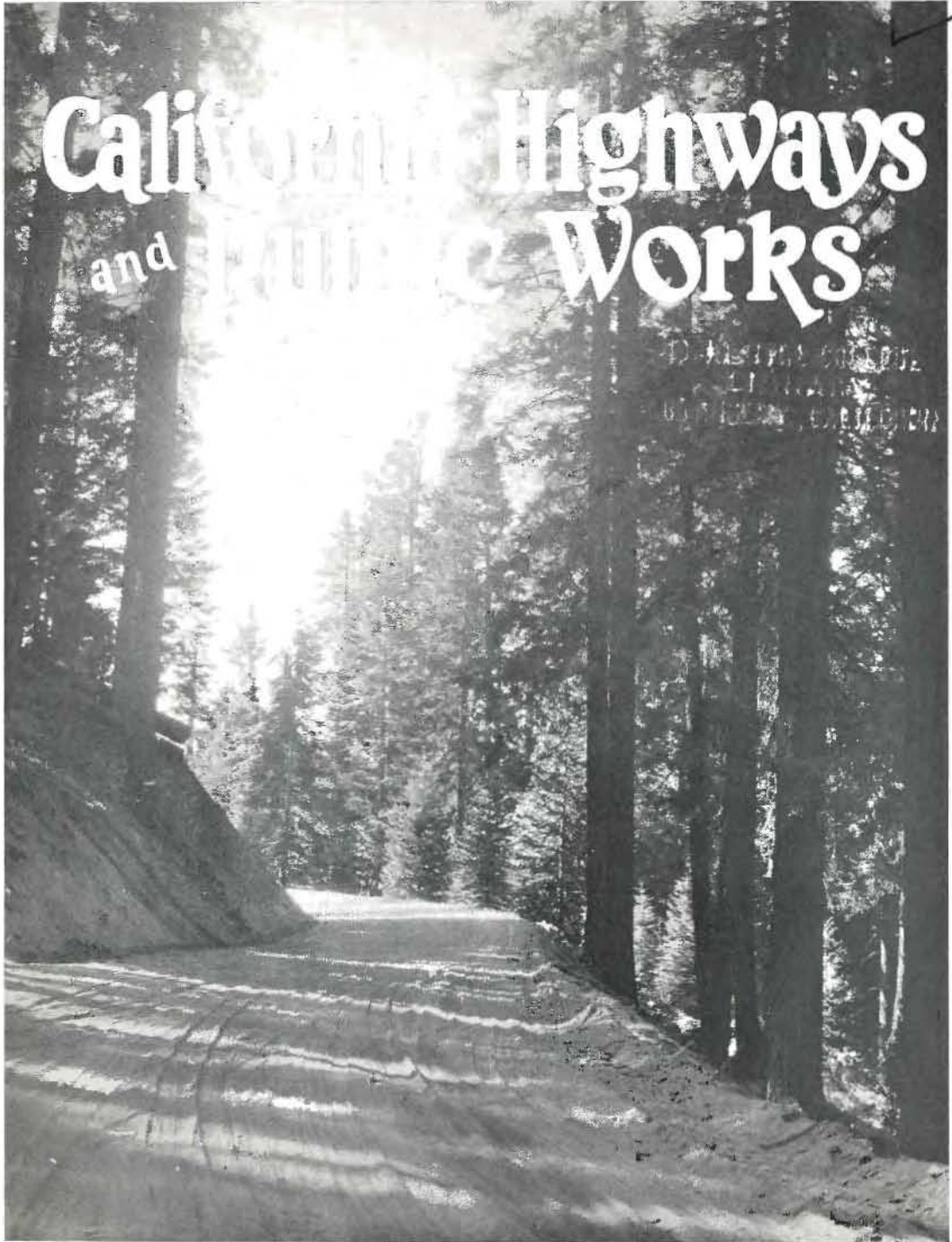


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ON THE KINGS RIVER HIGHWAY

Official Journal of the Department of Public Works
SEPTEMBER State of California 1930

Vol. 8 #9



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Mid-summer Traffic Census on State Highways Shows Normal Increase

By T. H. DENNIS, Maintenance Engineer

THE semiannual traffic count of the Division of Highways was taken July 13th and 14th between the hours of 6 a.m. and 10 p.m. each day throughout the state highway system. For purposes of analysis, the vehicles are segregated by hourly periods under the following classifications: California automobiles, foreign automobiles, light trucks, heavy trucks, trailers, buses and horse-drawn vehicles.

A comparison of the July, 1930, count with that of July, 1929, shows the following increases:

	For Sunday per cent	For Monday per cent
Main north and south routes.....	7.3	12.6
Laterals between inland and coast routes.....	6.4	8.1
Interstate connections.....	13.8	17.0
Recreational routes.....	5.0	8.5
Average all routes.....	7.3	11.6

The gain or loss on a particular route expressed in percentage may show a considerable variation from the record of the previous year. This is especially noticeable on some of the shorter routes and may be accounted for, in the main, by the fact that construction operations may have interfered with normal traffic either last year or during the recent count. Other local influences such as local celebrations, etc., may cause a marked difference if the count happens to come at that time.

Gain or loss in traffic volume expressed as a percentage of the July, 1929, count for all state highway routes, is as follows:

Rt. No.	Description	Sunday		Monday	
		gain	loss	gain	loss
		per cent	per cent	per cent	per cent
1	Sausalito-Oregon Line.....	8.3		5.9	
2	San Francisco-San Diego.....	0.4		1.3	
3	Sacramento-Oregon Line.....	94.2		45.5	
4	Sacramento-Los Angeles.....	8.2		17.0	
5	Stockton-Santa Cruz.....	18.3		7.6	
6	Sacramento-Woodland Jet.....	22.2		21.2	
7	Tehama Jet-Benicia.....	16.8		16.1	
8	Ignacio-Cordelia.....	48.3		51.3	
9	San Fernando-San Bernardino.....		5.2		13.1
10	San Lucas-Sequoia National Park.....		9.1		1.8
11	Sacramento-State Linc via Placer-ville.....		22.6		29.4
12	San Diego-El Centro.....		11.5		11.9
13	Salida-Sonora.....		2.4		9.2
14	Albany-Martinez.....		5.9		11.0
15	Rt. 1 near Calpella-Emigrant Gap.....		14.1		13.3
16	Hopland-Lakeport.....		3.4		6.8
17	Roseville-Nevada City.....		5.9		
18	Merced-El Portal.....		6.5		1.6
19	Rt. 9 west of Claremont-Riverside.....		2.7		6.0
20	Redding to Rt. 1 near Arcata.....		14.5		8.2
21	Rt. 3 near Richvale-Quincy.....		19.5		21.2
22	San Juan Bautista-Rt. 32.....		19.7		14.9
23	Saugus to Jet. Rt. 11.....		6.5		1.6

Rt. No.	Description	Sunday		Monday	
		gain	loss	gain	loss
		per cent	per cent	per cent	per cent
24	Rt. 4 near Lodi to Junction Rt. 23.....	12.9		12.7	
25	Nevada City-Downieville.....	9.4		54.1	
26	San Bernardino-El Centro.....	9.5		11.7	
27	El Centro-Yuma.....	11.6		7.7	
28	Redding-Nevada Line.....		10.2		3.0
29	Red Bluff-Nevada Line.....		7.4		6.2
31	San Bernardino-Jean.....	4.6			4.4
32	Rt. 4 near Califa-Rt. 2 at Gilroy.....	0.8		19.0	
33	Rt. 4 near Bakerfield-Paso Robles.....		4.5		11.0
34	Rt. 4 near Arno-Picketts Jet. via Jackson.....	8.4		16.7	
35	Peanut-Kuntz.....		63.6		26.3
37	Auburn-Truckee.....		7.2		5.5
38	Meyers-Nevada Line via Truckee.....		67.0		50.9
39	Tahoe City-Nevada Line.....	53.7		115.4	
40	Rt. 13 near Montezuma-Rt. 22 Mono Lake.....		96.1		5.8
41	West and East of Hume.....		13.1		15.6
42	Saratoga Gap-Redwood Park Gate.....	114.7		84.6	
43	San Bernardino-Big Bear Lake.....	16.5		18.1	
44	Boulder Creek-Redwood Park.....	19.9		5.3	
45	Willows-Rt. 3 near Higgs.....	6.9		2.3	
46	Rt. 1 near Klamath River-Rt. 3 near Cray.....	15.6		27.0	
47	Oxford Chico.....		16.9		9.7
48	McDonald-Wendling.....		27.9		17.5
49	Calistoga-Lower Lake.....	25.2		24.8	
51	Santa Rosa-Sheffville.....	5.2			21.6
52	Alto-Tiburon.....		26.1		18.6
53	Fairfield-Lodi.....	27.2			35.6
54	Near Michigan Bar-Central House.....		4.3		37.3
55	San Francisco-Saratoga Gap.....	12.7		23.5	
56	Carmel-Cambria.....	12.3		5.7	
57	Santa Maria-Freeman.....	32.1		19.1	
58	Mojave-Topeka.....		15.2		24.5
59	Lancaster-Balises.....	29.5		38.3	
60	El Rio-Serra.....		4.9		25.1
61	La Canada-Mt. Wilson Rd.....	27.7		43.4	
63	Big Pine Oasis.....	47.8		37.1	
64	Mecca-Blythe.....	8.7			44.7
65	Auburn-Sonora.....	6.3		19.9	
66	Manteca-Mossdale.....	8.2		13.3	
67	Pajaro R.-Jet. Rt. 2.....	4.4		5.9	
68	San Francisco-San Jose.....	66.1		82.9	
69	San Rafael-San Quentin.....		6.6		12.2
70	Ukiah-Men. State Hospital.....		15.2		7.3
71	Crescent City-Oregon Line.....		10.6		9.9

A comparison of traffic census for July 1929 and 1930 in the count from 6 a.m. to 10 p.m. show the following figures:

Route 1. Sausalito to Oregon Line	July, 1929		July, 1930	
	Sun.	Mon.	Sun.	Mon.
	Station location			
	14	15	13	14
Sausalito to Ferry Bldg.....	495	267	179	134
Sausalito, Hyde St. Ferry.....	11,154	4,111	11,930	4,761
Belvedere Jc. R. 52 to Belvedere, S. on 1.....	14,516	6,407	17,691	6,610
E. on 525.....	2,625	1,109	1,694	940
N. on 1.....	13,749	5,870	17,369	6,666
San Rafael N. of Cy. at top hill	12,253	4,553	12,437	5,825
Petaluma S. Cy. Lta. at Mainst. Yd.....	9,053	3,978	9,272	4,903
Petaluma N. of Cy.....	19,570	5,572	10,446	6,644
Costa at Jet. C.R. to Sebastopol, S. on 1.....	9,839	4,135	8,710	4,462
W. on C.R.....	5,598	1,832	4,833	1,668
N. on 1.....	4,499	2,684	4,265	3,027
Santa Rosa S. of Cy. at Triangle Service Sta.....	3,675	4,531	4,718	3,400
Santa Rosa N. of Cy. at S. P. R. R. King.....	6,350	4,573	6,791	5,112
Healdsburg S. of Cy. at N. W. P. R. R. King.....	4,526	3,346	4,577	3,331
McCrays Jet. C.R. to Preston, S. on 1.....	2,668	1,872	2,329	1,779

(Continued on page 28.)

The California Institution for Women

By GEO. B. McDOUGALL, State Architect

AT THE present time in this state about 120 women felons, vagrants, and misdemeanants are detained in what is known as the Women's Building at the State Prison at San Quentin, in Marin County, and are under the same management and control as the more than 4000 male prisoners incarcerated there.



GEO. B. McDOUGALL.

These 120 women occupy the entire capacity of the Women's Building and the number of women is increasing. There is practically no opportunity whatever at San Quentin for outdoor work of any kind.

Responsive to the vision of Governor Young and to his recognition of the fact that

women law violators should be detained under different conditions and entirely separate from male prisoners, the legislature of 1927 passed an act creating a commission of five members, the majority to be women, to investigate and report its findings to the Governor prior to the meeting of the 1929 legislature. This commission recommended that a separate institution for women be established on a site to be selected and suggested a method of management and control.

The legislature of 1929, with the approval of the Governor, accepted the commission's recommendation and passed an act creating a separate institution for women to be under the management and control of a board of trustees of five members, three to be women, and also appropriated \$475,000 to purchase a site and start construction of necessary buildings.

Soon after this act became effective, Governor Young appointed the following trustees: Mrs. Ernest Wallace of Alhambra, chairman; Mrs. Everett B. Latham of Los Angeles, Mrs. Ingram B. Slocum of San Francisco, Mr. Fred D. Parr of San Francisco, and Mr. J. Frank Burke of Santa Ana. This board and chairman constitute the Division of Women's Prisons, which is one of the divisions of the State Department of Penology over which Mr. James A. Johnston presides as director. Mrs. Wallace as chairman of the board of trustees is chief of the division.

After examination of numerous suggested sites in various parts of the state, a piece of land in Cummings Valley in the southern part of Kern County, nine miles from Tehachapi, and containing 1682 acres, has been selected by the trustees and acquired by the state as the site for the new institution. Before its final selection this site was carefully examined as to the location, transportation facilities, climate, character of soil, the water supply, available building areas, and farming possibilities, and was found to be satisfactory. It may properly be said to be one of the best sites which the state has considered in the light of requirements of the California Institution for Women. The location is isolated both geographically and in relation to the main highway giving access to it, and for such an institution this isolation is especially desirable. Transportation will be by the Southern Pacific Railroad to Tehachapi and by automobile travel over excellent highways from Bakersfield and to Los Angeles. The elevation above sea level is about 4000 feet, and the climate is not excessively warm in the summer nor very cold in the winter. When the main highway from Los Angeles to the San Joaquin Valley, known as the Ridge Route, has been closed in the winter on account of snow, this highway between Bakersfield and Los Angeles by way of Tehachapi and Mint Canyon has been used as a detour.

The major portion of this site is comparatively level and available for use either as building site or for farming and truck gardening. The soil is rich and capable of producing a large variety of products.

There are several water wells on the property and an adequate supply of water of fine quality can be developed from additional wells



Airplane view of site near Tehachapi for California Institution for Women.

as required for both domestic use and irrigation.

As soon as the site was selected, and in keeping with Governor Young's forward-looking program of building construction for all the state's institutions, the Division of Architecture at the request of the board of trustees put a party of surveyors into the field to determine the contours of the ground, and started the study of a tentative plot plan to show the suggested development of the entire site for an ultimate institution to accommodate about 500 inmates and about 100 employees.

This plot plan, also preliminary sketches for particular buildings, have already had consideration by the board of trustees. When finally approved this plot plan will constitute a basis for determining upon a tentative 10-year building construction program beginning with the current biennium.

Work has already started on the repair and alteration of the old farm house on the property to make it available for a temporary office of the institution during building construction and for quarters of a man and his wife who will act as caretakers, and for accommodation for the members of the board of

trustees and for the state officials having business at the site. Working drawings and specifications as required for taking bids on the permanent structures to be built with the 1929 appropriation should be ready so that permanent construction work can start at the site by the end of the present year, 1930. This will permit of the occupancy of the institution by the women now detained at San Quentin sometime during the latter half of the year 1931, thus releasing the present Women's Building at the State Prison at San Quentin for use as a hospital for that institution.

The particular site on the property to be used for the main group of buildings is in the shape of a basin, surrounded almost entirely by a range of hills, and the buildings so located will be seen to excellent advantage and will be effectively protected from prevailing winds. While there will be a unit for detaining inmates who may not yet have learned the wisdom of maintaining good behavior, the majority of the inmates will be housed in cottages having a capacity of about 50 each. These cottages will be self-contained homes, each having its own living room, dining room, and kitchen. Small separate sleeping rooms

will be provided for most of the inmates, together with small dormitory sleeping porches with small private dressing cubicles. Two employees, a matron, and one assistant will be housed in each cottage in order to insure complete control and safety in management. Thus, these cottages will each be a home for those living in it and as far as possible in a building housing a family of 50 will have the qualities required to promote home life. The architecture of these cottages both outside and inside, also the landscaping about them, will be in keeping with this idea.

In addition to the detention unit and cottages, there will be a receiving and hospital building and administration building, an education building, possibly a chapel, an open air assembly building, industrial buildings, garages, warehouse, commissary and laundry buildings, and a group of farm buildings.

This new women's prison, so called, is not intended as a punitive institution but a corrective one "to provide custody, care, protection, industrial, vocational, and other training and reformatory help for women confined therein." The purpose is to rehabilitate women convicted of felonies, female vagrants, and narcotic misdemeanants.

There will be plenty of outdoor work which will tend to maintain good health in the inmates and the board of trustees is authorized in its discretion to compensate them, any accumulations resulting to be held for the benefits of the particular inmate or forwarded to her dependents as the board may decide.

It is the intention of the board of trustees that the institution shall be an asset to the community surrounding it.

The superintendent is to be a woman and all other employees, as far as practicable, are to be women.

THE FIRST AUTOMOBILE

Who had the first automobile in the world?

The first automobile which actually ran, which incidentally was steam propelled, was built in France between 1760 and 1770 by Captain Nicholas Joseph Cugnot, history declares.

The first gasoline-operated automobile in America was Charles Duryea's "Buggyaut" which came out in 1892. Henry Ford's first car followed in 1893, and in 1894 Elwood Haynes' historic automobile was brought before the public eye.

In 1892, history states, an electric automobile built by William Morris of Des Moines, Iowa, was sold to a Chicago citizen.

Highway building under the spur of modern transportation and rapid development of both urban and rural localities, is a never-ending task. And as a result as well as a cause, California is an ever-growing state.—*Corcoran Journal*.

Traffic Officers Have Perilous Job

THE hazardous character of the California traffic officer's job is evidenced in a report by Eugene W. Biscailuz, superintendent of the California Highway Patrol, showing three officers killed and sixty-nine injured in performance of their duty within the last eighteen months.

Two of the fatalities occurred in the Kern County squad, Officers Howard C. Garlinger and L. W. Hogan dying in highway crashes. The third was Officer Leland Bond of San Mateo County.

The sixty-nine counted as injured include only those who were off duty long enough to draw compensation and does not include scores of sprained legs, battered hands, lacerated faces, etc., which traffic officers come to regard as a part of the daily grand of watching the roads.

Biscailuz said many of the injuries are of an extremely serious nature, one officer having been off duty for eighteen months. Broken legs and arms, incurred in dashes after speed-maddened motorists, are of frequent occurrence.

The average number of men killed annually is three while the number killed or seriously hurt annually over a period of years has been close to 25 per cent of the entire personnel of the patrol.

Traffic officers find it difficult to secure life insurance except at exorbitant rates because of the extremely high hazard involved. Through an arrangement worked out with the State Compensation Insurance Fund, however, injured officers received \$25 a week after the first week while off duty and the families of officers killed on duty receive a like amount until the sum of \$5,000 has been paid.

In addition, the officers have protected themselves to a degree by benefit funds set up by their own associations.

In the hope of minimizing the death toll in the patrol, orders have been given that motorcycles be discarded for automobiles by men operating on night patrols or in wet weather.

In the modern household practically everything is operated by switches except the children.—*Arkansas Gazette*.

Doctor (after bringing victim to)—How did you happen to take that poison? Didn't you read the sign on the bottle? It said "Poison."

Ebenezer—Yassah, but Ah didn't believe it.

Doctor—Why not?

Ebenezer—'Cause right underneaf it was a sign dat said, "Lye."—*The Pathfinder*.

Report on Five Seasons' Study of Sacramento-San Joaquin Water Area

By HARLOWE M. STAFFORD, Sacramento-San Joaquin Water Supervisor

BULLETIN No. 23 of the Division of Water Resources comprising the Sacramento-San Joaquin Water Supervisor reports for the five-year period 1924 to 1928, inclusive, has recently been published by the State Engineer and will soon be released for distribution.



HARLOWE M. STAFFORD.

The publication of this bulletin marks the completion of five seasons' work under the Water Supervisor Plan in the Sacramento-San Joaquin territory. This work had its inception in the unusually short water year of 1924. Its immediate status was that of an emergency measure effected by the water users themselves to tide

over the critical situation of that year. However there was an underlying and more fundamental conception that, by its inauguration, a definite and necessary step was being taken toward the ultimate solution of the water difficulties in the territory involved. Of first importance in that solution comes conservation, both by careful use of existing natural flow and by storage of flood flows. But to attain effective conservation there must be an authoritative, orderly and equitable distribution of the water supply to those entitled to receive it. Such distribution requires as a basis either an adjudication of water rights or a mutual agreement and stipulation, either temporary or permanent, among the water users. In working out an adjudication or mutual agreement there are certain facts and data which are indispensable, namely, the records of the diversions and uses of water, and the pertinent hydrographic data on stream flow, return flow, duty of water, etc.

In the Sacramento-San Joaquin area there has been no adjudication of rights and due

to the complicated nature of the situation it would appear that the ultimate distribution of water may be most satisfactorily based upon mutual stipulation, perhaps temporary at first but ripening to permanent adjustment and agreement, similar to the outstanding example on Kings River.

In preparing the way for this solution, then, the value of the work commenced in 1924 and continued to date is evident. Through the office of the Water Supervisor of the Division of Water Resources, all diversions of water have been measured, the stream flow and return flow have been recorded and duty of water and salinity investigations pursued. The results of this work have been reported annually in mimeograph form but for purposes of preservation and wider distribution, as well as to afford an opportunity for review, comparisons, summarizations, and such analyses as may be made, it is felt they should be brought together in a printed publication, and that is the purpose of this bulletin.

WASTE AVOIDED

In addition to the engineering investigation, collection of records, etc., the office of Water Supervisor has been of service in effecting conservation and waste prevention measures in the seasons of low flow. In respect to this and to actual stream administration the water supply of two seasons, 1924 and 1926, has been such as to urgently require the efforts that have been made and in the seasons of 1925, 1927 and 1928, the urgency has not been so great. As the work in each season has progressed, however, the water users, both upstream and in the delta, have become better acquainted with the methods adopted and in doing so have more readily extended their cooperation. A practical demonstration has been made that with each water user doing his reasonable share or perhaps making some sacrifice, situations which otherwise might prove critical, may be successfully relieved, thereby effecting the maximum benefit to the greater portion of the territory involved. With a more intimate knowledge of the Water Supervisor procedure on the part of the water users, and with the addition to the record each year of the valuable facts as to

the use of water, stream flow, etc., the Division of Water Resources through the Water Supervisor becomes more and more prepared and ready to initiate (upon short notice in case of water shortage) some schedule or plan to be mutually agreed upon by the water users, for the most equitable and efficient administration of the water.

HISTORY OF WORK

The water situation on the Sacramento and lower San Joaquin rivers and in the Sacramento-San Joaquin delta is one that has become well known throughout the state, and published Bulletins No. 3 and No. 4 of the former Division of Water Rights have described in detail the particular conditions and events in 1924 which lead to the inception of the Sacramento-San Joaquin Water Supervisor work in that year. Bulletin No. 3 is a record of the proceedings of the first Sacramento-San Joaquin River Problems Conference held in January, 1924, and Bulletin No. 4 reports the transactions and papers of the second conference which met in December, 1924, and presents the Water Supervisor's report for the 1924 season. The first conference resulted in the appointment of a committee known as "The Permanent Committee of the Sacramento-San Joaquin River Problems Conference," and through the efforts of this committee working with the Division of Water Rights, the office of Water Supervisor was established by that division, "to bring about the greatest possible conservation of water and to commence the collection of the records of use of water, stream flow and other engineering data necessary in the ultimate attainment of a solution to the water problems." The necessary funds for the conduct of the work in 1924 were raised, through the efforts of the permanent committee, almost entirely by voluntary local subscription. Since 1924, however, the work has been carried on under state appropriation.

THE SITUATION

In the Sacramento-San Joaquin territory from Redding at the upper end of the valley on the north to Vernalis and lower San Joaquin River points on the south the present water requirements may be grouped as follows:

(1) Irrigation.—Above the city of Sacramento, for approximately 90,000 acres of rice and 140,000 acres of general crops on the Sacramento River itself and 50,000 acres of rice and 45,000 acres of general crops on its tributaries. Below Sacramento, in the 425,000-acre delta region, for an area of nearly

300,000 acres of general crops irrigated annually, and on the uplands bordering the delta for about 65,000 acres of general crops.

(2) Navigation.—Requires sufficient flow in the Sacramento River for 125 miles above Sacramento to permit the passage of freight steamers. The federal government has stated that a flow of about 3500 second-feet is needed to properly care for this requirement.

(3) Salinity Control.—Requires a flow to the delta sufficient to protect that area from the encroachment of salt water from San Francisco Bay. A bulletin is shortly to be published covering the salinity investigations to date and more particularly the intensive investigation of 1929-30. This will show the exact flow requirements to accomplish salinity control in the delta, but a tentative figure of probably not less than 4000 second-feet for the combined flow to the delta of the Sacramento and San Joaquin rivers is indicated.

With an almost unbroken succession of years of subnormal stream flow since 1916, the full satisfaction of these water requirements has been impossible and in 1920, 1924 and 1926, but particularly in 1924, the situation was acute. This is brought out more vividly by a comparison of the river flow at Red Bluff and the irrigation draft. For example, in 1926, the average discharge of the Sacramento River at Red Bluff, July to September, inclusive, was 3140 second-feet, and in the same period the average irrigation draft, Redding to Sacramento, was 3210 second-feet. In the month of July, 1926, the Red Bluff flow was 3190 second-feet and the irrigation draft was 4220 second-feet, segregated to 1208 second-feet under old appropriative rights (initiated prior to the Water Commission Act, 1914), 2690 second-feet appropriative rights under the Water Commission Act, and 322 second-feet presumably riparian or unknown old appropriative rights. Compare, in turn, these data with the facts that ultimate use, Sacramento to Redding, of appropriative rights under permits already granted by the Division of Water Resources, will probably amount to 4000 second-feet and that there is a total maximum use to date of 2000 second-feet under old appropriative and riparian claims on the same stretch of river.

ALLEVIATING FACTORS

Fortunately, for the present, use through appropriative rights initiated under the Water Commission Act has not reached full development, and, due to rotation and idle lands, full use under all riparian and old appropriative rights does not occur simultaneously. Another and most important

Slurry Base Construction on Desert Roads

By C. S. POPE, M. Am. Soc. C. E., Construction Engineer, Division of Highways

IN THE construction of crusher run bases on desert road construction, the problem of the economical use of water in binding such bases has led to a type of construction on the California highways which we have designated as the slurry base construction.

Essentially, this method consists of plant production of a concrete or slurry composed of crushed rock graded from $2\frac{1}{2}$ -inch to dust and containing about 15 per cent of material passing the 200 mesh which has a cementing value. The method of production is as follows:

Material for the base is obtained usually from pits or talus slopes and is crushed to the proper size in a crushing plant of ample capacity. If necessary, fine material is added to bring the 200-mesh material up to the requirements of the specifications. In order to secure accurate composition of the mixture, the material is often screened and remixed by a belt system and then passed to a mixer either of the pug mill type or revolving drum. The mixer shown in the illustrations is the revolving drum type. The aggregate and dust are weighed out with some care or are proportioned by volume, and the water is added in an amount of about 9 gallons per ton of aggregate. It is then mixed for a period of 30 seconds and when dumped has a consistency of damp concrete. The distribution of aggregate is complete and uniform and when the material is hauled to the road, it may be spread without segregation. Spreading is done by means of one-man graders or by the use of a caterpillar and blade, depending



Mixing slurry base in drum mixer.

upon the quantity to be handled. After the material has been bladed to a smooth surface, it is drenched with water to the extent of about $3\frac{1}{2}$ gallons per square yard and rolled with a 10-ton roller. The appearance of the base with fine cementing slush brought out by the roller suggested the term slurry base. The resulting base is allowed to bake hard, and if the materials are properly selected, the result is an astonishingly firm foundation. The base is kept sufficiently damp to protect it from raveling and is usually covered within 24 hours by an oil-mixed surfacing from 3 to 4 inches in compacted thickness.

The method has shown a great saving in the amount of water to be used and gives a base which is far better than could be obtained by simply spreading the mixed aggregate and sprinkling and rolling in the usual way. Such bases are obtained at a cost of about \$1.80 per ton and in favorable locations, no doubt, this cost could be decreased.

The success of the method has been so pronounced that it is being used on a considerable mileage of desert roads at the present time.



Rolling slurry base with macadam roller.

Conkling Author With Baker of Book On Water and Uses

HAROLD CONKLING, deputy in charge of water rights, of the Division of Water Resources, Department of Public Works, is joint author of a new book, "Water Supply and Utilization." Associated with him in the authorship is Donald M. Baker, consulting engineer.



HAROLD CONKLING.

The new volume is described by John Wiley and Sons, Inc., of New York publishers, as "An outline of hydrology from the viewpoint of the arid section of the United States together with an outline of water law and its administration

as it has been developed in the arid states," and continuing the announcement says:

"This book may be considered as a handbook on water supply. While the material is of universal application it has a western background. It contains a broad outline, a mass of specialized information on hydrology, water development and water law in the western states. It is the only text treating the subject from the arid region standpoint. It contains, also, a thorough consideration of water law as it has been evolved and developed to suit peculiar conditions in the west.

"The book will serve not only as a text for students but will be of great value to engineers, attorneys, bankers and public officials in the western states who are interested in water development and wish to enlarge their knowledge of its principles and practice. It will interest also similar groups everywhere who are interested in water supply and its comprehensive utilization."

The book contains:

Introduction

The Long History of the Use of Water

Climatology

Precipitation

Measurement of Precipitation

Disposition of Precipitation

Evaporation

Evaporation of Moisture from Soils

Transpiration

Streamflow and Runoff

Flood Flows

Methods of Forecasting Streamflow

Water Rights in Surface Streams

Riparian Rights

Doctrine of Appropriation

Miscellaneous

State Water Codes

Statutory Provisions

Determination of Available Water Supply

Supply from Normal Flow

Available Supply from Storage

Groundwater Hydrology

General Principles of Occurrence of Groundwater

Occurrence of Groundwater in Rocks

Influence of Rock Structures upon Groundwater Springs

Groundwater in Alluvial Deposits

Movement of Underground Waters

Yield of Groundwater

Water Rights in Underground Water

Purposes for Which Water is Utilized

Use for Irrigation

Domestic and Municipal Supplies

Conflict and Correlation Between Uses of Water

Administration of Streams

Adjudication of Existing Rights

Statutory Provisions Relative to Adjudications

Distribution of Water

Valuation of Water Rights

Methods of Valuation

Quality of Water

Harold Conkling served eleven years with the U. S. Reclamation Bureau on investigation of steam developments throughout practically the entire west, acting as special advisory hydraulic engineer from headquarters office. For six years he was engineer with the Division of Water Rights for the State of California on special investigation of magnitude and as advisor on hydro power and large irrigation projects. Later, for a period of two years, he was Chief of the Division of Water Rights, administering the water law of California. He is now Deputy State Engineer of California.

Donald M. Baker, is a graduate in civil engineering from the University of California. He served three and one-half years with the U. S. Indian Irrigation Service on water development in the southwestern states. For seven years he was hydraulic engineer with the State Water Commission of California. For the past five years he has been a consulting engineer, specializing in water development.

All ye who intend purchasing canines hearken and abide by the following:

For ye bean lovers—Boston.

For ye tobacco chewers—Spitz.

For ye bald heads—Hairless hounds.

For ye interpreters of Hamlet—Great Dane.

For ye lazy persons—Police.

For ye penniless—Mutt.

WASHINGTON, D. C.—Reports received from state highway departments and compiled by the Bureau of Public Roads, indicate that state and local authorities plan to spend \$1,601,167,455 for highway improvements during 1930.

State Highway Patrol Aids Motorists; Services Cover a Most Varied Field

THE WIDE range of activities of the California Highway Patrol are indicated by letters received from the traveling public, telling of work done and assistance given by officers of the Patrol. Excerpts from the following letters will be of interest:

The Civil Service Board of Oakland writes to thank the Department of Public Works for assistance given that board in conducting a practical test for auto truck drivers for employment by the city. Officers C. Ralph, E. J. Dias and A. Lawson of the California Highway Patrol were assigned to help the city in conducting this test. The Civil Service Board writes as follows: "There were seventy-three candidates who took the test, which was a very comprehensive and practical one. Your officers made the rating on each man and the test was completed in two hours time. The snappy and efficient manner in which these officers performed the duties assigned to them speaks very highly for your organization."

AIDS IN ACCIDENT

F. F. Smith & Company, Inc., of Sacramento writes that one of its cars was in a collision near Antioch. The driver of its car was injured and the driver of the other car killed. The letter continues: "This is the first experience we have had with the Highway Patrol, and we wish to take this opportunity of expressing our appreciation of the splendid service rendered and the courtesy extended to our man. The officers who had charge at the site of the accident were Inspector Brown, Officer Sloat and Officer Dewarn, and another officer whose name we did not procure. We wish you would extend our sincere thanks and appreciation for the assistance they rendered."

COURTEOUS CORRECTION

Edwin T. Blake of San Francisco writes as follows:

"On Saturday, at 11.20 a.m. about two miles north of Sausalito I was stopped by one of the traffic officers for cutting in too quickly after passing a truck. I was wholly unaware that I had done anything that would endanger my life or that of anyone else, but I defer wholly to the judgment of the traffic officer

whose view of the occurrence from the side lines was much better than mine from the driver's seat.

"I wish to most highly commend the traffic officer for his courtesy and consideration and the care with which he explained the dangers in passing other vehicles on that rather narrow and crooked highway. Unfortunately I did not make a note of the officer's number.

"I have been driving a car for 28 years during which time I have covered some half million miles and this is the first time that I have been called upon to show my driver's license or had my number taken.

"I hope that I can keep my name from invading your department records for another half million miles."

AIDED IN FIRE FIGHTING

Edwin H. Smith, Forest Supervisor of Placerville, writes to express appreciation for the cooperation given his organization in the suppression of a forest fire in his district.

WHEN HELP WAS NEEDED

Gertrude Cugin of Santa Barbara writes as follows: "A woman friend and myself were in sore need of masculine strength for a change in tires, owing to a bad puncture near the Cabrillo Pavilion. Your two officers in a car bearing license No. E-5808 and one of them with a Captain's badge with No. 51 on it, gave us most efficient and courteous assistance. Such men make one proud of our State Highway Patrol service."

FELON ARRESTED

John H. Thieler writes from Chester, Plumas County telling of assistance given in capturing a man wanted for an attempted murder. His letter follows:

"I wish to call your attention to an exceptional service rendered by one of the men of your department. About 12 o'clock midnight on Saturday, I appealed to Officer Tom Birmingham for help in apprehending a man, who had attempted to commit murder, giving the officer a description of the automobile owned by the suspected felon.

"Birmingham immediately communicated with the sheriff of Plumas County reporting the details of the attempted felony, and after patrolling the vicinity continuously through the night he arrested Hatton Bruce, an itinerant lumber worker. While en route to Quincy on Sunday morning to turn Bruce over to Sheriff Braden, the man escaped from custody. All passing cars on the highway were stopped by the officer and instructions given not to pick up any man on foot. After a search of nine hours Bruce was retaken and lodged in the county jail at Quincy, charged with attempted murder.

"Because of these facts, I wish to compliment your department for making efficient police service possible, in isolated mountain towns; and further to commend to you personally, Officer Tom Birmingham of your department, who worked through without relief from the time the crime was reported to him, until 2 a. m. of the following morning."

CROWDS CARED FOR

The Sierra Valley Smith Club writes to thank the Department for assistance given by Inspector White, Captain Blake and Officer Fonta at the annual Swiss celebration at Loyalton, Sierra County, on August 19th. The letter states that the large crowd attending the celebration was handled in a manner most satisfactory both to the officials in charge of the celebration and to the public.

ASSISTANCE TO WOUNDED

W. J. Gillilan of San Francisco writes as follows:

"My wife was seriously cut, in a crash, on the causeway, near Sacramento, on July 26th. Traffic Captain H. R. Jacobs rendered valuable service in obtaining my wife's transportation to the hospital and in helping secure for my sister-in-law, Mrs. Brackman, the information which she would require. "Traffic Officer W. D. Cassleman cleared the way and escorted the machine carrying my wife to Sacramento."

AUTOMOBILE SAVED

Larry Gott of San Jose writes that Captain R. S. Ryder and Officer White of Ukiah observed his automobile on fire, before he had noticed the fact, and extinguished it with their pyrenes before it had done any great damage.

ARMY ASSISTED

Lt. Col. H. H. Morehead, 251st Coast Artillery, Fort MacArthur, San Pedro, writes as follows:

"The undersigned desires to express the appreciation of the officers and men of the regiment to you for the courtesy extended by allowing your traffic officers to assist the movement of our truck column to the Field Training Camp at Fort MacArthur on August 2, 1930.

"The officers, Geo. Stimson, No. 180, and Lloyd Grooner, No. 175, were courteous, efficient, and a credit to your department.

"The Santa Ana Office, Orange County, is to be commended for the manner in which the affair was handled."

GAS THIEVES CAUGHT

W. H. Hollingsworth of Ignacio tells of assistance given by the Patrol in capturing gas thieves. He writes:

"Through your office I wish to thank our Marin County night patrol, officers Monteverde and Carbine, for the efficient manner in which they caught the three young men who broke into our gas pumps and stole gas.

"Without the aid of the night patrol, the thieves would never have been caught, and you are to be

congratulated upon having two such officers as Monteverde and Carbine."

BEREAVED PARENTS FOUND

Mr. and Mrs. George Danielson of McCloud tell of service given to them by the Siskiyou Patrol at a time when their son was fatally injured on the Klamath lateral. The letter follows:

"We wish you to know of the wonderful aid given us by the Siskiyou County contingent of the State Highway Patrol last Friday, July 4th. Our son, Carl, was fatally injured on the Klamath River Highway and at the time we were traveling in southern Oregon.

"Traffic Officer E. N. Belanger, of McCloud, immediately set about to locate us and called his fellow officers to assist. We were finally located at Klamath Falls. On our arrival at the state line on the Pacific Highway we were met and transferred to an official car and taken with all possible despatch to the Siskiyou General Hospital at Yreka. Your officers rendered this act of human kindness on a holiday when their services were taxed to the utmost.

"We can not adequately express the high esteem in which we hold such outstanding service. We feel that the State of California can well be proud of its efficient Highway Patrol."

INDIO AIDED

L. A. Pawley of Indio, Riverside County, extends thanks to the Department in the following letter:

"Just recently the city of Indio was unfortunately visited by a very serious fire. It might have been much more serious had it not been for the singular service rendered by two of your officers, Mr. George Baker, No. 185, and Mr. Ora E. Townsend, No. 363.

"It therefore gives us pleasure to call to your attention this fact for they are indeed justly entitled to recognition for the exceptional services they rendered at a time when they were seriously needed."

OTHER LETTERS

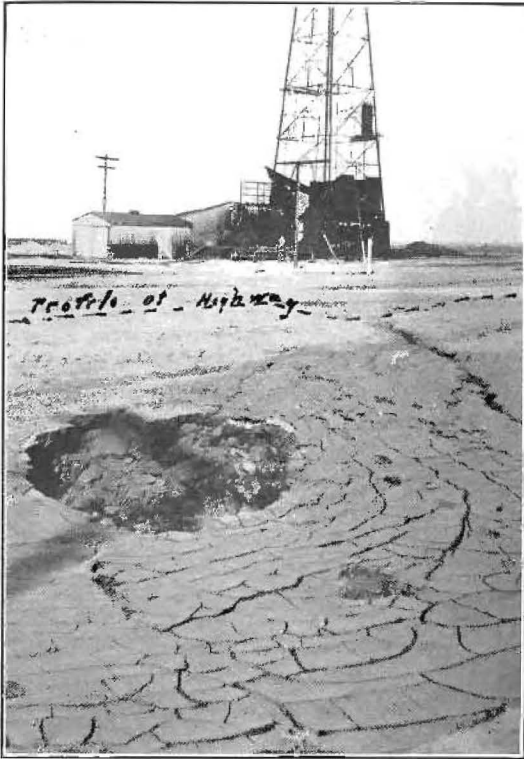
There are numerous letters from motorists extending thanks to the Department of Public Works for aid given by traffic officers in making repairs to tires and to assisting owners of machines who are having mechanical trouble. There are also many letters from organizations expressing thanks for aid given by members of the Patrol in handling crowds at picnics and parades. A number of letters from persons to whom tags have been given for traffic violations or who were warned of such violations express thanks for the courteous manner in which the officers performed their duties.

No man's world is any bigger than the man himself. That which his eye can see, his ear can hear, his heart can feel, make up for him the universe. For no man has anything he can't use.

What good is money to Hottentot, or a magnificent picture to an idiot?

The whole world for you lies under your own hat, and it is just as large and just as varied as your own mind will let it become.—Salescraft.

New Menace to Highway Develops in Oil Field



Sink near roadside in the Maricopa oil fields

THIS sink occurred in the Santa Maria to Freeman State Highway where it passes into the easterly fringe of the Maricopa Oil Fields. The surface of the highway sagged from 18 inches to 24 inches, where it was crossed by a crack some 60 feet long. The hole in the foreground caved in, as shown, after water, impounded beside the highway, had found a subterranean outlet, at that portion of the crack. Clay washed into this depression. The picture shows the characteristic cracking of this wash clay, due to excessive shrinkage while drying.

Several sinks have been found in this general vicinity, one having entrapped oil, flowing along surface drains. This oil could be seen standing some five feet below the surface. In one instance 1600 barrels of oil was drained out of an oil well sump through the opening of such a crack. Generally the sink is surrounded by successive circles of cracks indicating settlement toward a common center. Various theories are put forward to explain the occurrence of these cracks and sinks, but no definite conclusions have been reached.

Maybe So, Mr. Somner, But It Sounds Somewhat Like An Alibi To Us

It is not every man who can appreciate a joke on himself. Mr. F. G. Somner, District Engineer of District Nine, Division of Highways, tells this one.

A family in one of the desert highway camps had a young daughter who was to enter school at Bishop. Mr. Somner offered to take the child to town in his sedan to which the mother gladly consented. Soon above the purr of the motor the clucking and cawing of a hen attracted his attention. Glancing at his young passenger he remarked:

"Was that you? You're quite an imitator!"

The child nodded, smiled demurely, but said nothing.

But the clucking, continuing at intervals, soon ceased to be amusing. Mr. Somner grew somewhat annoyed, then worried, fearing some nervous affliction. The child did not seem ill though rather fidgety under his sharp and anxious glances. So rather than take chances he speeded up to Independence, secured a sleeping draught on the advice of the druggist, and hurried on to home of the child's aunt in Bishop with the parting injunction to call a physician immediately.

With what relief he drove to his residence! But on stopping the car, he suddenly seemed to hear that sound again. What had come over him? Was it all just imagination * * * the heat * * * or was he ill himself? He reached in the rear compartment for his bag. Something in a burlap sack stirred and startled him * * * and clucked much more distinctly. The grateful mother had slipped in a surprise present for Sunday dinner, a fat, frightened but perfectly healthy hen.

NEW AND OLD METHODS IN STATE HIGHWAY BUILDING



- (a) Oil macadam in poor condition, induced by inadequate subsurfacing drainage, chemically and physically adverse subbase (native soil), and volume and unit weight of present-day traffic being far in excess of what the pavement was designed for.
- (b) 12-inches of pit-run gravel blanketing the new adobe embankment and on which is to be placed a modern reinforced F. C. C. pavement, 20 feet wide. New roadbed adequately drained, built 2 1/2 feet higher than old roadbed, to safeguard against possible flooding to which old road was occasionally subjected, and on a 100-foot right of way, permitting, thereby, widening of pavement when increased volume of traffic dictates the need.

Progress on State Highway System

MAJOR PROJECTS COMPLETED, UNDERWAY AND ADVERTISED AS REPORTED
TO GOVERNOR'S COUNCIL ON AUGUST 28th

C. H. PURCELL, Chief of Division of Highways.

During the past month, contracts have been awarded, work advertised, and plans and specifications commenced as shown in the following table:

Work placed under contract.....	\$2,676,000
Work pending and advertised.....	1,350,000
Total	\$4,026,000

PROJECTS COMPLETED

Work which has been completed and opened to public use during the past period includes the following projects of importance:

NEWHALL ALTERNATE

Of the greatest interest to motorists of southern California is the completion of the "Newhall Alternate." This 8.5 miles of new State Highway in Los Angeles County extends over a new alignment of the Los Angeles to Sacramento artery, south of the Ridge Route, via Weldon Canyon. It connects San Fernando Road, near the city limits of Los Angeles with the Ridge Route at the Santa Clara River, and it diverts the Ridge Route traffic from the old alignment through the Newhall Tunnel, thus relieving the congestion at this point, which has been a great detriment to fast moving traffic. This new construction consists of a graded roadbed 46 feet wide upon which has been placed a Portland cement concrete pavement 30 feet wide. The total cost of constructing this wide stretch of highway amounted to \$271,100.

ARROYO SECO PROJECT

The grading of the first sector of the new "Arroyo Seco Road," which will eventually climb from the canyon to the ridges in the rough country north of Pasadena opening up additional recreational areas, is completed from La Canada to 2.5 miles northerly. This 24-foot roadbed has been cut from the walls of the arroyo, and the use of a large amount of reinforced concrete cribbing was necessary to hold the bank on the steep mountain slopes. The second sector of this project is now under construction carrying the road to 4 miles north of La Canada. Two bridges, one, a large reinforced concrete arch across La Canada Canyon, and the other a concrete girder across Slide Canyon are now under construction. The grading cost of the first sector was \$275,100.

SALINAS RIVER BRIDGE

One of the larger bridges on the Coast Route from Los Angeles to San Francisco has just been completed across the Salinas River at San Ardo in Monterey County. This structure, erected at a cost of \$107,392, is composed of ten 100-foot steel deck truss spans and seventeen 37-foot reinforced concrete girder spans. It replaced the old county bridge, which was

only 15 feet wide, built in 1907 and which was in very poor condition, being dangerous for the traffic and loads which a structure on this important route is called upon to carry.

BAY SHORE HIGHWAY IMPROVEMENT

Grading and placing a bituminous macadam surface has been completed on the most northerly section of the new Bay Shore Highway in San Mateo County. This project extends from the southerly city limits of San Francisco on San Bruno Ave. to Grand Ave. on South San Francisco. The graded roadbed varies from 62.5 feet to 125 feet in width and in crossing the low lying marsh lands the heaviest grading in the State Highway System was encountered, vast amounts of fill being necessary to build up the roadbed. This section of this San Francisco to San Jose highway will eliminate the use of the old crooked and narrow road built many years ago by the county. It connects at the southerly end with section from South San Francisco to Burlingame which is now being paved. The cost of the 3.5 miles from San Francisco to South San Francisco was \$1,435,062.

REDWOOD HIGHWAY OVERHEAD

A 236-foot steel overhead crossing with timber approaches, across the tracks of the Northwestern Pacific Railroad at Forbes Station in Marin County has just been completed. This structure is a unit in the recent relocation of the popular Redwood Highway north of San Rafael. The new alignment eliminates the necessity of using the old crooked road which climbed the hill over the tunnel of the railroad. This new grade separation was constructed at a cost of \$17,300.

PROJECTS ON WHICH BIDS WERE OPENED

Some of the more important bids received during the past four weeks include the following:

SAN DIEGO-EL CENTRO LATERAL

On the San Diego-El Centro lateral, heavy fuel oil is to be applied to the newly graded roadbed on the relocation of this route between La Posta and the Tecate Divide in San Diego County. This work will complete the reconstruction of this important southern California highway to modern standards of width, alignment and grade over the entire distance from San Diego to El Centro. The cost of oiling this 8½ miles will be \$14,000.

ROSE CANYON CUT-OFF

The relocation of main route between Los Angeles and San Diego which lies within the city limits of San Diego, and is referred to as the "Rose Canyon

Cut-off" will be paved with a Portland cement concrete pavement 30 feet wide. This new routing extends from Balboa avenue to Torrey Pines Road, a distance of 5.4 miles, and will shorten the distance over the existing route, via La Jolla, by 4.5 miles. The grading of this alignment and the construction of a 210-foot reinforced concrete bridge were completed a month ago. The total cost of this relocation will be \$230,000.

COAST BOULEVARD IMPROVEMENT

In Los Angeles and Orange counties three projects will greatly improve the Coast Boulevard from Long Beach to Sunset Beach where they will join the work, now in progress, widening this heavily traveled route as far south as Newport Beach. With the cooperation of the city of Long Beach the road is to be constructed on new alignment from Hathaway avenue to connect with the present boulevard at Seal Beach. The roadbed will be 60 and 100 feet wide over this portion and the Portland cement concrete pavement 40 feet wide. The second project consists of the construction of a 400-foot reinforced concrete girder bridge across the San Gabriel River on this new routing. The third project, from Seal Beach to Sunset Beach, calls for widening the roadbed to the full extent of the right of way and widening the existing 20-foot concrete pavement to 30 feet. This widened roadbed will give much needed parking space to the many motorists who come to the beaches from metropolitan Los Angeles. The total cost of these improvements will be \$467,200.

DESERT HIGHWAYS BETTERMENT

The steady improvement of the desert highways in southern California is noted by the opening of bids for two projects east of San Bernardino. Over 16 miles of the Mecca to Blythe lateral in Riverside County and 9.5 miles of the Los Angeles to Salt Lake Road in San Bernardino County.

Both projects call for the construction of a 36-foot graded roadbed and the placing of an oil treated crushed rock surfacing 20 feet wide, with adequate drainage systems consisting of ditches and dikes constructed parallel to the highway to direct flood waters from desert storms into proper channels, thereby protecting the highway roadbed. The improvement in Riverside County will extend from Desert Center to 9.5 miles west of Hopkins Well and will cost \$280,100. This road has been constructed to modern standards over the 32 miles west of Blythe and the present project will carry this improvement to Desert Center, giving a surfaced road for nearly 50 miles west of Blythe. The improvement of the road in San Bernardino County will extend from Dunn to the Cronise Valley and will cost \$200,700. Of the 193 miles of this route from San Bernardino to the state line, near Jean, Nevada, 108 miles has been graded and surfaced to present day standards of desert road construction and the present improvement will carry these standards easterly to the Cronise Valley, leaving only 75 miles yet to be improved.

CUYAMA LATERAL WORK

Another project will be the improvement of 37.7 miles of the Cuyama lateral in Santa Barbara and San Luis Obispo counties. The work will extend from the second crossing of the Cuyama River to the Kern County line. This work will consist of straightening several curves, smoothing the present choppy gradient and surfacing the entire distance with 20 feet of oil treated crushed gravel or stone. The improvement will cost \$301,500. This road serves as an outlet to the coast for the Maricopa oil fields and

as a connecting link between the San Joaquin Valley and the Coast Route.

COAST ROUTE IMPROVEMENTS

Two improvements worthy of note are to be made on the Coast Route. The one, will be a reinforced concrete girder bridge composed of four 42½-foot spans, which will cost \$21,138. This structure will be built on a new alignment of this heavily traveled route across Nojoqui Creek 7.5 miles south of Zaca in Santa Barbara County. The new bridge will replace the existing narrow structure built many years ago by the county on an alignment which is decidedly dangerous to present high speed traffic. The other is the grading and paving of the three miles immediately north of San Luis Obispo. This improvement will pave with Portland cement concrete and will materially improve the alignment, by eliminating several blind curves, this section of the main artery from Los Angeles to San Francisco. This paving project will cost \$145,400.

MONO COUNTY PROJECT

At a cost of 176,200, 13 miles of the highway through the Walker River Canyon, in Mono County is to be graded to a roadbed width of 24 feet. This improvement will extend from Sonora Junction to Coleville. This road forms a part of the interstate highway connecting Reno, Nevada, with southern California via the Owens Valley. This work is the first of a series of projects to provide an improved highway for this recreational area of the Sierra Nevada. More and more vacationists are using this route each year, as traffic passing from the Yosemite Valley via Tioga Pass, uses this road.

REDWOOD HIGHWAY

An improvement of special interest to the motorists of the bay area is noted by the opening of bids for the construction of a graded roadbed 36 and 56 feet wide and placing 20 feet of bituminous macadam surfacing from Belvedere Crossing to Tiburon in Marin County. The 4.5 miles from Belvedere Crossing to the Redwood Highway at Alto has been improved and is in very good condition. The present improvement, to cost \$62,700, is largely on new alignment and is designed to cross the tracks of the Northwestern Pacific Railroad via an overhead crossing which is proposed for construction in the near future. With the advent of increased ferry service from San Francisco to Tiburon this route will carry a considerable portion of the traffic using the Redwood Highway and will do much to alleviate the present congestion at the Sausalito terminal.

An improvement to another of California's scenic highways will be the widening and surfacing of three short sections of the road which extends from the Redwood Highway, north of Cloverdale, to the coast at Navarro Head. While this lateral is only 50 miles in length, it traverses an increasingly popular recreational section of the coast country, passing through the beautiful redwood groves of the Paul Dimmick Park. The expenditure on this improvement will be \$92,600.

The steady improvement of the ever popular Redwood Highway is shown by the construction of an overhead crossing 2.5 miles north of Beatrice in Humboldt County. It will consist of two 61'-7" through plate girder spans, one 40-foot steel beam span and 450 feet of timber approach trestle; the concrete piers and steel bents are to have pile foundations and the timber trestle will be constructed on pile bents. This structure will separate the grades of the main line of the Northwestern Pacific Railroad and the State Highway which is now under construction on the new

alignment between Loleta and the existing road some three miles north of Beatrice. This new alignment, including a subway at Loleta, which is now under construction, and the present overhead structure, will eliminate a very narrow and crooked section of the existing road as well as shorten the distance by 1.5 miles. This structure will be erected at a cost of \$52,800.

VICTORY HIGHWAY

Contracted to cost \$226,000 is an important improvement on the heavily traveled road from Sacramento to the high Sierras and Reno via Auburn. The work proposed consists of boring a tunnel, with a 30-foot roadway and 531 feet long, and constructing about one mile of approaches, through the hill and under the town of Newcastle, some 3 miles west of Auburn. This new location of the State Highway will eliminate the necessity of through traffic climbing the excessive grades at both the east and west entrances of Newcastle and passing through the congested area of the town and the existing narrow subway under the tracks of the Southern Pacific Railroad. The portions of the tunnel near the portals and beneath the Southern Pacific Company's tracks will be lined with reinforced concrete. The remaining portions will have timber lining. The placing of the ultimate Portland cement concrete pavement will be postponed until the fills in the approaches to the tunnel have fully settled, at which time the approaches and tunnel will be paved as a unit.

PACIFIC HIGHWAY

At Lincoln, in Placer County, nearly two miles of the Pacific Highway is to be graded and paved with 20 feet of Portland cement concrete. This project is on an improved alignment of the road through the town and includes the construction of two small bridges. This project, which will cost \$70,400, will close the gap in the pavement on this route, between Sacramento and Red Bluff.

WORK ADVERTISED

Work advertised for bids during the past month includes the following important projects:

CASTAIC CREEK BRIDGE

A reinforced concrete girder bridge consisting of seven 35-foot spans on concrete pile bents and concrete abutments with pile foundations and having a clear roadway width of 34 feet will be constructed across Castaic Creek on the Los Angeles to Bakersfield road in Los Angeles County. This new structure will be built on an improved alignment at this crossing and will replace the existing 8-span steel through girder bridge which was built by the county some 15 years ago on an inferior alignment.

BAY SHORE EXTENSION

The further improvement of the Bay Shore Highway is noted by the advertising for bids for the construction of a 60-foot graded roadbed on the sector from Redwood City to Willow Road. This important alternate route down the Peninsula is now graded and surfaced from San Bruno avenue in San Francisco to 5th avenue in San Mateo. The portion from 5th avenue, San Mateo, to Redwood City is now under construction and the present project will carry the Bay Shore Highway 4 miles nearer to San Jose. The termination of this project is Willow Road which is the main connection between the Coast Route and the Dumbarton Bridge across the bay.

County Reports on State Highway Projects

COLUSA COUNTY

Construction of 13 miles of new State Highway, between Bear Creek and 5 miles west of Williams, on the Ukiah-Tahoe Highway under contract by Le Tourneau, is practically completed on 4 miles of the Williams end of the work. The contractor has begun on the Bear Creek end of the work, and proposes to work east from there to connect with the completed 4 miles. Construction is ahead of schedule and will probably be completed prior to May, 1931, the date set for completion.

A 24-foot graded roadbed is to be built from Bear Creek to the mouth of Salt Creek Canyon and from there to the junction with the present highway a 36-foot graded roadbed is planned. Surfacing of this project is scheduled to begin prior to the middle of next year.

The work between Williams and Maxwell, consisting of construction of a 19-foot new grade alongside the present 15-foot concrete pavement, is being constructed ahead of schedule by Frederickson-Watson Construction Co., Contractor. The excavation of the drainage ditch, which is being done to afford material for roadway embankment, is completed. At the present rate of progress, the work will be finished by the latter part of September of this year.

EL DORADO COUNTY

Construction of a new roadbed between Bay View Rest and one mile north of Eagle Falls is under contract by Nate Lovelace. The mountainous country through which the route is projected necessitates a large volume of roadbed retaining wall. The wall is being constructed of selected material obtained along the work.

FRESNO COUNTY

The Peninsula Paving Company have begun paving on the contract for improvement between 3 miles south of Fresno and 3 miles south of Fowler.

GLENN COUNTY

The concrete paving project between Logandale and Willows, under contract by Basich Bros. Construction Co., was begun the latter part of May. The earth roadbed, and the pit-run gravel blanket course for the concrete pavement, is half finished. The contractor is placing pavement forms at the Willows end of the work, preparatory to placing the 20-foot wide Portland cement concrete pavement.

INYO COUNTY

Beginning at the southerly boundary of Inyo County, Route 23, Fred W. Nighbert has recently completed a 16-mile stretch of State Highway to Little Lake, from which point north he also has under construction an additional 4-mile stretch, which will be completed within the next two weeks. At this point a connection is made with the Allied Contractor's, Inc., contract, which extends 21 miles to Olancho, which when completed, will close the gap and give a continuous paved highway to the northerly boundary of Inyo County.

Other reports by counties will be found on page 22.

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.

B. B. MEEK.....Director
GEORGE C. MANSFIELD.....Editor

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

Vol. 8 SEPTEMBER, 1930 No. 9

1931 License Plate Form is Approved

The 1931 colors for automobile license plates will be exactly the same as this year except that they will be reversed.

Instead of black letters and numerals on an orange background, it was stated, orange letters will appear on a black background, just as they were in 1929.

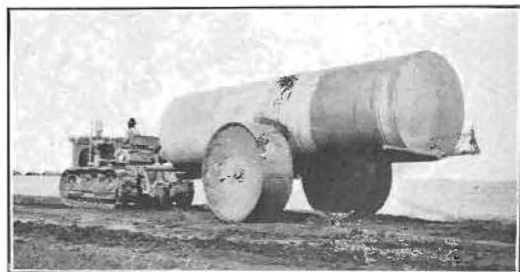
Exhaustive tests for visibility, the division's announcement said, have proven beyond all doubt that these colors are the most satisfactory and that numbers may be read at a greater distance than with any other combination.

The only change in the general appearance of next year's plate will be the elimination of the dashes between numerals and letters. This will be done to improve the plate's appearance and will not decrease visibility.

The plates will be 13 $\frac{3}{8}$ inches long and 6 $\frac{3}{8}$ inches wide as provided by the Motor Vehicle Act. They will be manufactured of the same grade of 24-gauge steel.

The same combination of letters and numerals that has proven so satisfactory in the last two years will be used. The division announced that a maximum of 2,070,000 plates of not more than six characters may be issued with this arrangement.

A REAL WATER WAGON



Water tank of 6000 gallons capacity for compacting, by watering, newly placed roadway fills on the new state highway now being constructed between Bear Creek and five miles west of Williams on the Ukiah-Tahoe highway route.

"A RADIO MIX UP"

Submitted by a reader of Napa Grange Bulletin.

Following is the experience of a man who bought and installed a radio. He tuned in, getting three stations on the same wave length. One was a minister, one a man telling the condition of the roads, and the third was a lecture on poultry. Here is what he heard:

The Old Testament tells us that baby chicks should detour one mile south of the salina and listen to the words of the prophets. Be careful in the selection of your eggs, and you will find hard-surfaced roads to Garden City. We find in Genesis that the roads are muddy just west of the hen house and clean straw is essential if you would save your soul. After passing through Marysville, turn north to Jericho.

Three wise men brought a large-size incubator on account of the bad detour. The baby chicks were troubled with pip and a bond issue is being talked of in the Holy City. Keep the feet clean and dry, live a life of righteousness and turn south one mile west of the school house. Much care should be taken in commanding the sun to stand still, as there is a wash-out on the bridge just south of Scotia, and the road to salvation is under repair, making it necessary for 70 degrees in the brood house at all times. After Garberville, unless you do those things the wrath of the Lord will cause the pin feathers to fall out.

Many are called, but few have any luck unless the gravel road between Rohnerville and Ferndale is mixed with feed. The Lord commanded Noah to build the ark just one mile west of Ukiah. It rained for forty days and forty nights and caused an eight-mile detour.

Just west of the brood house many tourists from the house of David are trying the Plymouth Rocks mixed with concrete and a desire to do right.

SHADE

By Theodosia Garrison

"The kindest thing God ever made,
His hand of very healing laid
Upon a fevered world, is shade.

His glorious company of trees
Throw out their mantles, and on these
The dust-stained wanderer finds ease.

Green temples, closed against the beat
Of noontime's blinding glare and heat,
Open to any pilgrim's feet.

The white road blisters in the sun:
Now, half the weary journey done
Enter and rest, O weary one!

And feel the dew of dawn still wet
Beneath thy feet, and so forget
The burning highway's ache and fret.

This is God's hospitality,
And whoso rests beneath a tree
Hath cause to thank Him gratefully."

Few women are color blind, except in the matter of distinguishing red and green traffic lights.—Florence (Ala.) *Herald*.

Compiling Data
on Irrigation
Districts

☛ ☛ ☛
Sacramento Flood
Control Construc-
tion Program
Adopted

Review of August Activities

In the

Division of Water Resources

EDWARD HYATT, Chief of Division

Study of Dams
in California
Progressing

☛ ☛ ☛
Water Rights;
Adjudications and
Permits, Applica-
tions

IRRIGATION, WATER STORAGE DISTRICTS

In connection with the assembling and completion of data on water supply and other matters of interest to irrigation districts in California for the purpose of bringing Bulletin No. 21 up to date, the following irrigation districts were visited: Modesto, Turlock, Waterford, Oakdale, West Stanislaus, Merced, El Nido, Madera, Corcoran, Lakeland, Alta, Island No. 3, Alpaugh, Lindsay-Strathmore, Terra Bella, Vandalia, Fair Oaks, Citrus Heights, Carmichael, Camp Far West, Paradise, Deer Creek, Anderson-Cottonwood, El Camino, Glenn-Colusa, Jacinto, Princeton-Codora, Byron-Bethany, East Contra Costa.

An appraisal of the lands of the El Nido Irrigation District was made. Plans for proposed irrigation works for the district were submitted to the State Engineer for review.

As a result of the hearing held at Buttonwillow, Tulare County, on July 16, 1930, the State Engineer, on petition of landowners, issued an order for the exclusion of certain lands from the Buena Vista Water Storage District.

A petition was received by the State Engineer petitioning the exclusion of about 1300 acres of land from the Tulare Lake Basin Water Storage District, located in Kings County. The hearing on this petition for exclusion has been set for October 14, 1930.

Request for approval of a bond issue in amount of approximately \$135,000 has been submitted to the California Bond Certification Commission by the Directors of the El Nido Irrigation District.

The California Bond Certification Commission has approved the private sale of \$350,000 par value of bonds of the El Dorado Irrigation District at 94 per cent and has issued an expenditure order to the same district authorizing expenditures in amount of \$364,000 for the construction of the Webber Dam for storing approximately 9000 acre-feet of water.

DAMS

The activities of the Department have, during this period, been directed primarily to the completion of a preliminary examination of all existing dams, compilation and study of hydrographic data upon which to base wasteway requirements and the basic stress determination of masonry dams. Technical assistance has been rendered the Water Resources Investigation in the selection of typical sections for high gravity dams.

To date 690 applications have been filed with the Department for approval of existing dams and dams under construction.

Applications received for approval of plans and specifications for construction:

Dam	County	Owner	Estimated cost
Swanzy Lake	Solano	Calif-Hawaiian Sugar Refining Company	\$68,000
Tiger Creek	Amador	Pacific Gas & Electric Company	350,000

The Swanzy Lake Dam is an earthen structure to be built as a regulating reservoir for use in the Sugar Company's water supply project.

Tiger Creek Dam is to be a slab and buttress type for use as a regulating and balancing reservoir in the P. G. & E.'s Electra system.

Applications received for approval of plans for repair or alteration.

Dam	County	Owner
Kelly Lake	Placer	Pacific Gas & Electric Company
Mell Pond	Modoc	Crane Creek Lumber Company
Meadow Lake	Alpine	Pacific Gas & Electric Company

Plans approved for repair or alteration.

Dam	County	Owner
Notre Dame	San Mateo	College of Notre Dame

Activities on dams built prior to August 14, 1929.

Preliminary inspections have now been made on practically all the dams in the state. The inspection reports are being digested and segregated.

Spillway requirements have been furnished through the Water Resources Investigations Department on all dams.

Office studies for determining the safety of design are nearing completion.

Geological examinations are being made of all major structures.

The results of the various activities are being combined and the department will soon be able to divide the dams into three main groups, i. e.:

1. Dams which can be approved.
2. Dams which need repairs or alterations.
3. Dams which require further study.

FLOOD CONTROL AND RECLAMATION

MAINTENANCE OF SACRAMENTO AND SAN JOAQUIN
DRAINAGE DISTRICT

The work during this period in connection with flood control maintenance has been mostly routine, including miscellaneous repair work and irrigation of willows. In addition clearing of second growth timber has been

carried on in the by-passes. A total of twenty-eight men have been engaged in this work during the period.

FLOOD CONTROL PROJECT MAINTENANCE, BANK PROTECTION

The work of constructing a sandfill and pavement at Isleton under contract by O. G. Ritchie will be completed by August 30.

Work is now under way on the installation of two current retards on the right bank of the Sacramento River on the Davis property, eleven miles above Colusa, to cost \$6,200, in cooperation with Reclamation District No. 2047.

Arrangements have been completed for the construction of three current retards on the Campbell and Dwyer Ranch two miles below Colusa in cooperation with the Sacramento River West Side Levee District. The total cost is \$7,632.

SACRAMENTO FLOOD CONTROL PROJECT

Approximately sixty-four men have been engaged during this period in clearing operations in the Sutter By-pass. The clearing work being done under five contracts in the Feather River Bottoms near Marysville is approximately 80 per cent completed.

On July 16 the Reclamation Board approved a program for new construction on the Sacramento Flood Control Project for the fiscal year 1930-31. This program was presented in a report submitted by a committee appointed by the Reclamation Board consisting of Stephen W. Downey, A. M. Barton, R. L. Jones, B. A. Etcheverry and F. C. Herrmann, and has since been approved by the California Debris Commission. The program follows:

	U. S.	State	Local	Total
West Intercepting Canal, right of way		\$5,000		\$5,000
Deficit, Starr Bend Levee	\$2,610	1,305	\$1,305	5,220
Deficit, Lake of the Woods, Levee	10,500	5,250	5,250	21,000
By-pass clearing		36,500		36,500
Removing old levees, Feather River		7,500		7,500
Controlling works at Nelson Bend, Feather River	5,000	5,000		10,000
Feather River clearing, below Marysville		5,000		5,000
American and Sacramento R. clearing		2,000		2,000
West Yolo By-pass Levee:				
Liberty Farms	18,480	9,240	9,240	36,960
Sullivan and Roche	15,820	7,910	7,910	31,640
Reclamation Dist. No. 2068	12,840	6,420	6,420	25,680
Yolo By-pass, East Levee, Disl. 785	23,980	11,990	11,990	47,960
Feather R. Levee, Dist. 784	38,385	38,385		76,770
Moulton Weir	64,580	33,500		98,080
Reclamation Board administration		25,000		25,000
Totals	\$192,195	\$200,000	\$42,115	\$436,810

RUSSIAN RIVER JETTY

The work of depositing rock in the Russian River Jetty has been continued with a force of eight men operating the quarry and railroad. The jetty now extends approximately 300 feet from the shoreline and the channel through the bar is open along the north side of the jetty, having a depth of 10 feet at high water and a width of about 150 feet. There is no indication that this channel will be closed during the balance of the summer months. The present work will be continued for approximately three months longer.

NAVARRO RIVER JETTY

The construction of the rock jetty on the Navarro River under contract by Christie and Allen is approximately one-half completed and it is expected the whole work will be completed by October 30.

WATER RIGHTS

APPLICATIONS TO APPROPRIATE

Forty applications to appropriate water were received during the month of July, 14 applications were canceled and 27 were approved. Six permits were revoked, 4 licenses were issued and 1 license was revoked.

Applications received which were of more than ordinary interest are as follows: The application of Little Rock Creek Irrigation District to appropriate 3000 acre-feet from Little Rock Creek tributary to Antelope Valley in Los Angeles County. Estimated cost of project \$65,000. Applications of Fresno Irrigation District to appropriate from San Joaquin River in Fresno and Madera counties for irrigation and power purposes. Cost of project not stated. Applications of Pacific Gas & Electric Company to appropriate from Tiger Creek and Panther Creek, tributaries of Mokelumne River, for power purposes. Estimated cost of project \$40,000,000. Application of McGrath Brothers, D. C. Smith and S. A. McKeenan, et al., Meridian, California, to appropriate from Butte Slough in Sutter County for the irrigation of 5245 acres. Application of Bear Gulch Water Company to appropriate from San Francisco Creek in San Mateo County for municipal purposes. Estimated cost of project \$325,000. Applications of Sacramento Municipal Utility District to appropriate from Silver Creek tributary of American River in El Dorado County for municipal, domestic, irrigation and power purposes. Estimated cost of project \$26,500,000.

Permits issued which are of more than ordinary interest are those of M. J. and H. E. Newkom, Yuba City, California, to appropriate from Feather River at an estimated cost of \$13,570, and Fallbrook Irrigation District to appropriate from Santa Margarita River in San Diego County for irrigation and domestic purposes, 10,000 acres, at an estimated cost of \$1,400,000.

ADJUDICATIONS

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

Whitewater River (San Bernardino and Riverside Counties): Still 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): Submission of referee's final report still being withheld pending negotiations now in progress towards settlement of one of the important issues.

Oak Run Creek (Shasta County): Case still pending in Superior Court of Shasta County awaiting the entry of a decree in the North Cow Creek case.

Clover Creek (Shasta County): Case still pending in the Superior Court of Shasta County awaiting the court's pleasure in placing it on the calendar.

Butte Creek (Siskiyou County): Case still pending in the Superior Court of Siskiyou County awaiting action by the parties involved.

Los Alamos Creek (Santa Barbara County): Action by referee being deferred awaiting the outcome of the circulation of a stipulation for consent judgment among the parties involved.

Davis Creek (Modoc County): Negotiations relative to a consent judgment still being carried on.

Mill Creek (Modoc County): The trial schedule of distribution proposed by the Division of Water Resources was administered by a water master throughout the month.

Deep Creek (Modoc County): The field investigation of water supply and use of water was continued throughout the month.

Franklin Creek (Modoc County): The field investigation of water supply and use of water was continued throughout the month.

WATER DISTRIBUTION

Little Shasta River (Siskiyou County): Water master service on this stream was continued throughout the month.

Pit River (Modoc and Lassen Counties): Supervision over diversions from Pit River in Big Valley was continued throughout the month by the resident engineer on the Pit River Investigation.

Hat and Burney Creeks (Shasta County): Water master service on these streams was continued throughout the month.

North Cow, Oak Run and Clover Creeks (Shasta County): Water master service on these streams was continued throughout the month.

Davis, Emerson, Mill, Owl and Soldier Creeks (Modoc County): Water master service on these streams was continued throughout the month.

Lower Shasta River (Siskiyou County): Water master service was continued throughout the month.

West Fork of Carson River (Alpine County): Water master service was started on this stream for the 1930 season on July 21st.

SNOW SURVEYS

Office work in the past month has consisted in computations and preparation of diagrams in determining the relation between snow, precipitation, temperature, and run-off for the various basins. A statement of expenditures in the past year and budget for 1930-31 have also been completed.

In the field work two trips were made: one to Bear Valley in the Mokelumne basin to install a shelter for the equipment used on the Bear Ridge course, and the other to the Feather and Yuba basins to relocate the Lassen and Mount Stover courses, to establish a new course in Church Meadows near Gold Lake, to establish Jackson Meadow and relocate Findley Peak courses, and to arrange for a new precipitation observer at Downieville in the Yuba basin. The relocated Lassen course is adjacent to Lake Helen at an elevation of about 8100 feet.

In the surveys of the past winter and spring, the men encountered many varied, interesting, and at times hazardous experiences. Our attention has been called to the fact that certain of these might be of interest to include in the staff report. One incident in connection with the Sanislaus basin survey was of particular interest.

The snow course is located at Lake Alpine on the Ebbetts Pass road. Three men skied in leaving from Angels Camp and taking four days to reach the course. One man, who is the owner of a resort at Lake Alpine, was new to snow travel and hence the delay. Also, the men had to carry the provisions for the intermediate stops. The resort at Lake Alpine was previously stocked with food and bedding. On the way in the men found that someone had been breaking into cabins all along the road and when they reached Lake Alpine they found an occupant in their cabin making himself at home with their provisions and supplies. Although one of the men carried a gun, the occupant appeared too formidable to start a quarrel with which would necessarily have to last the entire time the men would be at the course.

Briefly, the snow surveyors jollied the trespasser along and finally persuaded him to accompany them, on one pretext or another, on the return to Angels Camp. There they succeeded in turning him over to the Sheriff and after he was safe behind the bars, the Sheriff told the surveyors that they had brought in an ex-convict.

SACRAMENTO-SAN JOAQUIN WATER SUPERVISOR

Regular field and office work comprising measurements of all diversions, stream flow, and return flow throughout the Sacramento-San Joaquin territory, has continued. Office work has included the preparation of maps of irrigated areas and new schedules for the salinity observers, showing for each the times for sampling during the next six months.

The salinity investigation has been continued by the maintenance of sampling at 37 bay and delta stations, and by establishing nine new stations as the salinity has advanced into the delta. The six tide gages have been maintained and in the past month three new gages were installed in the vicinity of Courtland to secure data in connection with the proposed diversion of Sacramento River water through Snodgrass Slough.

On August 6th the salinity in parts of chlorine per 100,000 was as follows: Bullshead Point 1290; O. and A. Ferry 630; Collinsville 400; Antioch 315; Jersey 75; Emmaton 74; Webb Pump 26; Rio Vista 10; Isleton 6. On the same date, the discharge of the Sacramento River at Sacramento was about 2500 second-feet, and the San Joaquin River near Vernalis was discharging 660 second-feet, making a combined flow to the delta of 3160 second-feet. The corresponding Sacramento, San Joaquin, and the combined discharges on August 6, 1929, were 2740, 665 and 3405 second-feet, respectively.

WATER RESOURCES

SAN JOAQUIN VALLEY INVESTIGATION

Ground Water Investigation. Maps delineating the elevation of the ground water for the areas from Madera to Kern County have been completed for the years 1921 to 1929, inclusive. Maps have also been prepared showing the depth to ground water as of October 1, 1929 for all the wells in these same areas. Quantitative estimates have been made of the underground storage capacities of possible absorptive areas in the upper San Joaquin Valley.

Land Classification. Further field examinations are being made of the foothill and low mountain areas extending east of the San Joaquin Valley floor.

Irrigation Requirements. Month by month studies have been completed for each of the main stream basin divisions of the upper San Joaquin Valley showing irrigation requirements, yields from local supplies and requirements for imported water, utilizing underground as well as surface storage.

Water Supply. Detailed studies have been made to determine the yield of the San Joaquin River at Friant for exportation southward under various assumptions: 1. Utilizing only surplus water and waters adapted to this so-called "grass land." 2. Utilizing the entire flow of the stream.

San Joaquin Pumping Plan. Further studies have been made on plans for pumping water up the San Joaquin River to supply the irrigation demands below Mendota in exchange for San Joaquin River water.

Engineering Advisory Committee. A meeting was held on August 14 and 15 of the Engineering Advisory Committee on San Joaquin Valley investigations. The work completed during the past month was reviewed and plans were made for the investigation which will result in determination of a possible first unit in the San Joaquin Valley.

SACRAMENTO VALLEY INVESTIGATION

Water Supply. Estimates of the present impaired run-off of the American River at Auburn, Coloma and Folsom dam sites and the Yuba River at the Upper Narrows were completed. The run-off studies for the Trinity River were extended to cover the season of 1928-1929.

Irrigation Yield Studies. Irrigation yield studies were made for reservoirs on all the major streams of the Sacramento Basin including Kennett on the Sacramento River, Oroville on the Feather River, Narrows on the Yuba River, Camp Far West on the Bear River and Folsom, Auburn and Coloma reservoirs on the American River, assuming that the power head available at the dam would not be reduced to a point below one-half maximum. Further studies were made of the irrigation yield at Red Bluff on the Sacramento River with the Trinity River diversion operated in conjunction with the Kennett reservoir. Studies are now in progress to determine the economic installed capacity of power plants at the various reservoirs.

Irrigation Requirements. Estimates of the ultimate irrigation requirements in the Sacramento Valley have been completed. These estimates have been approved by the Engineering Advisory Committee. A study of the amount of return that would be available from the application of the irrigation water is being made together with its probable distribution through the year.

Flood Flow Studies. Studies of flood flows with their probabilities and concentrations have been continued through the month.

Cost Estimates. Sections to be used in estimating the costs of demand at the various sites together with unit costs of the principal items of construction have been approved by the Engineering Advisory Committee.

Geologic Reports. A geological investigation and report of the Iron Canyon and Kennett dam site were made by Dr. F. L. Ransome. A preliminary report on the geology of the Fairview dam site on the Trinity River has been completed by Dr. Louderback.

Exploration Work. A second exploration pit has been started at the Iron Canyon dam site during the past month and is now practically completed. The exploratory work at Kennett dam site has been continued. Up to the present time about 1400 feet have been driven under the direction of Colonel Robins.

American River Investigation. Sampling and testing of water at various stations on the American River has been continued throughout the month.

SALT WATER BARRIER INVESTIGATION

Field work on the survey of industrial development, public water supply systems and industrial water front structures was practically completed during the past month and work started on the compilation and analysis of the detailed data which have been gathered. Detailed surveys have been made on over 120 industries, 22 public water supply systems, and about 350 industrial water front structures, all within the area extending from Antioch and Rio Vista on the east to Richmond on the south and west. The economic studies of the industrial development are actively under way under the direction of the committee composed of:

Prof. W. E. Hotchkiss, Dean, Stanford Graduate School of Business, Chairman.

Prof. H. S. Grady, Dean, Graduate School of Business U. C.

A. D. Schindler, Consulting Engineer.

Professor George W. Dowrie, Consulting Economist of the Stanford Graduate School of Business, is engaged with this committee in making the detail economic studies, including the compilation and preparation of all data pertinent to the past and future growth and trend of industrial development in the bay region, and particularly the area affected by the barrier.

A large part of the work during the past month has been devoted to the preparation of basic data required for estimating the consumption of and demand for water from the proposed barrier lake, including all uses by industries, municipalities, agriculture and use of water by natural vegetation and by evaporation. Special studies on the important item of evaporation and transpiration have been largely completed. This has involved the gathering of all available records of evaporation and related meteorological data and intensive studies to determine the variation and distribution of evaporation as applied to various areas related to the several proposed barrier locations. Similar studies have also been under way and largely completed on transpiration from natural vegetation, especially the aquatic growths of tules and cat-tails and the native salt grass and salt marsh and fresh water vegetation. Detailed data on the consumptive use of water by crops within the delta region of the delta region of the Sacramento and San Joaquin rivers and the cropped areas have been determined and compiled. Field surveys were completed on the classification of the Suisun Bay marsh land area which forms what is hoped to be a rich potential agricultural area. In this connection, aerial photographs covering a large part of the area made by the U. S. Army Engineers on their cooperative investigations with the state have been of tremendous value. Soil surveys are also under way covering the Suisun Bay area and classification and soil surveys will also be immediately started in the San Pablo Bay marsh area.

Substantial progress has been made on the gathering of detailed data in regard to reclamation within the delta. Complete data has been obtained on a large number of the more important and larger reclamations. This data is of special importance in the study which must be made of the effect of the proposed barrier on the present reclaimed area within the delta, with special regard to the levees and the drainage and irrigation operations.

SALINITY INVESTIGATIONS

During the past month work has been continued on the preparation of final maps, diagrams, tables and other data for the report covering the results of field work and office studies on salinity investigations in the Sacramento-San Joaquin Delta and upper bay region. Final revised data is under preparation for the determination of the final relations which will be established as between stream flow, tidal action and variation of salinity within the tidal basin, and finally, the relation as to the amount of stream flow required for control of salinity at various points in the tidal basin.

Work in the field has included the maintenance of between 30 and 40 regular salinity observation stations covering the entire tidal basin from San Pablo Bay upstream through the delta and in addition the maintenance of automatic tide gage stations throughout the tidal basin.

Field work in connection with spreading works and flood control channels is virtually completed at this

time on San Antonio, Cucamonga, Deer, Day, City and Mill creeks and also the small creeks immediately north of the city of San Bernardino. Office computations were begun about thirty days ago and it is expected to have all of this work completed by September 15th. When this is done a complete system of spreading works and flood control works for the entire Santa Ana River and tributaries above Lower Santa Ana Canyon in Riverside and San Bernardino counties will have been laid out as part of the Water Resources Investigation. No work is being done in Orange County as that work was the subject of inquiry by Orange County Flood Control District and is being reexamined by a board of consulting engineers at the present time.

MOJAVE RIVER INVESTIGATION

No field work was done during the month but work of laying out a map of the basin was continued in the Sacramento office. This is being done from photographs of an aerial survey which gives an immense amount of detail and the resulting map will be very comprehensive and complete.

The Arrowhead Lake Company which owns Arrowhead Lake, a resort in the San Bernardino Mountains on a tributary of the Mojave River, furnished a large amount of data on run-off of some 16 tributaries of the Mojave which were susceptible of being diverted into Arrowhead Lake and also a large amount of data on run-off in the Mojave Valley. These data were gathered for the purpose of a lawsuit which was held many years ago between the water users of the Mojave River and the Arrowhead Company. The Arrowhead Company built the dam which makes Arrowhead Lake and proposed to divert the water which could be impounded behind the dam to the coast side of the mountains but was enjoined. Since that time and up to 1922, the company continued to maintain a great many of the gaging stations and rainfall stations. These data when analyzed will be very valuable for purposes of the report and will be also valuable from the general standpoint in getting the rainfall run-off relation in southern California mountains—something which has been needed for many years. Up to this time the Arrowhead Company has never made these data available except in general form but now has turned over to this office all original data. The expense of analyzing these has proven unexpectedly high because of the large amount of data but it is expected that the office will be well repaid when the work is completed.

SOUTH COASTAL BASIN INVESTIGATION

This is the investigation for which an emergency appropriation of \$10,000 was made by the Department of Finance about July 1st. Some progress was made in this. Because of the peculiar situation in southern California it is not advisable to proceed with a great amount of field work until the territory has been thoroughly organized. As there are a large number of agencies gathering data throughout the entire field and which will continue to gather and make them available for use by the state, it was thought advisable to form a committee consisting of the chief engineers and technical heads of the various organizations doing such work for the purpose of securing their advice and correlating their work. A meeting was held on July 29th which all attended and it was agreed that the best way to start this and inform the public as to what is being done now would be for each to write a short article of between two and three thousand words describing the work under his supervision and the aim of the research work. This matter is to be published as a bulletin of the state and marks the first step in coordinating the various activities

of the basin. Those forming the committee may be divided into four groups: sewage research workers and chief engineers, flood control district chief engineers, governmental research bodies and University of California research bodies. At the present time eight men are on the committee and it will probably be advisable to add to this.

It has been also found desirable to organize the people of South Coastal Basin in various committees in order to provide a medium through which field data can be obtained more readily and through which can be disseminated any information gathered by the state. This work was taken up and some committees organized. The Los Angeles County Conservation Association expects to aid materially in this, particularly on the west coast, south coast and San Gabriel Valley. Field and office work in obtaining capacities of the 29 underground reservoirs in the area was started August 7th.

SANTA CLARA VALLEY AND NAPA COUNTY INVESTIGATIONS

Office work in connection with these two investigations is proceeding in anticipation of completion of a progress report before the close of the year.

MISCELLANEOUS ACTIVITIES

LOCATING STEAM GAGING STATIONS

Field trips were taken with representatives from the U. S. Engineer's office and the Water Resources Branch of the U. S. Geological Survey for the establishment of stream gaging stations (with automatic recorders) on the Sacramento River at Verona, Thomas Creek near Paskenta, Middle Fork of the Feather River at Bidwell Bar, South Fork of the Feather near Enterprise, North Fork of the Yuba River below Goodyear Bar, Middle Fork of the Yuba below Freeman's Crossing, North Fork of the American River at Rattlesnake Bridge, and West Branch of the Feather River at Nelson's Bar. These are reconnaissance trips in the program for the location of some 18 new gaging stations and the installation of recorders at 18 old stations throughout the Sacramento-San Joaquin drainage basin in accordance with a federal-state cooperative agreement.

SHORE PROTECTION

A member of the State Engineer's office has been appointed on a committee to serve with interested agencies in the matter of beach protection immediately west of Santa Monica and along the Malibu Range. Other members of the committee are the representatives of the county of Los Angeles, city of Santa Monica, beach frontage owners and Division of Highways, State of California.

MOTOR VEHICLE DIVISION REPORTS

(To Governor's Council August 28th)

FRANK G. SNOOK, Chief

REGISTRATION DATA

As of August 1, the Division had registered 1,997,161 automobiles, solid and pneumatic trucks, motorcycles, and solid and pneumatic trailers.

3019 automobile dealers have been registered, 72 motorcycle dealers and 46 trailer dealers.

During the first seven months, 323,095 transfers have been handled.

As of August 1, the Division has collected a total of \$8,998,317.64 in motor vehicle fees.

In the month of July, 12,920 nonresident permits were issued, making a total for the year of 47,845.

HIGHWAY PATROL

The California Highway Patrol has been busily engaged during the past few months in their various activities, and the patrolmen have assisted in handling congested traffic in several communities during conventions and meetings. During the American Legion Convention approximately 60 men were brought to Sacramento to work with the local police detail in handling the Legion Parade. Their general appearance was splendid and their support was certainly appreciated by the Sacramento Police Department and the American Legion Parade Committee.

The Highway Patrol school has been transferred from the State Fair ground and is now located at Mather Field. They have been assigned a large barrack for housing the men, a separate one for the kitchen, and mess hall, and one hangar has been allotted them for whatever use necessary. It is felt that this arrangement will be very beneficial to the Patrol. The fourth class is expected to be called soon after September 1.

HEADLIGHT ADJUSTMENT ACTIVITIES

The Bureau of Lights has inaugurated a program for testing headlight stations and adjusters, as well as enforcing the provisions against the motorist. As of August 1, the Division has authorized 1125 official headlight adjusting stations, with approximately 4500 adjusters. Arrangements have been made to inspect all stations regularly each four months.

From April to July an examination was given to 3000 adjusters and it was found that periodical examinations of the adjusters, as well as the stations, will prove of great benefit to the motoring public. In many cases we found that old adjusters had not acquainted themselves with changes in the law, which was of vital importance to them. On July 1, the men working on a night patrol were instructed to spend at least one hour each night with the testing screen in testing lights. In those counties having night patrols, the day squads assist in a night raid once a week. In those counties without night patrols, the day squads conduct two raids each week. Under this new program, the enforcement work increased 93 per cent in July and June. In June, there were 9469 motorists stopped for test and 3894 arrested. In July, 18,258 were stopped and 6457 arrested. For the first seven months of 1930, 71,752 vehicles have been stopped and tested, and 29,442 arrests have been made.

BRAKE TESTING PROGRAM; TRUCKS ARE EXAMINED

The Bureau of Brakes and Commercial Vehicles has launched an extensive campaign during the past four months. Instructions were issued the patrolmen to stop at least one truck or more each day for a complete check of possible violations and this activity has resulted in a general "brushing up" along lines of enforcement that have been ignored in the past. The truck owners generally have taken heed and are equipping their trucks with the necessary safety appliances, such as mirrors, mechanical signals, and clearance lights, all of which are necessary to the safe operation of a truck, and tend to protect the other motorists on the road. This enforcement has also increased the number of trucks weighed, arrested for overloads, and bad rubber.

As of August 1, this Bureau has received 1439 applications for brake-testing stations of which 997

have been issued permits. The remaining 375 are pending or incomplete. Many of these have been issued permits during August. There has been 2141 men authorized as official brake adjusters, as of August 1.

From April 1 to July 31, 4997 trucks have been stopped in the general checkup of which 1977 have been arrested for flagrant violations pertaining to destruction of roads. The remaining numbers have been warned and instructed in regard to proper equipment. This total does not include trucks stopped for defective lights or minor infractions.

Since April 1, the patrol has tested brakes on approximately 100,000 cars. It is gratifying the manner in which the public has taken to this work, and to date not a single complaint has been received regarding the manner in which these tests have been conducted.

**AUGUST REPORT OF
DIVISION OF ARCHITECTURE**
(To Governor's Council, August 28th)
GEORGE B. McDOUGALL, Chief

Work for which contracts were awarded during August.....	884,857
Projects on which bids are in but awards not yet made.....	1,327,994
Projects now out for bids.....	57,500

PROJECTS PLACED UNDER CONTRACT

List of projects for which contracts were awarded during the month of August, 1930.

Allen dam, Preston School of Industry; installing sprinkler system and piping system, Pacific Colony; sidewalks, Pacific Colony; general work, kitchen and commissary building, Whittier State School; plumbing, heating and ventilating work, kitchen and commissary building, Whittier State School; electrical work, kitchen and commissary building, Whittier State School; reconstructing retaining wall, San Francisco State Teachers College.

PROJECTS ON WHICH BIDS ARE PENDING

Bids were received on the following projects during the month of August but no award has as yet been made.

California State Building at Los Angeles: General work, \$639,000; plumbing work, \$47,673; heating work, \$33,383; ventilating work, \$16,850; electrical work, \$48,894; elevators, \$47,900; structural steel, \$128,775; granite work, \$199,385.

San Jose State Teachers College: Gymnasium Building: general work, \$114,836; electrical work, \$7,403; plumbing, heating and ventilating work, \$26,488.

San Diego State Teachers College: Service connections, \$17,407.

The car had come to a sudden standstill on a country road. The motorist descended, diagnosed the trouble, and then applied at a neighboring cottage for assistance.

"Pardon me," he said to the old woman who answered his knock, "do you by any chance possess any lubricating oil?"

The old woman shook her head.

"Any oil will do," said the motorist, hopefully; "castor oil, if you have any."

"I ain't got it," replied the old woman, "but I could fix you up with a dose of salts."

COUNTY REPORTS ON STATE HIGHWAY PROJECTS

(Continued from page 14.)

KERN COUNTY

The construction of the State Highway has been completed from Mojave north as far as Cinco, a distance of approximately 17 miles, where we encounter the George Herz Company contract. This contract is that portion of the State Highway under construction through the famous Red Rock Canyon, for a distance of some 15 miles, beyond which a completed State Highway is encountered for the following 20 miles, to the northerly boundary of Kern County, which means that when the George Herz Company completes its contract, which extends from Cinco to 7 miles north of Ricardo, Route 23 will have been paved throughout the length of Kern County.

A. Teichert and Son, Inc., started work August 7, 1930, which provided for 14 miles of oil-treated crushed rock surfacing on the Kern Canyon Highway, between Cottonwood Creek and Democrat Springs.

Shoulder oiling along Route 4 and 57 has been completed by C. M. Duntley, Contractor.

Completion of grading and surfacing between San Emidio Road and Route 4 is progressing steadily. V. R. Dennis Construction Company are the Contractors.

The Valley Paving and Construction Company are now starting macadam surfacing on their contract on Route 33, between the west line of Kern County and Junction Pumping Station, a distance of 15.5 miles. The contract will probably not be completed before February of next year, but when finished will eliminate the last unpaved portion of Route 33 in Kern County.

KINGS COUNTY

Shoulder oiling on Route 10 has been completed.

LAKE COUNTY

The approximate 5-mile section of armor coat surfacing between Upper Lake and Ukiah on the Blue Lakes section of Route 15 was completed by state forces in June. With work previously done, this puts this highway in an excellent condition for summer tourist travel from the Redwood Highway to the "Beautiful Lakes" region of California.

State forces have completed oil treating 10.6 miles of 20-foot wide crushed stone surfacing recently placed, by contract, on a new graded highway between Lucerne and Clear Lake Oaks.

Widening of the roadbed to 24 feet between Sweet Hollow Summit and Abbott Mine is complete.

From Abbott Mine to Bear Creek, Colusa County, the construction of a new 24-foot graded roadbed is one-third finished. Work is on schedule, and, at the present rate of progress will be completed by the early part of next year.

MADERA COUNTY

No major contract work in progress since completion of Califa line change. Shoulder oiling work has been completed.

MARIN COUNTY

The contract of Granfield, Farrar and Carlin for grading the 4.4-mile section of Route 1 on the Redwood Highway, between San Rafael and Alto was accepted June 16th by the Director.

Work was started on a surfacing contract for the same section by the same contractor on the tenth of June. This surfacing project calls for the placing of 6-inch crusher run base and 2-inch emulsified asphalt macadam 30 feet in width.

The reinforced concrete overhead structure at the Northwestern Pacific Railroad tracks at Greenbrae under contract with Siemer & Kendall and F. J. Main, has been completed.

The 150-foot steel truss span overhead crossing the Northwestern Pacific tracks at California Park on this section under contract with Frederickson and Watson Construction Company and Frederickson Bros. is complete with the exception of a little painting work yet to be done.

The bascule bridge under contract with the Butte Construction Company at Corte Madera Creek, Greenbrae has been completed with the exception of the bascule span, which is in process of erection. This structure, together with the surfacing contract of Granfield, Farrar and Carlin should be completed about the same time in August, allowing traffic to enjoy full use of the completed highway between Alto and San Rafael, with a shortened distance between these points of two and one-half miles.

The 1.8-mile section of the Redwood Highway north of San Rafael, also under contract to Granfield, Farrar and Carlin, was opened to traffic on July 26th; the overhead crossing to Forbes Station on this project, under contract to Rocca & Coletti, having been completed just previous to the finishing of the surfacing work. This project called for grading a 40-foot roadbed with 20-foot pavement for 1.3 miles and 50-foot roadbed with 20-foot pavement for 0.5 mile. Pavement over the compacted sections of roadbed being of concrete and over the newly graded portions of bituminous macadam. (See special article attached.)

Bids were taken on July 23d for constructing 1.3 miles of Route 53 between Alto and Tiburon. Graded roadbed will be from 36 to 56 feet in width with bituminous macadam surface 20 feet wide.

MARIN AND SONOMA COUNTIES

The contract of the Hanrahan Company for constructing the 11.9-mile section of Route 1, Redwood Highway, between Ignacio in Marin County and Petaluma in Sonoma County is nearing completion. The date set for the finishing of this work is the twenty-fifth of September. The contractor has consistently been up to or slightly ahead of his schedule in the progress of this work so it is expected that this will be fully completed by that time. All the grading work and the 9 miles of concrete pavement 20 feet in width called for under this contract has been completed and the bituminous macadam on the balance is well under way.

MENDOCINO COUNTY

The Basalt Rock Company, working with State Maintenance Forces completed the application of light fuel oil on 38 miles of State Highway, Route 48, McDonald-to-the-Sea, early in June. This highway carries heavy traffic on holidays and Sundays due to the beauties of the Navarro River, the Redwoods and the State Park, which offers delightful camping grounds with fishing and swimming and other outdoor sports.

The application of armor coat to the 8 miles of Redwood Highway between Ukiah and Forsythe Creek was completed by State Maintenance Forces about the middle of July.

The placing of asphaltic road oil under contract with A. Teichert & Son of Sacramento for 12 miles of Redwood Highway between Cloverdale and Hopland for armor coat work, being handled by State Maintenance Forces, is nearing completion. This should be fully completed late in July.

MONO COUNTY

The State Highway extending from Mattly Ranch to Leevining, a distance of approximately two miles, is nearing completion by C. Miles, Contractor, which should be completed about the middle of August.

Approximately 12 miles of State Highway construction is being advertised for early letting between Sonora Junction and four miles south of Coleville. This portion of the State Highway follows the Walker River, which when completed, will add materially to the accessibility of the country east of the high Sierras.

District contracts have recently been completed for the oiling and road-mixing of about 40 miles of highway, upon which there has been no permanent construction. The first of these pieces extends from the summit of Sherwin Hill to Devil's Punch Bowl, 24 miles, the second extending from Devil's Punch Bowl to Leevining, which also includes a short stretch through the town of Bridgeport.

MONTEREY COUNTY

The bridge across the Salinas River on the Coast Highway at San Ardo is nearing completion. Ben C. Gerwick is the contractor under the supervision of the Bridge Department. The approaches to the bridge have been completed by Frederickson and Watson and Fredrickson Brothers, Contractors.

A contract has been awarded to H. E. Doering for the construction of a new bridge across the Salinas River on the Coast Highway at Bradley. This work is under the supervision of the Bridge Department.

On the San Simeon-Carmel Highway a timber bridge is being constructed across Alder Creek. The Dean Construction Company, Contractor, has established a camp near the site. The Bridge Department has supervision of this work.

Two convict camps are maintained on the San Simeon-Carmel Highway. Camp 15 at Salmon Creek has a crew of 90 men and Camp 18 at Little Sur has a crew of 70 men. Camp 15 is to be moved to Willow Creek during August and will thereafter be known as Camp 22. Surveys and plans are in progress between the two camps.

Surveys are in progress for relocating San Simeon-Carmel Highway from Rocky Creek to Carmel through Carmel Highlands.

NEVADA COUNTY

Grading and oil-treated stone surfacing between Nevada City and one mile west of Washington Road on the Ukiah-Tahoe Highway will be completed within another month. C. R. Adams has the contract for the work.

PLACER AND NEVADA COUNTIES

Grading of the highway between Airport and Soda Springs, a part of the Dutch Flat-Donner Lake wagon road, by T. E. Connolly, who has the contract for the first 9½ miles, and by Callahan Construction Co., Inc., who has the contract for the last 10½ miles, is being completed as rapidly as possible to permit the placing of crushed stone surfacing which has been contracted for on the entire length of the new grade.

SAN BENITO COUNTY

Surveys are in progress for the elimination of San Juan Grade between Salinas and San Juan Bautista. A careful study is being made to locate the line in a position that will preserve the natural beauty of Pineate Rocks along the route. About 10 miles of the road has been located. This project is located in San Benito and Monterey counties.

SAN LUIS OBISPO COUNTY

Very satisfactory progress is being made on the reconstruction of the Coast Highway between the Santa Maria River and Los Berros Creek. This is a 20-foot Portland cement concrete pavement on a 36-foot roadbed. Placing the pavement is complete. J. F. Knapp is contractor.

Plans are complete for the construction of a 20-foot concrete pavement across the bed of the Santa Maria River. This is a dry weather detour around the through steel truss bridge, one span of which collapsed on June 10th, 1930. The wrecked span will be replaced by a temporary trestle to carry traffic during high water.

Bids were received on July 23d on the reconstruction of the Coast Highway between San Luis Obispo and Cuesta Grade, a distance of about three miles.

On the Cholame Lateral a seal coat is being applied to the bituminous macadam surface between Estrella River and the Sacramento Ranch, a distance of about six miles. The Granite Rock Company is the contractor.

SAN MATEO COUNTY

The contract with the H. W. Rohl Company for grading and surfacing that section of the Bayshore Highway between the southerly city limits of San Francisco and the northerly city limits of the city of South San Francisco has been practically completed. The operations of this Contractor, however, have been extended by special arrangement to some grading and temporary surfacing within the city of South San Francisco on the adjoining section of this major highway. A heavy fill is being made in the vicinity of Linden avenue in order to give this fill the benefits of the compaction due to the winter rains and the carrying of the heavy traffic using this road. This work should be completed early in August.

The next important link of the Bayshore Highway between South San Francisco and Broadway, Burlingame, 5.2 miles, was recently awarded to the Basich Bros. Construction Company of Los Angeles. Work is to be commenced on this section of a 40-foot width concrete pavement early in August and should be completed before the first of the year.

The 7.3-mile section of the Bayshore Highway under grading contract to Frederickson & Watson Construction Company and Frederickson Bros., from San Mateo to Redwood Slough, Redwood City, is about 60 per cent complete, the Contractor on this work being about one month ahead of schedule. Progress on the hydraulic fill portion of this roadway has been a slightly retarding factor, but as this work is practically completed and unless unforeseen circumstances arise, this work should also be completed by the first of the year.

The adjoining section of Bayshore Highway to the south for grading from Redwood Slough to Willow Road, a distance of 4.1 miles, will be advertised for bids at an early date.

SANTA CLARA COUNTY

Work on the contract of the Hanrahan Company for grading and paving between Palo Alto and San Antonio Road, a distance of 4.4 miles is about half completed. Approximately two miles of paving full 30-foot width has been placed from Matadero Creek to San Antonio Road. This job has been consistently behind schedule but should be completed before the first of the year.

The center link of the major section of the Peninsula Highway from Palo Alto to Santa Clara, being 4.9 miles in length, between San Antonio Road and Sunnyvale has also been awarded to the Hanrahan Company. Work was started on this section late in June. This project calls for resurfacing the existing 20-foot pavement with asphalt concrete and widening with a 10-foot strip of concrete to a 30-foot paved width throughout on 50-foot graded roadbed within a 100-foot right-of-way. With the completion of this unit in early 1931 the public will enjoy the use of the widened, resurfaced 14-mile section between Palo Alto and Santa Clara on an alignment vastly superior to that which previously existed.

A 10.7-mile section of Route 32, the Pacheco Pass Highway, between San Felipe and Bell Station for grading and surfacing with bituminous macadam on a vastly improved alignment will be advertised in the early fall of this year. This project is an important link in the major plan for a fast highway between the San Joaquin Valley and the bay districts of California.

SANTA CRUZ COUNTY

A contract for grading and surfacing 2.7 miles of State Highway, Route 42, between Saratoga Gap and Waterman Switchback was awarded to O. A. Lindberg of Stockton in July, work being started about the middle of this same month. This project, which calls for 243,000 cubic yards of roadway excavation will greatly improve the alignment and shorten the dis-

tance of this beautiful section of roadway leading through the Redwoods from its connection with the Skyline Boulevard at Saratoga Summit to the California Redwood Park at Big Basin. The contract time limit has been set at January 14, 1931, so that the public will be fully enjoying the benefits of the coming holiday season.

SONOMA COUNTY

One mile of State Highway, Route 51, between Schellville and Sonoma and 2.9 miles between Sonoma and Beltane has been surfaced with an armor coat, work being completed early in July. The furnishing and placing of asphaltic road oil was done under contract with A. Teichert & Son, of Sacramento. Furnishing and placing of all rock being done by State Maintenance Forces. This highway carries an extremely heavy summer traffic due to the many resorts and hot springs of Jack London's famous "Valley of the Moon."

TULARE COUNTY

No major projects in Tulare County since completion of the 20-foot A. C. widening and resurfacing between Pixley and Tipton, by the California Construction Company.

The paving, which involved 33,750 tons, was completed between April 7 and May 23. The contract was completed over two months in advance of the contract time.

Shoulder ciling on Routes 4 and 10 has been completed.

YOLO COUNTY

Construction is scheduled to soon begin for grading and paving with asphalt concrete 5.8 miles of State Highway between Williams and Maxwell. Bids for the work were received July 9.

YUBA COUNTY

A 20-foot Portland cement concrete pavement through Wheatland has been completed by C. W. Wood, the contractor. Minor drainage structures, and rock borders, are yet to be done before the contract is completed.

OPENING TO TRAFFIC A NEW SECTION OF THE REDWOOD HIGHWAY

An important link in the Redwood Highway of the State Highway System, just north of San Rafael, will be opened to traffic for the first time on Saturday morning, July 26th.

Although only 1.8 miles in length, this section of highway saves over one-third of a mile in distance over the previous location. It extends from the northerly city limits of San Rafael to a connection at Gallinas Creek with the recently constructed concrete pavement to Ignacio.

The present project is paved with Portland cement concrete and bituminous macadam 30 feet in width on a 50-foot wide graded roadbed for the first one-half mile north of San Rafael, the balance being paved 20 feet in width on a 40-foot graded roadbed.

An overhead crossing structure over the Northwestern Pacific Railroad tracks is provided at Forbes, approximately one and one-half miles north of San Rafael.

This project is a part of the nearly completed major plan of relocation and widening of the Redwood Highway of that section between Sausalito and Santa Rosa, which will net an ultimate saving in distance of approximately 5 miles between these cities. This project is an outstanding one, with long sweeping curves, easy grades, elimination of railroad grade crossings and a minimum sight distance of 600 feet, so essential to the safety of the traveling public.

LIST OF HIGHWAY BIDS AND AWARDS

For July and August

COLUSA COUNTY—Reinforced concrete girder bridge across Bear Creek about 23 miles west of Williams consisting of seven 31-foot spans on concrete bents. Dist. III, Rt. 15, Sec. D. Geo. J. Ulrich Const. Co., Modesto, \$23,792; Whipple Engineering Co., Monrovia, \$28,400. Contract awarded to R. B. McKenzie, Red Bluff, \$19,966.

COLUSA COUNTY—Three concrete girder bridges across Salt Creek about 1 mile north of Williams, across Freshwater Creek, 1½ miles north and across Green Valley Slough 4 miles north of Williams. Dist. III, Rt. 7, Sec. B. Geo. J. Ulrich Const. Co., Modesto, \$18,833; Whipple Engineering Co., Monrovia, \$26,532. Contract awarded to Fredrickson & Watson Const. Co., Oakland, \$18,127.

DEL NORTE COUNTY—Between southerly boundary and Wilson Creek, 12.7 miles to be surfaced with oil treated crushed gravel or stone. Dist. I, Rt. 1, Sec. A. Heafey Moore Co., Oakland, \$98,410; Hein Bros. Basalt Rock Co., Petaluma, \$100,523; M. J. Bevanda, Stockton, \$114,764; Englehart Paving & Const. Co., Eureka, \$93,497; J. P. Holland, Inc., San Francisco, \$100,694. Contract awarded to Hemstreet & Bell, Marysville, \$88,405.50.

EL DORADO COUNTY—Between Fresh Pond and ¼ of a mile east of Riverton on Placerville-Tahoe route, 5.2 miles bituminous surfacing treatment. Dist. III, Rt. 11, Secs. F-G. Finnell Co., Inc., Sacramento, \$8,720; A. Teichert & Son, Sacramento, \$8,226. Contract awarded to F. C. Adams, Angels Camp, \$5,994.

EL DORADO COUNTY—Reinforced concrete bridge across the So. Fork of the American River at Riverton. Dist. III, Rt. 11, Sec. F. Hector Williamson, Placerville, \$38,283; Geo. J. Ulrich Const. Co., Modesto, \$30,194; Finnell Co., Inc., Sacramento, \$34,480. Contract awarded to Ralph Hunter, Sacramento, \$25,106.99.

FRESNO COUNTY—Between Fowler switch canal and Fancher Creek, 7.6 miles to be graded and paved with asphalt concrete. Dist. VI, Rt. 4, Secs. A-B. A. Teichert & Son, Sacramento, \$296,668; Valley Paving Co., Visalia, \$280,594; Geo. R. Curtis Paving Co., Los Angeles, \$299,993; Steele Finley, Santa Ana, \$284,339. Contract awarded to Peninsula Paving Co., San Francisco, \$257,557.30.

HUMBOLDT COUNTY—Overhead crossing over Northwestern Pacific R. R., 2½ miles north of Batrice, Redwood Highway. Dist. I, Rt. 1, Sec. G. C. Emil Force, Piedmont, \$66,961; Henry Padgett, Fields Landing, \$55,985; Smith Bros., Eureka, \$55,813; Mercer-Fraser Co., Eureka, \$31,693. Contract awarded to Fred J. Maurer & Son, Eureka, \$50,320.30.

HUMBOLDT COUNTY—Between ½ mile south of Eureka and Eureka, 0.5 of a mile to be graded and paved with Portland cement. Dist. I, Rt. 1, Sec. G. Mercer-Fraser Co., Eureka, \$23,700; J. V. Galbraith, Petaluma, \$27,198. Contract awarded to Englehart Paving Co., Eureka, \$22,043.

KERN COUNTY—Between 1½ miles east of Cottonwood Creek and Democrat Springs, 13.9 miles of surfacing with oil treated gravel. Dist. VI, Rt. 57, Secs. F & G. J. P. Holland, Inc., San Francisco, \$214,814; G. W. Ellis, Los Angeles, \$144,240; Hartman Const. Co., Bakersfield, \$141,483. Contract awarded to A. Teichert & Son, Sacramento, \$141,335.

LOS ANGELES COUNTY—Between Castaic School and Santa Clara River, 4.3 miles to be widened with bituminous treated rock borders. Dist. VII, Rt. 4, Sec. A. Fred W. Nighbert, Bakersfield, \$21,105; Gibbons & Reed Co., Burbank, \$18,225. Contract awarded to Southwest Paving Co., Los Angeles, \$16,425.

LOS ANGELES COUNTY—Between 1.3 miles and 13.9 miles north of Castaic School 12.6 miles, portions, to be surfaced with bituminous macadam. Dist. VII, Rt. 4, Sec. B. Gibbons & Reed, Burbank, \$139,420; McCray Co., Los Angeles, \$140,590; V. R. Dennis Const. Co., San Diego, \$184,020; G. W. Ellis, Los Angeles, \$145,390; Fred W. Nighbert, \$149,988. Contract awarded to Southwest Paving Co., Los Angeles, \$134,330.

MONO COUNTY—Between Mono Lake and the foot of Conway Grade, 8.8 miles furnishing and applying heavy fuel oil as dust layer. Dist. IX, Rt. 23, Sec. H. G. M. Duntley, Los Angeles, \$5,301; Gilmore Oil Co., Los Angeles, \$5,621; California Road Oil

Service Co., Wilmington, \$5,317. Contract awarded to Leonard C. Pulley, Long Beach, \$4,981.50.

NEVADA COUNTY—Between Boca and Iceland, 7820 lineal feet laminated timber guard rail. Dist. III, Rt. 38, Secs. A-B. Arthur Mitchell, Sacramento, \$6,842; Ralph Hunter, Sacramento, \$7,116; L. C. Seidel, Oakland, \$7,585; I. Greitzen & Son, Sacramento, \$7,741. Contract awarded to Geo. E. McDonald, Marysville, \$5,434.90.

PLACER COUNTY—Through Newcastle, 531 feet of tunnel and 1 mile of roadway approaches to be graded and surfaced with crusher run base treatment. Dist. III, Rt. 17, Sec. B. T. E. Connolly, San Francisco, \$298,132; Ward Engineering Co., San Francisco, \$272,596; Fisher & Bonny, San Francisco, \$260,352; George Pollock Co., Sacramento, \$249,999; J. G. Donovan & Son, Los Angeles, \$308,121; W. S. Mead, Oakland, \$241,627. Contract awarded to T. M. Morgan Paving Co., Los Angeles, \$209,755.25.

PLACER AND NEVADA COUNTIES—Between Airport and Yuba Pass on the Victory Highway 7.2 miles to be surfaced with crusher run base and untreated crushed gravel or stone. Dist. III, Rt. 37, Secs. EA. A. Teichert & Son, Sacramento, \$129,363; T. E. Connolly, San Francisco, \$147,405; Hein Bros. Basalt Rock Co., Petaluma, \$151,915; Chas. Harlowe, Oakland, \$144,448. Contract awarded to Tieslau Brothers, Berkeley, \$122,807.60.

RIVERSIDE COUNTY—Between northerly boundary and 1 mile west of Beaumont, 6.2 miles of existing roadbed to be widened. Dist. VIII, Rt. 26, Sec. A. Match Bros., Elsinore, \$38,533; Gist & Bell, Arcadia, \$43,711; P. J. Ahmadzich, Los Angeles, \$50,779; Monarch & Breen, Inc., San Diego, \$39,924; Watson & Sutton, San Diego, \$37,982. Contract awarded to Steele Finley, Santa Ana, \$34,402.

SACRAMENTO COUNTY—Between Twin Cities School and 1/2 mile N.E. of Herald, 4.6 miles crushed gravel with bituminous surfacing 3 feet borders on each side of existing pavement. Dist. X, Rt. 24, Sec. B. J. R. Reeves, Sacramento, \$9,204; A. Teichert & Son, Sacramento, \$9,967; L. C. Seidel, Oakland, \$10,390; Pereira & Reed, Tracy, \$7,224.80.

SACRAMENTO COUNTY—Between 1 mile south of Arno and Cosumnes River, 2.6 miles to be graded and paved with Portland cement concrete. Dist. X, Rt. 4, Sec. A. C. W. Wood, Stockton, \$100,015; N. W. Ball, Porterville, \$96,464; Basich Bros., Const. Co., Los Angeles, \$103,303; T. M. Morgan Paving Co., Los Angeles, \$99,973; M. J. Bevanda, Stockton, \$129,602. Contract awarded to Fredrickson & Watson Const. Co., Oakland, \$89,029.30.

SAN BERNARDINO COUNTY—Between 6 miles east of Amboy and 1/2 miles east of Essex, 28.7 miles to be graded and surfaced with oil treated crushed gravel or stone. Dist. VIII, Rt. 58, Sec. K.L. New Mexico Const. Co., Albuquerque, N. M., \$579,519; T. G. Donovan & Son, Los Angeles, \$669,790. Contract awarded to George Herz & Co., San Bernardino, \$507,402.95.

SAN DIEGO COUNTY—Between La Posta and Tecate Divide, 8.4 miles of heavy fuel oiling. Dist. VII, Rt. 12, Sec. F. V. R. Dennis Const. Co., \$15,510; Calif. Road Oil Co., Wilmington, \$15,329; Gilmore Oil Co., Los Angeles, \$15,171. Contract awarded to Leonard C. Pulley, Long Beach, \$13,366.80.

SAN DIEGO COUNTY—Between Viegas Creek and Pine Valley about 11.2 miles to be paved with Portland cement concrete. Dist. VII, Rt. 12, Sec. D. Will F. Peck Co., Los Angeles, \$387,582; Watson & Sutton, San Diego, \$373,900; Basich Brothers, Los Angeles, \$338,703; Jahn & Bressi, Los Angeles, \$340,326; Griffith Company, Los Angeles, \$340,782; R. E. Hazard Const. Co., San Diego, \$363,325; Wells & Bressler, Santa Ana, \$369,282; E. Paul Ford, East San Diego, \$340,677. Contract awarded to Sander Pearson, Santa Monica, \$338,287.

SAN JOAQUIN COUNTY—Between Forest Lake and northerly boundary, 1.4 miles to be graded and paved with asphalt concrete. Dist. X, Rt. 4, Sec. D. Heafey-Moore Co., Oakland, \$59,581; Valley Paving Co., Visalia, \$62,162; Clark & Henry Const. Co., San Francisco, \$57,147.90.

SAN LUIS OBISPO COUNTY—Oiling shoulders, Atascadero to Paso Robles. Dist. V, Rt. 2, Sec. E. M. J. Bevanda, \$7,439; V. R. Dennis Const. Co., San Diego, \$8,287; Irvin L. Ryder, San Jose, \$8,293; Steele Finley, Santa Ana, \$9,275; A. Teichert & Son, Sacramento, \$11,259. Contract awarded to Hartman Const. Co., Bakersfield, \$6,277.40.

SAN MATEO COUNTY—Between South San Francisco and Burlingame, 5.2 miles to be graded and paved with Portland cement concrete. Dist. IV, Rt. 68, Sec. B. Hanrahan Company, San Francisco, \$411,254; J. F. Knapp, Oakland, \$435,169; Eaton & Smith, San

Francisco, \$443,487; C. W. Wood, Stockton, \$475,338; Frederickson & Watson, Oakland, \$427,854; Jahn & Bressi, Los Angeles, \$437,962; N. M. Ball, Porterville, \$423,507; T. M. Morgan Paving Co., Los Angeles, \$413,314. Contract awarded to Basich Brothers Const. Co., Los Angeles, \$402,982.

SANTA BARBARA COUNTY—Constructing oiled rock shoulders between El Capitan Creek and 1 mile south of Tajiguas Creek, about 4 miles. Dist. V, Rt. 2, Sec. F & G. M. J. Bevanda, \$13,434; E. T. Carter, Santa Barbara, \$15,007. Contract awarded to Santa Maria Const. Co., Santa Maria, \$11,344.65.

SANTA BARBARA AND SAN LUIS OBISPO COUNTIES—Between the 2d crossing of the Cuyama River and the easterly boundary of San Luis Obispo County, 37.9 miles to be graded and surfaced with oil treated crushed gravel or stone. Dist. V, Rt. 57, Secs. B, C, D. M. J. Bevanda, Stockton, \$233,740; A. Teichert & Son, Sacramento, \$367,818; J. F. Holland, San Diego, \$358,593; H. W. Rohl Co., Los Angeles, \$354,342; Chas. U. Heuser, Glendale, \$353,891; Allied Contractors, Inc., Omaha, Nebr., \$453,969; G. W. Ellis, Los Angeles, \$312,880; Peninsula Paving Co., San Francisco, \$491,338; Irwing L. Ryder, San Jose, \$315,557. Contract awarded to Lang Transportation Co., Los Angeles, \$261,612.90.

SISKIYOU COUNTY—Reinforced concrete bridge across Shasta River about 7 1/2 miles north of Yreka. Dist. II, Rt. 3, Sec. C. Pacific Bridge Co., Portland, Oregon, \$111,190; Ward Engineering Co., San Francisco, \$102,283; M. B. McGowan, San Francisco, \$103,977; Bodenhamer Const. Co., Sacramento, \$106,582. Contract awarded to Rocca & Calletti, San Rafael, \$97,884.

SISKIYOU COUNTY—Reinforced concrete girder bridge across Klamath River 10 miles north of Yreka. Dist. II, Rt. 3, Sec. C. Ward Engineering Co., San Francisco, \$80,593; Pacific Bridge Co., Portland, \$77,985. Contract awarded to Rocca & Calletti, San Rafael, \$77,779.

TRINITY COUNTY—Bridge across Trinity River near Douglas City. Dist. II, Rt. 20, Sec. EA. M. B. McGowan, San Francisco, \$86,754; Fred J. Maurer & Son, Eureka, \$85,010; Rocca & Calletti, San Rafael, \$101,425. Contract awarded to Whipple Engineering Co., Monrovia, \$83,000.

YOLO COUNTY—Between Bretona & Dunnigan, 5.8 miles to be graded and paved with asphalt concrete. Dist. III, Rt. 7, Sec. C. Clark & Henry Const. Co., San Francisco, \$147,265; A. Teichert & Son, Sacramento, \$133,214; Heafey-Moore Co., Oakland, \$148,375; Valley Paving & Const. Co., Visalia, \$144,271. Contract awarded to Jones & King, Hayward, \$129,575.75.

ARCHITECTURAL AWARDS

For July and August

STATE FAIR GROUNDS, Sacramento—Construction cattle corrals, awarded to Guth & Fox of Sacramento, \$4,866.

FOLSOM STATE PRISON—Contract for sheet metal work on the Cell Block, Administration and Hospital Building, awarded to Frank Z. Ahl, Sacramento, \$5,994.

CALIFORNIA SCHOOL FOR BLIND, Berkeley—Contract for general work, Annex to School Building and Annex to Residence for Boys, awarded to Sorensen & Haggmark, San Francisco, \$45,700.

Contract for plumbing and heating work on the above awarded to Geo. A. Schuster of Oakland, \$3,262. Contract for electric work on the above awarded to Geo. Woolf of Oakland, \$1,783.

PRESTON SCHOOL OF INDUSTRY, Ione—Contract for constructing Allen Dam awarded to Geo. French, Jr., of Stockton, \$14,300.

PACIFIC COLONY, Spadra—Contract for installing Sprinkler System and Piping System awarded to American Engineering Co. of Los Angeles, \$4,250.

Contract for sidewalks in above institution awarded to W. C. Cline of Upland, \$2,394.

WHITTIER STATE SCHOOL, Whittier—Contract for general work on Kitchen and Commissary Building, awarded to Adolf G. Schmid of Santa Ana, \$53,260.

Contract for plumbing, heating and ventilating on the above awarded to F. B. Jones of Pasadena, \$8,178.

Contract for electrical work on the above awarded to R. R. Jones Electric Co., So. Pasadena, \$1,525.

(Continued on next page.)

REPORT ON FIVE SEASONS' STUDY OF SACRAMENTO- SAN JOAQUIN AREA

(Continued from page 6.)

factor in alleviating the shortage of water for navigation and for the delta is the return water; the water which has been diverted in excess of the actual requirements of the crops, and which, returning to the river, is again available for use.

WATER SUPERVISOR FUNCTION

The ultimate relief for the conditions as described lies, of course, in conservation by storage and the successive development as demanded of projects such as are being worked out for the conservation and utilization of the water resources of the Sacramento-San Joaquin Valley in connection with the State-Wide Water Resources Investigation. Prior to these developments, however, there is much that can and must be done in the way of conservation of the existing water supply and determination of water rights, or at least determination of the extent of water uses under the various water rights claimed.

SCOPE OF WORK

The work of the Water Supervisor is broadly divided between two fields: (1) the engineering investigation, measurements, collection of records and data, etc., and (2) the conservation efforts, waste prevention, and such administration of the stream flow, as shall fall within the jurisdiction of the Division of Water Resources or be mutually agreed upon by the water users.

THE ENGINEERING INVESTIGATION

This has comprised measurements and records of all diversions of water from the Sacramento, Feather, Yuba, American and lower San Joaquin rivers within the valley floor and above the delta; stream flow measurements throughout the territory, largely in cooperation with the Water Resources Branch, U. S. Geological Survey; measurements and records of waters returned

ARCHITECTURAL AWARDS

(Continued from page 25.)

SAN FRANCISCO STATE TEACHERS COLLEGE—Contract for reconstructing retaining wall awarded to Mission Concrete Company of San Francisco for \$950.

SAN JOSE STATE TEACHERS COLLEGE—Contract for electrical work on Men's Gymnasium, awarded to Gullbert Bros. Electric Co., of San Jose, \$7,403.

Contract for plumbing, heating and ventilating work on the above awarded to Hateley & Hateley, Sacramento, \$26,488.

to the Sacramento and San Joaquin rivers; studies of the consumptive use of water on peat and sedimentary lands in the delta region in cooperation with the U. S. Department of Agriculture, Division of Agricultural Engineering, and the University of California Agricultural Experiment Station; an annual census of irrigated areas and crops under all diversions recorded throughout the delta; and investigation and study of the advance and retreat of salinity in the delta channels and upper bays.

CONSERVATION FEATURES

In connection with this phase of the Water Supervisor's work, the greater or lesser requirement for conservation measures in the seasons of 1924 to 1929, inclusive, is indicated in the following table which gives the run-off and minimum stream flow figures for those years.

Run-off and Minimum Flow 1924-1929

Year	Entire run-off to San Francisco Bay in per cent of normal		Minimum flow in second-foot	
	Sacramento River	San Joaquin River	at Sacramento	near Vernalis
1924	27		705	391
1925	78		2,760	660
1926	55		1,330	565
1927	108		3,420	1,290
1928	75		2,510	840
1929	41		2,300	565

The most critical season was that of 1924, the driest year of record, and it was the impending crisis, evident as early as January of that year, which set in motion the steps to effect the necessary conservation through the River Problems Conference, its permanent committee and the Water Supervisor. Through the medium of a water users agreement the signers pledged themselves to exercise their respective rights to use of water in such a manner as to accomplish the maximum degree of water conservation and to at all times refrain from acting in any way to hinder or prevent the Water Supervisor in the execution of his work. On all of the larger projects, conservation officers were appointed to work with the supervisor in the detection and prevention of waste and valuable assistance was rendered in this connection. A report of the work in 1924 and the success attendant upon the measures effected in that season has been published in detail in Bulletin No. 4 and needs no elaboration here. Suffice it to say that when the most critical time came about the middle of July, and it seemed that portions of the delta area faced disaster due to the salinity encroachment, the appeal to up-river water users for further diversion reductions and the effective operation of the waste prevention and curtailment program proved suc-

cessful, beyond all expectation, in meeting the situation.

In the 1925, 1927 and 1928 seasons the necessity for strenuous conservation measures was considerably lessened and the work in these seasons, therefore, was confined largely to the engineering investigation. There were, however, certain conservation efforts and actions demanded to greater or lesser extent in connection with such features as navigation and the gun clubs, in every year.

In 1926, as shown in the table, the seasonal run-off to San Francisco Bay was only 55 per cent of normal and although conditions were not as serious as in 1924 a considerable effort was required to effect the greatest water savings and relief for the up-river navigation and delta irrigation and salinity difficulties. The procedure was similar to that of 1924 and again the work was carried on almost entirely through appeals to the water users for waste prevention and reduction of diversions where possible. It is to be noted that in both 1924 and 1926 the conservation measures effected were purely voluntary and there was no enforcement of any particular schedule of water diversions agreed upon by the water users.

THE PERMANENT COMMITTEE

Emphasis should be given to the great value in the conservation work and in the entire investigation, of the Permanent Committee of the Sacramento-San Joaquin River Problems Conference. Since the first conference this committee has functioned actively and has proven to be a powerful influence in welding together the divergent interests involved, in bringing about constructive cooperative effort and in preventing litigation in the face of critical situations that have arisen. In this committee and the River Problems Conference there has been created a most fortunate medium for dealing with the problems involved; and at present, the committee, both as representing the water users and as consultant to the division, stands as the proper body to forward an administrative schedule for water distribution or any constructive plans of this nature for bettering the situation.

WATER USERS ORGANIZATIONS

In a territory as large as that of the Sacramento-San Joaquin, difficulty is encountered in making contact and dealing with such a large number of individual water users. However, in any program for conservation or in the development of a schedule for water allocation based upon mutual agreement, all should of course be included. The solution of

this difficulty would appear to be the formation of local water users associations, combining in each association those water users in a particular locality where there are local problems of common interest or where there is some particular situation which sets that locality apart from others. The Division of Water Resources, Water Supervisor and permanent committee, could then deal with these associations, thus reaching through them, with facility and dispatch, all of the water users. A step in this direction, resultant from the 1926 shortage for irrigation, was the action taken by districts and water companies on the Sacramento River in organizing the Knights Landing North Water Users Association. This association, as the name implies, includes all Sacramento River users north of Knights Landing. As stated in its constitution the purpose was to form an organization

* * * to the end that the low water flow of the river may be so used and conserved as to avoid friction and litigation among diverters * * * and to work with the United States War Department in charge of navigation on the Sacramento River, the State Division of Water Resources, and the permanent committee of the Sacramento-San Joaquin River Problems Conference in all questions of policy regarding the use of water from the river.

Such an organization can greatly facilitate conservation work and all dealings with the water users within it, and the possibility and advantage of either the formation of similar associations or the reorganization of existing ones so that the entire Sacramento-San Joaquin territory would be covered, is worthy of consideration.

THE THRICE BLEST HIGHWAY

By PLATT YOUNG, in *Georgia Highways Magazine*

I drove along the crowded thoroughfare
Where busy marts of men in commerce there
Rich wares displayed, to tempt the asking eye
And bulging purse of chanceful passerby.
Each hurried throng upon some mission went
With haply those on simple pleasure bent.

I drove along the quiet country lane
Past promised fields of cotton, corn and grain,
Where neighbors knew that tiring, dull remorse
Dissolved at once in friendly intercourse;
Where some were wont to borrow, some to lend—
A godly interchange from friend to friend.

When next I sought the mountain's rugged crest
I found a mountain lake within a nest
Of lofty pines, while smiling overhead
A crescent moon its silver radiance spread.
Three things were mine to bless this common sod:
Swift commerce, friendship, and a glimpse of God.

Passenger (in speeding bus passing town): "This is rather a nice looking town, wasn't it?"

MID-SUMMER TRAFFIC CENSUS ON STATE HIGHWAYS SHOWS NORMAL INCREASE

(Continued from page 1.)

Station location	July, 1929		July, 1930		July, 1929		July, 1930	
	Sun.	Mon.	Sun.	Mon.	Sun.	Mon.	Sun.	Mon.
E. on C.R.	366	228	427	270	14	15	13	14
N. on I.	2,250	1,643	1,906	1,529	14	15	13	14
Mountain House at Jct. Rt. 48 to Boonville,					14	15	13	14
S. on I.	2,339	1,486	2,018	1,676	14	15	13	14
W. on 48.	432	278	226	254	14	15	13	14
N. on I.	1,954	1,403	1,706	1,424	14	15	13	14
Hopland at Jct. Rt. 16 to Lakport.					14	15	13	14
S. on I.	2,247	1,874	2,159	1,792	14	15	13	14
E. on 15.	711	787	934	733	14	15	13	14
N. on I.	2,948	2,643	3,025	2,591	14	15	13	14
Ukiah S. of Cy. Lts. Jc. with Rt. 70					14	15	13	14
S. on I.	2,510	2,003	2,421	2,208	14	15	13	14
E. on 70.	1,061	1,000	921	1,079	14	15	13	14
N. on I.	3,180	2,747	3,054	3,108	14	15	13	14
Ukiah N. of Cy. Lts. at Jc. Rt. 15 to Colusa,					14	15	13	14
S. on I.	2,694	2,233	2,786	2,670	14	15	13	14
E. on 15.	1,019	749	1,113	862	14	15	13	14
N. on I.	2,925	1,923	3,014	3,050	14	15	13	14
Willits N. of Cy. at Jc. C.R. to Sherwood,					14	15	13	14
S. on I.	1,456	1,371	1,589	1,519	14	15	13	14
W. on C.R.	72	109	62	76	14	15	13	14
N. on I.	1,415	1,269	1,532	1,437	14	15	13	14
Mendocino-Hum. Co. Line.	1,261	1,164	1,245	1,174	14	15	13	14
Garderville at Jc. with C.R. to Briceband,					14	15	13	14
S. on I.	1,511	1,482	1,906	1,687	14	15	13	14
W. on C.R.	362	178	219	186	14	15	13	14
N. on I.	1,689	1,573	2,062	1,808	14	15	13	14
Dyersville at Jc. C.R. to South Fork,					14	15	13	14
S. on I.	2,336	1,629	2,262	1,691	14	15	13	14
E. on C.R.	429	453	255	395	14	15	13	14
N. on I.	2,254	1,533	2,161	1,529	14	15	13	14
W. on C.R.	261	187	189	122	14	15	13	14
Fernbridge Jc. C.R. to Ferndale,					14	15	13	14
S. on I.	3,564	2,318	3,746	2,402	14	15	13	14
W. on C.R.	1,045	822	1,135	863	14	15	13	14
N. on I.	3,498	2,359	3,666	2,491	14	15	13	14
Eureka S. of Cy. Lts.	4,605	3,832	4,809	3,653	14	15	13	14
Eureka N. at Eureka Slough Bridge	4,245	3,483	4,400	3,109	14	15	13	14
Arcata N. of Cy. at Jc. Rt. 29 to Weaverville,					14	15	13	14
S. on I.	1,274	874	4,659	2,385	14	15	13	14
E. on 29.	1,388	934	1,433	688	14	15	13	14
N. on I.	293	114	2,554	1,744	14	15	13	14
Arcata at Mad River Store,					14	15	13	14
E. on I.	430	361			14	15	13	14
S. on C.R.	2,792	1,832			14	15	13	14
N. on I.	2,788	1,839			14	15	13	14
Orick, Jc. Rt. 1 and C.R. to Weltchpac,					14	15	13	14
S. on I.	1,048	941	1,256	1,074	14	15	13	14
E. on C.R.	77	40	81	64	14	15	13	14
N. on I.	1,081	925	1,201	1,072	14	15	13	14
Klamath River Br.	1,150	1,048	1,351	1,113	14	15	13	14
Crescent Cy. S. E. of Cy. at Jc. Rd. to Crescent Cy.,					14	15	13	14
S. on I.	1,745	1,912	1,379	1,541	14	15	13	14
N. to C. C.	2,374	2,433	2,123	2,664	14	15	13	14
E. on I.	1,653	1,644	1,531	1,349	14	15	13	14
Hiochi Bridge,					14	15	13	14
E. on I.	662	599			14	15	13	14
W. on I.	354	415			14	15	13	14
C.R.	176	61			14	15	13	14
Curve Half Way up Oregon Mt., N. Bound.	429				14	15	13	14
1 3/4 Mi. S. Oregon Line S. Bound.	36	395			14	15	13	14
Oregon Line.	893	773	915	836	14	15	13	14

Route 2. San Francisco to San Diego (District IV)				
Colma Jct. with C.R. to So. S. F.,				
N. on 2.	28,533	14,653	26,442	11,314
E. on C.R.	4,535	2,237	3,822	1,252
S. on 2.	24,018	11,746	22,620	9,561
San Bruno Jc. with C.R. E. to So. S. F.,				
N. W. on 2.	22,843	11,468	22,728	9,132

Route 2. (District VII)				
Ventura W. of Cy. at Br.	10,466	6,051	10,365	6,607
Ventura E. of Cy. Lts.	11,657	7,552	10,383	8,711
E2 Rio Intersection,				
W. on 2.	10,361	7,144	9,351	5,847
N. to Saticoy.	2,657	1,520	1,545	1,453
S. to Oxnard.	9,225	5,267	7,879	5,239
E. on 2.	2,927	2,945	4,309	2,388
Ventura L. A. Co. Line.	7,436	2,613	4,907	1,979

Station location	July, 1929		July, 1930	
	Sun. 14	Mon. 15	Sun. 13	Mon. 14
West of Hollywood-Ventura Blvd. at Sepulveda St.	12,036	5,592	10,268	5,486
L. A. E. at Indiana St.	23,303	26,850	16,851	14,352
Whittier at Jc. with Hadley St.				
W. on 2	20,661	14,070	17,981	13,669
N. on Hadley	4,171	4,729	3,671	4,342
E. on 2	16,513	10,493	12,644	10,045
La Habra E. Cy. Lts. at Jc. Rds. to La Habra and Brea				
N. on 2	11,534	5,456	9,050	4,701
W. to La Habra	3,126	2,791	4,190	3,364
E. to Brea	3,075	2,670	3,052	2,128
S. on 2	11,423	5,836	10,314	5,469
Anaheim N. of Cy. Lts.	15,074	10,112	13,947	9,465
Santa Ana N. of Cy. at Jc. C.R. to Orange				
N. on 2	11,855	6,271	16,483	10,840
E. on C.R.	7,473	6,605	9,354	6,810
S. on 2	12,681	6,491	15,337	12,559
Tustin W. of Cy.	9,327	6,568	9,014	5,886
Serra at Jc. Ora-60-C with Ora-2-A.				
N. of Jc. on 2	6,582	3,588	5,187	2,550
S. E. of Jc. on 2	10,350	4,938	10,396	5,087
W. of Jc. on 60	7,188	3,318	7,577	3,902
Oceanside N. S. Cy. Lts.	9,666	5,828	9,297	5,449
Del Mar at S. F. R. R. Xing.	9,456	4,721	9,053	4,676

Route 3. Sacramento to Oregon Line. (District III)

Sacramento N. at Jc. Garden Highway, S. on 3	*6,501	5,663	13,195	13,185
On Garden Highway	2,210	1,424	1,942	1,832
N. on 3	*6,574	6,171	13,261	12,223
Ben Ali Xing Jc. C.R.				
S. on 3	*2,568	1,478	7,600	5,023
W. on C.R.	282	164	692	452
E. on C.R.	*2,887	1,896	1,098	988
N. on 3	*	*	7,427	4,672
Jc. C.R. to Polson N. of 12 Mi. House				
S. on 3	*2,466	1,425	6,335	4,032
E. on C.R.	445	197	724	397
N. on 3	*1,846	1,283	5,656	3,655
Roseville S. of Cy. at N. end of Guard Rail Lane	5,335	3,548	6,626	4,552
Roseville N. of Cy. Lts.	1,715	1,173	1,837	1,500
Marysville S. of Cy. at Jc. Hammon Road				
S. on 3	1,535	1,272	1,574	1,901
Hm. Rd.	627	613	705	977
N. on 3	2,473	2,229	2,691	3,594
W. on C.R.	466	460	860	1,030
Yuba City N. of Cy. at Jc. Rt. 15				
S. on 3	3,623	3,411	3,932	4,415
W. on 15	1,989	1,938	2,228	2,521
N. on 3	2,269	2,160	2,693	2,829
Richvale Wye Jc. Rt. 21 to Oroville				
S. on 3	1,290	977	1,339	1,147
W. on 3	1,157	856	1,201	1,057
E. on 21	449	358	486	459
Chico at Jc. C.R. E. to De Sable				
S. on 3	2,945	2,498	5,064	2,771
E. on C.R.	387	319	378	366
N. on 3	3,151	2,709	3,242	2,969
Chico N. of Cy. at Jc. C.R. East				
S. on 3	2,151	2,014	2,433	2,317
E. on C.R.	433	255	515	349
N. on 3	1,809	1,818	2,069	2,108

Route 3. (District II)

Butte-Tehama Co. Line	1,057	973	1,050	941
Red Bluff E. at Jc. with Rt. 29 to Susanville				
S. on 3	1,439	1,285	1,868	1,720
E. on 29	849	573	987	820
N. on 3	1,847	1,579	2,051	1,989
Cottonwood S. of town at Tehama-Shasta Co. Line	2,363	2,144	2,117	1,812
Redding S. of Cy. at Jc. with Rt. 28 to Alturas				
S. on 3	2,225	2,217	2,144	2,283
E. on 28	565	654	723	756
N. on 3	2,721	2,749	2,713	2,910
Redding 3 Mi. N. at Jc. with C.R. to Kennett				
S. on 3			1,549	1,250
W. on C.R.			38	43
N. on 3			1,542	1,257
Gibson	1,540	1,323	1,542	1,342
Dunsmuir 1.5 Mi. So.	2,302	1,903	2,137	1,785
Dunsmuir N. Cy. Lts. at Br.	4,593	3,276	4,060	3,526
Dunsmuir 4 Mi. N. at Mott	2,794	1,972	2,728	2,001
Gazelle 1 MI. North	1,713	1,538	1,447	1,242

Station location	July, 1929		July, 1930	
	Sun. 14	Mon. 15	Sun. 13	Mon. 14
Yreka S. Cy. Lts.	2,456	2,277	2,391	2,221
Cray N. of Cy. at Jc. with Rt. 46 via Klamath River				
S. on 3	1,590	1,320	1,636	1,382
W. on 46	348	292	356	276
N. on 3	1,543	1,296	1,587	1,341
Oregon Line	1,599	1,351	1,615	1,308

Route 4. Sacramento to Los Angeles. (District X)

Sacramento S. of Cy. Lts.	8,364	6,739	8,033	6,792
7 MI. House at intersection Florin Rd.				
N. on 4	5,026	3,313	4,806	3,843
E. on C.R.	821	680	948	872
W. on C.R.	197	96	92	105
S. on 4	4,655	2,992	4,568	3,418
Old Elk Grove at intersection Franklin-Elk Grove Rd.				
N. on 4	4,151	2,572	4,206	2,986
E. on C.R.	762	655	663	720
W. on C.R.	536	423	500	422
S. on 4	3,703	2,179	3,789	2,542
Twin Cities Jc. Rt. 34 to Jackson				
N. on 4	3,569	2,245	3,902	2,896
E. on 34	456	342	987	461
S. on 4	3,667	2,304	3,926	2,848
Jc. State Highway & C.R. to Stockton at Farrant Lake				
N. on 4			3,759	2,354
S. W. on C.R.			437	266
S. on 4			3,325	2,202
Lodi Jc. Rt. 24 to San Andreas				
N. on 4	3,875	3,068	3,573	3,213
E. on 24	1,725	1,285	1,542	1,536
S. on 4	5,002	3,667	4,080	3,737
Stockton N. of Cy. at Cherokee Sta.				
N. E. on 4	3,841	2,387		
S. W. on 4	3,568	2,278		
S. E. on C.R.	434	260		
Jc. of Mariposa Rd. S. of Stockton				
W. on 4	3,107	2,234	3,516	2,530
S. on 4	1,938	1,517	2,363	1,794
E. on Mpa. Rd.	1,132	721	1,178	746
French Camp Jc. Rt. 5 to Oakland				
N. on 4	3,447	2,488	4,036	2,931
S. W. on 5	2,707	1,942	3,291	2,456
S. E. on 4	812	626	726	536
Interx. McKinley Ave. and C.R. with old SJ-4-B				
E. on McKin.	2,522	1,991		
On old SJ-4-B	1,851	1,495		
W. on C.R.	1,067	870		
Interx. Rt. 4 and C.R. at Turner Sta.				
N. on 4			2,928	1,715
S. on 4			3,112	2,444
W. on C.R.			1,589	1,271
E. on C.R.			542	380
Ripon N. of City	5,562	4,621	5,704	4,065
Salida Jc. Rt. 13 to Sonora				
N. on 4	5,285	3,092	6,077	4,392
E. on 13	421	404	385	414
S. on 4	5,302	3,966	6,141	4,503
Modesto N. of Cy.	7,282	6,212	7,777	6,702
Modesto S. of Cy. Jc. Crows Landing Road				
N. on 4	9,576	2,535	10,543	9,367
S. on 4	7,178	6,211	9,598	8,544
W. on C.R.	2,558	2,367	3,086	2,933
Turlock N. of City	5,845	4,751	6,043	5,119
Turlock S. of City	4,579	3,791	5,298	4,379

Route 4. (District VI)

Stanislaus-Merced Co. Line	4,134	3,591	4,319	3,356
Atwater N. of City	4,173	3,251	4,539	3,853
Merced N. Cy. Lts. at Br.	5,782	4,956	6,428	5,475
Merced S. Cy. Lts. at Br.	4,219	4,095	4,382	3,816
Merced-Madera Co. Line	3,084	2,213	3,094	2,431
Califa Jc. Rt. 32 to Gilroy				
N. on 4	3,251	2,358	3,398	2,323
W. on 32	1,142	818	618	716
S. on 4	4,376	3,093	3,938	2,914
Madera N. of City	3,251	3,715	4,548	3,598
Madera-Fresno Co. Line	5,029	3,744	4,813	4,020
Muscatal	5,529	4,068	6,291	4,248
Fresno N. of Cy. N. of S. P. R. R. King at Jc. Olive Ave.				
N. on 4	7,410	5,221	7,467	5,746
E. on Olive	2,461	1,064	2,631	1,311
S. on 4	5,874	5,160	5,931	5,069
W. on Olive	1,400	854	2,790	1,151
Fresno S. of Cy. at Jc. Church Ave., On 4	9,493	8,507	9,938	9,285

*Construction under way Ben Ali to Sylvan Corner.

Station location		July, 1929		July, 1930		July, 1929		July, 1930		
		Sun. 14	Mon. 15	Sun. 13	Mon. 14	Sun. 14	Mon. 15	Sun. 13	Mon. 14	
Route 7. (District II)										
Red Bluff S. of town at Read Cr. Br.		1,929	1,709	1,714	1,578	Visalia Wye Jc. Rt. 4 W. to Goshen & S. to Bakersfield and Rt. 10 E. to Visalia.				
						W. on 4	2,912	2,607	2,310	2,604
						S. on C.R.	2,316	1,619	2,315	2,625
						E. on 10	4,545	3,874	4,785	4,435
Route 8. Ignacio to Cordelia via Napa. (District IV)										
Tetaluma C. Bridge		3,201	856	3,349	1,167	Visalia E. of Cy. at Exeter Jct.				
Schellville Jc. Rt. 51 to Santa Rosa,						W. on 10	2,327	2,008	2,411	2,231
S. on 8		2,077	1,315	3,777	1,248	S. to Exeter	1,224	1,175	1,206	1,172
N. on 51		3,236	1,012	2,455	845	E. on 10	1,590	1,082	1,578	1,469
N. E. on 8		1,774	558	1,923	758	Lemon Cove Jc. C.R. to Woodlake,				
Vineburg Jc. Rt. 8 with C.R. to Vineburg,						W. on 10	1,627	708	1,569	854
W. on 8				1,988	664	N. on C.R.	1,032	371	1,113	474
E. on 8				4,653	1,701	E. on 10	2,127	853	2,220	872
N. on C.R.				2,860	1,149	Three Rivers E. of town at Jc. C.R. northerly,				
Napa Junction Jc. C.R. to Vallejo,						W. on 10	1,398	574	1,413	621
N. on 8		7,049	3,029	8,590	3,695	N. on C.R.	182	82	298	96
S. on C.R.		6,989	3,007	10,436	5,161	E. on 10	3,151	575	1,389	626
E. on 8		*653	*382	6,158	3,784	Route 11. Sacramento to Nevada Line via Placerville. (District III)				
Route 8. (District X)										
New Jc. Routes 7 and 8 at Cordelia,						Sacramento E. of Cy. Lts.				
S. on 7		*3,434	*2,089	428	337	Perkins Jc. with C.R. to Plymouth,	5,026	2,885	5,079	3,111
W. on 8		*584	*877	5,069	3,974	W. on 11	2,444	1,464	5,105	3,065
E. on 7		*5,442	*2,377	5,285	3,355	S. E. on C.R.	1,392	857	1,495	1,122
Route 9. San Fernando to San Bernardino. (District VII)										
Tujunga west of Sunset Blvd.		5,436	3,214	5,329	3,566	E. on 11	2,058	1,247	3,981	1,063
La Crescenta W. of Penn Ave.		6,096	3,459	5,916	4,947	Folsom W. of Cy. Jc. Pratt Rd.,				
La Canada at School St.		6,033	3,585	5,425	4,728	W. on 11	1,907	977	2,676	1,525
Pasadena E. of Cy. Lts.		12,216	7,793	11,072	7,645	E. on C.R.	498	267	737	382
Azusa W. City Limits		10,708	5,784	11,494	6,981	E. on 11	1,792	868	2,003	1,242
Route 9. (District VIII)										
S. Bd.-L. A. Co. Line		Not taken acct. const.		8,124	3,259	Folsom E. of Town at High School,				
Upland E. of Cy. at Jc. C.R. to Upland,						N. on 11	997	406	1,406	762
W. on 9		Not taken acct. const.		5,501	2,457	E. on 11	741	386	1,850	966
S. W. on C.R.		Not taken acct. const.		1,863	1,890	W. on C.R.	227	110	555	235
E. on 9		Not taken acct. const.		7,408	3,967	El Dorado Jc. Rt. 65,				
Upland at Euclid Ave. Interx,						W. on 11	1,422	709	1,604	658
W. on 9		Not taken acct. const.		7,296	3,417	S. on 65	336	179	342	181
N. on Eu. Ave.		Not taken acct. const.		3,414	1,971	E. on 11	1,035	620	1,164	558
S. on Eu. Ave.		Not taken acct. const.		3,081	2,415	Placerville W. of City				
E. on 9		Not taken acct. const.		5,728	2,817	Placerville E. of City	2,823	1,433	2,432	1,687
S. Bd. W. of Cy.		Not taken acct. const.		7,358	5,587	Hdqs. Camp, 14 Mi. Post	2,435	1,365	2,495	1,423
Route 10. San Lucas to Sequoia National Park. (District V)										
San Lucas S. of City at Jc. Rt. 2		144	171	162	171	Between Riverton and Kyburz,				
Route 10. (District VI)										
Monterey-Fresno Co. Line		148	72	128	69	Alpine Jc.,				
Parkfield Jc.						W. on 11	637	359	547	296
W. on 10		239	112	242	117	S. on 23	117	93	100	82
S. on C.R.		137	46	94	29	E. on 11	625	366	573	300
E. on 10		212	149	292	122	Jc. Rt. 38 to Lake Tahoe,				
Coslinga S. of City		690	568	560	455	S. on 11	713	411	690	390
Oilfields at Oil King School,						N. on 38	497	298	687	412
W. on 10		1,167	1,260	357	366	E. on 11	153	147	624	381
N. on C.R.		236	280	188	212	Lakeside at State Line	749	597	937	628
E. on 10		925	982	320	391	Route 12. San Diego to El Centro. (District VII)				
Coalinga 3 Mi. E. at Jc. C.R. to Oilfields,						San Diego E. of Cy. Euclid Ave. at Cajon Ave.				
W. on 10		726	789	794	793	San Diego W. of Cy. Lts.	7,120	4,445	8,193	5,287
N. on C.R.		476	446	167	145	At Sweetwater Bridge	5,124	3,312	5,333	4,857
E. on 10		473	520	627	648	Jacumba at Jc. C.R. to El Campo,	2,053	1,362	1,949	902
Kings River Bridge		469	451	273	286	W. on 12	1,388	746	1,595	796
Lemoore Jc. C.R. to Lemoore,						S. on C.R.	533	268	701	191
N. on 10		607	597	549	477	E. on 12	1,844	940	2,103	967
E. on C.R.		590	560	447	445	Route 12. (District VIII)				
S. on 10		651	607	404	342	On Imp-12-B				
Hanford W. of Cy. Lts.		1,919	2,084	1,591	1,942	El Centro W. of Cy. at Jc. Rt. 26 to S. Bd.,				
Hanford E. of Cy. at Interx. Co. Bds. N. to Kingsburg & S. to Corcoran,						W. on 12	2,843	2,774	2,556	2,780
W. on 10		3,621	2,949	3,271	3,339	N. on 26	3,209	3,000	3,873	4,097
N. on C.R.		2,105	1,666	2,014	1,804	E. on Mulberry Lane	2,191	2,333	2,576	2,619
E. on 10		2,555	2,244	2,566	2,857	S. from Interx	4,040	4,117	4,768	4,598
S. on C.R.		1,807	1,512	2,010	1,847	Route 13. Salida to Rt. 23 at Junction. (District X)				
Goshen Jct. Jc. Rt. 4 N. to Fresno E. to Visalia & S. to Tulare,						Salida Jc. Rt. 4, E. of Jc.				
W. on 10		1,665	1,062	1,542	1,184	E. of Salida at McHenry's Jc. C.R. to Modesto,	421	404	385	414
N. on 4		3,340	2,685	3,320	2,925	W. on 13	580	459	590	563
S. on 4		3,243	2,478	3,038	2,544	S. on C.R.	2,117	1,572	2,446	1,895
E. on 4		2,087	1,563	1,956	1,807	E. on 13	2,168	1,581	2,443	1,797
						Oakdale W. of City				
						Oakdale E. of City				
						Mountain Pass J. Rt. 40 to Yosemite,				
						S. W. on 13	1,204	632	1,634	657
						S. E. on 40	819	226	347	182
						N. E. on 13	1,356	536	1,365	551
						Sonora S. of City				
						Sonora E. of City				
						E. end of Sullivan Cr. Br.,				
						E. on Br.	820	619	939	679
						N. E. on 13	1,086	473	1,428	624
						W. over Br.	1,884	1,071	2,223	1,269

*Construction under way from Junction to Greenwood Corner.

Station location	July, 1929		July, 1930		Station location	July, 1929		July, 1930	
	Sun. 14	Mon. 15	Sun. 13	Mon. 14		Sun. 14	Mon. 15	Sun. 13	Mon. 14
Jct. St. Highway & Rd. to Pine Cr.,					Grass Valley S. of City.....	1,282	631	1,290	688
E. on 13.....	660	347	409	309	Nevada City S. of City.....	1,909	3,399	1,720	1,487
W. on 13.....	540	273	638	329	Route 18. Merced to Rt. 40 near Sequoia. (District VI)				
S. E. on C.R.....	914	390	500	204	Merced 1.6 Mi. E. at Interx. C.R. & 21st St.,				
Jct. St. Highway & C.R. at Pooleys					W. on 18.....	2,598	2,368	2,364	2,061
W. on 13.....	1,612	578	1,283	511	E. on 18.....	2,651	2,448	2,798	2,727
E. on 13.....	1,961	672	1,443	952	N. on C.R.....	1,469	1,419	2,118	2,652
S. on C.R.....	434	171	269	123	Merced 12 Mi. E. at Interx C.R. to Le Grand,				
Route 13. (District IX)					W. on 18.....	1,845	1,296	1,770	1,145
Jc. Rt. 22.....	37	35	68	70	S. on C.R.....	107	69	96	58
Route 14. Albany to Martinez. (District IV)					E. on 18.....	1,877	1,284	1,789	1,181
Albany at Co. Line.....	26,028	15,892	26,762	15,416	Mormon Bar at Interx with C.R. to Mormon Bar,				
Jc. C.R. to Richmond,					S. on 18.....	2,239	1,455	2,026	1,762
S. on 14.....	25,429	14,098	25,952	16,168	E. on C.R.....	368	254	254	176
W. on C.R.....	8,031	5,378	8,479	5,776	N. on 18.....	2,026	1,328	1,986	1,294
N. on 14.....	16,934	8,848	28,132	16,439	Briarburg at Bear Cr. Br. on 18 El Portal, Jct. C.R. to El Portal,	1,648	1,031	1,608	964
Jc. Franklin Canyon Rd.,					W. on 18.....	1,859	1,211	1,826	1,053
S. on 14.....	11,276	5,192	12,953	6,261	R. on 18.....	1,819	1,257	1,743	1,666
E. on C.R.....	2,490	1,295	3,289	1,546	W. on C.R.....	381	587	411	209
N. on 14.....	5,156	4,273	10,446	5,979	Route 19. From Rt. 9 West of Claremont to Riverside (District VIII)				
Carquinez Straits Bridge.....	7,260	3,244	7,383	3,731	Bet. Pomona and Ontario at Chico Cross Roads (old road),				
Crockett 1 Mi. S. of City at Jc. C.R. to Crockett,					W. on 19.....	10,674	6,020	9,682	6,665
S. on 14.....	2,197	1,529	2,376	1,608	N. on C.R.....	98	147	327	323
W. on C.R.....	1,152	1,258	1,142	1,437	S. on C.R. to Chico.....	290	308	1,031	1,215
N. on 14.....	1,898	1,315	2,159	1,467	E. on 19.....	10,546	6,328	8,908	5,737
Martinez W. City Lts.....	1,127	542	1,416	863	Bet. Pomona & Ontario at Chico Cross Roads (new highway),				
Route 15. Rt. 1 near Calpeña to Rt. 37 near Cisco. (District IV)					N. on C.R.....			1,190	1,124
Ukiah N. at Jc. Rt. 1.....	1,619	719	1,112	862	S. on C.R.....			1,613	1,495
Upper Lake S. of Cy. Jc. C.R. to Lakeport,					E. on 19.....			5,053	2,368
W. on 15.....	1,198	1,184	1,021	974	W. on 19.....			3,473	2,692
S. on C.R.....	793	566	586	603	L. A. Co. Line E. Lts. Pomona (old rd.),	11,733	7,546	9,515	6,926
N. on 15.....	927	854	1,296	1,316	L. A. Co. Line E. Lts. Pomona (new rd.),	2,594	2,199	3,837	3,173
Upper Lake Jc. C.R. to Bartlett Spgs.,					East of Ontario E. Cy. Lts. at Jc. new S. Bd.-15-B with old road,				
W. on 15.....	494	369	335	158	N. W. on old 19.....	4,643	3,054	2,534	1,692
E. on C.R.....	59	24	36	29	W. on new 19.....	1,090	691	1,753	1,347
S. on 15.....	377	329	349	151	S. E. on 19 (old road).....			4,169	2,584
Route 15. (District III)					Ontario Cy. Lts. N. W. on 19. At S. Bd.-Riv. Co. Line.....	3,873	2,274	3,549	3,103
Hog Hollow Jc. Rts. 49 & 15,					Wineville E. of City.....	4,312	2,421	4,269	2,712
E. on 15.....	286	324	651	199	Riverside W. of Cy. Lts. near Santa Ana River Br.....	12,365	5,998	6,417	5,387
S. on 19.....	273	217	654	217	Route 20. Rt. 1 near Arcata to Redding via Weaverville. (District I)				
N. on 15.....	379	443	284	253	Arcata N. of Cy. at Jc. Rt. 1.....	1,388	934	1,438	688
Near Venada Jc. C.R. to Bartlett Spgs.,					Willow Creek Jc. C.R. to Hoopa,				
S. on 15.....	193	67	218	147	W. on 20.....	127	82	176	128
W. on C.R.....	72	66	85	50	N. on C.R.....	135	76	188	123
E. on 15.....	215	109	292	167	E. on 20.....	169	87	187	124
Williams W. of City.....	655	561	688	695	Humboldt-Trinity Co. Line.....	186	86	337	206
Williams E. of City.....	529	477	595	553	Route 20. (District II)				
Colusa E. of City.....	999	769	1,123	919	Big Bar vicinity.....	88	79	98	90
Sutter City,					Weaverville 3 Mi. south.....	184	207	296	185
W. on 15.....	895	624	1,021	813	Bet. Redding and Tower House	259	415	288	320
N. on C.R.....	399	217	865	317	Route 21. Rt. 3 Nr. Richvale to Quincy (District III)				
E. on C.R.....	366	499	364	497	Richvale Wye.....	449	338	486	459
S. on 15.....	1,045	860	1,139	1,075	Oroville W. of Cy. at Jc. Marysville Rd.,				
Marysville E. of City.....	1,031	656	1,262	814	N. on 21.....	1,790	1,722	1,124	1,225
Smartsville E. of City,					W. on 21.....	1,067	1,026	1,999	1,821
N. on 15.....	351	126	342	147	S. on C.R.....	827	508	963	712
W. on 15.....	282	120	248	152	Oroville E. of Cy., Ridge Road	1,519	1,142	1,966	1,508
W. on C.R.....	85	82	71	40	Miners Ranch, N. on 21.....	857	245	867	603
Grass Valley W. of City.....	727	416	775	328	S. on C.R.....	252	134	329	266
Nevada City E. of Cy.,					W. on 21.....	1,068	362	1,969	576
E. on 15.....	427	347	449	394	Bidwell Bar Br.....	599	223	623	278
Emigrant Gap, Jc. Rts. 37 & 18	78	70	90	32	Berry Creek.....	329	141	327	174
Route 16. Hopland to Lakeport (District IV)					Meadow Valley,				
Hopland at Jc. Rt. 1.....	711	787	954	793	W. on 21.....	147	158	164	147
Lakeport S. of town at Jc. C.R. to Kelseyville,					N. on C.R.....	100	114	125	121
N. E. on 16.....	1,498	1,206	1,418	1,341	E. on 21.....	179	141	173	158
S. on C.R.....	960	922	863	958	Quincy.....	552	366	143	326
W. on 16.....	478	344	555	387	Oroville E. of Cy., River Road			288	208
Route 17. Roseville to Nevada City (District III)					Route 22. San Juan Bautista to Rt. 32 via Hollister (District V)				
Roseville E. of City.....	3,661	2,103	4,339	2,672	San Juan Bautista S. of City at Jc. Rt. 2.....	3,091	1,780	3,381	2,113
Auburn W. of Cy. Jc. Ophir Road & Wise P. H.,									
E. on 17.....	1,955	1,808	1,396	1,313					
W. on 17.....	2,277	1,977	2,147	1,419					
N. on C.R.....	612	210	330	291					
Auburn S. of City at S.P. King Auburn N. of Cy.,	1,955	1,808							
S. on 17.....	637	375	764	476					
E. on C.R.....	54	67	147	194					
N. on 17.....	623	386	616	403					

Route 22. (District IV)

Station location	July, 1929		July, 1930	
	Sun.	Mon.	Sun.	Mon.
Hollister Jc., Jc. Rt. 32	1,065	699	1,121	735

Route 23. Saugus to Rt. 11 at Alpine Jc. (District VII)

Saugus Jc. with Rt. 4	3,806	2,403	3,298	1,828
Palmdale S. of Cy. Lts.	2,111	1,374	2,123	1,490
Lancaster Jc. with Rt. 59 to Neenach, S. on 23	1,013	1,542	1,023	1,715
W. on 59	606	584	758	830
N. on 23	1,361	932	1,334	1,106
L. A. Kern Co. Line	889	549	827	623

Route 23. (District IX)

Mojave Jc. Rtes. 53 and 25, S. on 23	821	559	864	566
E. on 53	131	90	146	114
N. on 23	624	911	892	648
Mojave Jc. C.R. to Bakersfield, S. on 23	778	619	814	611
N. W. on C.R.	393	292	293	226
N. on 23	478	323	524	391
Freeman 1 Mi. N. Jc. to Rt. 57, S. on 23	415	314	256	200
W. on 57	87	62	80	76
N. on 23	334	429	236	223
Kern-Inyo Co. Line	436	395	---	---
Olancho Jc. C.R. to Keeler, S. on 23	524	347	564	484
E. on C.R.	26	28	36	48
N. on 23	520	347	577	475
Lone Pine S. Cy. Lts. Jc. C.R. to Keeler, S. on 23	707	606	701	525
E. on C.R.	196	109	164	139
N. on 23	750	657	847	638
Big Pine Jc. Rt. 63 to Oasis, S. on 23	855	586	829	580
E. on 63	67	70	99	110
N. on 23	817	554	822	593
Bishop half Mi. N. at Jc. C.R. N. to Laws & Dirt Rd. Easterly, S. on 23	1,314	1,088	1,239	1,123
N. on C.R.	324	368	319	402
E. on C.R.	22	21	65	45
W. on 23	997	732	941	751
Mono-Inyo Co. Line	652	397	710	515
Farrington Ranch, N. on 23	---	---	326	288
S. on 23	---	---	251	200
Leevining Jc. Rtes. 40 & 23, On 40	208	197	281	269
On 23	379	387	378	368
Mono 23 L.	341	397	274	305
Bridgport at E. Cy. Lts.	327	365	354	359
On Mono 23-K	177	132	237	260
Sonora Jc., Jc. Rts. 13 & 23, S. on 23	174	190	113	122
W. on 13	87	35	68	70
N. on 23	170	210	110	151

Route 23. (District X)

S. of Markleeville Jc. Rt. 24, On 23	60	50	65	43
On 24	41	37	65	43
Jc. St. Hy. & C.R. at Woodfords, S. E. on 23	52	35	104	55
N. E. on C.R. to Minden	100	50	250	48
N. W. on 23	72	25	203	59
Picketts Jc., Jc. Rt. 34, E. on 23	36	63	208	92
W. on 34	90	26	184	79
N. W. on 23	78	38	183	90
Jc. Rt. 11	117	93	100	82

Route 24. Route 4 near Lodi to Route 23 near Silver Creek. (District X)

Lodi Jc. Rt. 4, Jc. Rt. 24 & C.R. to Ione, W. on 24	1,892	844	2,055	1,006
N. on C.R.	1,024	362	1,091	541
E. on 24	1,024	955	1,159	576
Det. San Andreas and Valley Spgs., Jc. Rt. 24 and C.R. to Vallicita, E. on 24	897	385	1,045	410
E. on C.R.	653	285	690	284
W. on 24	117	202	97	97
Jc. Rt. 24 & C.R. to Murphys, S. on 24	654	289	745	296
N. on C.R.	485	292	654	332
E. on 24	852	377	1,033	391

Route 25. Nevada City to Downville. (District III)

Station location	July, 1929		July, 1930	
	Sun.	Mon.	Sun.	Mon.
Nevada Cy. N. of Cy.	418	225	478	335
Comptonville N. of Cy.	293	151	278	228
Downville Jc. Rtes. 25 & 36, W. on 25	251	146	293	239
N. on 36	10	7	5	3
E. on 25	261	149	265	240

Route 26. San Bernardino to El Centro. (District VIII)

San Bdo. S. of Cy. at N. end of Santa Ana River Br., N. on 26	---	---	2,471	2,559
W. on C.R.	---	---	2,885	2,972
S. on 26	---	---	4,596	4,664
Det. S. Bdo. & Redlands at Jc. of Hunt's Lane, S. on C.R.	---	---	566	475
E. on 26	---	---	4,631	3,392
W. on 26	---	---	4,719	4,141
Jc. Road to Colton at Interx with Mt. View Ave. W. of Redlands, E. on 26	4,741	3,344	4,236	3,462
S. on C.R.	982	707	770	839
N. on C.R.	1,661	1,549	924	931
W. on 26	4,248	2,806	4,302	3,550
Colton Ave. at W. Cy. Lts. of Redlands Jc. C.R. to Yucudpa, N.W. on 26	2,773	2,115	2,701	2,505
E. on C.R.	588	535	562	613
S. E. on 26	2,224	1,634	2,170	1,896
At S.Bd. Riv. Co. Line	2,386	1,756	2,396	1,979
Beaumont Jc. Jack Rabbit Trail, N. W. on 26	2,226	1,390	1,942	1,601
W. on Jack Rabbit Trail	1,147	670	1,042	652
E. on 26	3,051	1,945	2,632	2,097
Banning W. of Cy. at Jc. C.R. to Palm Springs, E. on 26	2,637	1,913	2,956	2,257
S. E. to Palm Springs	1,115	925	1,318	1,148
W. on 26	243	184	258	189
One Mi. S. of Indio at Jc. of C.R. S. to Coachella, N. on 26	1,304	1,040	1,469	1,217
S. W. on 26	---	---	1,976	2,036
S. on C.R.	---	---	1,100	988
Coachella S. of Cy. at Jc. C.R. to Thermal & Mecca, N. on 26	1,088	1,059	1,382	1,353
E. on C.R.	538	547	272	244
W. on C.R.	185	182	223	232
S. on 26	777	701	1,242	1,092
At Riv. Imp. Co. Line	851	766	681	622
Westmoreland, 5 Mi. W. of Westmoreland, at R. R. Xing	1,586	1,777	830	862
Brawley at W. Cy. Lts. Jc. with Western Ave., W. on 26	2,356	2,596	2,311	2,505
N. on Cy. St.	130	118	241	243
E. on Cy. St.	2,339	2,569	2,261	2,412
S. on Cy. St.	187	141	441	436
Brawley Jc. S.W. of Cy., S. on 26	2,591	2,656	2,920	3,018
N. on Cy. St.	2,456	2,642	2,619	2,674
N. W. on C.R.	140	125	388	441
El Centro W. of Cy. Jc. Rt. 12	3,299	3,600	3,373	4,097

Route 27. El Centro to Yuma. (District VIII)

El Centro E. of Cy. at Jc. C.R. N. to Brawley and S. to Calexico, W. on 27	2,671	3,082	3,536	3,226
N. on C.R.	140	194	249	236
S. on C.R.	152	185	202	253
E. on 27	2,699	3,014	2,585	3,110
E. of Holyville	1,616	1,621	1,896	1,905
Sand Hills Maint. Sta.	604	451	585	488
Yuma at S.D.A. Plant Quarantine Station	2,461	1,765	2,293	1,887

Route 28. Redding to Nevada Line via Alturas. (District II)

Redding S. of Cy. at Jc. with Rt. 3	665	654	723	756
Montgomery Creek, 4 Mi. E. of Pittrille at Maint. Sta.	311	300	189	291
Canby, 5 Mi. N. Alturas at Jc. with Lakeview Rd., S. on 28	182	122	167	153
N. on C.R.	279	244	268	253
S. on 28	388	236	322	222
N. on C.R.	205	138	172	125
E. on 28	219	121	168	109
2 Mi. E. of Cedarville	121	88	141	51

Route 29. Red Bluff to Nevada Line Near Purdy's, (District II)					Route 34. Route 4 near Arno to Route 23 at Picketts Jc. (District X)				
Station location	July, 1929		July, 1930		Station location	July, 1929		July, 1930	
	Sun.	Mon.	Sun.	Mon.		Sun.	Mon.	Sun.	Mon.
Red Bluff E. at Je. Rt. 2.....	849	573	987	839	Twin Cities Jc. Rt. 4.....	456	343	387	461
Tch.-Flu. Co. Line.....	184	200	523	349	W. of Ione Jc. C.R. to Michigan Bar.....	179	92	106	71
2 Mi. W. of Westwood.....	1,372	729	947	638	N. on C.R.....	128	133	72	54
Susansville 1 Mi. W. of town.....	1,205	662	855	579	E. on 34.....	305	237	128	92
Susansville 1 Mi. E. of town.....	1,580	1,262	1,719	1,524	W. of Jackson Jc. Rt. 63 to Placerville.....	1,262	956	1,282	1,289
12 Mi. E. of Milford at Maint. Sta.....	209	191	283	229	N. on 65.....	375	815	876	963
5 Mi. S. of Constantia at Maint. Sta.....	440	308	289	242	W. on 34.....	503	351	392	426
Route 31. San Bernardino to Nevada Line near Jeas. (District VIII)					Route 35. Peanut to Kuntz. (District I)				
S. Bd. N. of Cy. at Jc. with Mt. Vernon and Highland Ave.....	2,968	2,922	3,728	2,532	At Peanut.....	72	48	---	---
S. on Mt. Vernon.....	3,554	1,823	3,989	2,619	Forest Glenn.....	---	---	44	38
E. on Highland.....	2,487	1,394	2,791	* 192	Route 37. Auburn to Truckee. (District III)				
W. on Highland.....	1,599	1,165	1,609	1,721	Auburn K. of City.....	2,147	1,345	2,737	1,750
N. W. on 31.....	2,961	1,158	2,276	1,928	Colfax E. of Cy. Jc. Grass Valley Rd.....	953	451	2,977	1,169
Jc. Route 31 with State St.....	719	285	820	355	N. on C.R.....	235	168	368	179
N. W. on 31.....	1,429	1,009	1,689	1,999	E. on 37.....	779	429	2,014	1,092
Verlomet Jc. Rt. 31 and Kendall Dr.....	2,757	1,796	2,679	1,594	Emigrant Gap Jc. Rtes. 15 & 37.....	1,300	799	1,635	916
N. on 31.....	2,216	1,142	2,124	1,134	W. on 15.....	78	79	90	32
S. on 31.....	992	724	898	516	E. on 37.....	1,282	784	1,662	925
S. on K. Drive.....	2,331	1,433	2,299	1,039	Deer Lake Camp, W. of Truckee W. of Cy. Jc. with Rt. 38 S. to Lake Tahoe.....	1,269	1,121	1,817	992
N. of Cajon Jc. C.R. to Swartout Valley.....	788	177	925	234	W. on 37.....	2,643	1,086	1,230	1,181
S. on 31.....	1,541	1,161	1,416	1,254	S. on 38.....	2,728	1,449	1,287	1,162
W. on C.R.....	1,885	1,455	1,461	1,251	E. on 37.....	2,634	1,355	1,589	1,218
Victorville S. Cy. Lts.....	901	811	926	766	Truckee E. of Cy. at Jc. with Rt. 38 to Nevada Line.....	2,650	1,408	1,365	967
Helendale.....	934	532	937	847	W. on 37.....	2,188	1,059	1,366	995
Yermo, E. of Cy. Lts.....	496	477	416	334	E. on 37.....	458	291	225	151
Baker.....	311	301	296	371	Route 38. Myers to Nevada Line via Truckee River. (District III)				
Nevada State Line.....	277	259	324	398	Myers Jc. Route 11.....	497	292	687	412
Route 32. Route 2 near Gilroy to Route 4 near Califa (District IV)					Route 39. Tahoe City to Nevada State Line. (District III)				
Hollister Jc. with Rt. 22.....	991	724	1,110	683	Tahoe City Jc. Rt. 28.....	719	396	1,353	1,044
W. on 32.....	1,065	699	1,121	735	State Line.....	719	316	857	490
S. on 22.....	1,639	1,291	1,913	1,223	Route 40. Route 13 near Montezuma to Route 23 near Mono Lake (District X)				
Pacheco Pass at Santa Clara-Merced Co. Line.....	1,783	1,042	1,901	1,139	Mt. Pass Jc. Rt. 13.....	819	220	347	182
Route 32. (District VI)					Route 41. General Grant Park to Kings R. Canyon. (District VI)				
Junction-Jc. C.R. to Gustine.....	1,782	1,699	1,344	1,878	W. of Hume.....	199	141	176	122
W. on 32.....	485	252	470	253	Route 42. Saratoga Gap to Redwood Park. (District IV)				
S. on 32.....	1,522	905	1,395	972	Waterman Switch.....	---	---	2,320	534
E. on 32.....	2,535	2,373	2,884	2,611	E. on 42.....	---	---	1,397	239
Los Banos, S.P. R.R. King near Maint. Yard.....	2,224	1,808	2,461	1,929	W. on 42.....	---	---	1,383	394
E. of Los Banos at Jc. (C.R. to Dos Palms).....	916	852	1,077	1,013	S. on C.R.....	---	---	---	---
W. on 32.....	2,145	1,536	2,460	1,713	* Count from 6 to 7 a.m. only. Road then closed for repairs.				
S. on 32.....	1,896	1,153	1,886	1,295					
N. on C.R.....	701	828	718	518					
E. on 32.....	1,387	778	1,347	816					
Califa Jc. Rt. 4.....	1,342	818	678	716					
Route 33. Paso Robles to Route 4 near Bakersfield. (District V)									
Paso Robles E. of Cy. Lts.....	1,184	1,332	1,337	1,386					
Paso Robles Quarter Mi. E. of Cy. Lts. on 33.....	1,017	944	1,640	997					
Route 33. (District VI)									
S. L. O.-Ker. Co. Line.....	483	269	432	246					
Blackwell's Cor. Jc. C.R. to Coalinga and S. to Taft.....	405	334	540	109					
W. on 33.....	162	303	115	127					
N. on C.R.....	189	257	171	127					
S. on C.R.....	406	379	583	297					
E. on 33.....	605	642	492	445					
Lost Hills Interx of Main St.....	31	34	13	16					
W. on 33.....	128	139	101	128					
N. on Main.....	605	603	492	458					
S. on Main.....	632	589	784	715					
E. on 33.....	767	778	847	897					
Wasco Jc. C.R. S. to Wasco near S.P. R.R. King.....	824	713	715	651					
W. on 33.....	692	524	274	438					
S. on C.R.....	---	---	---	---					
E. on 33.....	---	---	---	---					
Famosa Jc. Rt. 4.....	---	---	---	---					

Station location	July, 1929		July, 1930	
	Sun. 14	Mon. 15	Sun. 13	Mon. 14
Saratoga Gap at Redwood Park Gate	1,228	299	2,626	552

Route 43. San Bernardino to Big Bear Lake. (District VIII)

Station location	July, 1929 Sun. 14	July, 1929 Mon. 15	July, 1930 Sun. 13	July, 1930 Mon. 14
Foot of Waterman Grade	3,323	1,037	4,588	1,474
Waterman Canyon, Jc. old and new roads				
Old road			661	254
On new Rd. above Jc.			3,549	955
On new Rd. below Jc.			4,168	1,192
Squirrel Inn Jc. old and new roads				
W. on old road			529	190
E. on old road			3,574	983
S. on new road			3,616	968
Pinecrest Jc. C.R. to Lake Arrowhead				
S. W. on 43	3,175	725	3,433	987
N. E. on C.R.	3,033	667	3,456	981
N. W. on C.R.	216	82	253	129
E. on 43	216	73	56	65
Running Spgs. Park Jc. Cy. Creek Rd.				
W. on 43	630	138	611	153
S. on Cy. Cr. Rd.	933	359	1,315	358
E. on 43	1,488	477	1,897	477
W. end of Dr. over Big Bear Dam				
W. on 43	1,454	692	1,564	592
E. over Dam	1,458	610	1,510	528
N. E. on 43	784		895	291
1 Mi. from end of Rt. 43 Jc. C.R. to Pineknut				
W. on 43	296		382	165
S. on C.R.	147		693	265
E. on 43	325	212	630	330

Mill Creek Lower Control, S. Bd. Co.

Jc. Big Meadows				
S. to Redlands	409	141	428	157
E. to Big Meadows	229	53	276	91
N. to Big Bear Lake	207	106	199	87

Big Bear Lake Desert Route

Jc. E. of Baldwin Lake				
N. to Desert	141	61	183	53
W. to Big Bear Lake	121	51	136	48
S. on E. side of Baldwin Lake	24	16	54	7

Route 44. Boulder Creek to Redwood Park. (District IV)

Boulter Creek at Park Line	2,311	1,526	2,771	1,596
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Route 45. Willows to Rt. 3 N. of Biggs. (District III)

Willows E. of City	584	745	746	732
Butte Cy. W. of Cy.				
N. on 45	344	333	404	389
W. on C.R.	189	125	184	196
S. on C.R.	510	509	546	470
E. on 45	513	568	451	438
Butte Cy., 3 Mi. E. of Jc. Chico Rd.				
E. on 45	107	94	124	122
W. on 45	267	242	253	243
N. on C.R.	163	95	130	124
S. on C.R.	47	98	35	35
Cherokee Canal Jc. with C.R. to Richvale				
W. on 45	104	82	152	119
N. on C.R.	113	122	103	134
E. on 45	88	97	137	112

Route 46. Route 1 near Klamath River to Route 3 near Cray. (District I)

Welchpep Jc. Co. Rds.	54	51	73	41
Thompson Creek	45	55	83	78

(District II)

Cray N. of Cy. Jc. Rt. 2	348	203	356	276
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Route 47. Orland to Chico. (District III)

Orland E. of City	842	665	1,018	1,037
Gianelli Bridge on 47	947	529	918	682
Chico W. of City				
W. on 47	1,408	1,139	1,383	1,139
S. on C.R.	679	429	495	542
N. on C.R.	378	468	139	134
E. on 47	1,877	1,934	1,656	1,437

Route 48. Near McDonalds to mouth of Navarre River. (District IV)

Station location	July, 1929		July, 1930	
	Sun. 14	Mon. 15	Sun. 13	Mon. 14
McDonald Jc. Rt. 1	432	278	326	294
Boonville, on 48	649	446	511	355
Navarre, 2.3 ml. W. of town	514	295	419	392

Route 49. Calistoga to Lower Lake. (District IV)

N. of Calistoga at foot of grade	1,459	619	1,857	828
Middletown Jc. Cobb Mt. Rd.				
N. on 49	1,556	877	1,873	1,252
S. on 49	1,857	1,182	2,321	1,456
W. on C. M. Rd.	666	448	955	796
Lower Lake Jc. Kelseyville & Lower Lake Road				
S. on 49	884	431	996	495
E. on L. L. Rd.	1,332	774		
W. on N. Rd.	531	393	593	334
N. on 49			1,236	752

Route 51. Santa Rosa to Shellville. (District IV)

Santa Rosa E. of City	4,248	2,420	4,267	2,684
8 Mi. E. of Santa Rosa at Souma Cr. Br.	1,695	2,046	2,574	1,387
Shellville Jc. Rt. 8	3,286	1,012	2,455	845

Route 52. Alto to Tiburon. (District IV)

Belvedere Jc. Rt. 1	2,035	1,109	1,694	940
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Route 53. Fairfield to Lodi via Rio Vista. (District X)

Deviation at Overhead Xing	537	371	737	453
Rio Vista at Bridge				
N. on 53	1,475	1,096	2,253	1,725
W. on 53	2,206	1,374	1,677	1,353
S. on C.R.	1,453	913	1,431	1,044
Walnut Grove at Bridge				
W.	1,968	1,484	2,367	1,966
E. on 53	1,836	1,298	2,058	1,659
S. over bridge	547	423	691	495
East end of Isletop Dr.				
W. over Br.	2,218	1,760	2,740	1,972
N. on 53	366	333	519	457
S. on 53	2,447	1,992	3,155	2,345
Thornton Interx. C.R.				
E. on 53	1,265	911	1,791	1,438
W. on 53	1,051	749	1,295	1,093
N. on C.R.	545	402	672	611
Lodi N. of City	1,341	1,263	2,596	2,677

Route 54. Near Michigan Bar to Central House. (District X)

Central House Jc. Rt. 65 to Placerville & Jackson				
W. on 54	659	573	619	445
N. on 65	541	349	523	432
S. on 65	594	518	578	418

Route 55. San Francisco to Route 5 near Glenwood. (District IV)

Swimming Pool	17,308	5,275	18,963	5,568
Jc. with C.R. to Colma				
N. on 55	9,725	1,825	11,536	1,093
E. on C.R.	3,727	987	4,223	1,138
S. on 55	11,105	1,887	16,985	2,374
Jc. C. R. to Belmont at Dirt Dam				
N. on 55	5,795	834	7,119	1,171
S. E. to Belmont	2,709	456	3,076	662
S. on 55	5,669	898	7,048	1,468
Jc. Rt. 55 with C.R. W. to Half Moon Bay				
N. on 55	5,408	834	6,810	1,352
S. on 55	2,187	255	3,228	660
W. on C.R. to Half Moon Bay	3,895	611	3,267	779

Saratoga Gap, (District I)

N. on 55			1,870	385
S. on 55			18	6
E. on C.R.			1,029	232
W. on 42			2,636	552

(District II)

S. Cl.-S. Cr. Co. Line bet. Saratoga Gap and Route 5	32	9		
S. Cl.-S. Cr. Co. Line Jc. Rt. 5 & 55	166	39	51	52

Route 56. Carmel to Cambria. (District V)

S. of Carmel Interx. of Carmel Valley and Big Sur Rds.	1,972	1,164	2,096	1,197
San Simeon 1 mi. S.	296	163	452	232

Route 57. Santa Maria to Freeman via Bakersfield. (District V)

Santa Maria N. of Cy. at Jc. Rt. 2	244	168	327	149
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Station location	July, 1929		July, 1930	
	Sun. 14	Mon. 15	Sun. 15	Mon. 14
At Interx Rt. 57 & Suey Rd.,				
S. on C.R.	109	69	173	97
W. on 57			279	131
E. on 57	340	123	490	179
Cuyama Lateral between 2d Cuyama King and Kern Co. Line	412	177	293	178
Route 57. (District VI)				
S. L. O.-Ker. Co. Line	277	147	414	194
Mariposa W. of Cy.	503	338	606	593
Pentland at R. R. King	638	773	1,016	917
Bakersfield Jc. C.R. N. to Conner				
W. on 57	103	166	291	231
N. on C.R.	79	86	78	79
E. on 57	131	92	221	157
Jc. Rt. 4	147	97	225	189
Bakersfield Easterly Cy. Lts.	2,379	2,680	2,034	2,572
Bakersfield 10 Mi. E. at Jc. Co. Club Rd & Ker.-b7-E. on 57	1,005	471	1,392	354
Bodfish at Interx Rt. 57 with C.R. to Caliente				
E. on 57	279	147	313	139
S. on 57	233	138	287	124
S. on C.R.	63	37	44	38
Route 58. Mojave to Arizona Line near Topock via Barstow. (District IX)				
Mojave	131	90	146	114
Route 58. (District VIII)				
Kramer near Kern Co. Line	81	73	105	102
Barstow N. of Cy. at Jc. C.R.				
J. on 58	376	297		
W. on 58	225	172		
N. on C.R.	169	152		
Barstow Jc. Lts. 58 & 31 at Mojave River Br.				
S. on 58			1,047	924
N. on 58			497	474
N. E. on 31			699	471
Daggett Jc. Arrowhead Trail, Old Trails Highway				
N. on old 31	377	410	111	167
W. on 58	326	681	577	506
E. on 58	570	471	529	460
Vicinity Newberry Springs	535	495	481	293
Vicinity Amboy	373	376	405	377
Near Bannock Jc. C.R. to Searchlight				
W. on 58	204	283	326	297
N. on C.R.	23	19	30	34
E. on 58	303	299	360	394
Needles W. of Cy. Lts.	646	541	661	568
Needles 5.7 Mi. S. Jc. to Parker and Blythe				
N. on 58	440	435	374	245
S. W. on C.R.	11	26	88	48
S. on 58	429	414	263	149
Route 59. Lancaster to Baileys. (District VII)				
Lancaster Jc. Rt. 23	690	584	753	830
Bailey Ranch	89	84	251	94
Route 60. El Rio to San Juan Capistrano. (District VII)				
Santa Monica Interx Beverly & L. A.-60-B, Santa Ynez Canyon				
W. on 60	28,635	11,109	22,233	16,376
On Bev. Blvd.	16,411	3,317	13,800	4,966
E. on 60	53,303	22,402	48,011	29,211
Lomita on Redondo-Wilmington Rd., on 60, E. of Walnut	13,034	5,151	12,492	9,078
Seal Beach at L. A.-Orange Co. Line	24,333	10,394	23,866	12,003
Newport N. of Cy.	16,740	6,040	16,661	7,137
Newport at Interx Newport-Tustin Road				
N. on C.R.	16,645	7,251	17,001	9,128
E. on 60	15,710	6,120	16,258	7,102
W. on 60	11,085	4,054	13,620	4,909
S. on C.R.	14,104	6,094	14,110	7,203
At Santa Monica Canyon and L. A.-60-B, on Santa Monica Canyon Road	25,577	9,876	21,971	13,365
At Topanga Canyon & L. A.-60-B on 60	25,152	12,038	32,380	14,582
At Oxnard S. of Cy. Lts. on Ven-60-A	9,821	3,758	6,361	4,134

Station location	July, 1929		July, 1930	
	Sun. 14	Mon. 15	Sun. 13	Mon. 14
Route 61. La Canada to Mt. Wilson Rd. via Arroyo Seco. (District VII)				
Pasadena at N. Cy. Lts.	2,557	602	3,266	863
Route 63. Big Pine to Oasis. (District IX)				
Big Pine Jc. Rt. 23	67	70	99	110
Route 64. Mecca to Blythe. (District VIII)				
Desert Center	84	81	76	46
Blythe S. D. A. Quarantine Sta.	88	68	111	57
Route 65. Auburn to Sonora. (District III)				
Auburn at Wire Bridge American River				
N. on 65	262	116	316	229
E. on C.R.	189	66	115	160
S. on 65	344	118	292	233
Placerville N. of Cy. Jc. Georgetown Road				
N. on 65	226	177	304	190
N. on C.R.	161	117	108	85
S. on 65	292	192	418	246
El Dorado S. of City			342	181
Route 65. (District X)				
Central House Jc. Rt. 54 to Michigan Bar				
N. on 65	541	349	523	432
W. on 54	650	273	610	445
S. on 65	594	318	578	418
N. of Jackson Jc. Rt. 34				
N. on 65	875	815	876	903
E. on 34	1,263	956	1,232	1,289
S. on 34	593	351	592	436
S. of San Andreas at Sheep Camp W. of Sonora, Jc. C.R. to Jamestown				
N. W. on 65	343	376	223	219
S. W. on C.R.	368	194	145	143
S. E. on 65	155	348	251	219
Route 66. Manteca to Rt. 5 nr. Mossdale School. (District X)				
Mossdale Jc. Rt. 5	3,611	2,128	3,934	2,412
Route 67. Pajaro River to Rt. 2 nr. San Benito R. Dr. (District V)				
San Juan Bautista N. of Cy. at Jc. Route 2	3,697	1,533	3,861	1,623
Route 68. San Francisco to San Jose. (District IV)				
San Bruno Jc. with Rt. 2 to San Francisco	2,185	1,912	2,395	2,325
N. Cy. Lts. So. S. F.	7,380	5,360	16,774	11,254
So. San Francisco at underpass	19,434	4,840	17,313	9,109
Burlingame, Jc. 68 with Broadway, Burlingame				
N. on 68	10,268	4,776	15,915	8,723
S. on 68	9,261	3,613	13,941	6,298
W. on Bdwg.	2,596	2,060	3,715	3,669
Route 69. San Quentin Road. (District IV)				
San Quentin Hill	4,904	2,333	4,873	2,618
Route 70. Ukiah to Men. State Hospital. (District IV)				
Ukiah Jc. Route 1	1,661	1,098	921	1,079
Route 71. Crescent City to Oregon Line. (District I)				
Crescent City N. of Iowa at Mainl. Yard	1,053	1,037	923	974
At Oregon Line	462	499	447	387

ARIZONA—The Arizona Good Roads Association has approved a proposed amendment to the state constitution to provide a means of road financing and has urged that immediate steps be taken to put it before the voters of Arizona in the November general election.

An expert has figured it out that the electrical energy developed by five million persons, all talking at once, would keep just one incandescent light going. That helps to understand how little illumination comes from most conversations.—Manchester Union.

STATE OF CALIFORNIA
Department of Public Works

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Port of San Jose—Not appointed

Port of San Diego—Edgar A. Luce

STATE HIGHWAYS IN CALIFORNIA SHOWING THE PRIMARY AND SECONDARY ROAD SYSTEMS AND THE DIVISION OF THE STATE UNDER THE BREED BILL.



CALIFORNIA STATE PRINTING OFFICE
SACRAMENTO, 1930