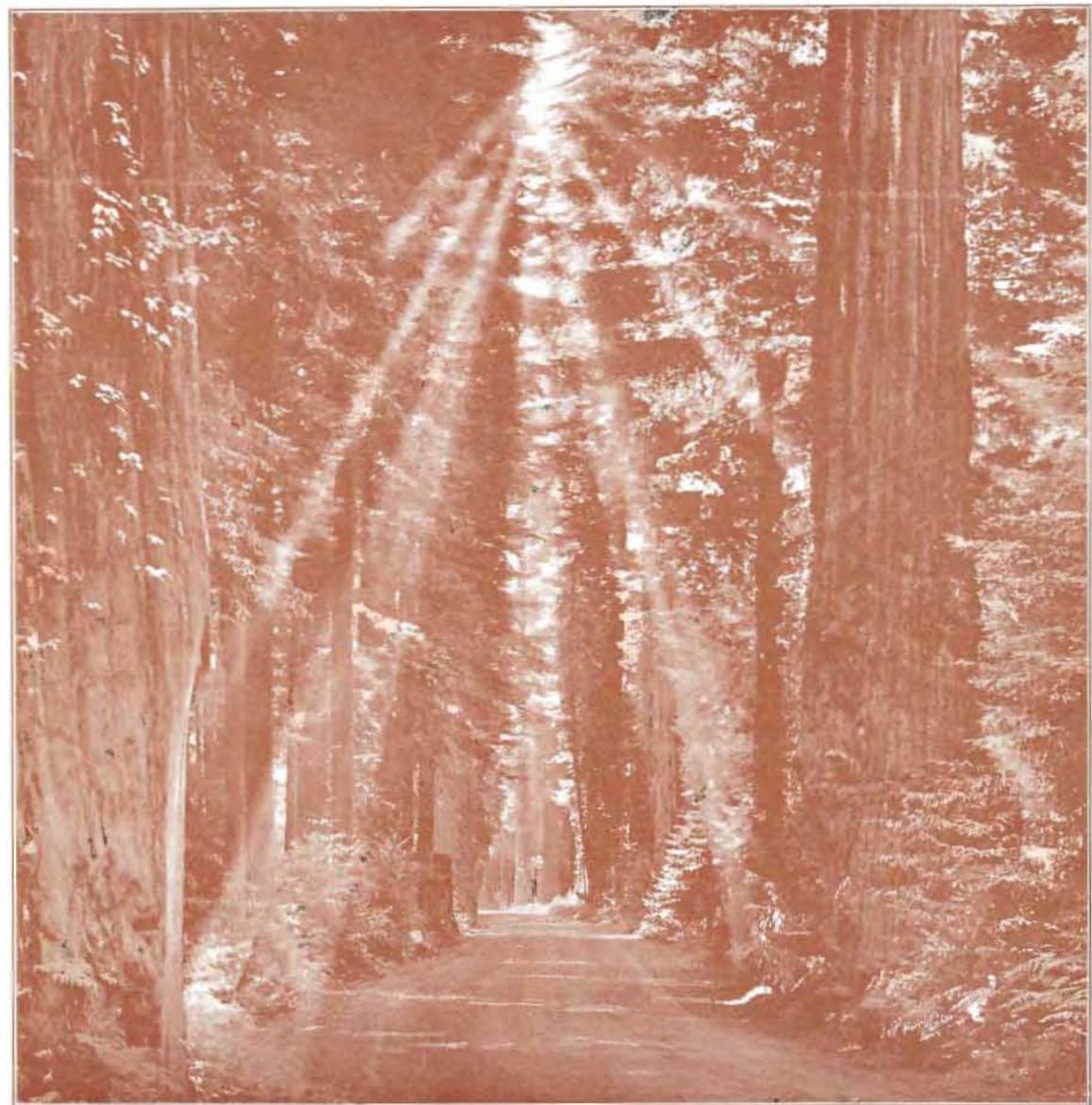


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California Highways and Public Works



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Feather Falls near Oroville,
Butte County.

Table of Contents

	PAGE
Front Cover Picture—A View of the Redwoods—Photo by Moulin of San Francisco.	
California's Next Big Job is Parking Our State Highways— <i>By Fred S. Moody, Member of California Highway Commission</i>	1
The Bayshore Highway	4
Effect of Distance on Automobile Operating Costs— <i>By</i> <i>N. D. Douglas, Assistant Engineer</i>	5
Preserving Roadside Trees	7
Supplementary Budget is Adopted	8
Development of the Right of Way— <i>By H. D. Jerrett, Right of Way Agent</i>	9
The Serra Grade Separation— <i>By L. M. Ranson, Assistant District Engineer</i>	11
Contribution to Joint Highway District	12
Pioneer Trail Now State Highway— <i>By Eleanor Lee Reading</i>	13
"Grumbler" Praises Effort of State Highway Workers	14
Seven Years of Highway Landscaping	15
Association Labors to Keep the State Highway Beautiful ..	15
Value of Traffic Lanes is Shown	17
Highway Program During Biennium	18
Budget Requests	18
Maintenance on Redwood Highway is Commended	18
Cause of Highway Accidents Analyzed	19
Progress of Grade Separations	19
Flood Inundates Imperial Highway	20
Historic "Test" Highway To Go	20
Progress Reports from the Counties	24
Record of Bids and Awards	28
State Highway Map	30

California's Next Big Job Is Parking Our State Highways

By FRED S. MOODY, Member, California Highway Commission.

CALIFORNIA'S foremost appeal to visitors, as well as her own citizens, lies in the state's variety of scenic beauty and in the abundant opportunities found here for the enjoyment of outdoor life. Her reputation as an outdoor state is based on her foam-fringed stretches of ocean beach, her towering forests of redwood and other majestic trees, her wooded lakeshores, and her thousand-and-one features of charm and interest. Nowhere in the world can such variety of landscape be enjoyed within such a comparatively brief radius as in California.

This is why the name "California" has come to mean an alluring outdoor playground for millions in America. It is why many observers have declared that no industry, not even agriculture, has the permanent possibilities for the future in California as has the tourist industry.

And it is largely because of our highway system that this is so. A splendid network of highways traversing every section of the state and costing millions of dollars has made California a motorist's paradise. While the excellence of construction in these roads, the ease of travel they afford, is a source of gratification, nevertheless, at least half the value of such a highway system lies in the fact that it makes accessible the diversified charm of the state. To attain their highest use the roads must lead through scenes to charm the eye and to spots of recreational interest and surpassing beauty. The value of any system of highways is two-fold: the first, or economic, facilitating the movement of commercial traffic from one point to another, and the second, the recreational use. Some of our highways are largely recreational. Perhaps 50% would not be too high a proportion

to allot to the recreational functions of the entire system. These highways, in order to fulfill their highest destiny, must therefore lead to and through the innumerable points of attraction which make this state foremost as an unexcelled all-year playground.

Before the advent of good roads, many of the attractions that the state has, while of surpassing interest and value, were little known or enjoyed beyond their own localities. But all this now is changed. The motorist, whether he be tourist or permanent resident, is not content until he has explored forests, deserts, mountain passes that only a few years ago were considered inaccessible. And hand in hand with this greater mobility of the vacationist and traveller has come increasing evidence that easily traveled highways, while they make the beauty spots of the state available, at the same time facilitate their destruction and their loss to the general public.

Thus it is that the cry has gone up that unless something is done soon, many of our greatest attractions will disappear; that California's finest ocean beaches are being fenced off and lost to the public; that our redwoods, oldest of living things, are being cut; that many other scenic areas and historic landmarks will soon be gone unless the state acts now to save them. Where commercial exploitation, facilitated by good roads, does not aid this process, private appropriation to the exclusion of the public is hastening the day when California can no longer be considered the playground of America.

If, we are told, California fails to save her finest scenic, recreational, historic and scientific areas, she will have lost her greatest asset. These attractions are the basis of our



A scene on the Navarro River, Mendocino County.

tourist business which now brings California over \$150,000,000 in revenue each year. California's rapid growth in population—close to a quarter of a million people annually—is said to be exhausting the present opportunities for outdoor life. What is the value, we are asked, of spending millions on a highway system which is 50% recreational if the roads lead us through fields of blackened stumps which were once mighty forests, and along a shoreline fenced off from the public with signs everywhere: "Private Property—Keep Out!"

To remedy this situation, California at the last legislature adopted a real park policy. A central State Park Commission was created under the Department of Natural Resources.



The Narrows, Painted Canyon, near Mecca, Riverside County.

Five prominent citizens from different parts of the state were called to serve without salary on this commission. And a state park survey was authorized.

Thus the state is doing now something that should have been done long ago. The first real inventory of California's scenic and recreational resources is now being made in the survey being directed by Frederick Law Olmsted, nationally known park expert and landscape architect, under the auspices of the State Park Commission. This survey is for the purpose of taking stock of California's attractions with a view to determining the



Windblown cypress and surf at Point Lobos, Monterey County.

finest in each section of the state which should ultimately be reserved as parks or monuments. To date, approximately 300 proposed parks and monuments have been suggested, including the very best things which California has to offer to the world. The survey, when completed, will list these areas in the order of their importance and uniqueness and the urgency of their preservation. Preservation societies and local committees have suggested beach and ocean shore parks, forest parks containing unique and rare species of trees, desert parks with strange and beautiful formations and rare flora, mountains, lakes, waterfalls, historic landmarks, objects of scientific interest, petrified forests, geysers and Indian pictographs.

This survey shows the great and varied opportunities for preservation in California. It shows that every part of California contains objects of beauty and interest which will be lost to the public unless action is taken very soon to set them aside under the custody of the state. It is fortunate that a capable State Park Commission has been appointed to administer all parks and that the survey is going on under expert direction of one of America's foremost park authorities, for this work has started none too soon.

And, as a necessary step in the process of preserving the finest of these areas, most of which are either directly on our highways, or



The old bastion, Fort Ross, Sonoma County.

easily accessible therefrom, the 1927 legislature unanimously passed the State Park Bonds Act which goes before the voters for ratification on November 6th.

This measure, known as Amendment No. 4, provides for the ultimate issuance of \$6,000,000 in state park bonds but with the important provision that each dollar of state money spent for parks must be matched with another dollar from private gift or local sources. Governor C. C. Young, a staunch advocate of the state park program, has pointed out, not only the urgency of this bond issue, but also the respects in which it



A view at Palisades, Santa Monica, which illustrates why California must save its beaches.

differs from other bond issues. Speaking recently before the National Conference on State Parks in San Francisco, he said:

“Aside from such bond issues as those for veterans’ welfare, where only the credit of the state is loaned and the money received from the veterans ultimately retires the bonds, bond issues in the past have been mainly for state buildings or for state roads. When bond interest is taken into account, I believe that this is an expensive method of construction. Our state building program can be most economically carried out through regular biennial appropriations. Our state highways can most satisfactorily be built through some “pay as you go” system such as the gas tax.

“The proposed park bond issues, however, presents an entirely different situation. Our



Rubicon Point at Lake Tahoe.

California beaches, which once could have been bought cheaply and dedicated to the enjoyment of the public, are now with few exceptions held at so high a price as to be out of reach. Just so will it be with our forests, the remaining beaches, and other beauty spots suitable for state parks, unless these are purchased in the very near future.

“Accordingly, economy requires that our state park system be secured, now, before the private demand for such locations has too greatly increased their price. And, since the cost of any adequate park system would be clearly too great to be met by a legislative appropriation, the only means of making such purchase now, while prices are still within reason, must be by a bond issue.

“Moreover, when state buildings or state roads are constructed through a bond issue, the buildings begin to become obsolete, or the roads begin to wear out, before the public



In the Calaveras Big Trees. The first grove of Sequoia Gigantea was discovered in 1852. At one time it was one of the traveled routes into California.



Palm Canyon, San Jacinto Mountains.

finishes paying out money to redeem the bonds. In the case of parks, however, if the purchases are made wisely, by the time the last of the bonds mature, the state has an investment worth many times its original cost.

"Finally, this proposed bond issue is different from any other I have ever known, in that one dollar is made to do the work of two. There are many wealthy friends of the park movement, both in this and in other states, who would like to help preserve as parks some of California's natural beauties, provided the state will also show its interest by joining with them in making such preservation possible.

"This park bond issue has accordingly been so devised that not a dollar of state money shall be expended until it is matched by another dollar of private beneficence or from local sources. In other words, the first \$100,000 of bonds will be sold only when there is another \$100,000 of private or subscribed money waiting in the treasury, thus permitting the purchase of \$200,000 worth of park lands.

"In this way, the \$6,000,000 park bond issue will secure for our state a \$12,000,000 park system, covering every portion of the state. With this set-up, and with the high character of the Park Board which will oversee the expenditure of this money, it is little wonder that the plan is being universally endorsed as a wonderful opportunity to create for California a permanent unified park system second to none in the Union."

Tandem maintenance is believed by the New Mexico highway officials to have proved its superiority over ordinary methods in maintaining gravel and earth roads. It has been adopted exclusively in the Torrance County Training School District and it will probably be adopted throughout the state because of the good road surfaces obtained, its economy in manpower, and the elimination of the ridges of loose material on the roadway.

Bayshore Highway, Huge Road Project, Is Now Under Way

THE CONTRACT for the grading and surfacing of the Bayshore highway for 3.5 miles between San Francisco and South San Francisco was awarded to H. W. Rohl Co. of Los Angeles. This work is mostly over new line and grades, utilizing the old road for short distances near each end, and gives excellent alignment and grades over two prominent points of land, Visitacion and Sierra points. There were 19 bidders on this contract and the low bid of \$661,000 was within \$1,000 of the engineer's estimate for the work.

Entailing, as this contract does, the excavation of 805,000 cubic yards of material, much of which is rock, the construction of a concrete railroad underpass, a 20-foot arch 120 feet long, and a massive rubble masonry retaining wall 315 feet long with a maximum height of 28½ feet; also the placing of rock pavement, consisting of a 40-foot by 4-inch base with a 4-inch oil-treated surface course, this is indeed a gigantic project.

The contractor has made a start on the work, having installed two shovels with 14 trucks and several tractors with graders and bulldozer. In the time that he has worked, he has already made a sizable cut in the Visitacion Point hill. The fill looms up giving a fair idea of the ultimate improvement when the heavy cut at Sierra Point is made and the entire fill across the Guadalupe Canal completed.

As the material to be excavated can be handled in wet weather, the grading will carry through the rainy months and spring should see this job in good shape for completion early in the year.

C. W. Wood, contractor on the section of the Bayshore Highway between Broadway Station and San Mateo, has completed the major portion of his contract. The clearing, grading, pipes and concrete structures are complete; much of the rock base and top have been laid and oiling is to be started about the middle of September.

A couple of months more will see the opening of this section, giving a clear road from South San Francisco to San Mateo. This will be fully appreciated by the traveling public as is evidenced by the traffic count taken in July, which shows an average of 8000 vehicles per day using the section to the north recently completed by Granfield, Farrar and Carlin.

Effect of Road Distance on Automobile Operating Costs

CAR OPERATING COSTS AFFECTED BY DISTANCE SELDOM EXCEED THREE CENTS A MILE

By N. D. DOUGLAS, Assistant Engineer, Division of Highways, Sacramento, California.

THE HIGHWAY engineer often finds it necessary to consider the value of distance when comparing alternative road locations. A certain initial additional expense to reduce distance is usually justified. Roughly speaking this is the capitalized value of the saving effected by the distance reduction. This saving consists of two parts: (1) the possible saving of roadway expense, and (2) the saving in the cost of operation of traffic.

Cost Estimates—It is believed that most engineers make only rough estimates, based on arbitrary assumptions, of the effect of distance on operating costs and that they are inclined to overestimate its unit value. In engineering reports the usual claim is that highway distance reduction will save from six cents to 12 cents per car-mile, and this saving is balanced against other cost items to determine the feasibility of a project.

In Bulletin 69, "Highway Transportation Costs," Engineering Experiment Station, Iowa State College, it is shown plainly that vehicle operating costs should be divided into mileage costs and time costs; the former are due directly to mileage, and the latter are independent of mileage and due to time of service only. Based on a large number of experiments, observations and collected data, the same bulletin suggests that the average costs of operating trucks and passenger automobiles are as given in the accompanying table.

Obviously license, garage, insurance and interest charges are time costs independent of mileage. Our investigation, then, should consider only the items of gasoline, lubrication, tires, maintenance and depreciation. Passenger cars will be considered first.

Gasoline—It is assumed that the figures in the table represent the over-all cost of average operation, including stopping and starting, idling, warming up, operating in city traffic and over various types of roads, choking, etc. It is estimated that fully 10 per cent of the

gasoline used by the average car is wasted by these operations. Highway distance will not affect this waste, but will affect gas consumption only on the open road.

For example, a Ford touring car in good condition will deliver 18 to 20 miles per gallon of gas in city operation and about 27 miles per gallon on long runs at about 30 miles per hour through average country. If 20 per cent of the car mileage were in city traffic, the gas consumption would be 10 per cent greater than it would be if the total mileage were on the open road.

A modern car of the \$1,000 to \$1,800 class will make 14 to 16 miles per gallon of gas under ordinary conditions on a concrete road of moderate grades. At 22 cents per gallon, the gasoline cost would be about 1.38 cents to 1.46 cents per mile.

The lighter cars average 20 to 30 miles per gallon of gas, which costs 0.73 cent to 1.10 cents per mile. A survey by National Automobile Chamber of Commerce covering 17,000,000 cars owned in the United States in 1926 indicates that about 64 per cent of them were cars whose list price was \$800 or under. The proportion of heavy cars above the \$1,800 class is very small. An average open road gasoline cost for all cars based on a conservative average of the foregoing figures would be about 1.28 cents per car-mile.

Lubrication—Oil consumption also should be considered only for open road operation. The average modern car in fair condition uses 4 to 6 qts. of oil in the crankcase, plus an additional quart about every 200 miles, or, say, 8 qts. per 800 miles if changed every 800 miles. California prices range from \$0.30 to \$1.40 per gallon for various oils. A conservative average for the individual consumer would be about \$1.10 per gallon, or 0.28 cent per car-mile.

Most new cars will use only the amount required to refill the crankcase every 800 or 1000 miles, or barely three-fourths of the amount allowed above. For future estimates, 0.21 cent per car-mile is considered a suf-

The above article appeared in the August number of *Engineering News-Record*.

ficient allowance for lubrication under ordinary conditions. The item of greasing is too small to be considered.

Tires—The usual assumption that tire costs vary directly with mileage is an error. Wear resulting from rim cutting, under-pressure, punctures, wheels out of alignment, running off pavement shoulders, bruises, skidding, exposure, etc., can not be laid to highway distance.

In Engineering Bulletins 16 and 17, "The Relation of Road Surface to Automobile Tire Wear," published by the State College of Washington, experiments are described that indicate that tires will last about 40,000 miles on pavement. Mileages of 20,000 or more are not unusual. The writer has averaged better than 15,000 miles on a combination of all kinds of roads, some very rough, and driving a car only about 7000 miles a year.

A set of four good high-pressure tires and tubes for a Ford car costs about \$48. A set of the best balloons for a Buick Master Six costs about \$160. A high average between these extremes would be \$100, which, with a life of 20,000 miles, would indicate a tire cost of 0.50 cent per car-mile. This mileage is obtained, or exceeded, by taxicab companies, buses, etc., operating on pavement.

Maintenance—The maintenance cost is the most variable item. It includes repairs due to rusting, accidents, faulty lubrication, excessive speed, painting, brake band renewals, etc., and therefore does not vary directly with highway mileage and is increased considerably by operation in city traffic. In the absence of more adequate data, the item of 1.24 cents per car-mile shown in the table can be assumed correct although it probably is high.

Depreciation—The item of depreciation is mainly a time item. The resale value of a car is determined usually by its model and age. Obsolescence is a very important factor. A four-year-old car driven 20,000 miles is worth no more on the market than a four-year-old car of the same type driven 50,000 miles.

Considering the small ratio that the usual distance saving would bear to the total car mileage, it would seem that the item of depreciation should not be considered ordinarily in figuring the value of distance.

Time—Another item often used in arguments for road improvements is "time" saved or lost by distance. The general belief that time is always worth money is a popular fallacy, because the average passenger car driver is not producing in the economic sense, and

AVERAGE COSTS OF OPERATING MOTOR VEHICLES

TRUCKS		
Item		Cents per ton-mile
Driver.....	Time	2.25
License.....		0.10
Garage.....		0.25
Interest.....		0.30
Insurance.....		0.31
Supervision.....		0.52
		3.81
Gasoline.....	Mileage	1.00
Oil.....		0.12
Tires.....		0.71
Maintenance.....		0.99
Depreciation.....		1.10
Total.....		7.74

AVERAGE COSTS OF OPERATING MOTOR VEHICLES

PASSENGER CARS		
Item		Cents per vehicle-mile
Interest.....	Time	1.24
Insurance.....		0.31
Garage.....		0.83
License.....		0.59
		2.97
Gasoline.....	Mileage	1.61
Oil.....		0.31
Tires.....		0.95
Maintenance.....		1.34
Depreciation.....		3.16
Total.....		10.27

would not produce more or less if he reached his destination a few minutes earlier or later. Usually, at best, it would be a matter of only slight convenience. Suburban and commuting traffic is an exception to this general premise.

In the case of alternative routes involving long distances of several miles, or more, the value of time saving should be considered as far as concerns business traffic, but care should be used to hold the consideration within the limits of fact, avoiding extra expense for some imaginary benefit.

From the preceding count the distance cost items of the average passenger car can be tabulated as follows:

Item	Cents per mile
Gasoline.....	1.23
Lubrication.....	0.21
Tires.....	0.50
Maintenance.....	1.24
Total.....	3.23

These figures are based on fairly high prices and ordinary operation, and are more conservative than the claims of manufacturers. The writer's experience has been that his own costs have run lower. Increasing automobile efficiencies will tend to reduce the items, or at least to offset any price rises.

Considering the average trunk highway, it is believed that, in general, expenditures for highway distance reduction may be premature or may represent economic waste if based on

Preserving the Roadside Trees

TO PRESERVE beautiful shade trees along the state highway, by caring for those which now grace the road sides, is one of the duties impressed upon state highway employees.

A fine big sycamore tree, standing along the highway near Capistrano in Orange County, and much used by motorists who enjoyed its shade, was recently the subject of major tree surgery. The big tree had developed a large hole in its trunk which weakened it to such an extent that it was feared a strong wind would blow it down. Maintenance Foreman Hugh Henry removed the dead wood from the hollow trunk and constructed a filling of concrete, weighing about two tons, which has added greatly to its strength. The surface of concrete was roughened and marked to resemble the bark of the tree, and when a



The right of way was shifted to save this tree.



Saved by tree surgery.

little stain is applied to the concrete, it will take a close inspection to detect the concrete substitute.

On the new Foothill boulevard in Los Angeles County, between Monrovia and Azusa, which is now under construction, an additional expense of \$450 was incurred in securing the right of way, in order to shift the highway and avoid the removal of a beautiful oak tree, which has stood for years a landmark of the community.

a capitalization of passenger car operating costs assumed to exceed 3 cents per car-mile.

Exceptional Cases—It must be noted that the preceding arguments are based on present-day average conditions with road speeds averaging from 30 to 40 miles per hour. Road speeds are increasing yearly, a fact tending to increase cost of operation. On a certain proportion of the existing and proposed roads the location and alignment are such as to allow unlimited speeds. But there is a practical upper limit to automobile speeds

determined by considerations of safety, economy, motor design, etc. The railroads of the country have found that 70 miles per hour is about the practical limit for trains. Much higher speeds can be and have been used but have proved impracticable. It is believed that the upper limit of highway speed will be about 50 miles per hour.

Almost no data on such high-speed operation are in existence, but theoretical extension of various data curves would indicate that the figures in the preceding tabulation

(Continued on page 21.)

Supplementary Budget Is Adopted

A SUPPLEMENTARY budget of state highway projects totaling \$5,083,489.56 was adopted by the California Highway Commission at its September meeting in Sacramento. The projects included in the supplementary budget are planned for construction during the present biennium. A number of these projects will be under way during the coming winter months, and it is expected that this work will be a factor in relieving unemployment during the period of usual seasonal idleness.

The funds with which the work included in the supplementary budget will be financed are derived from unallocated balances in state highway funds which were set apart as a reserve when the original state highway budget was adopted last January, together with savings made on contracts already awarded. The fact that construction costs have run well below estimates makes the use of these funds possible at this time in the opinion of the Highway Commission and B. B. Meek, Director of the Department of Public Works.

The specific list of projects included in the supplementary budget follow:

SAN FRANCISCO TO OREGON LINE

Humboldt County—Arcata to Mad River, grading and surfacing, 3.1 miles, \$145,000; additional funds for construction between Fortuna and Fernbridge, \$16,541.26; Arcata overhead—Mad River bridge, \$110,000; South Trinity River bridge, \$75,000; oiling, crushed rock surfacing and drainage improvement on portions of highway between Mad River and Orick, \$50,000; reconstruction near Mad River, \$50,000.

Sonoma County—Additional funds for reconstruction between Santa Rosa and Willowbrook, \$210,000.

Del Norte County—Elk Valley road to Smith River, surfacing, \$14,000.

SAN FRANCISCO TO SAN DIEGO

San Diego County—Repairs to the Santa Margarita bridge, \$10,725.

Ventura County—Paving exception on Conejo grade, \$545.26.

SACRAMENTO TO THE OREGON LINE VIA MARYSVILLE

Placer County—Reconstruction of Dry Creek bridge and additional funds for reconstruction of Antelope Creek bridge, \$24,776.42.

SACRAMENTO TO LOS ANGELES

Madera County—Califa grade separation, \$110,000. Sacramento County—Oil treating, rock surfacing, between one mile north and one mile south of Arno, \$3,024.

Fresno and Madera Counties—Grading and paving approaches to the Herndon bridge, \$62,000. This is in addition to the \$81,000 heretofore allocated for grading and surfacing and is made to provide funds for paving in lieu of surfacing.

TEHAMA JUNCTION TO BENICIA

Yolo County—Mullen grade separation, state's share, \$65,000 (railroad's share, \$40,000).

SAN LUCAS TO SEQUOIA NATIONAL PARK

Tulare County—Oiled rock surfacing, 5.9 miles, from Three Rivers to Sequoia Park, \$50,000.

Fresno County—Oil rock surfacing, 6.4 miles, Coalinga to Parkfield Junction, \$65,000.

SAN DIEGO TO EL CENTRO

San Diego County—Grading from Cottonwood Creek easterly, \$300,000; paving, Cottonwood Creek to Kitchin Creek, 4.6 miles, \$163,000; Pine Valley Creek bridge and approach, \$55,000. Additional funds for construction, San Diego to El Centro, \$75,000.

TAHOE-UKIAH HIGHWAY (CALPELLA TO CISCO)

Lake County—Oiled rock surfacing, 15.8 miles, High Valley Creek to Abbott Mine, \$120,000.

Nevada County—Grading, Nevada City to Washington road, 14 miles, \$300,000.

WEST OF CLAREMONT TO RIVERSIDE

Riverside County—Wineville grade separation, \$65,000.

REDDING TO ROUTE 1 NEAR ARCATA VIA WEAVERVILLE

Trinity County—Rock surfacing from Weaverville to Grass Valley Creek, 16 miles, \$90,000.

Shasta County—Rock surfacing from Tower House to Dickey's Ranch, 5 miles, \$27,500.

Humboldt County—South Fork Trinity River bridge, \$75,000.

ROUTE 3 NEAR RICHVILLE TO QUINCY VIA FEATHER RIVER

Butte County—Grading and surfacing four miles, Oroville to Feather River, \$120,000.

S AUGUS TO ROUTE 11 AT ALPINE JUNCTION

Alpine County—Markleeville Creek bridge and approach, amplifying funds in present budget, \$5,000.

Kern County—Grading and oil rock surfacing, 16.8 miles, Mojave to Cinco, \$163,000; grading and oil rock surfacing five miles north of Ricardo to Freeman, 10 miles, \$100,000.

SAN BERNARDINO TO EL CENTRO

Imperial County—El Centro to Brawley, 20-foot pavement 9.8 miles, \$294,000; resurfacing of one mile through town of Imperial, \$35,000.

EL CENTRO TO YUMA

Imperial County—Additional funds for construction of the Araz underpass and approaches, \$3,517.63.

RED BLUFF TO NEVADA LINE VIA SUSANVILLE

Lassen County—Two miles east of Westwood to Coppervale, grading and surfacing, four miles, \$40,000. Doyle to Long Valley Creek, grading and surfacing, nine miles, \$70,000; two bridges over Long Valley Creek, \$25,000.

PACHECO PASS (CALIFA TO ROUTE 2 NEAR GILROY)

Madera County—Ash Slough bridge, \$38,500; Berenda Slough bridge, \$24,000; approaches to above, \$9,600.

BAKERSFIELD TO PASO ROBLES

Kern County—Amplifying funds for pavement from two miles west of Wasco to Famosa, 8.9 miles, \$105,000; Galloway Canal bridge, \$7,500.

AUBURN TO NEVADA LINE NEAR VERDI

Placer County—Seal coat surfacing, 17 miles, Auburn to Colfax, \$85,000.

Nevada County—Additional funds for construction between Donner Monument and Tahoe Junction, \$21,000.

(Continued on page 22.)

Development of the Right of Way

By H. D. JERRETT, Right of Way Agent, District III.

THE "RIGHT OF WAY" a term used in engineering projects such as railways, electric and telegraph lines, canals, and highways, means a right of passage over another person's ground. It appears to have originated at Melbourne, Australia, where in laying out the city, narrow passages subject

to a right of way were left through the lots from one broad street to another. Hence the term came to be applied to the passages. It is now universally used in referring to the narrow strip of land upon and along which is constructed such engineering enterprises as heretofore mentioned. In a legal sense, it is a positive easement, or that right which involves active physical use of the land, falling short of ownership in the land itself.



H. D. JERRETT.

There are three essentials in securing the right of way: It must be secured by deed or other form of title before the actual construction of the enterprise can proceed; it is especially important to secure the exact location; and, it must be carefully secured as regards the terms and conditions between the parties.

With reference to the first: All right of way transactions involve a number of legal considerations, some of which are simple, and others of which are extremely complicated. The difficult questions of titles and contracts have very little to do with engineering requirements, and sooner or later legal knowledge is necessary in right of way negotiations. If a legal foundation is not laid at the outset, it will lead the parties to negotiations into later misunderstandings. Hence, the frequent statement that the work of securing the right of way is distinct in itself, and pertains to the functions of the real estate or legal departments of an organization. The very foundation of the right of way is involved in the surety with which one possesses the property.

The next essential and one important in securing the title is the description of the land desired for the right of way. Many difficulties and many disappointments arise in the transfer of land from inaccurate or inadequate description of property which the deed is designed to transfer. The title of the right of way may be all right, but the question often is, where is the right of way? If unsettled this complicates the question particularly as regards encroachments. To illustrate this we need look no further than the congressional grants to the railroads. It is safe to say not one in ten of the railroads of our country has any permanent markings of its center line. I am convinced that the same is true of many of our highway systems. The fence line marks the boundary, but the fence is gone.

Fortunately the old custom of securing right of ways by agreement preliminary to starting the enterprise, with a description resulting from the final surveys, has practically disappeared and well it should. Nothing could be more troublesome and unsatisfactory than this method of securing title for right of way. It was well characterized as a "roving commission to take possession of the farm."

Now negotiations can be begun on a basis determined by actual location and determination of grade, which will eliminate all misrepresentation and trouble.

The third essential is one that involves the engineering department and should be strictly guarded by the chief engineer, for nearly all contracts regarding rights of way pertain to such details as extra widths for deep cuts, borrow pits, spoil banks, fencing, moving buildings, cattle-passes, and crossing privileges and many other conditions that would add to the cost of construction, and in many cases act as an obstruction to the proper use of the way. No contract regarding these matters or kindred subjects should ever be entered into without the chief engineer's approval.

It is right and proper that the legal head should understand that his part of the work is properly confined within certain limits. The same is true of the engineer. It is the right and duty of the engineer to locate the line, to have the direction as to what property is needed, to approve all contracts pertaining to the same, and to prepare the descriptions for the deed. If printed forms are pro-

vided then the deed may be made up in his office, and submitted to the attorney that he may certify to its correctness as a legal document, one that would transfer a good title. This method would prevent any trouble in rights of way on account of the looseness with which descriptions in deeds have been drawn.

The importance of the right of way has seldom received the attention it merits. This has been largely due to the fact that property owners have generally been only too glad to promise the right of way in order that the highway, or railway, might be built, knowing how much the value of their property would be enhanced thereby. On the other hand those responsible for the enterprise have had in view the rapid, and at the same time economical construction of their project and have not always taken the precaution to secure the necessary title to the property occupied. The result is that after the lapse of years during which the property has by reason of construction of the highway or railway through it, largely increased in value, the owner fails to remember that he gave the right of way; and, if he is forced to it, he remembers also that there were certain conditions as consideration for the grant with which the officials in charge have failed to comply; or that the right of way has not been located through his property along the line he was given to understand it to be. In many cases, in collusion with a lawyer, he attempts legal action, or creates an uproar throughout the neighborhood, the effect of which many times is severely felt in the further development of the enterprise.

Again, it develops in later check-ups, that there is a considerable amount of right of way for which no settlement has ever been made, and in this, the only thing the parties in charge can do is to compromise as best they can.

It is gratifying to know, however, that during the last few years, particularly since the rapid development of the highway systems of our country, the importance of the right of way has received more attention. This change has been brought about through the fact that the law places every safeguard about the ownership of real estate. It is now almost a sacred act to come into possession of such title. The owner has come to realize this. The old roads and lines of transportation were in a condition of flux. Property owners as they builded their homes and cultivated their lands adjusted themselves to the conditions as they were. Now any changes in conditions must be made carefully, and even then, they may not be made without some difficulty.

It having been determined to connect two points called termini with a railway, or highway, and the final location, by proper surveys having been completed, the next important step is that of securing the necessary right of way. Here the opportunity presented itself for some one to specialize and devote his time and attention to this important work. Thus there very naturally has arisen a type of individual whose time and attention are very largely devoted to ascertaining the present and prospective value of lands, and the crops, buildings, timber and minerals thereon; to enlist the interest of the numerous land owners; and finally to secure the necessary rights either by gift or purchase. From the very nature of the work such individual has been given the title of right of way agent.

The right of way agent then, is the connecting link between owner and purchaser. To a certain limited degree, any one possessing good business judgment may carry on the work; but to attain any considerable degree of success the individual must be gifted with faculties comparatively rare in combination.

He must rely for his success primarily upon the establishment of some good system which keeps him constantly in touch with every case assigned to him. He must depend, to close a case, upon the following elements: His personality; ability to judge character; presentation and avoidance of misstatement; perseverance in the right direction; securing a balance between what the owner will take and the purchaser will give; and ability to draw up and secure the necessary papers the instant the two minds are in agreement.

In purchasing rights of way the personality of the agent enters almost immediately and continues to be the factor throughout. Whether he will secure the right sought often depends upon his personality—the way he impresses the property owner at the first meeting. Here is where the agent's ability to judge character enters, for until he becomes better acquainted with the party he is dealing with he is forced to judge by the party's exterior characteristics.

Sometimes a man can live down first impressions, but any unfavorable impression is a handicap and therefore puts a useless obstacle in the way. In general, the personality of the agent should create the impression that he is a solid, intelligent man with plenty of energy and perseverance. He should avoid any eccentricity of raiment that would create the impression that he is sporty or frivolous. Moreover the agent must be able to make friends, be a man who has ideas, conversant with general topics, and whom, there-

The Serra Grade Separation

By L. M. RANSON, Assistant District Engineer.

ON AUGUST 3, the contract between San Juan Creek and Serra in Orange County, was completed. This project involved a notable change in the line and grade of both the state highway and the Santa Fe Railway, which shifted its tracks to make possible the safe junction of the two state highways.

Two subways at this point were determined upon because of the heavy traffic over the coast highways, which had to be properly cared for at this junction, to obviate dangerous congestion.

LAST LINK COMPLETED

The completion of this grade separation completes the last link in the state highway



Placing slope paving in north subway.

system on Route 60, between Long Beach and Route 2, leading to San Diego, California.

COST IS SHARED

The cost of this grade separation was borne jointly by the Santa Fe Railroad Company and the state.

The agreement between the state and the



Looking west, showing south subway in center; north subway, upper right hand corner; Orange-2-A line lower right hand corner.



Another view of south subway.

railway company as approved by the State Railroad Commission was as follows:

“(a) The Highway Commission shall bear 60 per cent and the railway company 40 per cent of the cost of the North bridge.

(b) The Highway Commission shall bear 75 per cent and the railway company 25 per cent of the cost of the South bridge, including foundation, excavation, concrete abutments, steel span, docking for span, and all necessary labor incidental thereto.

(c) Each party shall pay 50 per cent of the cost of all track work and the necessary grading for the change of the



Looking west from south subway.

line of the railroad and all other work incidental thereto.”

WILL AID TRAFFIC

The completion of this contract means that a heavy volume of traffic is now using Route 60 along the coast instead of following Route 2 through San Juan Capistrano and Santa Ana.

Owing to the county road detour which involved the fording of San Juan Creek and

a dangerous grade crossing of the Santa Fe Railway, through traffic was not using Route 60 to any appreciable extent. The south underpass of the Santa Fe was thrown open to traffic in the evening of July 3d, affording the holiday traffic use of the coast road through Laguna Beach.

DETAILS OF WORK

This contract involved, on the part of the state, the grading and paving of 0.6 miles with Portland cement concrete and 0.4 miles graded and paved with bituminous macadam. Also 90,000 cubic yards of excavation was involved in the contract in addition to other contract items, which included 530 cubic yards of slope paving.

A 200-foot curve in the highway line was superseded by one of 550-foot radius, superelevated. This was made possible by cutting down the bluff at that point, the excavated material being used to raise the grade of the railway tracks. The shifting of the location of the railroad and a raise of nine feet in the grade, made possible a contraction of the two subways. These crossings consisted of concrete abutments with steel girder bridge construction, each subway having a clear roadway width of 40 feet. The curve leading through the south subway in the direction of San Diego has a radius of 750 feet and the one leading northward toward San Juan Capistrano has a radius of 900 feet.

The contract was awarded to the V. R. Dennis Construction Company on April 13, 1927, and final acceptance was made by the Director of Public Works on August 18, 1928.

The concrete pavement was constructed with the thickened edge, using the 9-inch—7-inch—9-inch section. The macadam pavement had a 4-inch water-bound base, Type "A," with 2-inch bituminous macadam surface, Type "C." Owing to the water conditions adjacent to this work, it was necessary to provide adequate facilities for removing surface drainage from the subways. This was provided for by the installation of a drainage system, consisting of approximately 350 lineal feet of 18-inch heavy reinforced concrete pipe, with a 5 by 5 Type, American Vertical Centrifugal Pump. This pump is driven at a speed of 1150 revolutions per minute by a 10-horsepower U. S. 60-cycle, 220-volt, 3-phase, electric motor, driving the pump by means of flexible coupling. The pump is equipped with a 5-inch suction pipe and a 6-inch discharge pipe, the automatic control consisting of a General Electric motor, starting switch and float switch. In addition to the electrically driven pump, there is an auxiliary pumping unit, consisting of an American 5 by 5, horizontal centrifugal pump, driven at a speed of approximately 900 to 1000 revolutions per minute by Novo type, 12-horsepower, water-cooled, multicylinder engine.

The furnishing and installation of the reinforced concrete pipe drainage system with necessary excavation and Portland cement concrete, was placed under contract with F. H. Vehring, Long Beach, California. The pumping equipment cost approximately \$2,000 and the Vehring contract was approximately \$4,900. The contract price for the grading and paving with sloped walls under Contract 521 was \$86,935.50.

Work was carried on under the supervision of District Engineer S. V. Cortelyou. J. B. Hodges was Resident Engineer and Ralph D. Kinsey, Assistant Resident Engineer.

\$30,000 Contribution Is Made to Joint Highway District

A contribution of \$30,000 to Joint Highway District No. 8 was announced by the California Highway Commission following its meeting in Sacramento on September 6th. The contribution was made by the state to the Joint Highway District on the recommendation of B. B. Meek, Director of the Department of Public Works. It will assure the construction of a connection between the new Sears Point cut-off road and the present Sacramento highway near Vallejo. An appropriation of a like sum has already been made by the boards of supervisors of Solano and Marin counties. These counties constitute the Joint Highway District.

Had it not been for the contribution made by the Department of Public Works, the appropriation of the two counties would have reverted to their respective treasuries.

The road to be constructed extends for two miles from the new Sears Point cut-off to a point north of Vallejo. It constitutes a short cut for travel bound from and to the Sacramento Valley from the Redwood Highway and from San Francisco via Sausalito. In the event that a state highway is constructed in the American Canyon in Solano County, which lies east of the present Vallejo road, the cut-off will constitute an important connection with this new highway.

Boards of supervisors of Marin and Solano counties, the city of Vallejo, numerous organizations and many private individuals were most urgent in their request that the state contribute to the Joint Highway District because of the importance of the projected road, both to neighboring cities and counties and to the state as a whole.

Some hesitation was felt by the Department of Public Works toward contributing to the Joint Highway District fund because travel using the road is pointed toward two toll bridges. Mr. Meek reiterated the opinion of his department and of Governor Young that toll roads and toll bridges should not be constructed on through traffic lines, and that the toll method of financing bridges and roads is archaic and justified only when all other methods of financing failed. All toll bridges and toll roads designed to carry through travel, Mr. Meek declared, should be made free at the earliest possible moment.

Pioneer Trail Now State Highway

By ELEANOR LEE READING.

The California portion of the Yellowstone Cut-off consists of the Redding-Alturas lateral and the road north from Alturas to the Oregon line near Lakeview. At a meeting of the Yellowstone Cut-off Association held in Redding, Miss Eleanor Reading read the following article telling of her grandfather's pioneer trip over the trail that this highway now follows. Miss Reading concludes her article with the sage observation that transportation then had one advantage over motoring, in that when the horses died they could be used for food, but when a battery now "goes dead," the "modern steed" does not offer a very appetizing diet.

MY GRANDFATHER, Major P. B. Reading, headed the first party of white men to cross the mountains into California by what is now the Yellowstone Cut-off. He kept a diary of the entire trip, making daily entries, always with his rifle at his side.

In May, 1843, exactly eighty-five years ago, he crossed the Missouri River with a wagon train of two hundred and fifty people, most of whom were bound for Oregon. In crossing the plains they had many interesting experiences, thrilling adventures and terrible hardships. Many times they were without food, sometimes due to scarcity of game, yet at other times they had an abundance of fresh meat but were unable to cook



Beautiful Burney Falls on the Yellowstone cut-off.



Major P. B. Reading,
pioneer trail finder

Eleanor Lee Reading

it because of the absolutely barren country and the wet weather, making it impossible for them to build a fire. Grandfather wrote that it was very tantalizing to be nearly starving in a camp full of meat.

Upon reaching the Platte, they found the river one mile wide and five feet deep, just barely too deep to ford, so they were delayed a number of days killing buffalo and making boats with the hides.

They passed Fort Laramie and crossed the Continental Divide at a point slightly south of Yellowstone Park—being very enthusiastic over the rugged cliffs, deep gorges, beautiful waterfalls, and unusual terraced hot-springs. The Oregon party left them at Fort Hall, heading for the Columbia River. Grandfather and twelve others proceeded to Fort Boise, seeking what they believed to be the

most direct route to California. The fort was then a 150-foot square adobe structure, used by the Hudson Bay Company as a trading post. It was in charge of Capt. Payette, who gave them a warm welcome, and very generously divided his limited food supply with the party. He warned them that the Indians west of there were very hostile, and that such a small party of men would be in great danger. They estimated that it would take them thirty to thirty-five days to reach the Sacramento Valley. It was then October, and the Sierras were covered with snow, so it seemed a daring adventure to try to cross the mountains by an entirely unknown route, but they had such implicit faith in the proposed course that they started out, each with a saddle horse and a pack animal, with only fifteen days food supply.

Game was very scarce and by the end of the fifteenth day their supplies were completely exhausted. On the fifth day following, they killed a small antelope, but were soon starving again. One notation in the diary shows that they had only one handful of antelope grease for the day, with no food at all for the next four days.

They followed the identical route of the present road, and were greatly impressed with the scenery, especially after reaching the Pit country. Grandfather described the magnificent cliffs of Pit River Canyon, the distant view of Mt. Shasta, and a very beautiful waterfall which was evidently Burney Falls.

They had hoped to be able to trade with the Indians for food, but they were very wild and fled at the approach of the white men. The natives lived in large holes in the ground, covered by a lattice of limbs and sod, with a three-foot opening which served as both door and chimney.

From there they followed a southwest course, but had to return to the Pit River after being without water for thirty hours. Realizing the danger of the situation (the canyon being a trap), but there being no alternative, they descended the cliff. In a few minutes they were attacked by Indians, but no lives were lost and they finally succeeded in driving them away. However, the following morning they found that most of their horses had been killed, and as they had been without any food for many days, they butchered and ate them.

As they neared the valley, game became more plentiful, and they found grizzly bear so numerous that they had in some places worn paths five and six inches deep. They reached the Sacramento River on November 3d, and their joy and thanksgiving was pathetic. It had been exactly one month

"GRUMBLER" PRAISES EFFORTS OF STATE HIGHWAY WORKERS

[From the Los Angeles Times.]

GOOD WORK, BOYS!

LOS ANGELES, Aug. 4.—[To the Editor of The Times]: Please allow me space for a word of appreciation and commendation to a crew of the State Highway Department that has for the past couple of months been doing patchwork on Foothill Boulevard between Pasadena and Arcadia.

As the proof of the pudding is in the eating of it, so the proof of good highway patchwork is riding over it. These men patched several miles of that highway where it was like a washboard and did the work so well that as you ride over it you can not tell where the patch begins and ends. And it is not just chance, because they have laid down hundreds of these patches and they are all alike.

The State Highway Department is to be congratulated on this work. It is a treat to see public work so well done. It might be well for the city and county to send their men out to see how it is done. No, I am not connected with the State Highway Department, nor am I in that line of work at all. I am ordinarily a grumbler, but willing to give the devil his due. I will do some first-class A-1 grumbling in later letters to you.

GRUMBLER.

since they left Fort Boise. They followed down the east bank of the river to Sutter's Fort at Nueva Helvetia (now Sacramento), where they were the guests of General Sutter.

He returned to Shasta County to take up a tract of land that had been presented to him by the Mexican government. This tract retains the name of Reading Grant and comprises 27,000 acres of which this city forms a small portion. The spelling of the name of the town was later changed in order to avoid the confusion of the frequent mispronunciation, and also to honor a Mr. Redding of San Francisco, a lawyer of the Southern Pacific Company, who was instrumental in bringing the railroad through this city.

He later made a trip to Washington City, where he met and married my grandmother. She returned with him to Shasta County, where they made their home until the time of grandfather's death.

In closing, I might mention that my grandfather had one advantage over the modern motorist—when his horse failed as a means of transportation, it furnished a food supply that saved him from starvation; but in these days, if you kill your engine and your battery goes dead when you are miles from anywhere, I don't believe you would find the modern steed a very appetizing diet.

Seven Years of Highway Landscaping

[Editor's Note.—The following article telling of the policy of Massachusetts in landscaping its highways will be of interest in California because of the increased interest to this state in highway beautification. The article was written by N. C. McCloud and was published in a recent issue of the Highway Magazine.]

TOURISTS motoring through Massachusetts find unending sources of admiration and delight in the roadside beauty of the state's thoroughfares. The general effect is that of a continuous garden plot wherein ragged edges and scarred slopes have no participation. Backyard practices, treating roadsides as things of minor importance, have been discarded by the Massachusetts authorities and supplanted by careful treatment which lends new charm to these borderlands of pleasure travel.

The Bay State policy recognizes roadside beautification as a vital part of highway betterment, demanding the same attention that is given road construction itself. In pursuit of this belief the state department of public works has proceeded with a definite program of activity dating back to 1921. The logical results of seven years entitle Massachusetts to foremost rank as a pioneer in this particular type of improvement.

The new state highways of Massachusetts have a standard right-of-way width of sixty feet, which affords abundance of room for landscaping the space on each side of the traveled portion. State legislation empowers the road authorities to improve the roadsides through such plantings, care and replacements as may be required. In applying the law on the subject, the department of public works has utilized vacant space along the highways for ornamentation through the cultivation of natural growth and the introduction of decorative plantings. Flowers, trees, vines and shrubs from state nurseries are planted in abundance to enhance the beauty of the wayside.

These improvements are conducted by the maintenance division of the department, and the cost is included in the regular expenditures for upkeep. The liberal scale on which the work is undertaken is indicated by the operation of extensive nurseries at Palmer, where trees and plants are propagated and where the working forces are trained in the care of transplanted growth and in the gen-

(Continued on page 16.)

Association Labors To Keep the State Highway Beautiful

Honorable B. B. Meek, Director,
State Department of Public Works,
Sacramento, California.

DEAR MR. MEEK:

Knowing of your very sincere desire to see the highways of the state beautified and attractive, and also your desire to see the best of accommodations and facilities for tourists and vacationists along California's highways, I am sure you would be interested in the work of the Auto Camp, Garage and Service Station Unit of the Redwood Empire Association, which was organized as a subsidiary over a year ago.

The functions and objectives of this organization are indicated on the enclosed. Enclosed, also, are copies of correspondence which has been sent out to our own members relating to cleaning up camps, improving sanitation facilities, and, in general, raising the standard of operation.

One thought that we have always had in mind is to induce camp owners and operators, also garage and service station people, to erect their buildings and set up their places of business as far away from the highway right of way as practical in order not to encroach upon the scenery and to avoid the additional traffic hazards which buildings flush on the edge of highway rights of way always create.

It is our desire to offer to the traveling public throughout the Redwood Empire not only diversified accommodations fitting every purse and every idea, but also absolutely clean, attractive, and in some cases odd and colorful stopping places.

If we can be of any service to you along these lines, please do not hesitate to call upon us.

Cordially yours,

RALPH HERRICK,
President Redwood Empire Association.

P. S.—We hope to frame some legislation affecting camp operation and sanitation and will appreciate your cooperation when the time comes.

The following letter was addressed to fifty-eight community organizations and boards of supervisors in the nine counties of the Redwood Empire.

"For three years officials of your Redwood Empire Association have been carefully watching the growing nuisance of promiscuous posting of all manner and type of signs along the highways in the Redwood Empire, which have been destroying the beauty and attractiveness of the scenery.

"Many of these very unsightly signs are being posted on redwood trees and in other spots, which not only hide the natural scenery, but create a feeling of distaste in the minds of tourists and vacationists.

"It seems high time to eliminate this evil, which is a fast growing influence militating against travel increase in the Empire.

"Your association has collected a series of clippings indicating the feeling of various newspapers, also city, county and state officials in other parts of the state and in other states. There seems to be a universal movement to eliminate this promiscuous sign evil, which is ruining the natural scenery."

SEVEN YEARS OF HIGHWAY LANDSCAPING

(Continued from page 15.)

eral work of roadside beautification. The entire program is superintended by the state highway landscape supervisor.

A DEFINITE PLAN FOLLOWED

Haphazard activities have no place in the Massachusetts policy. The completion of a construction job is followed by landscape planning in the hands of skilled engineers. For the guidance of the roadside forces a plan of treatment is worked out on blueprints carrying colored crayon markings to indicate the character of the planting at each particular spot. These designs show the planting crews where to place each tree, plant, vine, or shrub. The result is a borderland which fits the environment.

The policy demands that the designers shall follow natural tendencies in every detail. Local soil conditions are studied as a means of selecting the growth that will thrive best in each locality. Plantings of growths foreign to the Massachusetts landscape are not permitted. The Colorado spruce, for example, is dismissed as something of inherent beauty but out of place in the New England environment. The authorities have taken a determined stand against imported species obviously artificial and failing to reflect the personality of the commonwealth.

Seven years of concentrated activity has transformed Massachusetts roadsides into something to which the state points with becoming pride. At one place the visitor finds a border of flowering honeysuckle; near at hand a blossoming elderberry thicket; and in a neighboring spot a border of old-fashioned daisies. Other places hold artistic blendings of shrubs and evergreens, covering a spot formerly offering the bleakness of a bank of gravel or a rain-washed slope of barren clay. The department has found that a dressing of topsoil makes it possible to convert construction scars and unsightly bleakness into pleasing bits of garden, offering an assortment of plants and blossoms which changes the entire prospect.

The barren reaches of Cape Code are brightened by luxurious borders of beach plums which make the drive among the sand dunes a thing of unforgettable delight.

The roadside policy of Massachusetts possesses a practical aspect that is not to be disregarded, in that the nursery plantings and landscape work serve the useful purpose of preventing

soil erosion and washouts, with resultant savings in the cost of highway maintenance. Countless spots which offered an open invitation to erosion have been covered with vines, clover or shrubs, to the perpetual advantage of the taxpayer in the matter of upkeep.

A phase of the work that may be regarded as no less important than the new plantings is that which involves the use of the axe and pruning knife in treating existing growth and promoting satisfactory development. Trees with mangled trunks and branches are removed in the interest of attractive appearance and to permit the better expansion of surrounding vegetation. Pruning and shaping are applied to unsightly and ill-shaped growth, accompanied by tree surgery for the repair of mechanical wounds and open cavities. Telephone wires and poles are taken down and the wires concentrated in unobtrusive roadside cables, to the distinct improvement of the skyline. Board fences are cloaked by plantings of shade trees arranged with studied avoidance of straight lines and uniform spacing, in simulation of natural forestation.

In dressing up its roadside landscape the state has adopted a plan of softening the harsh lines of white-washed stone pillars placed at danger points for the protection of traffic. The stark stiffness of these markers has been relieved by giving them a background of vegetation which does not interfere with their visibility but which gives the pleasing effect to be expected in a well-tended garden. Roadside springs, as well, have been dressed up in attractive fashion which makes each of them an invitation for the tourist to stop and be refreshed. Benches are provided at frequent intervals and a bid for public neatness is extended through the presence of barrels for the receipt of picnic rubbish and other debris. The suggestion of good housekeeping is everywhere apparent.

SCENERY GIVEN A CHANCE

Perhaps the crowning touch of the Massachusetts program from the viewpoint of the tourist is afforded by the attention devoted to the opening of scenic vistas along the highways. The state authorities feel that the engineer can not be expected to locate his road with regard to scenery alone, and that his task is completed with establishing the grades and curves that are to be followed. The task of bringing the scenery to the highway is that of the expert in landscaping effects. The extent to which this policy has been followed in Massachusetts is a revelation to the sight seeing tourist who has had the frequent experience of passing fine views that could not be seen from the channel of travel.

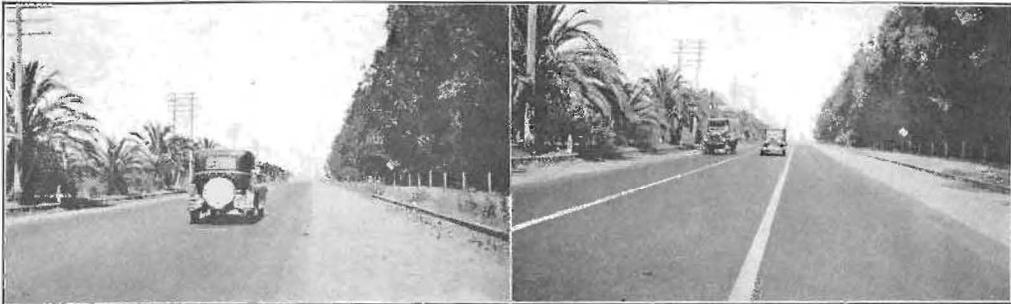
Until recently the highways passed through scenic beauties entirely hidden from the traveler who stuck to the main thoroughfare. The visitor might have been within a few feet of a splendid panorama without suspecting its existence.

In today's scheme of beautification this condition does not prevail. Landscape artistry, as applied in Massachusetts, has selected strategic points where the cutting away of roadside foliage has revealed scenic vistas. In this way the scenery has been brought to the highway and the traveler receives the full benefit of the picturesque environment. This development is especially important in the Berkshire region, where the cleared spaces open vistas of the utmost beauty.

The experience of seven years has enabled the state to appraise the cost of the beautification work, and the officials do not hesitate to say that the expense has been of trivial proportions.

Value of Traffic Lanes Is Shown

By ALMON COONROD.



Hogging the road

vs.

Every auto in its right place.

THE MARKING of traffic lanes on the reconstructed portion of the Foothill boulevard between Cherry avenue and San Bernardino has vastly increased the traffic capacity of this highway. The movement of vehicles has quickened and lines of vehicles waiting for an opportunity to pass a truck or slow moving car are no longer in evidence. This is the thought borne out by observation and illustrated by the accompanying photographs.

Approximately two months lapsed between the time of completion of the pavement and painting the traffic lines. This period afforded an opportunity to observe traffic both before and after the lines were painted and visualize in some degree the value of the lines.

There seemed to be a feeling among the traveling public that the widened pavement was constructed only for their ease and safety. This we agree was part of the purpose, yet some drivers in thorough enjoyment of the wide pavement took more than one-third of the road, often at the inconvenience of faster drivers following in close procession behind them. Vehicles awaited their opportunity to pass or risked an accident in the same way as on a 20-foot or two-lane pavement. The public were not using their highway to capacity and were not receiving the full benefit of their investment in a 30-foot pavement.

The pavement is now divided by white painted lines into three 10-foot lanes. The driver no longer feels his right to half the road but finds plenty of ease and comfort within a well defined one-third of the road and is satisfied. The bold white stripe inspires confidence that a vehicle coming in the opposite direction will not cross the line to meet him in a head-on collision.

With but slight exception all vehicles are seen in the outer lanes, the center lane remaining open for passing. With plenty of passing facilities vehicles now travel far apart and bunching behind slow vehicles is no longer in evidence.

The two white lines were painted over the 9.3 miles stretch from Cherry avenue to San Bernardino at a cost of \$2,076.52. The original 18-foot pavement was resurfaced and widened to 30 feet at a cost of \$186,688.77. This highway could have been resurfaced and widened to 20 feet for approximately half this amount. The third traffic lane, therefore, was an investment of about \$90,000. It follows that by the small cost of \$2,076.52 for painting lines for traffic guidance an investment of \$90,000 has been made to yield its full benefit to the public.

L'il pickaninny,
Looks just like his poppy;
Don't know what to call him,
'Less it's Carbon Copy.

—Wisconsin Octopus.

DELAWARE—Combined state and local expenditures on highway improvements for 1928 are expected to total \$3,215,000, about one-third of which is being applied to local roads. The state is supervising 95 miles of grading and paving projects.

MINNESOTA—The maintenance dollar was spent in 1927 as follows: Patrol, 38.3 cents; special work (including snow removal and snow fences), 34.5 cents; repairs and replacements, 15.8 cents; betterments, 6.0 cents; and supervision, 5.4 cents.

ILLINOIS—The state department of public health has joined other states in testing semipublic wayside water sources and giving them a seal of approval. "Safe water" signs will soon greet the thirsty motorist, who may thus be reassured that the well has passed inspection.

Figures Tell Story Of Highway Program During Biennium

At the August session of Governor Young's council, B. B. Meek, Director of the Department of Public Works, reported for the Division of Highways that during the present biennium work to the value of \$15,720,144.97 had been placed under contract or bids had been opened with awards pending. This work is divided between the construction fund and the reconstruction or maintenance fund as follows: Construction fund, \$7,124,900.11; Reconstruction fund, \$8,595,244.86.

Work then under advertisement was estimated to cost \$1,629,000. This work was divided as follows: Construction fund, \$480,000; Reconstruction fund, \$1,149,000.

Mr. Meek stated that it appeared reasonably certain that work estimated to cost \$2,900,000 would be placed under advertisement between the date of the council meeting (August 29) and September 30, 1928, divided as follows: Construction fund, \$1,700,000; Reconstruction fund, \$1,200,000.

HIGHWAY WORK FOR WINTER MONTHS

Projects which can be constructed during the winter months are now being planned. It is hoped that this will aid in providing greater employment during the winter months.

Budget Requests of Governor Young Are Met by Department

The budget requests of the Department of Public Works for the biennium of July 1, 1929, to June 30, 1931, total less than \$10,000 over budget allotments for the present biennium, according to figures made public today by B. B. Meek, director of the department. These figures shows budget requests for the coming biennium totaling \$910,886 as compared with budget allotments for the present biennium having a total of \$910,094. This is in accordance with the announced policy of Governor Young that budget requests for the next biennium be kept as closely as possible to the expenditure figures of the present biennial period.

The figures for the 1929-1931 biennium do not include expenditures for highway construction, reconstruction and maintenance as these are financed from gasoline taxes, registration fees on motor vehicles, taxes on highway transportation companies, and federal aid.

The budget of recommended state highway expenditures for the coming biennium is now being prepared. Under the new budget law, which was one of the outstanding enactments of the Young administration, highway projects are budgeted along with all other items of state expenditures. Under the Young budget plan, information as to all highway projects is given the public by the California Highway Commission in advance of their construction or the expenditure of money upon them. The budget for the new biennium will be presented to the legislature when it meets in January.

Maintenance on Redwood Highway Is Commended By Association President

Willits, California, August 28, 1928.

Mr. Ralph Bull,
Chairman, California Highway Commission,
Eureka, California.

DEAR MR. BULL:

I have made a recent trip over the highway from San Francisco to Eureka and I am particularly impressed with the splendid maintenance work being done over the entire route. The new process of quickly laid, oiled and graveled surfacing has facilitated the motorist travel to the extent that the old complaints no longer are heard.

I think your maintenance department should be congratulated on the efficient handling of its part of the highway program.

The portion of the road south of Willits to connect with the paved highway at Cloverdale is in the best condition I have ever seen it.

Sincerely yours,

EDWARD MORRIS,
President, Redwood Empire Association.

A CONDUIT HIGHWAY

Handling traffic on the approaches to big cities is the problem that is proving hard to solve and congestion, especially on Sundays and holidays, is continually growing worse, preventing many motor car owners from using their cars on those days. Highway engineers state that the 20-foot highway is a thing of the past and that 40-foot roads, under ordinary conditions capable of carrying at least twice as much traffic and at a more rapid pace, are essential to meet the modern demand. New York state, realizing that the public will have speed whether or not road facilities are equal to the demand, has embarked upon its greatest single highway project. This is a 40-foot wide pavement running through 11 towns on Long Island for a distance of 24 miles. The Conduit Highway, as it is called, constitutes the newest offering to speed and safety—the demand of the motorist.—Wall Street Journal.

Among the safety measures adopted by the South Dakota state highway department is a flat "3 to 1" sideslope. Where fills are more than seven feet high, a steeper slope is used, and a guard fence added for protection.

Cause of Highway Accidents Analyzed By U. S. Road Body

DURING EVERY 24 hours of 1928 an estimated average of 2360 persons are being killed or seriously injured on the streets and highways of the United States. The estimated economic loss for the first six months of 1928 was \$350,000,000 exclusive of small property damage and insurance premiums. At the present rate of increase the "Grim Reaper" will exact a toll of 40,000 human lives in highway accidents during 1935. These figures were part of an analytical highway safety report issued by the American Road Builders' Association.

During the first six months of 1928 the American Road Builders' Association estimates that 13,750 persons were killed and 412,500 seriously injured in highway accidents. The toll for 1927 was 26,618 killed and 798,700 seriously injured, a total of 825,318 casualties. At the present rate approximately 27,500 persons will be killed by the end of 1928.

What do these figures show? Do they indicate that the American people are becoming alarmingly careless at the wheel of an automobile or while walking upon the street? Do they mean that modern cars are too fast or too inefficient to be safely operated on our system of highways?

ANALYSIS OF ACCIDENTS

A careful analysis of highway accident statistics will show the latter to be largely untrue. The principal causes of highway accidents it will be shown, are discourtesy and carelessness on the part of both drivers and pedestrians. The statistics prove the following points:

First—That the most important causes of highway accidents where motorists are principally at fault are in order of their importance—inattention, speeding, traffic law violation and intoxication. Of the 26,618 killed in 1927, motorists were at fault in 11,765 fatalities and all but 1882 were attributed to the above causes.

Second—That the most important causes of highway accidents where motorists are principally at fault are: children playing in the street or crossing in violation of traffic law, adult jay-walking, inattention, and confusion. Of the 11,367 deaths caused principally by pedestrians in 1927, all but 1250 were attributed to these causes.

Third—That adverse physical conditions, such as wet streets, defective roads, poor lights and narrow streets, caused but 3586 deaths.

Fourth—That the human factor is responsible for 95 per cent of all accidents.

Fifth—That the human factor which causes highway accidents is largely the result of certain definable physical conditions, such as complex traffic laws, traffic congestion, discourtesy on the part of fellow

motorists, carelessness on the part of fellow motorists, fatigue, physical incompetency, lack of confidence and the improper conduct of pedestrians.

Sixth—That approximately 60 per cent of all fatalities are pedestrians.

Seventh—That more than 30 per cent of all fatalities are children of school age.

Eighth—That accidents involving pedestrians continue to climb in number much faster than accidents involving only motorists.

THE REMEDY

As a result of its studies, the American Road Builders' Association has launched a national highway safety campaign based upon what it believes to be the fundamental principles of highway accident prevention. These principles are in brief:

First—That all cities and communities should undertake local campaigns to educate pedestrian traffic in the principles of courtesy and caution while on the public street or highway. The use of common sense is recommended in lieu of complex traffic rules.

Second—That all states should adopt a system of examination and licensing of motor vehicle drivers.

Third—That the adoption of the uniform codes of state and municipal traffic laws based on the report prepared by the National Conference on Street and Highway Safety is desirable.

Fourth—That the education of drivers in the principles of courtesy and caution should be undertaken in all communities.

Progress Told in Grade Separations On State Highway

Substantial progress has been made in securing cooperation on grade crossings separation projects, so Director Meek reported to the Governor's Council on August 29th.

The following grade separations, with the amounts provided by the railroad and the state, are under contract, advertised or an agreement has been reached with the railroad for division of cost:

	Est. cost	R.R. share	State's share
Under contract—			
Brighton subway (Sacramento County)	\$100,000 00	\$53,000 00	\$30,000 00
(City of Sacramento pays \$16,000.)			
Herdon line change (Fresno and Madera counties)	335,000 00	47,000 00	287,400 00
Weimar crossing (Placer County)	50,000 00	25,000 00	25,000 00
Two Bowman crossings (Placer County)	35,000 00	1,500 00	33,500 00
Araz crossing (Imperial County)	32,500 00	10,000 00	22,500 00
Santa Clara overhead (Los Angeles County)	70,000 00	10,000 00	60,000 00
Sargent crossing (Santa Clara County)	63,336 30	27,867 00	35,469 30
Advertised—None.			
Agreement reached—			
Irvine crossing (Orange County)	125,000+	40,000+	85,000 00
Spence crossing (Monterey Co.)	70,000 00	30,000 00	40,000 00
Modesto line change (Stanislaus County) (Hatch crossing)		52,832 00	
Wineville crossing (Riverside Co.)	125,000 00	60,000 00	65,000 00
Barstow grade separation (San Bernardino County)	145,000 00	75,000 00	35,000 00
(County pays \$35,000.)			
Donation to S. P. R. R.—San Jose	150,000 00	75,000 00	75,000 00

A total of 3,530,000 cars and trucks were manufactured in 1927, having an aggregate wholesale value of \$2,550,750,000. The average retail price during the year, of passenger cars, was \$953, and of trucks, \$1,053.

Flood Inundates State Highway in Imperial Valley

THE EL CENTRO to Yuma highway was completely inundated on the morning of July 14th following a break in the East High Line Canal near Holtville.

It is believed that the water in the canal was caused to raise through silting up of the channel causing a small stream to flow through a gopher hole or weak place in the canal bank. The rapid erosion which followed soon made an opening large enough to take the



The inundated highways.

entire flow of the canal. The canal was carrying a volume of 1800 to 1900 second-feet of water which amounted to a veritable river and the adjoining fields and the state highway were quickly flooded.

The Imperial Irrigation District acted promptly when the break was reported. The head gates were closed and water was turned from the canal into the Alamo River. At the end of 36 hours the break was repaired, the canal was again carrying water and the highway was made passable.

Occasional breaks in the soft silt banks of the canals in the Imperial Valley are inevitable. The state highways throughout the Imperial Valley have been designed to drain water away as rapidly as is possible in the flat valley lands. Previous to the construction of the state highways breaks in canals of this sort tied up traffic sometimes for periods of weeks.

An inspection of the highway on July 28th and again on August 17th revealed practically no damage traceable to the overflow of the canal. The pavement is oiled gravel of the field mix type.

WISCONSIN—About 400 miles of pavement was completed in 1927, making a total of 2700 miles of hard surfacing on the state highway system.

Historic "Test" Highway Soon to Belong to Past

[From the Pittsburg Post.]

Giving way before the march of progress as exemplified by the new Hooper subdivision, the test highway of the Columbia Steel Corporation, near the Santa Fe subway is being destroyed by a crew of men employed by the steel company.

The test highway, constructed in 1921, and which cost probably a quarter of a million dollars, as an experiment to demonstrate the value of concrete for roads, and steel reinforcing, is credited generally by construction engineers with having given California's \$200,000,000 highway program its first great impetus.

Incidentally the road experiment which cost the Columbia Steel Corporation and other contributors \$240,000, started Pittsburg on its way as an industrial city.

Men with heavy sledges and with dynamite are now shattering the heavy cement, and it is being hauled away. The tract will be cut up into lots.

The circular highway was built by the Columbia Steel Corporation after its engineers had made investigations of different types of highway at a cost of \$3,600. Later on the California Highway Commission and U. S. Bureau of Public Roads sent observers to watch the tests. The highway was built to parallel actual conditions, and while the steel company was interested in the use of steel in concrete, actually the test was of concrete roads, as the open hearth reinforcing steel manufactured here was not patented. The tests were in charge of John B. Leonard, structural engineer, and the results were later published in an exhaustive illustrated report by the California Department of Public Works.

To make the test the state loaned forty trucks which had been secured from surplus war material, and these trucks were kept in continual operation for 89 days. During that period 7.36 million tons were applied to the different types of highway, and the experiment not only gave valuable road information to future builders, but also important data on the use of trucks and tires.

AN OLD PRAYER STILL GOOD

An Interesting Prayer Dating from the Eighteenth Century. Authorship Unknown.

Give me a good digestion, Lord, and also something to digest.

Give me a healthy body, Lord, with sense enough to keep it at its best.

Give me a healthy mind, good Lord, to keep the good and pure in sight,

Which, seeing sin, is not appalled but finds a way to set it right.

Give me a mind that is not bound, that does not whimper, whine or sigh.

Don't let me worry overmuch about the fussy thing called I.

Give me a sense of humor, Lord; give me the grace to see a joke,

To get some happiness out of life and pass it on to other folk.

EFFECT OF DISTANCE ON AUTOMOBILE OPERATING COSTS

(Continued from page 7.)

should be increased about 15 to 30 per cent for speeds of 50 miles per hour. Therefore it seems that on projects involving unlimited road speeds passenger automobile operating costs may be assumed to range up to 4 cents per mile, but care must be used to base the estimate on the average prevailing speed rather than the maximum speed.

Preponderance of traffic in one direction, heavy grades or curvature, a large proportion of business or commuting traffic and a number of extreme or unusual conditions would modify the figures in the tabulation, which, as shown, apply to ordinary roads with average traffic and ordinary profile and alignment.

Truck Costs—Truck traffic conditions are very different. The table gives the average itemized cost per gross ton-mile for trucks based on observations of about 1000 trucks. As many of the arguments applied to passenger traffic will fit truck traffic, the mileage total of 3.93 cents per ton-mile probably is too high.

The time value effect of distance is tangible, especially as applied to drivers' wages. Grades seriously affect truck costs, and shortening of grade distances is usually desirable. On most roads the proportion of trucks is small, but growing. Operating cost data are obtained more readily than in the case of passenger cars. Truck traffic should be analyzed carefully in each individual case, as freight traffic is analyzed on a railroad, with special attention to commodities hauled, type of trucks, methods of hauling, grades, etc. In the absence of more extensive data, the table furnishes a valuable guide for estimating average truck costs, but each case is a problem in itself, and averages will not apply to trucks as well as they do to passenger cars.

Conclusion—It is suggested again that highway engineers have been too much inclined to base location estimates on assumptions rather than on facts. As far as the item of route distance is concerned this article has attempted to present a brief outline of facts to be used as a foundation for estimates. It is a fact that the total over-all cost of operating a passenger car may well be 6 cents to 12 cents per mile, more or less, but the highway engineer must divide and apportion this total to reach the proper solution of his location problems.

New Mexico Borrows California Type Pavement For Its Arid Highways

How the "California type pavement" is spreading among western states is shown by the fact that New Mexico is now laying this type of "oil-mixed" pavement. In an article telling of the first contract for this type of pavement in New Mexico, the *New Mexico Highway Journal* says in part:

"Early in the summer of 1927 the New Mexico Highway Commission decided to investigate the mix-in-place or 'turn-over' method of treating crushed rock and gravel roads with asphaltic oils.

"California had pioneered in the application of this method. It is true that Wisconsin had treated a short section of road by this method as early as 1923, but either its importance escaped them or they decided it was not suited to their conditions, for there is no record of their having made a further application. Doubtless an ample supply of moisture for the maintenance of their gravel roads has dulled for them the sharp spur of necessity which pricks California, Arizona, and New Mexico on to a search for some method which will keep gravel roads travelable in areas so arid that no ordinary sort of maintenance can keep them fit for travel."

SOME JAPANESE TRAFFIC WARNINGS

One of the problems of motorists in Kobe, Japan, is to control their mirth while reading some of the traffic signs that have been translated into English, according to information received by the American Automobile Association from a prominent surgeon doing missionary work in that country.

One sign, "Hints to Motorists," reads as follows:

"At the rise of the hand of policeman, stop rapidly. Do not pass him or otherwise disrespect him."

"When a passenger of the foot hove in sight, tootle the horn, trumpet to him, melodiously at first. If he still obstacle your passage, tootle him with vigor and express by word of mouth the warning HI EI."

"Beware of wandering horse that he shall not take fright as you pass him. Do not explode the exhaust box at him. Go soothingly by or stop by the roadside while he pass by away."

"Give big space to the festive dog that make sport in the highway. Avoid entanglement of dog with your spoke wheel."

"Go soothingly on the grease mud, as there lurk the skid demon."

"Press the brake of the foot as you roll round the corner to save collapse and tie-up."—*Patton's Monthly*.

Canada ranks third among the countries of the world in automobile registration, with 733,764 passenger cars, 1,503 buses, and 84,953 motor trucks. The United Kingdom ranks second, with 754,284 passenger cars, 21,000 buses, and 248,367 motor trucks. Canada, however, ranks second in population per motor vehicle, with 10.7 persons to every automobile as against 43 persons to every motor car in the United Kingdom.

Horse drawn vehicles are no longer counted by the State Highway Department of Michigan in its traffic census, because they have decreased to a negligibly small number. Nine traffic counts are taken during the year at 456 different stations including one count in winter. Incomplete reports indicate an unusually large volume of winter traffic particularly in the northern counties.

ASK US ANOTHER

The District Highway Engineer is subjected to a variety of demands and requests by the public. Following is an unusual one:

Mr. S. V. Cortelyou, Dist. Eng.,
Los Angeles, California.

My Dear Sir:

As the chief engineer of District No. 7 you likely know some choice locations for auto camp with gas stations, stores and the usual outfit.

Also you may have seen locations that you thought would be ideal for a mountain resort; fishing, hunting, rest, boating, tennis, etc.

Kindly give me a few of the best, telling where they are located and stating the advantages of each location.

I am a retired M. E. minister and would like to build a place in ideal surroundings with my son. Possibly combine the two features as income justifies.

We will greatly appreciate your careful consideration and beg to remain

Yours very truly,

P.S. Permanent state road very important.

An Old Enemy.

One finds him everywhere he goes—on highway, road or lane,
He who disregards his fellow tourists with disdain.

He who drives disgustingly glancing left nor right
But "rides" the white line in the road—a custom impolite.

His motto is "the road is mine" and "no one shall go past"
And he doesn't seem to hear behind a horn's ferocious blast.

He creeps along at twenty-five till traffic's sadly fussed
And still in the middle of the road sneers "Fellows, take my dust!"

By MAXINE J. STICKLE.

Maintenance Men Praised

[From the Crescent City Courier, August 25th]

A large slide came across the Redwood Highway about five miles south of the Klamath River late Monday afternoon, holding up all traffic and making the highway impassable until about noon on Tuesday.

The maintenance men were highly complimented on their rapid work on the slide, as they were on the job within a very short time after the slide came across the highway, and had a temporary road across the slide early Tuesday morning, which was passable for passenger cars.

INCREASE IN AUTOS

Registration of motor cars and trucks in the United States for the first half of 1928 shows a gain of 1,504,489 or 7.2 per cent, as compared with the same period in 1927. The total registration was 22,248,686 motor vehicles, as against 20,744,197 in 1927, according to the *Oil and Gas Journal*.

"DETOURS"

By PLATT YOUNG

Detours are much like traversed lanes of life:

Congested traffic marks the smoother roads

And rows on rows of heavy-laden loads

Make motor's path a way of care and strife.

Mankind will always choose the beaten way

And follow traffic whereso'er it leads,

Through hamlet, city, peaceful vales and meads,

Nor mind the destined goal, be where it may.

Detours are but adventures. He who dares

Will challenge some inviting, wayside lane

And when within the clearing once again,

A closer kin with Nature he declares.

Heed well the warning over fills and cuts,

And keep the well-worn way. But sometimes blend

A normal swerve with your progressive wend:

Detours of life will lift you out the ruts.

—Georgia Highway.

NATIONAL—Rural mail routes cover 1,270,746 miles, or nearly one-half of our rural highway mileage, states a report from the postal service. They reach 31,698,700 patrons.

NATIONAL—The Atlantic Coast Highway, from Fort Kent, Maine, to Miami, Florida, is one of the world's longest improved highways. Only one per cent of its 2321 miles is yet unsurfaced.

NEW YORK completed more than 500 miles of new pavement on the state highways in 1927. The average width was approximately 20 feet, with a number of routes paved 27, 30 or 40 feet wide.

SUPPLEMENTARY BUDGET IS ADOPTED

(Continued from page 8.)

MYERS TO TRUCKEE, VIA MCKINNEY'S AND TAHOE CITY

El Dorado County—Meeks Creek bridge, \$11,500.

WILLOWS TO ROUTE 3 NORTH OF BIGGS

Glenn County—Quint Canal bridge, \$10,000.

TIBURON TO ALTO

Marin County—Overhead approach at Alto, grading and surfacing, 0.7 mile, \$44,000; Alto overhead, \$40,000;

SANTA MARIA TO FREEMAN VIA BAKERSFIELD AND WALKER'S PASS

Kern County—Grading and oiled rock surfacing from five miles east of Bakersfield to mouth of Kern River Canyon, \$154,000.

MOJAVE TO NEEDLES VIA BARSTOW

San Bernardino County—Barstow grade separation, state's share, \$40,000; railroad's share, \$75,000; county's share, \$35,000.

OXNARD TO SAN JUAN CAPISTRANO

Ventura and Los Angeles Counties—Little Sycamore Creek to Solstice Canyon, pavement, 11.5 miles, \$422,000.

PINNACLES NATIONAL MONUMENT ROAD

San Benito County—To complete a preliminary survey to the Pinnacles National Monument in San Benito County, \$3,500. (Money contributed by the board of supervisors of San Benito County.)

DEVELOPMENT OF THE RIGHT OF WAY

(Continued from page 10.)

fore, his fellow man is glad to meet at all times.

Like every other profession, that of the right of way agent is or should be subject to the same rules of conduct as are applicable to any other vocation. Good faith and truth are fundamental principles, applicable to the relationship of agent, buyer, and owner. In the long run the right of way agent who never loses sight of this fact and practices it will succeed in inspiring confidence, which is the most valuable article of the right of way agent's stock in trade.

Skillful use of facts and arguments which will lead the owner to lower his original price, if it be really excessive, is very essential. Invariably the right of way agent will find the owner "up" in his price. This is natural for the unity of use of his property is in many cases materially interfered with, and many times damaged.

Again the right of way agent should be very careful at all times never to insult or anger the land owner, either by making him feel that he does not know the merits or value of his own property or otherwise.

Above all the right of way agent should never misrepresent facts, as misrepresentation of facts may invalidate a contract, and besides it is best to be honest and clean cut in all dealings. There are many cases of record where the right of way agent has lost a situation and embarrassed his employer by informing the land owner in an off-hand way, without wrong intention, and merely through over-zeal to close his case, that this or that would be done. The one difficulty with the average right of way agent is that he expects to be held responsible for the sum total in dollars and cents only of the cost of securing the right of way. If he comes to an actual case in which it will cost \$1,000 for a cattle-pass, drain ditch, or road crossing for the payment of \$50 or \$100 in cash for the right of way, as the expense of such work goes into the construction account, they outweigh in his mind the advantage of securing the right for \$50 or \$100 in cash. For this reason the right of way agent should not be allowed to make any bargains that would involve the engineering department without the approval of the Chief Engineer or higher official.

There was a time when the conception of securing the right of way was that it consisted of a hypnotic, high pressure, procedure by which the land owner was persuaded,

coerced, frightened, or in any other way compelled to acquiesce in the wishes of the agent. The only consideration in the mind of the agent was how to get the name "on the dotted line." The right of way agent who could successfully browbeat the largest number of land owners was the one who was considered most successful. But that day has passed, and with it the trouble it brought.

A certain amount of system as to deeds and maps is both essential and economical. All deeds should be made in the Engineer's office, and not one should be sent out without being numbered and charged to the person to whom sent for attention. These charges should be made in a book in which sufficient space should be allotted to each deed to allow a full summary of the case from the first move in it until its final settlement. This record should show the name of the project, name of the party to make the deed, number of acres taken, consideration, and when and to whom sent. A careful brief of all correspondence about each case should also be made a part of the record, and a thorough register, carefully kept as indicated, will save much time and labor. All records pertaining to right of way should be kept separate from all other records.

The making of right of way maps for permanent records is a matter that should receive the most careful attention. The trouble with the usual right of way map is that it contains too much that is useless, and too little that is useful.

Upon completion of construction, the right of way map should show all lands belonging to the enterprise, the location of monuments and the character of the title.

The foregoing are only a few of the many changes that have been brought about by the development upon a professional basis of the work of securing rights of way.

Highway Employee Killed

Mr. O. Winters was killed while driving a truck in the Kern River Canyon on August 23d. The cause of the accident is unknown as the truck plunged over the bank when no one was looking.

An interesting piece of road is being built through a swamp near Westport, Massachusetts. The entire stretch is given a foundation of 12 inches of gravel and is surfaced with 8 inches of reinforced concrete, 20 feet wide for most of its length.

As a memorial to the men and women of New York who served in the World War, a road will be built to the top of Whiteface Mountain, overlooking Lake Placid. Eventually a perpetual light will shine from the summit and be visible from all directions for forty to fifty miles.

CALIFORNIA HIGHWAYS AND PUBLIC WORKS

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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

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Progress Reports From the Counties

DEL NORTE COUNTY

The Holdener Construction Company, which has the contract for oiling and surfacing 35 miles of the Redwood Highway from the Oregon line southerly, have completed the 8.4 miles of surface oiling between Patricks Creek and Gasquet, and are now working on the southerly 9.3 miles.

They have two large crushing plants operating and have practically completed the placing of crushed rock surfacing on the 11 miles from Patricks Creek north.

The Holdener Construction Company also has a contract on the Roosevelt Highway northerly from Crescent City for a distance of 21 miles for placing approximately 16,000 cu. yds. of crushed rock surfacing. Their work was approximately 25 per cent complete on the last of August.

John R. Hill, who has the contract for grading and surfacing on the Roosevelt Highway from the Oregon line southerly .7 mile, has practically completed his grading and is now setting up for his surfacing operations.

The day labor work of completing the State Highway from Elk Valley to the new Smith River bridge now being constructed east of Crescent City on the Redwood Highway, is practically all graded and temporary local surfacing is being applied to get the road in satisfactory condition for hauling the bridge steel in to the site.

J. E. Johnston, contractor for the grading and surfacing of the highway between the Klamath River and 7 miles northerly, has made excellent progress in his grading operations and it is expected that surfacing operations will be started as soon as his plant, which is now being erected near the northerly end, is in operation.

Mr. Johnston also has the contract for grading and surfacing 3.5 miles from the southerly Del Norte County line northerly. The grading on this contract is practically complete and surfacing operations are in progress. Traffic is yet using the old county road until the surfacing is further advanced on the contract.

FRESNO COUNTY

Widening roadway, line changes and the construction of drainage structures on Route 10 (Sierra-to-the-Sea lateral) west of Coalinga have made this section into a very good mountain road. This work has been done by day labor under Foreman O. D. Gaston. Surfacing of this road will soon be under way.

HUMBOLDT COUNTY

The Englehart Paving and Construction Company have now sufficiently completed their contract for grading and surfacing the 6.3 miles southerly from the northerly Humboldt County line, that traffic is being carried through without any interruptions whatever on the newly placed crushed stone surfacing, and finishing work is now in progress.

The Hauser contract for grading and surfacing from Orick northerly 8.1 miles, is complete and has been recommended for acceptance.

W. H. Hauser also has the contract for the grading and surfacing of 2.1 miles of Redwood Highway between Fortuna and Fernbridge. The contractor has just moved his equipment from his Orick job and now has two power shovels operating on the new work.

At Scotia, contractors Smith, Brothers have completed the clearing and about one-half of the grading on the small line change at the southerly end of the North Scotia bridge.

The placing of plant mix oil surfacing by day labor, between Fernbridge and Loleta, on 2 miles of Redwood Highway, is now in progress and it is expected will be completed by the 10th of September.

INYO COUNTY

The contract for surfacing between two miles south of Big Pine and Tinemaha Dam being done by Montfort and Armstrong, a distance of 7 miles is well along. The base course is now complete and the top course is now being placed preparatory to oiling which will start at once. Several minor line changes were graded by state forces before the above work was started and also all curves were super-elevated so that this section of road will be greatly benefited.

The grading to new grade and alignment of that section of road between Diaz Lake, three miles south of Lone Pine and Alabama Gate, a total contract length of 3.5 miles by the Southwest Paving Company, Harry Wilson of Lone Pine having the subcontract for grading and culverts, is about 50 per cent complete. The contractor expects to start erecting his plant for the road surfacing material within the next month and the oiling operations will follow.

The contract has just been awarded to the Southwest Paving Company for the grading and surfacing, oil-treated, plant mix method, of 9 miles from Olancha to Cottonwood Creek, which includes two timber bridges.

Two new additions in the form of wings to the original office building at Bishop have now been completed except for painting the outside. The district forces are now occupying same which greatly relieves the crowded condition heretofore existing.

A reinforced concrete culvert has been completed in Bishop Creek near the north city limits of Bishop, which gives a 40-foot roadway in place of the narrow timber bridge formerly at this location.

At the point where the newly-graded road near Cowan Station crosses the Los Angeles city aqueduct, a reinforced concrete slab bridge is being constructed by state forces which will permit the use of this section of road heretofore blocked off from traffic.

The state forces have now completed the oiling of about 12 miles of road in Round Valley and on Sherwin Hill, oiled shoulders along the oil-macadam pavement north of Bishop, reoiling certain sections between Bishop and Big Pine, and are now oiling the shoulders along the 8 miles of 8-foot concrete pavement between Tinemaha Dam and Division Creek. When the state oiling program for this year is completed, there will be a continuous stretch of road oiled or hard surfaced from the Sherwin Hill Summit south to Alabama Gate, near Lone Pine, distance 75 miles.

KERN COUNTY

State forces will soon have completed the new road from the junction of Route 23 to the Walker Pass, a distance of 8 miles. This will be on high standards of alignment and grade and will afford a pleasing contrast to the present narrow winding roadway with its rolling grades.

The improvements on the Walker Pass road west of the summit, made during the early part of the year, have been the occasion of much favorable comment. Further improvements on this section of road are to be made in the near future, including a new bridge over Jack Creek in a new location, which will eliminate the dangerous approaches to the bridge as it now exists.

Widening of roadway and line changes on the Kern River Canyon Highway is progressing rapidly. All dangerous points have been eliminated and curves and grades improved. It is expected to have the road in first class shape before winter.

KINGS COUNTY

A portion of Route 10 west of Lemoore has been surfaced with an asphalt mix. The work was done by day labor under General Foreman E. W. Latour.

LOS ANGELES AND VENTURA COUNTIES

The Southwest Paving Company has recently completed the placing of 11.8 miles of oil treated crushed

stone surfacing between Little Sycamore Creek in Ventura County and Latigo Creek on the Malibu Ranch in Los Angeles County. Their rock plant, where the oil treated California type surfacing was premixed, will not be dismantled until after the completion of the Lewis Construction Company's 1.5-mile grading job between Arroyo Sequit and Los Alisos Creek. It has been arranged to have the Southwest Paving Company furnish premixed surfacing for the latter job, which is nearing completion.

Jahn and Bressi have grading operations well under way on their 11.6-mile contract between Hueneme road and Little Sycamore Creek on the Coast Highway in Ventura County, easterly from Oxnard, where the highway is to be paved with Portland cement concrete.

On the reconstruction of Foothill boulevard between Monrovia and Azusa in Los Angeles County, all culverts are completed and about half of the 40-foot asphaltic concrete pavement being placed is finished.

MADERA COUNTY

The Callahan Construction Company have completed their contract for resurfacing from Herndon to Arcola school.

Construction work on the new Herndon bridge is being pushed by Contractor Carl Peterson.

MARIN COUNTY

Progress is being made by Hanrahan Company on their contract to reconstruct the Redwood Highway from Ignacio to Gallinas Creek near San Rafael. Over three-fourths of the grading is completed; detour bridges and approaches at the several new and reconstructed bridges are opened up to traffic and a 10-foot by 2-inch oil treated strip is being laid on the west side of the existing pavement to accommodate two lines of traffic during construction of the second story pavement which is to be laid in half widths. Two shovels and many trucks and tractors are busy clearing up the work preliminary to paving. A central proportioning plant has been erected at Ignacio and laying of concrete will begin soon.

The removal of the old bridge at Miller Creek and the necessary removal of portions of the bridges at Pacheco and San Jose creeks have been completed and pouring of the deck of Pacheco Creek has also been finished.

MARIPOSA COUNTY

Basich Bros., contractors, have started work on their grading contract in Mariposa County. This work is in charge of Resident Engineer W. T. Rhodes.

Convict work under Superintendent D. M. Lee is progressing rapidly on the Yosemite Highway east of Mariposa.

MENDOCINO COUNTY

The recently completed work as done by the state maintenance forces on the "McDonalds-to-the-Sea Highway" from McDonalds to Boonville has made it possible for two vehicles to pass at most any point. And now the local inhabitants and also the regular visitors in this neighborhood are waiting expectantly for the proposed improvement of this highway by rocking the road and rebuilding major structures.

MERCED COUNTY

Work is expected to start soon on reflooring and painting the San Joaquin River bridge on the Pacheco Pass lateral east of Los Banos.

MONO COUNTY

Coolidge and Scott, contractors from Minden, Nevada, secured the contract for grading about 2½ miles of road between Dogtown and Point Ranch about 6 miles south of Bridgeport. They have a gas shovel, three trucks, teams and other equipment on the work and are making good progress.

State forces are doing good work on the Tioga and Sonora Pass roads, widening the existing roads and making line changes where most needed. Two new log bridges will soon be constructed on the Sonora Pass road eliminating two fords.

The survey of the road from Bridgeport to Colville is now under way and as soon as the location along the Walker River is completed a state grading crew will be placed on the most dangerous and narrow places bettering the alignment and sight distance.

The annual program of widening and alignment changes on the Tioga road by state forces is affording much appreciated added safety and comfort to the traveling public.

MONTEREY COUNTY

For several years past a consistent program of shoulder improvement has been carried out in the Salinas Valley, waterbound macadam shoulders having been constructed over some 70 miles of highway, followed by the construction of a bituminous macadam armor coat on these shoulders. In the furtherance of this general program, the construction of the bituminous macadam armor coat has just been completed on the shoulders between San Ardo and San Lucas.

The past few years have seen extensive improvement between Coalinga and San Lucas of Route 10, known as the Sierras-to-the-Sea lateral. All portions have been improved to state highway standards except the mountain grade over the Mustang Ridge approximately half way between San Lucas and Coalinga, and extensive improvement of this grade is now being finished by the state forces, including a widening of the roadbed, betterment of sharp curves, and surfacing of the roadway. As a further improvement on this lateral, the portion of road between San Lucas and Mustang Grade has just been oiled.

Rapid progress has been made on the construction of the San Simeon to Carmel Highway by convict labor from the camp at Salmon Creek near the southerly boundary of Monterey County. Over two miles of road has been completed since the camp started operation in April, and the road is under construction for a considerably greater distance.

Preparations are practically completed for the opening of a new convict camp on the Little Sur River approximately 20 miles south of Carmel, which camp, in conjunction with the camp already operating at Salmon Creek 60 miles farther south, will carry forward the construction of the San Simeon to Carmel Highway along the Monterey Coast.

ORANGE COUNTY

The link which connects the Coast Highway through Huntington Beach and Laguna with the Los Angeles to San Diego Highway at Serra has been completed and opened to traffic.

Grading work is nearly completed on the mile of highway north from Galivan, which when completed, will carry traffic over the new overhead crossing of the Santa Fe Railway tracks and eliminate the dangerous grade crossing at Galivan. The new stretch of highway will be surfaced with oil treated crushed stone.

Between Anaheim and Fullerton the state highway, 0.8 miles in length, is being reconstructed and will have 56 feet of Portland cement concrete with curbs. Half of the street is being constructed by Orange County; the other half by the state, all work being under state inspection.

SACRAMENTO COUNTY

Mankel & Staring's contract for grading and surfacing the Arno cut-off between Galt and Sacramento is nearly completed, after being held up for several months due to water in the borrow pit.

The contract for grading and paving with Portland cement concrete from Galt to one mile south of Arno has been approved, and work will start very shortly. The contractor is the firm of Frederickson Bros. and Frederickson & Watson Construction Company. C. M. Butts has been assigned to the job as resident engineer.

SAN BENITO COUNTY

Under the provisions of the act which provides for the making of surveys on county roads by the State Highway Commission upon the request of the counties and the payment of the cost by them, a state highway location party has been making the survey for improvement of the road south from Hollister through Tres Pinos to Paicines, which is a portion of the road leading to the Pinnacles National Monument. The survey is being made at the request of the county, with the idea of improving this road to the equivalent of state highway standards.

SAN DIEGO COUNTY

All work has been completed on the reconstruction along an improved alignment of two miles of highway between Pine Valley and Buckman Springs on the San Diego to El Centro Highway. The work which was contracted to the Jahn and Bressi Construction Company consisted of the construction of a graded road bed 30 feet wide with necessary pipe culverts, and a 35-foot span reinforced concrete girder bridge, with a 40-foot clear roadway constructed across Cottonwood Creek.

Hauser Construction Company has work well under way on the reconstruction of 7.2 miles of the San Diego to El Centro Highway between Viejas Creek and Guatay Creek. The work to be done consists of constructing a graded roadbed 36 feet wide with necessary drainage structures.

SAN JOAQUIN COUNTY

Remarkable progress is being made on the paving between Mossdale and French Camp. This work is being done by the firm of Frederickson Bros. and Frederickson & Watson Construction Company. We believe that by placing 884 cubic yards in a 10-foot strip of concrete pavement from one mixer in an eight-hour day is a record for this state. We would be interested to hear of a higher. The paving is now complete over three months ahead of the time limit, and will be opened to traffic shortly. This is the main road between Stockton and the San Francisco Bay region. C. M. Butts is resident engineer.

The widening with earth of Cherokee Lane for about five miles from Cherokee Station to Live Oak, between Stockton and Lodi, is progressing rapidly. The contractor, D. McDonald, is handling the grading and has sublet the culvert extensions to the Holdener Construction Company. R. H. Lapp is resident engineer.

SAN LUIS OBISPO COUNTY

Contractor J. F. Collins has just completed the construction of a line change two miles north of San Luis Obispo, which, although short, constitutes a

distinct improvement in the coast highway. It eliminates a double reverse curve, having required a change in the channel of San Luis Obispo Creek, and comparatively heavy grading.

The most extensive piece of highway improvement carried out in San Luis Obispo County in recent years is the reconstruction to modern standards of the coast highway between Pismo Beach and San Luis Obispo. This work, which is being carried on by Contractor J. F. Knapp, is now approaching completion the concrete pavement having been poured and open to traffic throughout. The construction of oiled macadam exceptions where heavy grading was involved and the completion of a major line change recently added to the contract are the only major items yet to be completed in connection with the work.

In connection with the construction of the new camp of the California National Guard near San Luis Obispo, the Adjutant General called on the Division of Highways to construct the roads within the camp area. These were let to a district contract last spring, and work of construction carried through to completion immediately before the occupancy of the camp by the first unit of the National Guard. It is probable that further improvement will be carried out by the Division of Highways at a later date.

SAN MATEO COUNTY

See account of Bayshore Highway project.

SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES

The work being done by Twohy Bros. Co. and J. C. Shea Co., contractors, on the Skyline boulevard extension from the La Honda road to Saratoga Gap, is progressing with a very large crew and much equipment rushing the grading work prior to the heavy winter rains. More than half the excavating has been completed, and seven power shovels are moving approximately 150,000 cubic yards per month. An excellent quarry site has been located and is being developed with the intention of starting the laying of the rock surface about the middle of September.

Clearing right of way has been completed. Also the construction of several timber cattle passes and the corrugated metal pipe culverts are being placed as fills are made.

SANTA BARBARA COUNTY

The Cuyama lateral extending from Santa Maria to Maricopa is being steadily improved to better standards, some 16 miles having recently been oil surfaced, the work including also the addition of considerable gravel surfacing.

SANTA CLARA COUNTY

District maintenance forces have just completed the extension of the 8-foot by 7-foot concrete box at Laguna Creek near Covoto and the construction of a new 12-foot by 7-foot concrete box immediately adjacent thereto. A detour was built around this work and the construction carried on in such a manner as to cause no interference with traffic at any time.

Much favorable comment has reached this office on the excellent manner in which this work was handled.

SANTA CRUZ COUNTY

The maintenance forces are starting the straightening out and widening on 7 miles of the road from Saratoga Gap to Redwood Park.

This section, from the Gap to Waterman switch, the connection with the Waterman road to Boulder Creek,

is extremely narrow, with poor visibility and many hairpin curves. It is proposed to improve the alignment and visibility on this section prior to the opening of the section of the Skyline boulevard, now under contract, by cutting across several of the worst curves and widening the narrow sections to allow of two-way traffic at all points.

SOLANO COUNTY

Larsen Bros.' contract for grading and surfacing the line change back of Cordelia is making good progress. The bridge over Green Valley Creek is complete, except for the guard rail. Jess Cole is resident engineer.

STANISLAUS COUNTY

The south approach to the Stanislaus River bridge near Ripon under contract to C. W. Wood is progressing. This job consists of replacing with earth fill about 300 feet of the old trestle and building three new bents of timber to connect with the concrete arch. Geo. R. Hubbard is resident engineer.

TULARE COUNTY

The Valley Paving and Construction Company were successful bidders on the Tulare to Goshen Junction section of the Valley Highway. The contract calls for widening and resurfacing with asphaltic concrete. H. B. LaForge will be resident engineer for the state on this job.

YOLO COUNTY

Replacing the old guard rail on the wooden portion of the Yolo Causeway is being pushed by P. F. Bender, contractor. H. S. Marshall is acting resident engineer.

The widening with earth and placing oil mix borders on the one and one-half miles east of the Yolo Causeway, D. McDonald, contractor, has been completed. R. H. Lapp was resident engineer.

GEORGIA has 470 miles of asphaltic surfaces on the state highways, to which about 70 miles is being added this year. All of this is on gravel, stone or slag base.

QUEBEC—Maintenance by contract has been abandoned after a three-year trial in which it was found that better results could be obtained by departmental forces. Lack of interest by contractors and uncertainty of quantities involved made canceling of contracts advisable for the present.

SOUTH CAROLINA—Counties which desire may finance state road construction entirely with local bond issue or other funds, under a "reimbursement agreement" in which the state agrees to repay its share when funds become available.

NEW ENGLAND—During the present year the various state and local highway departments will use nearly \$50,000,000 to extend, improve or reconstruct and maintain their highways. Maine will improve 90 miles. Vermont will double its paved mileage. New Hampshire is building 36 miles of new highways and 100 bridges. Massachusetts will apply \$12,000,000; and Rhode Island \$3,500,000. Connecticut will improve 150 miles with a total program of \$15,000,000.

Record of Bids and Awards

ALAMEDA COUNTY—Planning surface of asphalt concrete pavement between Alameda-San Joaquin County line and Greenville, about 10.2 miles in length. Dist. IV, Rt. 5, Sec. A. Engr's Est. \$6,052.84 Awarded to Standard Road Mfg. Co., Los Angeles, \$6,052.84.

BUTTE COUNTY—Between Butte Creek and Biggs Road, 7.7 miles to be surfaced with gravel. Dist. III, Rt. 45, Sec. A. Engr's Est. \$29,492. L. C. & W. E. Karstedt, San Jose, \$18,336; E. B. Bishop, Sacramento, \$20,832; Hemstreet & Bell, Marysville, \$31,937; Daniel Bayles, Biggs, \$35,841; Mankel & Staring, Sacramento, \$19,682; A. F. Giddings, Sacramento, \$19,581; H. H. Peterson, San Diego, \$24,798. Contract awarded to L. C. & W. E. Karstedt.

GLENN COUNTY—Between Logandale and Willos, 5 miles to be graded. Dist. III, Rt. 7, Sec. A. Engr's Est. \$48,360.50. E. T. Fisher, Patterson, \$65,690; Earl L. McNutt, Eugene, Oregon, \$44,406; A. P. Giddings, Sacramento, \$39,043; C. W. Wood, Stockton, \$49,155; Fredrickson & Watson, Oakland, \$26,637.10; D. McDonald, Sacramento, \$35,142.50; C. T. Malcom, Walnut Creek, \$42,951.50; C. R. Adams, Oakland, \$41,992.40. Contract awarded to D. McDonald.

IMPERIAL COUNTY—Through the town of Imperial, 1 mile to be paved. Dist. VIII, Rt. 26, Sec. F. Engr's Est. \$29,490. R. E. Hazard Const. Co., San Diego, \$29,395; Finley Steele, Santa Ana, \$31,590. Contract awarded to R. E. Hazard Const. Co.

INYO COUNTY—Between Olancho and Cottonwood Creek, 9.3 miles to be graded and surfaced with oil treated crushed gravel or stone. Dist. IX, Rt. 23, Sec. J. Engr's estimates, \$93,281.60 plant mix, \$91,776.60 road mix. W. J. Taylor, Palo Alto, \$96,967.80 PM, \$93,205.30 RM; Nighbert-Cornahan Co., Bakersfield, \$103,391.10 PM, \$96,468.10 RM; M. J. Beranda, Stockton, \$102,853. PM, \$92,823 RM; Holdener Const. Co., and G. E. Finnell, Sacramento, \$111,161.70 PM, \$108,904.20 RM; Robinson-Roberts Co., Oakland, \$101,737.50 PM, \$101,737.50 RM; Dan and Maney, Los Angeles, \$108,938.50 PM, \$195,923.50 RM; Southwest Paving Co., Los Angeles, \$85,753.80 PM, Isbell Construction Co., Carson City, Nevada, \$114,567 PM, \$113,363 RM. Contract awarded to Southwest Paving Co.

LOS ANGELES COUNTY—Bridge across Santa Clara River and bridge across S. P. Tracks with .72 of a mile of grading and paving approach. Dist. VII, Rt. 4, Sec. A. Engr's Est. \$229,185.50. Ross Const. Co., Los Angeles, \$198,424.60; The Western Const. Co., Los Angeles, \$222,563.33; C. E. Green & L. Worel, Los Angeles, \$220,342.28; R. H. Travers, Los Angeles, \$227,566.20; John C. Gist, Arcadia, \$198,408.26; Fredrickson & Watson, Oakland, \$295,087.80; Claude Fisher, Los Angeles, \$193,773.02; McWilliams & Ritchey, Los Angeles, \$238,713. Contract awarded to Claude Fisher.

LOS ANGELES COUNTY—Between San Dimas Ave. and Ramona Ave., 1.4 miles to be graded and paved with asphalt concrete. Dist. VII, Rt. 9, Sec. I. Engr's Est. \$69,867.50. Gibbons and Reed Co., Burbank, \$69,859.30; Griffith Co., Los Angeles, \$63,446.55; Hall-Johnson Co., Alhambra, \$92,530.60; Southwest Paving Co., Los Angeles, \$69,234.92. Contract awarded to Griffith Company.

MADERA COUNTY—Between Madera and Berenda Crossing, 7.3 miles to be graded and surfaced with asphalt concrete. Dist. VI, Rt. 4, Sec. B. Engr's Est. \$163,259.50. Warren Construction Co., Oakland, \$171,612.50; Hanrahan Co., San Francisco, \$142,867; Force Curriam & McLeod, Oakland, \$157,267.10; Allied Contractors, Inc., Omaha, Nebr., \$163,503.90; A. Teichert & Son, Inc., Sacramento, \$154,804; J. E. Johnson, Stockton, \$170,416.50; Valley Paving & Const. Co., Visalia, \$163,294.75; Cornwell Construction Co., Santa Barbara, \$154,797.50; Jack Casson, Hayward, \$158,575.15. Contract awarded to Hanrahan Company.

MARIPOSA COUNTY—Between westerly boundary and Orange Hill School, 6.3 miles to be graded and rock surfaced. Dist. VI, Rt. 18, Sec. A. Engr's Est. \$207,994.50. Robinson-Roberts Co., Oakland, \$255,386.80; W. H. Hauser, Eureka, \$199,667.50; T. E. Connolly, San Francisco, \$245,158.40; A. Teichert & Son, Sacramento, \$213,208.70; Ward Engineering Co., San Francisco, \$215,455.70; Holdener Const. Co., Sacramento, \$208,037.75; J. F. Collins, Stockton, \$208,164.70; Jasper-Stacy, San Francisco, \$207,484.78; Isbell Const. Co., Fresno, \$233,366.50; Basich Bros. Const. Co., Los Angeles, \$166,749.30; Harlan White, San Francisco, \$235,736.90; C. B. Adams, Oakland, \$198,654; Fredrickson & Watson Const. Co., \$207,829.30. Contract awarded to Basich Bros. Construction Co.

MERCED COUNTY—Repairing bridge across San Joaquin River about 16 miles east of Los Banos. Dist. VI, Rt. 32, Sec. C. Engr's Est. \$20,914. Geo. J. Ulrich Const. Co., Modesto, \$24,500; M. B. McGowan, San Francisco, \$26,894; Carl Nelson, Stockton, \$21,318.03; Stephenson Const. Co., San Francisco, \$19,006.60. Contract awarded to Stephenson Const. Co.

NEVADA COUNTY—Between Donner Lake and Truckee, 2.5 miles to be graded and surfaced with crushed gravel or stone. Dist. III, Rt. 37, Sec. D. Engr's Est. \$37,092.40. Hemstreet & Bell, Marysville, \$45,371; J. P. Brennan, Redding, \$38,994.50; Mathews Const. Co., Sacramento, \$27,983; G. E. Finnell, Sacramento, \$33,335.50; W. J. Taylor, Palo Alto, \$35,306. Contract awarded to Mathews Const. Co.

PLACER COUNTY—Between Sheridan and northerly boundary, 2.1 miles to be widened and surfaced with bituminous macadam. Dist. III, Rt. 3, Sec. B. Engr's Est. \$19,004.50. E. F. Hilliard, Sacramento, \$13,594; A. Teichert & Son, Sacramento, \$14,982.90; E. B. Skeels, Roseville, \$15,290.50; Kaiser Paving Co., Oakland, \$14,819. Contract awarded to E. F. Hilliard.

PLACER COUNTY—Two bridges across Dry and Antelope creeks east of Roseville. Dist. III, Rts. 3 and 17, Sec. A. Engr's Est. \$34,497.88. D. McDonald, Sacramento, \$34,420.75; Peter F. Bender, \$31,640; Stevenson Const. Co., San Francisco, \$31,644.50; Geo. J. Ulrich Const. Co., Modesto, \$28,639.45; Edgar Noble, La Moine, \$34,691. Contract awarded to Geo. J. Ulrich Const. Co.

RIVERSIDE COUNTY—Between 9½ miles west of Hopkins Well and Black Butte, 22.1 miles to be graded and surfaced with oil treated crushed gravel or stone. Dist. VIII, Rt. 64, Sec. C. D. Engr's Est. \$342,450, PM, \$334,554, RM. C. R. Adams, Oakland, \$373,492.20, PM, \$362,212.20, RM; Dillon & Boles Los Angeles, \$347,405.20 PM, \$342,409.20 RM; Holdener Const. Co., Inc. and G. E. Finnell, Sacramento, \$386,082.70 PM, \$380,442.70 RM; Ross Construction Co., Los Angeles, \$368,430 PM, \$379,719 RM; Hall-Johnson Co., Alhambra, \$399,639 PM; Nevada Contracting Co., Fallon, Nev., \$369,630.50 PM, \$369,630.50 RM; Force Curriam & McLeod, Oakland, \$310,885 PM; Robinson-Roberts Co., Oakland, \$376,297.30; \$376,297.30; C. G. Willis & Sons, Los Angeles, \$389,164.40 PM, \$335,780.40 RM; Southwest Paving Co., Los Angeles, \$353,554.80 PM; George Herz & Co., San Bernardino, \$292,899.60 PM, \$313,203.60 RM; Isbell Construction Co., Carson City, Nevada, \$346,141.20 PM, \$351,781.20 RM. Contract awarded to George Herz & Company for \$292,899.60 PM.

SACRAMENTO COUNTY—Constructing 1.8 miles of new property fence and removing and resetting 3.7 miles of existing property fence between Galt and Arno. Dist. X, Rt. 4, Sec. A. Engr's Est. \$2,347.98. Standard Fence Co., Oakland, \$5,386.47; Mathews Const. Co., Sacramento, \$4,660.78; Peter F. Bender, North Sacramento, \$3,899.99; Ed. R. Jameson, Sacramento, \$2,755.52; B. C. Burnett, Turlock, \$4,348.55. Contract awarded to Ed. R. Jameson.

SACRAMENTO COUNTY—Between Galt and 1 mile south of Arno, 4 miles to be graded and paved with Portland cement concrete. Dist. X, Rt. 4, Sec. A. Engr's Est. \$179,357.75. H. H. Peterson, San Diego, \$138,135.25; J. V. Galbraith, Petaluma, \$164,334.90; C. W. Wood, Stockton, \$139,982; Fredrickson & Watson Const. Co., Oakland, \$135,106.25; Dillon & Boles, Los Angeles, \$160,068. Contract awarded to Fredrickson & Watson Const. Co.

SAN DIEGO COUNTY—Repairing bridge across the Santa Margarita River 2.6 miles north of Oceanside. Dist. VII, Rt. 2, Sec. C. Engr's Est. \$11,076. Ross Construction Co., Los Angeles, \$9,750; L. Worel, Alhambra, \$14,400; John C. Gist, Arcadia, \$11,300. Contract awarded to Ross Construction Co.

SAN JOAQUIN COUNTY—Between the Diverting Canal and Cherokee Station, 0.8 of a mile to be graded and surfaced with crushed gravel or stone. Dist. X, Rt. 4, Sec. C. Engr's Est. \$34,290. Willard and Biasotti, Stockton, \$32,561.50; C. W. Wood, Stockton, \$29,792; Cannon & McCarty, Stockton, \$28,220.50; D. McDonald Sacramento, \$29,615; Mankel & Staring, Sacramento, \$39,336; Fredrickson & Watson Const. Co., Oakland, \$29,115; Ariss-Knapp Co., Oakland, \$39,755. Contract awarded to Cannon & McCarty.

SAN JOAQUIN COUNTY—From 3 miles west of Manteca to Mossdale, 2.2 miles to be graded and paved with oil treated crushed gravel or stone. Dist. X, Rt. 66, Sec. A. Engr's Est. \$36,208. Jack Casson, Hayward, \$36,503; Kaiser Paving Co., Oakland, \$41,073; Willard & Biasotti, Stockton, \$32,391.65; C. W. Wood, Stockton, \$32,885; W. J. Taylor, Palo Alto, \$34,198.40; Nighbert-Cornahan Co., Bakersfield, \$41,542.60; Mankel & Staring, Sacramento, \$29,292; A. Teichert & Son,

Inc., Sacramento, \$32,536.90; Valley Paving Const. Co., Visalia, \$34,194.50; Fredrickson & Watson Const. Co., Oakland, \$22,206; D. McDonald, Sacramento, \$32,328. Contract awarded to Mankel & Staring.

SAN MATEO COUNTY—Grading and oil treated rock surfacing 3.5 miles from San Francisco to South San Francisco. Dist. IV, Rt. 68, Sec. A. Engr's Est. \$669,028. Healy-Tibbitts Construction Co., San Francisco, \$935,740; Granfield Farrar & Carlin, San Francisco, \$704,049.50; H. V. Rohl Co., Los Angeles, \$661,373; The Utah Construction Co., Ogden, Utah, \$889,418.80; Marsh Bros. & Gardener, Inc., San Francisco, \$829,977.60; Calif. Const. Co., San Francisco, \$864,044.80; Nevada Const. Co., Fallon, Nevada, \$796,018.70; Towhy Bros., Co. & J. T. Shea, San Francisco, \$855,744.50; George Pollock, Sacramento, \$730,321; J. F. Knapp, Stockton, \$769,461.50; C. R. Adams, Oakland, \$825,572.20; Kaiser Paving Co., Oakland, \$807,422.49; D. A. Foley Const. Co., Los Angeles, \$1,002,816.50; T. E. Connally, San Francisco, \$885,856.80; Ross Construction Co., Los Angeles, \$797,939; D. McDonald, Sacramento, \$717,238; A. F. Giddings, Sacramento, \$843,371.40; S. H. Palmer Co., Sacramento, \$856,807.40; Wren & Greenough, Portland, Oregon, \$812,907. Contract awarded to H. W. Rohl Co., Los Angeles, \$661,373.

SANTA CLARA COUNTY—Overhead crossing, S. P. tracks at Sargant. Dist. IV, Rt. 2, Sec. C. Engr's Est. \$70,063.50; The Duncanson-Harrison Co., San Francisco, \$70,195.75; MacDonal & Kahn, San Francisco, \$71,860; Ben C. Gerwick, Inc., San Francisco, \$89,553; Jasper Stacy Co., San Francisco, \$84,983; A. W. Kitchen, San Francisco, \$74,837.22; Barrett & Hill, San Francisco, \$63,335.30; M. B. McGowan, San Francisco, \$78,489; Schulord McDonald, Oakland, \$71,293; Fredrickson & Watson, Oakland, \$73,870.25; Healy-Tibbitts Const. Co., San Francisco, \$89,953.25; Butte Const. Co., San Francisco, \$74,416.40. Contract awarded to Barrett & Hill, \$63,335.30.

SONOMA COUNTY—Between Santa Rosa and Willow Brook 11.4 miles to be graded and paved with Portland cement concrete. Dist. IV, Rt. 1, Sec. D. Engr's Est. \$450,458.35. J. F. Knapp, Stockton, \$428,634.95; J. V. Galbraith, Petaluma, \$409,452.70; Dillon & Boles, Los Angeles, \$490,142.75; H. H. Peterson, San Diego, \$383,639.50; N. M. Hall, Porterville, \$457,256.75; Prentiss Paving Co., San Jose, \$432,204.55; Hanrahan Co., San Francisco, \$414,816.70; D. McDonald, Sacramento, \$423,892.30; C. W. Wood, Stockton, \$419,358.20; Kaiser Paving Co., Oakland, \$440,989.45. Contract awarded to H. H. Peterson, \$383,639.50.

TRINITY COUNTY—Two bridges, reinforced, one across Indian Creek and one across Grass Valley Creek, about 40 miles west of Redding. Dist. II, Rt. 29, Secs. A and B. Engr's Est. \$28,275. J. P. Brennan, Redding, \$22,431.22; Edgar Noble, La. Moine, \$25,409. Contract awarded to J. P. Brennan.

TULARE COUNTY—Between Tulare and 1 1/2 miles south of the Plaza Garage 5.1 miles to be widened and surfaced with asphalt concrete. Dist. VI, Rt. 4, Sec. F. Engr's Est. \$138,167.10. Hanrahan Co., San Francisco, \$129,820; Valley Paving Co., Visalia, \$119,772; A. Teichert & Son, Sacramento, \$132,476; Allied Contractors, Inc., Omaha, Neb., \$137,643.50. Contract awarded to Valley Paving Co.

TUOLUMNE COUNTY—Unloading, hauling and placing oil treated surfacing between Keystone and Jamestown. Dist. X, Rt. 13, Secs. A and B. Engr's Est. \$12,950. Jack Casson, Hayward, \$11,470; Mankel & Staring, Sacramento, \$10,075; C. W. Wood, Stockton, \$12,400; M. J. Beranda, Stockton, \$12,927; A. Teichert & Son, Sacramento, \$10,850; A. H. Ralsch, San Francisco, \$22,940. Contract awarded to Mankel & Staring.

VENTURA COUNTY—On the Conejo Grade, 4 miles easterly from Camarillo, 0.2 of a mile to be graded and paved with class P Portland cement concrete. Dist. VII, Rt. 2, Sec. B. Engr's Est. \$9,950. Sam Hunter, Santa Barbara, \$10,110; Silveria & Robbins, Ventura, \$9,183; H. H. Peterson, San Diego, \$ 0,444. Contract awarded to Silveria & Robbins.

BUTTE, GLENN, COLUSA, YOLO, YUBA, SUTTER, PLACER, SACRAMENTO AND EL DORADO COUNTIES. Crushed gravel or stone to be unloaded from cars hauled and deposited in stock piles. Dist. III. Engr's Est. \$6,230. A. G. Ralsch, San Francisco, \$6,408; Hemstreet & Bell, Marysville, \$7,787.50; J. R. Reeves, Sacramento, \$6,719.50. Contract awarded to A. G. Ralsch.

PENNSYLVANIA—Four thousand units of maintenance equipment costing \$4,000,000 are in service maintaining the 12,000 miles under state jurisdiction.

POLITICAL CLASSIC

The *Houston Post-Dispatch* reprints the following announcement of a west Texan for the office of county attorney in his county:

To the Voters of Throckmorton County:

Having been strongly solicited by my wife, I hereby announce my candidacy for the office of county attorney. I shall be opposed in this race by two of your best known citizens, Hon. E. F. Reynolds and Mr. James F. Wright. Concerning them, I shall have nothing to say except that they are upright and honorable men deserving your confidence and support.

Mr. Reynolds came to Throckmorton County before most of us were born, when it represented the last outpost of civilization and lay far out on the edge of the wild frontier. But for such men as he, who came here when every step was attended by dangers and existence meant battle and a march, there would be no Throckmorton County and no county attorney's office to fill. For his labor and sacrifice we are all grateful. A life of noble deeds and great achievements recommended him to the voters. He is my friend and I love him. I have served for the past year, and am at present, his assistant.

Mr. Wright is a native son and was born in the county he seeks to serve. He is capable and qualified to fill the office and is deserving of the trust he asks you to bestow. He, also, is my friend, and should you elect him as your servant, I am sure your confidence would not be misplaced.

As for myself, I am an "Arkansas Hill-Billy," born and raised in the Ozark Mountains. Outran the dogs on Sunday morning to keep from having my face washed—did my sparring bare-footed—never saw a train until I was 13 and was almost grown before I learned that Republicans walked on hind feet like people.

Have farmed with a bull-tongue plow—taught school—practiced law—and am a first-class mechanic, having worked a right smart around a molasses mill. Came to Texas two years ago and married the finest little girl in Throckmorton County. I want the office because I think I can make a living out of it and will promise, if elected, to try and make thieves and bootleggers think hell ain't 40 feet from the courthouse.

So I expect to spend the time between now and the election, kissing babies, complimenting the ladies' cooking and bragging on the Old Man's crop.

Your vote and influence will be appreciated.

JEFF FOWLER.

Boss: "Mike, how did the accident happen?"

Mike: "Well, boss, ye see, 'twas like this: "I was drivin' me truck up State street, when I had to stop suddenly, and a fellow in a big Packard crashed into the rear end of me truck. Shure it didn't hurt his machine very much, but he jumped off and ran up to me, and shakin' his phist, said: 'Hey, you little Harp, why didn't you put out your hand?' 'Put out me hand?' says I. 'Ye dang fool, if ye couldn't see the truck, how the devil could ye see me hand?'"

Enthusiasm is the greatest business asset in the world. It beats money and power and influence. Singlehanded the enthusiast convinces and dominates where a small army of workers would scarcely raise a tremor of interest. Enthusiasm tramples over prejudice and opposition, spurs inaction, storms the citadel of its object, and like an avalanche overwhelms and engulfs all obstacles. Enthusiasm is faith in action; and faith and initiative rightly combined remove mountainous barriers and achieve the unheard-of and miraculous.

Set the germ of enthusiasm afloat in the prevention of accidents; carry it in your attitude and manner; it spreads like a contagion and influences every fiber of your activities; it begets and inspires effects you did not dream of; it means increase in production and decrease in costs; it means joy and pleasure and satisfaction to your fellows; it means life, real and virile; it means spontaneous bedrock results—the vital things that pay dividends.—D. D. McLean in *California Constructor*.

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



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