A. Teichert & Son, Sacramento, \$28,992; Harms Bros., Galt, \$27,930; Clark & Henery Construction Co., San Francisco, \$30,586; F. W. Nighbert, Bakersfield, \$33,049. Contract awarded to United Contracting Co., Portland, \$26,952.

**DEL NORTE COUNTY**—Between Crescent City and one-half mile east of Elk Valley, 5.1 miles to be graded and surfaced with untreated crushed gravel. Dist. I, Rt. 1, Sec. C, Interstate Construction Co., Portland, Ore., \$115,297; Kern & Kibbe, Portland, Ore., \$131,311; W. H. Hauser, Oakland, \$154,740; Kennedy Construction Co., Oakland, \$115,781; Frank C. Cuffe, San Rafael, \$127,446; H. J. Boomer, San Francisco, \$134,196; Daniel Bayles, Biggs, \$143,469; Hemstreet & Bell, Marysville, \$119,565; Contoules Const. Co., San Francisco, \$127,790; A. Guthrie & Co., Inc., Portland, Ore., \$140,370; C. T. Malcom, Mapleton, Ore., \$149,860; Steele Finley, Santa Ana, \$116,580. Contract awarded to Healy-Tibbitts Construction Co., San Francisco, \$113,969.

**EL DORADO COUNTY**—Between 14 Mile Stone and Fresh Pond, 3.2 miles to be surfaced with bituminous treated crushed gravel. Dist. III, Rt. 11, Sec. F, Fred W. Nighbert, Bakersfield, \$13,327; A. Teichert & Son, Inc., Sacramento, \$14,420; Chas. N. Chittenden, Napa, \$14,366; Tiffany-McReynolds, Tiffany, San Jose, \$18,257; Harms Bros., Galt, \$14,340. Contract awarded to C. E. Reed, Tracy, \$12,745.

**HUMBOLDT COUNTY**—Between Red Crest and Holmes Road, untreated crushed gravel or stone surfacing 1.4 miles. Dist. I, Rt. 1, Sec. D, Smith Bros., Eureka, \$10,811; J. W. Bertram, \$10,857. Contract awarded to Delose C. Kemp, Crescent City, \$7,740.

**HUMBOLDT COUNTY**—Between S. Scotia Bridge and Fortuna, 10.2 miles grading surfacing. Dist. I, Rt. 1, Secs. E, F, Healy-Tibbitts Construction Co., \$149,294; W. H. Houser, Oakland, \$147,096. Contract awarded to Hemstreet & Bell, Marysville, \$118,323.

**HUMBOLDT COUNTY**—Bridge across the east branch of the South Fork of El River, 2.7 miles south of Garberville, consisting of one 102-foot concrete barrel arch span, and two 46-foot concrete girder approach spans with walls faced with stone. Dist. I, Rt. 1, Sec. A, Peter McHugh, San Francisco, \$108,122; Smith Bros. Co., Eureka, \$97,936; M. B. McGowan, San Francisco, \$119,454. Contract awarded to Rocca & Coletti, San Rafael, \$86,320.

**LAKE AND COLUSA COUNTIES**—Between Abbott Mine and 12 miles west of Williams, surfacing with gravel base. Dist. III, Rt. 15, Secs. C, D, C. W. Wood, Stockton, \$59,719; C. Anli Co., Huntington Park, \$84,966; Hemstreet & Bell, Marysville, \$73,350; Larsen Bros., Galt, \$59,830; Force Construction Co., Piedmont, \$56,122; A. Teichert & Son, Sacramento, \$56,909; F. W. Nighbert, Bakersfield, \$92,900; Clark & Henery Construction Co., San Francisco, \$78,508. Contract awarded to Frederickson & Watson, Oakland, \$50,905.

**LOS ANGELES COUNTY**—Reinforced concrete bridge across Fern Canyon about 5 miles northeast of La Canada, consisting of one 126-foot open spandrel arch and seven 133-foot slab approach spans. Dist. VII, Rt. 61, Sec. A, General Engineering Corp., Los Angeles, \$35,474; Oberg Bros., Los Angeles, \$36,690; R. H. Travers, \$32,137; Franklin B. Gridley, Pasadena, \$33,999; Robinson Roberts Co., Los Angeles, \$29,153. Contract awarded to Houghton & Anderson, Los Angeles, \$28,958.

Gasoline consumption in the United States increased 5.3 per cent in 1930.

During the first six months of this year motor vehicle registration in San Mateo County brought the total for that area to 26,197. Passenger automobiles totaled 24,521, with the remainder consisting of various other types of vehicles, such as trucks, trailers, and motorcycles.

**MONTEREY COUNTY**—At the Spence Underpass about 0.2 of a mile from the State Highway to the county road grading and surfacing with crusher run base and bituminous treatment. Dist. V, Rt. 2, Sec. B, Granite Construction Co., Watsonville, \$4,110. Contract awarded to W. A. Dontanville, Salinas, \$3,461.

**MONTEREY COUNTY**—Reinforced concrete bridge across Dixby Creek, 18 miles south of Carmel, consisting of one 330-foot open spandrel arch span and nine 40-foot girder approach spans. Dist. V, Rt. 56, Sec. G, Geo. Pollock Co., Sacramento, \$212,975; Barrett & Hilp, San Francisco, \$234,067; Hanrahan Co., San Francisco, \$296,492; Lindgret & Swinerton, San Francisco, \$257,400; Rocca & Coletti, San Rafael, \$269,103; Gutleben Bros., Oakland, \$216,575; Merritt-Chapman & Scott, San Pedro, \$258,000; Fredrickson & Watson Construction Co., Oakland, \$233,151; Guy F. Atkinson, San Francisco, \$228,550; Oberg Bros., Los Angeles, \$218,400; Weves & Harp, Santa Clara, \$265,475; MacDonald & Kahn Co., San Francisco, \$237,360. Contract awarded to Ward Engineering Co., San Francisco, \$203,334.

**ORANGE COUNTY**—Pedestrian subway under State Highway and tracks of Pacific Electric Ry. Dist. VII, Rt. 60, Sec. A, Need Construction Co., Wilmington, \$14,323; R. R. Bishop, Los Angeles, \$11,485; W. M. Ledbetter Los Angeles, \$14,852; Franklin B. Gridley, Pasadena, \$17,435. Contract awarded to E. A. Irish, Los Angeles, \$11,026.

**ORANGE COUNTY**—Bridge across north arm of Newport Bay, near Newport Beach, one 42-foot steel stringer removable span and thirty-four 19-foot timber spans with concrete deck on crescent pile bents. Dist. VII, Rt. 60, Sec. B, R. H. Travers, Los Angeles, \$71,345; George Herz Co., San Bernardino, \$72,119; Nead Construction Co., Wilmington, \$69,935; General Emergency Corp., Los Angeles, \$78,242; Robinson Roberts Co., Los Angeles, \$70,278; R. R. Bishop, Long Beach, \$72,462; W. J. O'Neil, San Francisco, \$67,446; Bodenhamer Construction Co., Oakland, \$74,444; Merritt-Chapman & Scott, San Pedro, \$69,244. Contract awarded to J. S. Metzger & Son, San Gabriel, \$65,249.

**PLUMAS COUNTY**—Steel stringer bridge across Spanish Creek about 1.5 miles north of Kaddie. Dist. II, Rt. 21, Sec. C, R. B. McKenzie, Red Bluff, \$102,852; Barrett & Hilp, San Francisco, \$105,550; Robinson, Roberts Co., Los Angeles, \$103,479; Dyer Bros. Golden West Iron Works, San Francisco, \$102,049; M. B. McGowan, San Francisco, \$108,356; A. W. Kitchen, San Francisco, \$111,723. Contract awarded to Rocca & Coletti, San Rafael, \$92,780.

**SAN BENITO COUNTY**—Between 1½ miles north of San Juan Bautista and Pajaro River, 3.1 miles shoulders to be oiled. Dist. V, Rt. 2, Sec. A, W. A. Dontanville, Salinas, \$6,908. Contract awarded to Granite Construction Co., Watsonville, \$5,984.

**SAN DIEGO COUNTY**—At Jacumba, 1.1 miles grading, paving with Portland cement concrete. Dist. VII, Rt. 12, Sec. G, Gist & Bell, Arcadia, \$109,551; D. B. Carroll, San Diego, \$123,024; George Herz & Co., San Bernardino, \$114,794; E. Paul Ford, San Diego, \$112,404; Match Bros., Elsinore, \$117,019; Frank Doran, San Diego, \$123,646. Contract awarded to Walter Trepte, San Diego, \$106,704.

**SAN LUIS OBISPO COUNTY**—Between Hathaway Ave. and the California Polytechnic School, 0.6 of a mile to be graded and surfaced with bituminous macadam. Dist. V, W. A. Dontanville, Salinas, \$8,188; Wm. Raisch, San Luis Obispo, \$9,215; Santa Maria Construction Co., Santa Maria, \$9,368; Granite Construction Co., Watsonville, \$10,801. Contract awarded to Henry C. Dalessi, San Luis Obispo, \$8,023.

**SANTA BARBARA COUNTY**—Between Gaviota Canyon and Teolote Creek, 9.6 miles crusher run borders. Dist. V, Rt. 2, Secs. E, F and G, Santa Maria Construction Co., Santa Maria, \$30,885; Granite Construction Co., Watsonville, \$30,469. Contract awarded to Gist & Bell, Arcadia, \$29,425.

**SANTA BARBARA COUNTY**—Between Gaviota Pass and Zaca, 6.1 miles existing shoulders to be oiled treated. Dist. V, Rt. 2, Sec. D, Granite Construction Co., Watsonville, \$5,160; W. A. Dontanville, Salinas, \$5,295. Contract awarded to Santa Maria Construction Co., Santa Maria, \$4,200.

## Highway Awards

Continued from preceding page

**SANTA BARBARA COUNTY**—Between Zaca and Wigmore, about 4 miles of existing shoulders to be oiled. Dist. V, Rt. 2, Sec. C, Granite Construction Co., Watsonville, \$5,569; W. A. Dontanville, Salinas, \$4,890. Contract awarded to Santa Maria Construction Co., \$4,200.

**SANTA CLARA COUNTY**—Between Gilroy and Pajaro River, 5.2 miles to have rock borders to be placed. Dist. IV, Rt. 2, Sec. C, Harms Bros., Galt, \$15,335; W. A. Dontanville, Salinas, \$12,329. Contract awarded to Granite Const. Co., Watsonville, \$10,538.

**SHASTA COUNTY**—Between Diddy Hill and Montgomery Creek, 9.3 miles to be surfaced with untreated crushed gravel or stone and material stockpiled. Dist. II, Rt. 28, Secs. A, B, C, N. M. Ball, Porterville, \$88,867; Hein Bros. & Basalt Rock Co., Petaluma, \$84,688; Fred W. Nighbert, Bakersfield, \$92,825; A. Milne, Portland, \$92,825; E. B. Bishop, Sacramento, \$88,850. Contract awarded to Hemstreet & Bell, Marysville, \$81,465.

**TULARE COUNTY**—Between Tipton Crossing and Tulare, 7.6 miles to be graded and paved with Portland cement concrete. Dist. VI, Rt. 4, Sec. B, Basich Bros., Torrance, \$287,920; Southern California Road Co., Los Angeles, \$311,308; Jahn & Bressi, Los Angeles, \$297,988; Peninsula Paving Co., San Francisco, \$312,761; Hanrahan Co., San Francisco, \$299,649; Valley Paving & Construction Co., Fresno, \$305,674; N. M. Ball & D. McDonald, Sacramento, \$300,864; C. W. Wood, Stockton, \$310,145; M. J. Bevanda, Stockton, \$276,088; Fredrickson & Watson Construction Co., Oakland, \$302,032; Gibbons & Reed Co., Burbank, \$333,580; McCray Co., Los Angeles, \$306,503; Thompson Bros., Fresno, \$289,944. Contract awarded to Union Paving Co., San Francisco, \$274,283.

**TULARE COUNTY**—Five reinforced concrete bridges between Tipton Crossing and Tulare, varying from 48 feet to 300 feet long. Dist. VI, Rt. 4, Sec. B, Jahn & Bressi, Los Angeles, \$51,446; Peninsula Paving Co., San Francisco, \$53,086; Hanrahan Co., San Francisco, \$53,458; George J. Ulrich Construction Co., Modesto, \$48,459; Merritt-Chapman & Scott, San Pedro, \$53,577; Bodenhamer Construction Co., Oakland, \$53,886; Fredrickson & Watson Construction Co., Oakland, \$48,559; C. Anil Co., Huntington Park, \$61,841; Oberg Bros., Los Angeles, \$57,585; Hartman Construction Co., Bakersfield, \$53,414. Contract awarded to J. S. Metzger & Son, Los Angeles, \$43,517.

**VENTURA COUNTY**—Undergrade crossing of S. P. Ry., about 1/2 mile west of El Rio. Dist. VII, Rt. 60, Sec. E, Silveria & Robbins, Ventura, \$74,850; Robinson Roberts Co., Los Angeles, \$78,845; Oberg Bros., Los Angeles, \$74,781. Contract awarded to Merritt-Chapman & Scott, San Pedro, \$71,505.



MRS. JOHN H. SKEGGS, bride of Colonel John H. Skeggs of District IV, with headquarters in San Francisco. Mrs. Skeggs is the former Miss Ellanette Fagrelus of San Francisco, and was engaged in real estate activities before her marriage July 2d.

A young man who pleaded "joy riding" because he borrowed a car to meet his best girl and wanted to show off, got twelve months' hard labor. Courting trouble.—*National Motorist*.

A husband said to his wife: "I read here that 'Woman, without her man, is a savage.'" She looked over his shoulder and said: "Now read that again." And he read slower: "Woman! Without her, man is a savage."—*National Motorist*.

## Who Gets Tourists' \$\$\$? U.S. Analysis Shows Distribution

There seems to be some argument in various sections of the country among merchants as to who gets the tourist's dollar that may be spent in the community. The United States Department of Commerce has been making a study of this new industry and they give the following percentages as being about correct. It must be remembered that in some communities the actual figure will vary according to accommodations offered:

Retailer .....	25 per cent
Restaurant .....	20 per cent
Hotel or camp .....	17 per cent
Garage and filling station .....	12 per cent

Transportation .....	10 per cent
Theaters and amusement .....	10 per cent
Confectionery .....	6 per cent
<b>Total .....</b>	<b>100 per cent</b>

Usually the retailer is the first one to say that his sales are not affected by the tourist. He is overlooking the fact that in his case the money does not go from first spender to merchant. He gets his volume from the pay envelope of the employee of the filling station, garage, hotels and restaurants.

—*Roads and Streets*.

# August Water Applications and Permits

Applications for permits to appropriate water filed with the Department of Public Works, Division of Water Resources during the month of August, 1931.

**TUOLUMNE COUNTY**—Application 7025. Division of Highways, Sacramento, for .905 c.f.s. from Stoddard Springs tributary to North Fork of Tuolumne River to be diverted in Sec. 10, T. 3 N. R. 17 E., M. D. B. and M., for recreational purposes to supply public. Estimated cost \$200.

**DEL NORTE COUNTY**—Application 7026. Harry T. Wilkerson, 1238 S. Highland Ave., Los Angeles, for 50 c.f.s. from Hurdy Gurdy Creek tributary to South Fork of Smith River to be diverted in Sec. 19, T. 16 N., R. 3 E., II. B. and M., for mining and domestic purposes.

**SIERRA COUNTY**—Application 7027. T. W. Walter, c/o R. E. Taylor, Downieville, for 3.0 c.f.s. from Canyon Creek tributary to Yuba River to be diverted in Sec. 12, T. 21 N., R. 10 E., M. D. B. and M., for mining purposes. Estimated cost \$1,500.

**EL DORADO COUNTY**—Application 7028. Lawrence B. Kinnear, 309 4th St., Antioch, for 200 gallons per day from unnamed stream tributary to South Fork of American River to be diverted in Sec. 24, T. 11 N., R. 16 E., M. D. B. and M., for domestic purposes. Estimated cost \$200.

**EL DORADO COUNTY**—Application 7029. Lawrence W. Mehaffey, 611 6th St., Antioch, for 200 gallons per day from unnamed stream tributary to South Fork of American River to be diverted in Sec. 24, T. 11 N., R. 16 E., M. D. B. and M., for domestic purposes. Estimated cost \$200.

**FRESNO COUNTY**—Application 7030. Ambrose A. Cowan, c/o James M. Thueran, Atty., Fowler, for 2 c.f.s. from Mill Flat Creek tributary to Kings River to be diverted in Sec. 5, T. 13 S., R. 27 E., M. D. B. and M., for irrigation purposes. Estimated cost \$250.

**NEVADA COUNTY**—Application 7031. South Yuba Company, Ltd., c/o C. H. Shaw, Hotel Whitcomb, San Francisco, for 50 c.f.s. from South Yuba River tributary to Yuba River to be diverted in Sec. 8, T. 17 N., R. 11 E., M. D. B. and M., for mining purposes. Estimated cost \$10,000.

**PLACER COUNTY**—Application 7032. Paul H. Norboe, Room 605, 127 Montgomery St., San Francisco, for 250 c.f.s. 200,000 acre-feet per annum from Middle Fork of American River tributary to Sacramento River to be diverted in Sec. 36, T. 15 N., R. 13 E., M. D. B. and M., for power purposes. Estimated cost \$18,000-000.

**PLACER COUNTY**—Application 7033. Paul H. Norboe, Room 605, 127 Montgomery St., San Francisco, for 250 c.f.s. 200,000 acre-feet per annum from Middle Fork of American River tributary to Sacramento River to be diverted in Sec. 36, T. 15 N., R. 13 E., M. D. B. and M., for municipal purposes. Estimated cost \$15,000,000.

**HUMBOLDT COUNTY**—Application 7034. James L. Skiffington, Dyerville, for 0.012 c.f.s. from Little Creek tributary to Bull Creek to be diverted in Sec. 19, T. 1 S., R. 2 E., H. B. and M., for recreational purposes.

**SAN DIEGO COUNTY**—Application 7035. Marian Weber, Polomar Mountain, for 0.05 c.f.s. from springs tributary to Cutca Creek to be diverted in Sec. 29, T. 9 S., R. 1 E., S. B. B. and M., for domestic and irrigation purposes. Estimated cost \$1,000.

**EL DORADO COUNTY**—Application 7036. Geo. W. Harter and Mrs. W. W. Belshaw, c/o Geo. W. Harter, Antioch, for 400 gallons per day from a spring tributary to South Fork of American River to be diverted in Sec. 24, T. 11 N., R. 16 E., M. D. B. and M., for domestic purposes. Estimated cost \$200.

**VENTURA COUNTY**—Application 7037. Evelyn Akin Robertson, P. O. Box 957, Ventura, for 1.0 c.f.s. from unnamed spring tributary to Cuyama River to be diverted in Sec. 12, T. 7 N., R. 24 W., S. B. B. and M., for recreational and domestic purposes. Estimated cost \$300.

**SAN DIEGO COUNTY**—Application 7038. United States, Cleveland National Forest, 310 Federal Bldg.,

San Diego, for 0.066 c.f.s. from Vallecitos Spring tributary to Vallecitos Creek to be diverted in Sec. 34, T. 14 S., R. 5 E., S. B. B. and M., for domestic purposes. Estimated cost \$2,000.

**SANTA CLARA COUNTY**—Application 7039. Santa Clara Valley Water Conservation District, c/o Herbert D. Jones, atty., Auzerals Bldg., San Jose, for 200 c.f.s. and 60,000 ac. ft. per annum from Coyote River tributary to San Francisco Bay to be diverted in Sec. 10, T. 9 S., R. 3 E., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$1,600,000.

**SANTA CLARA COUNTY**—Application 7040. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 30 c.f.s. and 9000 ac. ft. per annum from Arroyo Calero River tributary to Alamos Creek to be diverted in Sec. 31, T. 8 S., R. 2 E., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$380,000.

**SANTA CLARA COUNTY**—Application 7041. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 30 c.f.s. and 6000 ac. ft. per annum from Almaden Creek tributary to Alamos and Guadalupe Creek to be diverted in Sec. 10, T. 9 S. R. 1 E., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$135,000.

**SANTA CLARA COUNTY**—Application 7042. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 45 c.f.s. and 100 ac. ft. per annum from Guadalupe Creek tributary to San Francisco Bay to be diverted in Sec. 9, T. 8 S., R. 1 E., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$53,000.

**SANTA CLARA COUNTY**—Application 7043. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 110 c.f.s. and 650 ac. ft. per annum from Los Gatos Creek tributary to Guadalupe Creek to be diverted in Sec. 10, T. 8 S., R. 1 W., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$105,000.

**SANTA CLARA COUNTY**—Application 7044. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 52 c.f.s. and 520 ac. ft. per annum from Los Gatos Creek tributary to Guadalupe Creek to be diverted in Sec. 35, T. 7 S., R. 1 W., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$57,500.

**SANTA CLARA COUNTY**—Application 7045. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 50 c.f.s. and 4000 ac. ft. per annum from Stevens Creek tributary to San Francisco Bay to be diverted in Sec. 27, T. 7 S., R. 2 W., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$350,000.

**SANTA CLARA COUNTY**—Application 7046. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 50 c.f.s. and 2000 ac. ft. per annum from Stevens Creek tributary to San Francisco Bay to be diverted in Sec. 4, T. 8 S., R. 2 W., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$146,000.

**SANTA CLARA COUNTY**—Application 7047. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 200 c.f.s. and 60,000 ac. ft. per annum from Coyote River tributary to San Francisco Bay to be diverted in Sec. 10, T. 9 S., R. 3 E., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$1,080,310.

**SANTA CLARA COUNTY**—Application 7048. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 50 c.f.s. and 3500 ac. ft. per annum from Guadalupe Creek tributary to San Francisco Bay to be diverted in Sec. 19, T. 8 S., R. 1 E., M. D. B. and M., for irrigation and

# Applications and Permits Granted

Continued from preceding page

domestic purposes. (133,000 acres.) Estimated cost \$377,179.

**SANTA CLARA COUNTY**—Application 7045. Santa Clara Valley Water Conservation District, c/o Herbert C. Jones, atty., Auzerals Bldg., San Jose, for 20 c.f.s. and 1600 ac. ft. per annum from Calabazas Creek and Stevens Creek tributary to San Francisco Bay to be diverted in Sec. 34, T. 7 S., R. 2 W., M. D. B. and M., for irrigation and domestic purposes. (133,000 acres.) Estimated cost \$183,595.

**PLACER COUNTY**—Application 7050. R. A. Chipman, Nevada City, for 0.5 c.f.s. from Dutch Flat Canyon tributary to Bear River to be diverted in Sec. 34, T. 16 N., R. 10 E., M. D. B. and M., for mining purposes.

**LAKE COUNTY**—Application 7051. John R. Connelly, E. P. Smith and Stephen J. York, c/o John R. Connelly, Native Sons Bldg., Sacramento, for 0.1 c.f.s. and 5 ac. ft. per annum from unnamed spring tributary to Clear Lake to be diverted in Sec. 32, T. 15 N., R. 3 W., M. D. B. and M., for domestic purposes. Estimated cost \$2,500.

**MENDOCINO COUNTY**—Application 7052. H. M. Haristone, Potter Valley, for 8990 gallons per day from Spicknard Spring tributary to Waterburg Creek, thence Eel River to be diverted in Sec. 25, T. 18 N., R. 12 W., M. D. B. and M., for irrigation and domestic purposes. (3 acres.) Estimated cost \$500.

**MONO COUNTY**—Application 7053. California Municipal Water Supply Co., Ltd., Riverside, for 200 c.f.s. from Lee Vining Creek tributary to Mono Lake to be diverted in Sec. 16, T. 1 N., R. 26 E., M. D. B. and M., for municipal and domestic purposes. Estimated cost \$40,000,000.

**MONO COUNTY**—Application 7054. California Municipal Water Supply Co., Ltd., Riverside, for 40 c.f.s. from (1) Walker Creek, (2) Gibbs Canyon Creek and (3) and (4) two unnamed streams between Walker Creek and Gibbs Canyon Creek tributary to Rush Creek to be diverted in Sec. (1) 5, T. 1 S., R. 26 E., M. D. B. and M., (2) in Sec. 21, T. 1 N., R. 26 E., M. D. B. and M., (3) in Sec. 32, T. 1 N., R. 26 E., M. D. B. and M., (4) in Sec. 33, T. 1 N., R. 26 E., M. D. B. and M. Estimated cost \$40,000,000.

**MONO COUNTY**—Application 7055. California Municipal Water Co., Ltd., Riverside, for 300 c.f.s. and 60,000 ac. ft. per annum from Rush Creek tributary to Mono Lake to be diverted in Sec. 26, T. 1 N., R. 26 E., M. D. B. and M., for municipal and domestic purposes. Estimated cost \$40,000,000.

**MONO COUNTY**—Application 7056. California Municipal Water Supply Co., Ltd., Riverside, for 40 c.f.s. from Parker and unnamed stream tributary to Rush Creek to be diverted in Sec. 9, T. 1 S., R. 26 E., M. D. B. and M., for municipal and domestic purposes. Estimated cost \$40,000,000.

**LOS ANGELES COUNTY**—Application 7057. Dr. Joseph A. Polla, 263 S. Lake St., at W. Miramar, Los Angeles, for 0.135 c.f.s. from underground spring tributary to Mojave Desert Drainage Area to be diverted in Sec. 1, T. N., R. 11 W., S. B. B. and M., for irrigation and domestic purposes. (20 acres.) Estimated cost \$750.

**TUOLUMNE COUNTY**—Application 7058. United States, Stanislaus National Forest, Sonora, for 0.4 c.f.s. from North Fork of Tuolumne River tributary to Tuolumne to be diverted in Sec. 22, T. 4 N., R. 18 E., M. D. B. and M., for domestic purposes. Estimated cost \$5,000.

**HUMBOLDT COUNTY**—Application 7059. C. H. Barkdill, 417 Mutual Life Bldg., Seattle, Wash., for 50 c.f.s. from Mosquito Creek, Big Lake, Ammon Creek, Bear Trap and White Sides tributary to South Fork of Trinity River to be diverted in Secs. 33, 26, 27, 14 and 11, T. 5 N., R. 5 E., H. B. and M., for mining and domestic purposes.

**TRINITY COUNTY**—Application 7060. C. L. Brown, 600 S. Madison St. Pasadena, for 100 c.f.s. from Canyon Creek tributary to Trinity River, thence Klamath River to be diverted in Sec. 17, T. 35 N., R. 10 W., M. D. B. and M., for mining and domestic purposes. Estimated cost \$150,000.

**HUMBOLDT COUNTY**—Application 7061. Arthur McBride, Winford Ottley, Ralph Peters, c/o Allen and McNamara, attys., Yreka, for 10 c.f.s. from Five Mile Creek tributary to Klamath River to be diverted in Section 16, T. 11 N., R. 6 E., H. B. and M., for power purposes. (681 H.P.) Estimated cost \$1,200.

**HUMBOLDT COUNTY**—Application 7062. Arthur McBride, Winford Ottley, Ralph Peters and Geo. W. Smith, c/o Allen and McNamara, attys., Yreka, for 10 c.f.s. from Five Mile Creek tributary to Klamath River to be diverted in Sec. 16, T. 11 N., R. 6 E., H. B. and M., for mining purposes. Estimated cost \$1,200.

**RUTTE COUNTY**—Application 7063. Richvale Irrigation District, c/o Frank S. Robinson, Civil Eng., Chico, for 15 c.f.s. from Dry Creek tributary to Butte Creek to be diverted in Sec. 6, T. 19 N., R. 2 E., M. D. B. and M., for irrigation purposes. (17,000 acres.) Estimated cost \$2,000.

**HUMBOLDT COUNTY**—Application 7064. Humboldt Creamery Association, c/o W. Ernest Dickson, atty., 1st Nat. Bank Bldg., Eureka, for 1 c.f.s. from Eel River tributary to Pacific Ocean to be diverted in Sec. 29, T. 3 N., R. 1 W., H. B. and M., for industrial purposes. Estimated cost \$500.

**SAN LUIS OBISPO COUNTY**—Application 7065. City of San Luis Obispo, c/o J. B. Lippincott, Engr., Petroleum Securities Bldg., Los Angeles, for 300 ac. ft. per annum from Salinas River tributary to Pacific Ocean to be diverted in Sec. 36, T. 29 S., R. 13 E., M. D. B. and M., for municipal purposes.

**MONO COUNTY**—Application 7066. Cy Williams, c/o Roy Boothe, Forest Supervisor, Bishop, for 200 gallons per day from Rock Creek tributary to Owens River to be diverted in Sec. 32, T. 4 S., R. 30 E., M. D. B. and M., for domestic purposes.

Permits to appropriate water issued by the Department of Public Works, Division of Water Resources during the month of August, 1931.

**MONO COUNTY**—Permit 3760, Application 6782. Emma G. Parker, Bridgeport, August 4, 1931, for 0.1 c.f.s. from an unnamed stream in Sec. 32, T. 4 N., R. 24 E., M. D. M., for irrigation on 4 acres. Estimated cost \$530.

**CONTRA COSTA COUNTY**—Permit 3761, Application 6884. Associated Oil Company, San Francisco, August 4, 1931, for 44.56 c.f.s. from Hastings Slough in Sec. 14, T. 2 N., R. 2 W., M. D. M., for industrial and incidental domestic. Estimated cost \$30,000.

**PLACER COUNTY**—Permit 3762, Application 6931. Fred E. Lazenby, Ogden, Utah, August 6, 1931, for 12 c.f.s. from 7 unnamed fresh water springs in Sec. 1, T. 13 N., R. 6 E., M. D. M., for irrigation and domestic on 10 acres. Estimated cost \$500.

**SISKIYOU COUNTY**—Permit 3763, Application 6625. Buzzard Hill Mine, Inc., Happy Camp, August 5, 1931, for 12.5 c.f.s. from Independence Creek in Sec. 32, T. 15 N., R. 7 E., H. M., for power. 319 T. H. P. to be developed. Estimated cost \$12,000.

**SISKIYOU COUNTY**—Permit 3764, Application 6636. Buzzard Hill Mine Inc., Happy Camp, August 5, 1931, for .05 c.f.s. from Independence Creek in Sec. 32, T. 15 N., R. 7 E., H. M., for irrigation on 4 acres. Estimated cost \$2,000.

**SISKIYOU COUNTY**—Permit 3765, Application 6637. Buzzard Hill Mine, Inc., Happy Camp, August 5, 1931, for 25 c.f.s. from Independence Creek in Sec. 32, T. 15 N., R. 7 E., H. M. for domestic and mining. Estimated cost \$12,000.

**SANTA BARBARA COUNTY**—Permit 3766, Application 6905. Union Realty Co., Santa Barbara, August 7, 1931, for 10,080 g.p.d. from an unnamed stream in Sec. 11, T. 5 N., R. 28 W., S. B. M., for irrigation and domestic on 5 acres. Estimated cost \$1,200.

**HUMBOLDT COUNTY**—Permit 3767, Application 6181. Benbow Power Co., Benbow, August 12, 1931, for 1.2 c.f.s. from Fish Creek in Sec. 6, T. 5 N., R. 4 E., H. M., for municipal purposes. Estimated cost \$26,000.

(Continued on next page)

## AN INACTIVE FUTURE

We'll surely be bored in the future  
When we've no more forests to burn  
And I know for spectacular action  
Our spirits will tenderly yearn.

Now, mother and sister and brother,  
Can throw lighted matches away;  
Can jazz up the velvety twilight  
And add to the heat of the day.

The hunter, the fisher, the tourist,  
The toll of destruction may swell,  
A campfire left burning untended,  
Can raise unmistakable hell.

We're talking, and talking, and talking,  
About the precautions we take,  
But year after year in the forests  
More havoc and ruin we make.

And each year the menace grows greater,  
Our great, fragrant forests are few,  
The watersheds dwindle and perish,  
Our birds and our deer perish too.

And soon in the long weary summers  
There'll be no more forests to burn,  
So over those days of inaction  
My spirit doth pensively yearn.

A. MERRIAM CONNER.

(Printed in the *North Sacramento Tribune-Progress*, Aug. 20.)

APPLICATIONS AND PERMITS  
GRANTED

(Continued from page 43)

LOS ANGELES COUNTY—Permit 3768, Application 6970. Harry M. Miller, Little Rock, California, August 12, 1931, for .05 c.f.s. from unnamed spring in Sec. 16, T. 4 N., R. 10 W., S. B. M., for domestic and irrigation on 2 acres.

SAN BERNARDINO COUNTY—Permit 3769, Application 6964. Robert M. Stapp, Lake Arrowhead, August 17, 1931, for 5170 g.p.d. from unnamed spring tributary to Little Bear Creek in Sec. 28, T. 2 N., R. 3 W., S. B. M., for domestic and recreational purposes. Estimated cost \$350.

HUMBOLDT COUNTY—Permit 3770, Application 6954. Peter H. Brandt, Fortuna, August 20, 1931, for 12,000 g.p.d. from Strong Creek in Sec. 2, T. 2 N., R. 1 W., H. M. for irrigation of 15 acres. Estimated cost \$500.

SIERRA COUNTY—Permit 3771, Application 6966. W. S. Coffin, Upland, August 21, 1931, for 3 c.f.s. from Rock Creek in Sec. 10, T. 19 N., R. 10 E., M. D. M., for mining purposes. Estimated cost \$600.

MONTEREY COUNTY—Permit 3772, Application 6804. Fort Klamath Meadows Co., Hollister, August 22, 1931, for 100 c.f.s. or 3 a.f. of irrigated land between October 1 and April 1 and or 10.37 c.f.s. between April 1 and October 1 of each season, total diversions shall not exceed 4000 a.f. in any one year from Peach Tree Creek in Sec. 12, T. 29 S., R. 10 E., M. D. M. for irrigation on 869.5 acres. Estimated cost \$3,000.

HUMBOLDT COUNTY—Permit 3773, Application 6849. Salyer Consolidated Mines Co., Salyer, August 25, 1931, for 50 c.f.s. from Campbell, Four Mile, Saxey, Deer Creek tributary to Trinity River in Secs. 16, 20 and 21, T. 6 N., R. 5 E., H. M. for mining purposes. Estimated cost \$200,000.

Remember Words of  
Rolph; Says Paper(Editorial in *Byron Times*)

Breaking all precedent by appealing to each and every citizen of California to lend his weight to a unified State water plan that will receive financial support from the Federal government, Governor Rolph has been the recipient of widespread acclaim.

His message is clear-cut and outlines in interesting detail what has already been accomplished toward the end that California may continue to progress and prosper.

The groundwork has been laid. Prominent legislators and citizens have been appointed. The congressional committee has been here and realizes the seriousness of the situation, and the California Water Resources Commission is now busy at work formulating such legislation as may be necessary and advisable to carry out a coordinated development of the waters of the State.

Each and every citizen now must do his and her part, remembering the words of Governor Rolph in his inaugural speech last January when he said, "we must not approach these problems in a narrow or sectional spirit."

Community leaders can accomplish much by visualizing the whole, and condemning selfish interests. It is in the hope that individuals will do so that the Governor has appealed to his 5,677,251 fellow Californians. Without their heartfelt sympathy and cooperation the water plan is doomed to failure. Each must do his part.

## 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.

Drivers apparently were more careful at railroad crossings where no warnings were given, than where automatic signal devices have been installed.

Honey: That boy you were riding with has trouble with his vision?

Girl: Yeah, he sees parking spots before his eyes.

—*State Lion*.

There are more passenger automobiles in use in the United States than there are telephones, according to figures reported to the California State Automobile Association. There were 23,042,840 passenger cars on December 31, 1930, as compared with 20,098,059 telephones.

NEVADA COUNTY—Permit 3774, Application 6824. Gordon M. Bettles, Nevada City, August 25, 1931, for 3 c.f.s. from South Fork of Poorman Creek in Sec. 15, T. 18 N., R. 11 E., M. D. M., for power purposes. Estimated cost \$8,000.

STATE OF CALIFORNIA

# Department of Public Works

HEADQUARTERS: PUBLIC WORKS BUILDING, ELEVENTH AND P STS., SACRAMENTO

JAMES ROLPH, JR. ----- Governor  
 COLONEL WALTER E. GARRISON ----- Director  
 JAMES I. HERZ ----- Deputy Director

## DIVISION OF HIGHWAYS

### CALIFORNIA HIGHWAY COMMISSION

EARL LEE KELLY, Chairman, Redding  
 HARRY A. HOPKINS, Taft  
 TIMOTHY A. REARDON, San Francisco  
 PHILIP A. STANTON, Anaheim  
 FRANK A. TETLEY, Riverside  
 C. H. PURCELL, State Highway Engineer, Sacramento  
 JOHN W. HOWE, Secretary  
 HUGH K. McKEVITT, Attorney, San Francisco

### HEADQUARTERS STAFF, SACRAMENTO

G. T. McCOY, Principal Assistant Engineer  
 L. V. CAMPBELL, Office Engineer  
 T. E. STANTON, Materials and Research Engineer  
 FRED J. GRUMM, Engineer of Surveys and Plans  
 C. S. POPE, Construction Engineer  
 T. H. DENNIS, Maintenance Engineer  
 CHAS. E. ANDREW, Bridge Engineer  
 R. H. STALNAKER, Equipment Engineer  
 E. R. HIGGINS, Comptroller

### DISTRICT ENGINEERS

F. W. HASELWOOD, District I, Eureka  
 H. S. COMLY, District II, Redding  
 CHARLES H. WHITMORE, District III, Sacramento  
 J. H. SKEGGS, District IV, San Francisco  
 L. H. GIBSON, District V, San Luis Obispo  
 E. E. WALLACE, District VI, Fresno  
 S. V. CORTELYOU, District VII, Los Angeles  
 E. Q. SULLIVAN, District VIII, San Bernardino  
 F. G. SOMNER, District IX, Bishop  
 R. E. PIERCE, District X, Sacramento  
 General Headquarters, Public Works Building,  
 Eleventh and P Streets, Sacramento, California

## DIVISION OF WATER RESOURCES

EDWARD HYATT, State Engineer, Chief of Division  
 J. J. HALEY, Jr., Administrative Assistant  
 HAROLD CONKLING, Deputy in Charge Water Rights  
 A. D. EDMONSTON, Deputy in Charge Water  
 Resources Investigation

R. L. JONES, Deputy in Charge Flood Control and  
 Reclamation

GEORGE W. HAWLEY, Deputy in Charge Dams  
 SPENCER BURROUGHS, Attorney  
 EVERETT N. BRYAN, Hydraulic Engineer, Water  
 Rights  
 A. N. BURCH, Irrigation Investigations  
 H. M. STAFFORD, Sacramento-San Joaquin Water  
 Supervisor  
 GORDON ZANDER, Adjudication, Water Distribution  
 KATHERINE A. FEENY, Chief Clerk  
 MABEL PERRYMAN, Secretary

## DIVISION OF ARCHITECTURE

GEO. B. McDUGALL, Chief, Division of Architecture  
 P. T. POAGE, Assistant Architect  
 W. K. DANIELS, Deputy Chief of Division

### HEADQUARTERS

H. W. DeHAVEN, Chief Architectural Draftsman  
 C. H. KROMER, Structural Engineer  
 CARLETON PIERSON, Specification Writer  
 C. O. PALM, Chief Clerk  
 C. E. BERG, Engineer, Estimates and Costs  
 J. W. DUTTON, General Superintendent Construction  
 W. H. ROCKINGHAM, Mechanical Engineer  
 C. A. HENDERLONG, Assistant Mechanical Engineer  
 W. M. CALLAHAN, Electrical Engineer

## DIVISION OF CONTRACTS AND RIGHTS OF WAY

C. C. CARLETON, Chief  
 FRANK B. DURKEE, General Right of Way Agent  
 C. R. MONTGOMERY, General Right of Way Agent

## DIVISION OF PORTS

Port of Eureka—William Clark, Sr., Surveyor  
 Port of San Jose—Not appointed  
 Port of San Diego—Edwin P. Sample



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS

MAP  
SHOWING  
STATE HIGHWAY SYSTEM

1931

LEGEND  
 Primary Roads ———  
 Secondary Roads - - - -

PACIFIC OCEAN