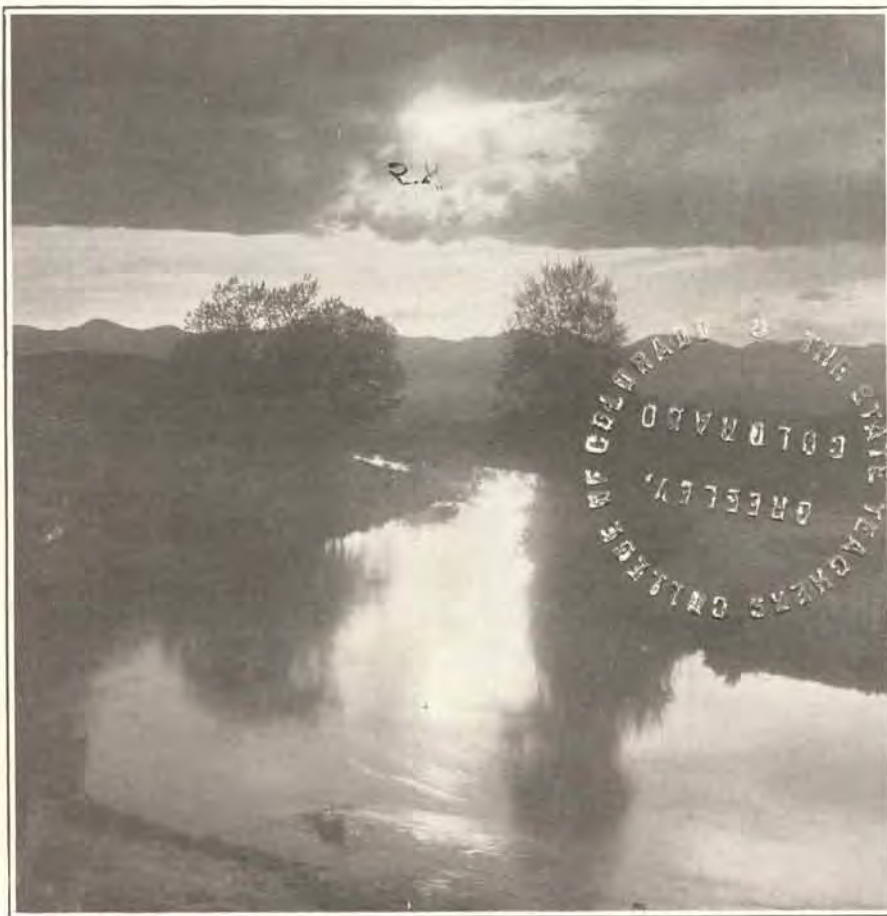


Colorado Highways

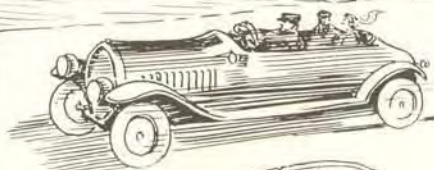
BULLETIN

Issued by the State Highway Department



BATHED IN THE GLORY OF THE SETTING SUN.
A Sunset on the Platte River, near Denver, on the Main Highway. Thousands Pass
This Spot Each Day. How Many See It?

June, 1918



States to Expend \$300,000,000 On Roads

APPROXIMATELY \$300,000,000 will be expended for the construction, improvement and maintenance of highways in the United States this year, according to estimates made out by various state highway departments. More funds are available for the work than ever before, and the only question which now looms large as a possible setback is that of the scarcity of labor and of materials.

According to figures secured by the Municipal Journal, from which this digest is made, Colorado ranks twenty-fifth in amount of its expenditure with \$3,635,000 as its estimate. Of this sum, some \$83,000 will be given for work by the Federal Aid and Forestry departments of the United States; approximately \$900,000 is raised by the state half-mill levy, and the remainder, or more than 50 per cent., is contributed by the various counties.

Texas leads the national list with an estimate of \$25,000,000, of which \$1,000,000 raised exclusively through the automobile tax is contributed by the state; \$1,753,973 by the national government, and the rest, \$22,246,027, will be raised by counties or other districts.

The table showing the estimates, in detail, follows:

Texas	\$25,000,000	COLORADO	3,635,000
Indiana	17,380,000	Virginia	3,600,000
Illinois	17,000,000	Mississippi	3,500,000
Massachusetts	15,637,000	North Dakota	3,500,000
Iowa	15,500,000	Maine	3,217,000
Arkansas	15,000,000	Arizona	3,000,000
West Virginia	14,000,000	Montana	3,000,000
California	12,000,000	Florida	2,750,000
Minnesota	11,500,000	Maryland	2,700,000
Pennsylvania	11,000,000	Alabama	2,500,000
Kansas	10,500,000	North Carolina	2,500,000
Wisconsin	10,125,000	Michigan	872,000
Tennessee	10,000,000	New Mexico	1,621,000
New York	8,500,000	South Carolina	1,498,000
Washington	*7,216,000	Nebraska	1,279,757
New Jersey	8,000,000	Utah	1,131,754
Ohio	7,210,000	Delaware	1,000,000
Oklahoma	6,000,000	Wyoming	806,000
Oregon	5,652,516	Vermont	685,000
Louisiana	5,300,000	Rhode Island	600,000
Connecticut	5,208,000	Nevada	506,000
Kentucky	4,500,000	New Hampshire	500,000
Georgia	4,300,000	South Dakota	300,000
Missouri	4,000,000		

*Does not include bond issue

+Only Federal figures. State appropriation not fixed yet. Idaho's estimate has not been completed.

The largest construction of new roads in point of mileage will probably be done by Arkansas, where projects calling for 22,000 miles of road are now under way. Probably the largest single project in the United States is included in this figure, a contract covering 168 miles of road to be constructed partly of macadam, partly of gravel, and 115 miles of asphalt on a concrete basis at a cost of \$2,788,000.

Not all of the states expect to expend their entire appropriations, among which New York will probably build roads to about half the amount of \$8,500,000, the sum available. New Jersey, on the other hand, will double its expenditure of \$4,000,000 in 1912.

It is noted in the more detailed figures, not used here because of lack of space, that the counties generally furnish by far the largest proportion of the fund; the state, in the case of Montana, for example, furnishing only the engineering work.

Federal aid plays a large part in the program of all the states, as does the Forestry division in those sections where the department has lands.

A general questionnaire to all highway departments sent out by The Municipal Journal brought out the fact that labor scarcity and cost of materials may result in curtailment of some of the work, but has also resulted in a more efficient handling of the work.

County Road Levies

Moffat and Montezuma lead the counties in the amount of mill levies made each year for work on roads with 7 mills each. From that figure the amount of the county levies gradually grades downward, depending upon the interest taken in road work and also in the levy raised for other purposes.

The figures in detail, together with the assessed valuation of each county, follow:

County Valuations, 1917.

County	Mill Levy	Valuation	County	Mill Levy	Valuation
Adams	2.	\$ 26,170,660	Lake .....	.75	11,508,625
Alamosa	2.	8,290,336	La Plata	2.623	15,244,340
Arapahoe	1.3	18,598,595	Larimer	2.3	40,979,005
Archuleta	2.8	4,803,077	Las Animas	1.5	37,440,456
Baca	1.	6,413,119	Lincoln	1.6	13,678,005
Bent	1.75	11,526,440	Logan	4.21	27,544,988
Boulder	1.95	42,892,240	Mesa	2.2	27,408,230
Chaffee	1.75	10,997,225	Mineral	5.	1,470,052
Cheyenne	1.5	10,728,544	Moffat	7.	5,714,770
Clear Creek	5.5	5,346,050	Montezuma	7.	5,844,653
Conejos	2.5	8,936,977	Montrose	2.7	15,192,880
Costilla	3.5	5,477,907	Morgan	3.3	21,491,890
Crowley	1.1	9,110,705	Otero	1.98	27,650,280
Custer	2.5	2,459,849	Ouray	3.5	5,194,341
Delta	2.6	15,373,800	Park	4.	8,637,650
Denver		330,453,580	Phillips	1.	8,190,356
Dolores	2.	1,582,545	Pitkin	3.5	5,385,630
Douglas	2.	11,113,180	Prowers	2.006	18,784,420
Eagle	3.	7,255,440	Pueblo	1.3	66,064,912
Elbert	2.3	13,722,779	Rio Blanco	2.75	5,728,420
El Paso	1.6	65,710,060	Ri Grande	2.	9,906,550
Fremont	2.8	18,797,830	Routt	5.23	14,247,327
Garfield	6.69	18,310,850	Saguache	2.	11,948,779
Gilpin	3.5	3,350,678	San Juan	3.5	4,172,220
Grand	2.53	4,737,555	San Miguel	3.25	8,845,724
Gunnison	2.2	16,025,760	Sedgwick	1.62	6,888,168
Hinsdale	4.	984,119	Summit	3.	6,474,358
Huerfano	2.5	12,963,074	Teller	2.67	13,848,230
Jackson	2.	5,058,955	Washington	1.5	17,904,363
Jefferson	2.49	22,579,930	Weid	2.7	82,573,620
Kiowa5	9,085,235	Yuma	1.5	15,233,850
Kit Carson	2.	14,123,033			

1,305,286,409

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Feasting on Colorado Scenery. Sheep Grazing Along the Road to Gunnison.

Circle Trips Included In Road Building Program For 1918

TWO, possibly three, new loop trips of surpassing scenic attractions will be made accessible to travelers in Colorado this year, if plans now completed by Commissioner T. J. Ehrhart are carried to a conclusion. Financial arrangements for the work have been made, and the only question not yet solved is that of obtaining labor. Road workmen are becoming an increasingly scarcer commodity, and already some vexatious delays have been caused by inability of contractors to get men in sufficient numbers.

The 1,000-mile trip, which swings out of Denver down through the southwestern portion of the state, and the Fall River route, are the two projects which, it is hoped, will be finished, while the Independence Pass route out of Leadville is a third for which contracts have now been let.

In each instance short links remain to be constructed which, once finished, will permit travelers to swing around in a circle of ever-varying scenic wonders, instead of retracing their steps after arriving at points which mark the ends of the roads.

From a commercial, as well as from a tourist's viewpoint, the 1,000-mile trip may be considered as the most im-

portant of the three. At the present time it is possible for the traveler to go from Denver to Durango or Dolores over good roads and to continue westward if he wishes, but not north. Or, traveling over any one of a variety of routes, he may reach Telluride or Silverton on the north, but cannot then connect up with the southern route.

Two proposals which will offer an alternate choice to the traveler, and either one of which will serve as a connecting link between north and south routes, are now financed and will be started within a short time, labor adjustments alone as a possible obstacle.

The better-known perhaps is the proposed road from Durango to Silverton. This road is 50 miles in length, and completion of a link of 17¼ miles will make it traversable. The project falls within the U. S. Forestry work, and the total cost is estimated at about \$230,000. Work has been delayed because of the government ruling that no labor shall be used on roads which might be used in war work, but negotiations are now under way for the use of a group of 300 Navajo Indians who have been doing road work in Arizona, and there is reason to believe that their services will solve the question.

(Continued on page 22.)

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FOREST SERVICE ROAD PROBLEMS

By R. E. Pratt, District Engineer, U. S. Forest Service

WHAT roads shall we construct or improve this year? How many people will they serve? What resources or industries will be developed or aided? What is the amount and character of the traffic, and in what direction will the heavy traffic go? What type of road should be provided to meet these conditions? How much can we afford to spend, and shall we build a single or a double track road? How much should we set aside for the maintenance and repair of our existing roads, and how much for temporary construction to meet immediate traffic needs?

These are some of the questions that the Forest Service must decide. No doubt they will sound familiar to Mr. Ehrhart and to each County Commissioner in Colorado. High mileage, inadequate funds and the ever-present maintenance and repair question—these are your problems and our problems, and how shall we go about solving them?

The answer, broadly speaking, is first a realization of just what the problem is; and second, co-operation and its solution. How then can Federal, State and County agencies get together on this proposition and accomplish the maximum results with a minimum of time and expense?

First, I believe by getting a better understanding of the other fellow's point of view; and second, reconciling differences of opinion and adopting a common plan of operation. My purpose is to state very briefly the Forest Service point of view and to sketch the basic policies which have been evolved by this Department.

The Forest Service spends in the State of Colorado annually for road purposes about \$100,000. Of this amount, about \$65,000 is Colorado's share of the Forest funds made available by the Federal Aid Road Act. Approximately \$30,000 accrues through the ten per cent. road fund, which is equivalent to 1-10th of the total National Forest receipts for the State, the remainder of approximately \$5,000 is represented by miscellaneous work by Service employees which is done as opportunity offers in connection with their regular duties. This appears at first glance like a considerable amount of money, but when you consider that the National Forests of Colorado include within their boundaries over 13,000,000 acres and the mileage of roads constructed, partially constructed and proposed, amounts to approximately 4,300 miles, the matter assumes a different aspect; in other words, the Forest Service has each year to spend on roads within the National Forests about 8 mills per acre, or \$23.00 per mile with present appropriations. A considerable per cent. of these roads are State and County highways upon which the Forest Service has to date spent no money at all, and some of them are as yet entirely unconstructed. However, this does not alter the fact that our funds are

altogether inadequate. Under these circumstances it is apparent that only a limited schedule of work can be undertaken annually and many desirable and even urgent projects must be postponed.

In preparing the annual program for survey and construction, the following factors relative to each project to be considered, are carefully weighed:

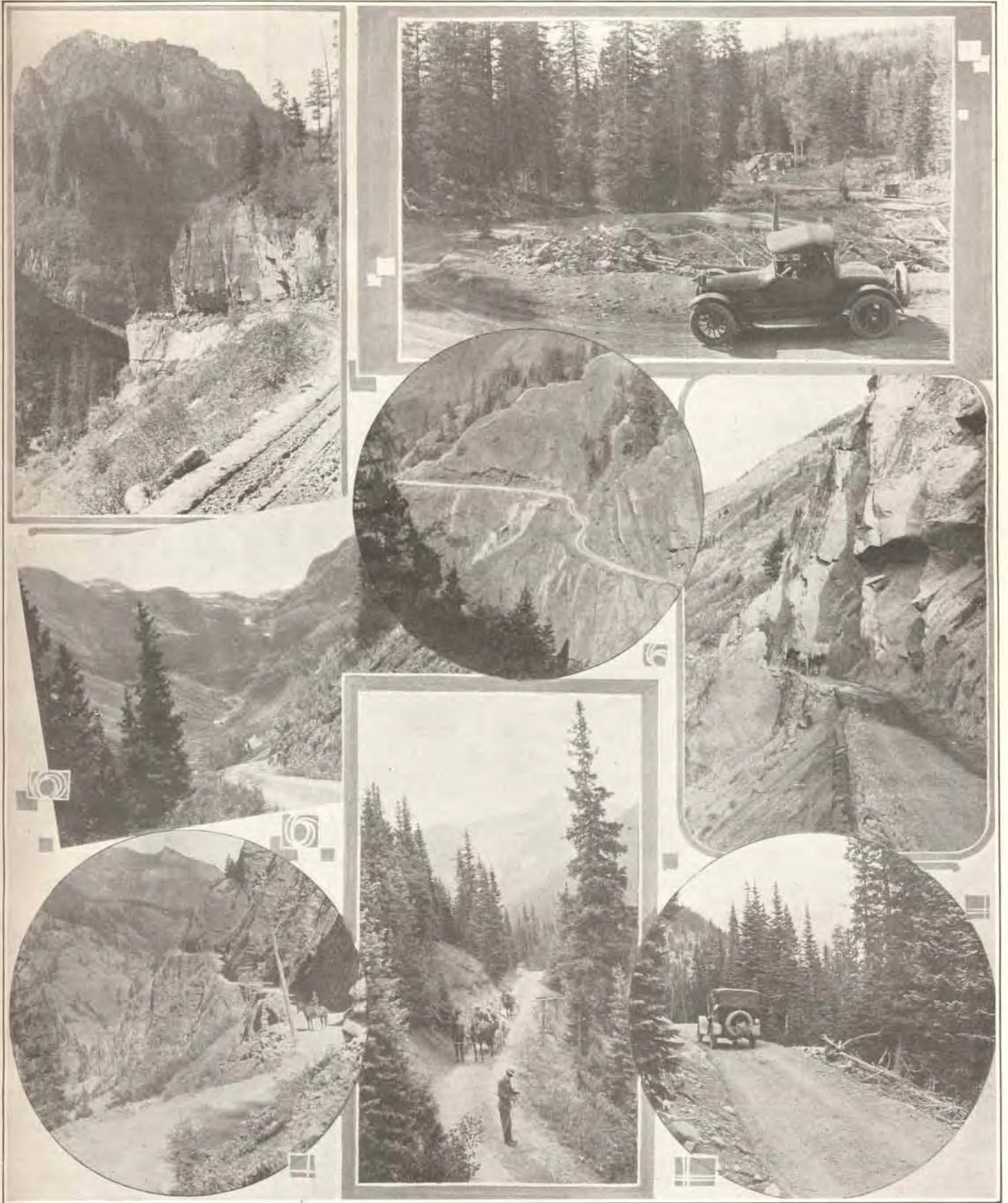
First, the number of people to be benefited; second, the kind and value of resources—State, County and Forest to be developed, and how and to what extent each road will aid in such development, and how soon this development will take place. In short, it is the practice to make a complete economic study of each project for which National Forest aid is requested. Among the resources which are weighed in connection with each project are timber, agriculture, mineral, grazing, water power and recreation. When such a study of a region tributary to a road has been made, it is intended that it will show not only the present and potential resources of the counties and Forests, but also along what general lines the development of the locality should progress, and when and how the proposed road will aid in such development.

Another point which is carefully weighed in connection with each project is the relation it bears to a comprehensive plan for road development covering not only the local Forest and County, but the State as a whole. Tentative plans for a comprehensive highway system for all National Forests in this State have been prepared, and steps are now being taken to present these plans to the State and County authorities for discussion and improvement before the plan is adopted.

Yet another consideration is the financial condition of the local agency. A study is made of the valuation of the Counties affected, both within and without the Forest, the amount of taxes levied, the bonded indebtedness, and the general financial condition of the County and people. The mileage of constructed and unconstructed roads in the County is also given consideration.

In selecting the type of construction, it is the endeavor of the Service to set standards only sufficiently high to take care of probable traffic needs for a reasonable period in the future. It is the intention, however, that careful location surveys, sufficient to insure satisfactory grades and alignment shall precede the expenditure of funds on construction. It is not the intention to construct roads of such high standards as not to be warranted by present traffic conditions. In short the aid is to adopt a practical, workable policy, one which is financially feasible, and to insure by proper location surveys that each dollar expended will count in the ultimate plan of development.

In conducting the maintenance work, it has been found that the patrol system gives the best results. Several crews of this kind are now in the field and are daily demonstrating the economy of systematic methods.



Striking photographs of Colorado highways telling, as no words can, of the difficulties of road construction through the heart of Colorado's ranges. Top: The Camp Bird Road, Uncompahgre N. F., at Windy Point looking up Canyon Creek. A mule team at the point gives some idea of the height of the cliffs. Right: A hairpin turn on Rabbit Ears Pass near Kremmling. Center: Looking up Mill Gulch near Chattanooga in Durango forest. North Lookout peak, 13,674 feet, in background; a stretch in the Ouray-Silverton road at Quartzite point with a sheer drop of 2,000 feet; and the Independence Road, Sopris N. F., showing rock work on cliff. Bottom: Ouray-Silverton road wending along cliff; the State circle highway between Silverton and Red Mountain; and a vista in Monarch Pass, east side of divide with Banana peak in far distance. Photos from U. S. Forest Service.

THE PROPOSED AUTOMOBILE LAW

Denver, Colo., May 16, 1918.

Hon. Thos. J. Ehrhart,
State Highway Commissioner,
Denver, Colorado.

Dear Mr. Ehrhart:

In answer to your inquiry concerning the steps being taken for the drafting of a new automobile law for presentation to the legislature next January, I beg to inform you that I hope to have a rough draft of this law ready for presentation within two or three weeks.

The different automobile associations and a great many individuals of the state along with yourself are giving me much valuable information on which to base this proposed new law. In addition, I have before me the laws of every state of the Union, also of Canada, and it is my purpose to utilize the best points from these different laws. After the rough draft is completed it will be submitted to you and the state highway commission, also to the different automobile associations for amendments and suggestions.

The idea is, that if we can all agree on a new and effective automobile law before the legislature meets we will not experience any difficulty in having it enacted.

Our present law is obsolete in many essential details caused by its having been enacted when the automobile business was in its infancy in this state.

The provision for the license charges are especially objectionable, as our present law charges so much on the manufacturer's advertised rating on a car, whereas the charge should be made on the h. p. as arrived at by scientific measurements. For example, Colorado charges \$2.50 for an automobile of an advertised horse power up to twenty h. p. The most popular automobile found in Colorado has an advertised horse power rating of twenty h. p., whereas the Society of American Engineers (or the scientific measurement of cylinder, etc.) shows that it has a horse power of twenty-two h. p.

Our records show that of the cars licensed in Colorado 57 per cent are in the class rated at \$2.50 advertised h. p., whereas, under the proposed new rating they would be assessed at \$5 each. Under the present law, however, they may be charged only \$2.50. In California a flat rate of forty cents per horse power is charged on all automobiles. A great majority of the states have a similar flat rate, running from 15 or 20 cents per horse power to as high as 80 cents per horsepower.

It should not be a difficult matter for those interested not only in automobiles, but in good roads, to reach an equitable charge per horse power for Colorado. This will be one of the most important features of the bill now being drafted.

Another very important point has to do with the headlight regulations. It is generally conceded that some law is necessary to prevent the use of glaring white lights by autoists, especially in mountain and rural districts. Our present law does not give the protection to which the peo-

ple are entitled and this fault will, I hope, be remedied in the new law.

New rules of the road and especially as regards speed regulations also must be incorporated for the protection not only of the people, but of the autoists themselves. The consensus of opinion seems to be that it is not best to fix a definite speed limit, but rather to deal with this subject by compelling drivers to propel their machines at a rate of speed to be governed by conditions of roads and traffic, allowing each incorporated community to govern the speed limits within its incorporated territory.

Severe fines should be provided and full power and authority given to proper courts for the revocation of licenses of habitual violators of the law. Heavy fines should also be provided for those who fail or refuse to take out new licenses promptly each year.

The foregoing are just a few of the perplexing problems that must be solved through the enactment of a new automobile law.

I am in receipt of communications from Washington urging me to use every influence to encourage the use of automobiles of all descriptions, including passenger cars as well as trucks, the idea being to relieve the railroad congestion as much as possible. The government also is, as you and your commission are fully informed, urging the constant building and improvement of highways. In this connection county commissioners are to be congratulated on the way in which they are co-operating with your department and with the executive officers generally in this splendid work.

Assuring you that I will appreciate any further suggestions you or the county commissioners may make for the drafting of the new automobile law,

Sincerely yours,

JAMES R. NOLAND,

Secretary of State.

JRN/MLP.

COLORADO TO HAVE THROUGH ROAD OVER RANGE THE YEAR AROUND.

Through automobile traffic over the mountain range will be possible all the year around in Colorado as the result of a conference held by the county commissioners of Saguache and Chaffee counties, whereby the Poncha Pass road will be kept open for travel at all times in rain or snow, hail or sunshine.

Announcement of the decision of the commissioners was made to the state highway department by W. L. Philbin, county commissioner of Chaffee, who was in Denver with Senator Frank H. Means of Saguache for the purpose of looking into road arrangements in their district.

"Heretofore," said Mr. Philbin, "there has been a period of from two weeks to a month when through traffic over the range has been impossible because of the heavy snow drifts. Acting in conjunction with Saguache, our county has now perfected a plan whereby we will detour the road for a distance of some 300 yards in the gulch at the top of the range and by keeping grading crews constantly at work, we will be able to give Colorado a through road at all times."

Value of County Organization in Road Work

By Chas. R. McLain, President State Good Roads Association

THE evolution of road building and improvements in Colorado stands without any probable parallel when mileage, population and wealth are considered. The question is frequently asked of me, "Why a State Good Roads Association now that we have a State Highway Commission and such an excellent law under which to operate?"

The answer is best found in the accomplishment, all due to the team work, of our united organizations throughout the State. A retrospect must necessarily impress us with the work yet ahead, and with which we are concerned, and emphasizes and intensifies the need for continuation of this community organization and their allied efforts.

means for securing this money by legislative enactment or otherwise.

A bond issue would necessarily involve years of time, but must in the end furnish the relief needed. In the meantime, however, by legislative enactment, all of the inheritance tax may be applied to road building.

Our automobile license tax should at least be doubled. As stated, these two items can be made available by the next session of the legislature, and would go far toward meeting the emergency arising from the necessity of meeting the federal allotment.

The writer is more than burdened with the necessity of community organization, and urges the greatest possible activity in this direction in every county in the State.



Laying Concrete on the Denver-Golden Road.

The province of the community organizations, working through their State Association, has been to formulate laws for a state system of highways, and to provide ways and means for the faithful execution of that work.

We are now more than ever overwhelmed with the importance of roads—goods roads—for Colorado. They are not only a commercial necessity, but it is our patriotic duty, made manifest on every hand, for each and every community to do its utmost to the end of the greatest improvement possible for the roads that we have and the construction of others that are necessary.

We are concerned with the problem of raising \$1,600,000 in ready money with which to meet federal allotments already made to our State for post roads and improvement of same. The paramount issue and burden laid upon the communities of our State is to provide ways and

In road building and improvement, as in war, let us "keep the home fires burning."

It has been decided by the executive committee of the State Good Roads Association that auxiliary societies, with independent organization, should exist in every county of the State, making the membership of each as large as possible. These local auxiliaries are empowered to select as many delegates as they may choose to attend the State Good Roads Convention, to be held in connection with the next meeting of the legislature in Denver, in which State Convention plans should and must be formulated for team work throughout the State to the end that existing emergencies shall be met and provided for.

The mere passing of resolutions will not grade a mile of highways, not build a bridge, nor transform the mountain side into a highway.

Return Loads Will Conserve Truck Power

By Tom Botterill, Chairman Highway Transport Committee, State Council of Defense

FORTY PER CENT. of the motor truck transportation of Colorado is going to waste every day. Sharp competition between business houses, coupled with a lack of a central clearing house, has resulted in a diversity of one-way loads which annually cause a waste of thousands of dollars in actual costs. Like Topsy, the condition has "just growed" until with the tremendous increase in transportation it has reached a point worthy the serious consideration of economists in all fields of commercial activity.

Last year, during the month of August, county commissioners of Colorado united in a census of road travel at the request of the State Highway department. In support of our statement of transportation waste, these figures may be cited:

On the Brighton road there were 106.2 trucks a day.

North of Las Animas the count showed 14.5 trucks a day.

From Denver to Parker some 11 trucks were counted daily.

From Leadville to Buena Vista the average was 23.

From Grand Junction to the State line, 19 passed a given point daily.

From La Junta to Las Animas there were 54 daily; from Rocky Ford to La Junta, 61; and from Fowler to Rocky Ford, 30.

Between Littleton and Denver, 44.6 trucks traveled daily, while 33 came in to Denver from South Broadway and Tejon.

Of the entire volume of travel, fully 90 per cent. carried one-way loads, or, in other words, approximately 40 per cent. of the entire volume of motor truck travel consisted of empty cars. Because of this waste more trucks were employed than would have been necessary had each been carrying a full load all of the time, and the resultant costs of labor, fuel, depreciation, etc., were correspondingly higher than they should have been. Carrying it back still further, these higher costs must have been added on to the cost of materials sold, thus adding to the burden borne by the ultimate consumer.

A practical remedy for this condition can be suggested. Every town of any size in the state has some central body, such as the various chambers of commerce, which maintains an office. By making such a point a clearing house, it would be possible to establish a "return-load" bureau. A. coming into this town every day with a load of produce could register his car, telling its carrying capacity and points made on the return trip. B. desiring to send out a load which is outside his regular delivery could make use of A.'s truck to make the trip.

It may have been that in the past B. would have sent his goods by rail. But the load was not large enough for a car, so he would have had to wait a few days. Then when the load was sent, transportation from rail to consumer

would have been necessary where under the return load plan a back-door delivery would be possible.

Regular deliveries, lower costs, a clearing up of rail congestion, and abolition of cost from rail to consumer may be cited as among the benefits.

A few years ago the plan might not have been practicable since motor truck travel was restricted any way. Today experts who have been on the road say that even the figures quoted for last August have been rendered obsolete by the sweeping developments in commercial motor vehicles, which have resulted in a tremendous increase which is still far from its highest peak.

The actual possibilities of the "return load" vary, of course, according to the type of vehicle employed, but nearly all of them can be used to haul more than the one commodity which they have been restricted to in the past.

The plan is one that makes for conservation at a time when every possible economy is desirable, and surprising results can be obtained if the officials of the chambers of commerce will give it a thorough trial.

Tourists Spend Huge Sums Here

THAT \$13,800,000 was expended in Colorado during the season of 1917 by visiting tourists is the estimate made by N.

A. Ballou of the State Highway department and based upon a census conducted during the latter part of August and the first week of September. The figures are, of course, approximated, but they supplement the Tourist Bureau estimates in a way which shows the striking effect of automobile travel upon Colorado's prosperity.

The owners of 111 cars were interviewed. It was found that 523 persons traveled in these machines, or an average of 4.71 to the car. The average length of their visits was 23 days. The total expense was \$38,315, an average per car of \$15 a day, or \$3.19 per person per day.

On the assumption that there were 40,000 machines here from other states with an average expense of \$15 per day per car, the total daily expenditures in this state would amount to \$600,000, or \$13,800,000 for a 21-day stop.

Taking the average of 4.71 passengers to a car as a basis for determining the number of visitors, an estimate of 188,400 people for the season of 1917 is arrived at.

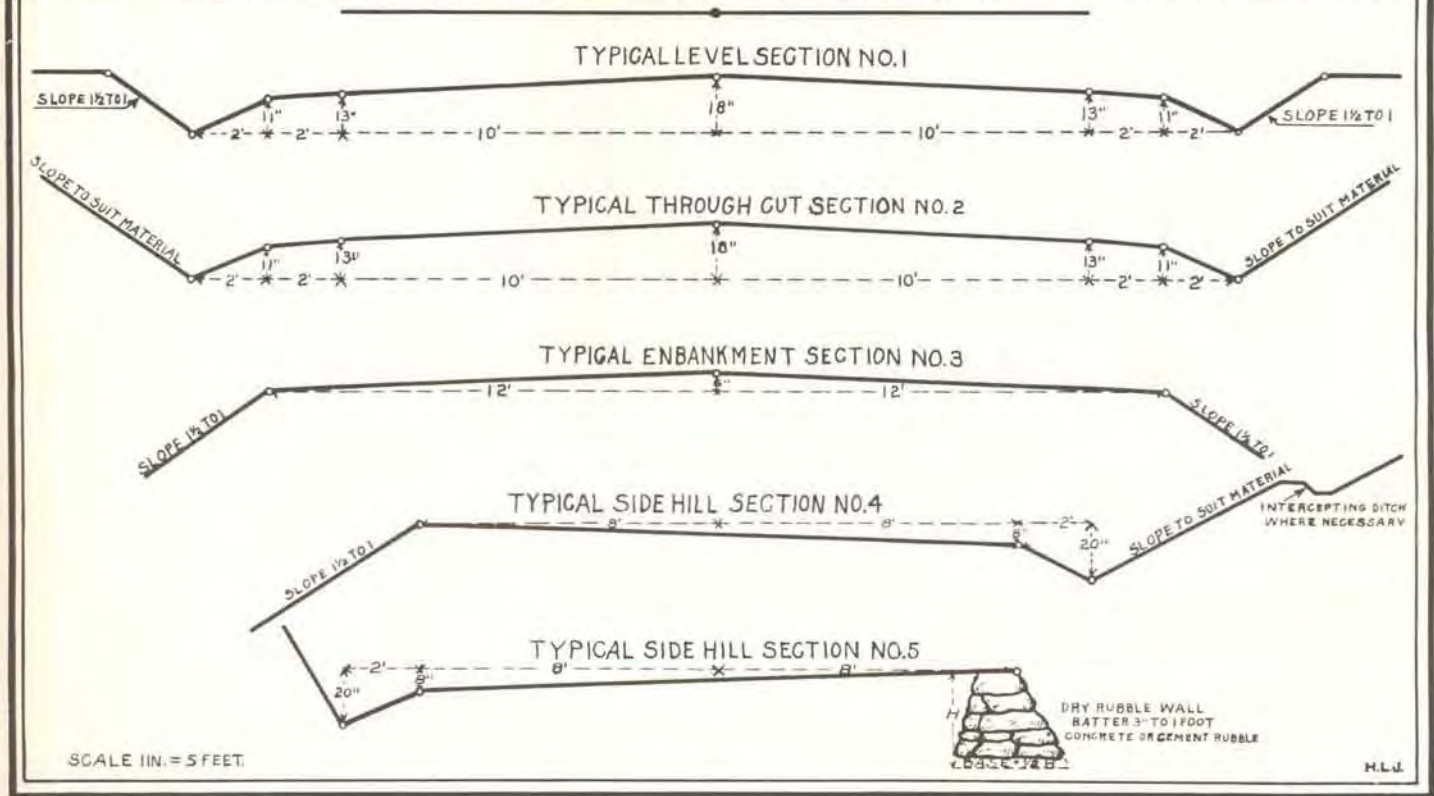
A definite estimate on the effect of the influx on the hotel business was found through a canvass of Colorado Springs hotels where eight out of eleven were able to show that their business had increased 36 per cent. over 1916 through tourist travel. The other three had no definite figures, but were inclined to give the same source credit for their increases.

Thirteen out of 20 Denver hotels were able to show an average increase of 32½ per cent. in foreign automobile business for 1917, the other seven not having definite figures.

Out of five hotels in Pueblo, three reported increases of 50 to 60 per cent., the average from foreign automobile travel being 53 per cent.

The total average for Denver, Colorado Springs and Pueblo on these figures is 40 per cent. increase, and the prospects for the present season are generally considered to be even better.

TYPICAL CROSS-SECTIONS OF IMPROVEMENT



Standardized Cross-Section Vital to Uniform Roads

By J. E. Maloney, Chief Engineer, State Highway Department

THE typical road cross-sections illustrated on this page are the standard sections adopted by the State Highway department for all graded roads in the state highway system of Colorado.

These sections have been designed as the outgrowth of our experience with the construction of roads in different parts of the state, and we know that they will meet the requirements of the several counties.

The width of the right-of-way in general should be 60 feet, although in a level district, with few cuts or fills, 40 feet might answer.

In all cases, except on side hills, a top width of 24 feet is called for, this giving the traveler a safe way of at least 20 feet. This also allows ample width for future surfacing.

On the side hills the section calls for a width of 16 feet, with an additional two feet for ditches. Even though this width can not be obtained at the start in many cases, experience has shown that it is advisable to work with this end in view, even though the widening must be done after the road is opened.

In many locations it will be found economical to use a retaining wall on the side hill. These walls may be of dry rubble, cement rubble, or concrete, as indicated on section

No. 5 of our drawing. The foundations of these wells must be looked after and the wall well built, as many of the dry rubble walls have exhibited a tendency to move down the hillside.

On both the through-cut and side-hill work it often will be necessary to provide an upper intercepting ditch to carry the water to the line of drainage at the end of the cut.

Section 3 shows the embankment section with side slopes based on the 1 1/2 horizontal to 1 vertical. This slope is used as the average one at which dry dirt will stand, but in some cases a slope of 2 to 1 will be necessary.

It will be found that any grading machine or scraper can be used in forming these sections and in keeping them in shape. Road superintendents, supervisors, overseers and foremen are urged to work to the sections here presented for both state and county roads, so that our foundations may be uniform, slightly, practical, and, I believe, more economical. In arranging the work-line, stakes should be placed for the sloping and grades, and grade-stakes for the ditching and crown. A crooked line of ditch and grade is unsightly and unworkmanlike, indicating either carelessness or lack of skill.

Judgment and care in laying out the work will be amply repaid by the results obtained.

The Log O' The Hard Pan Triangle Highway

AT the foot of the Six Great Mountains, where the Eagle makes his nest and the wild bluebird, favorite of the Great Manitou, wings his way thru the quaking asp, lie the Twin Lakes, abode of the Resting One. When the spirits are kind, the soft wind breathes upon him and he sleeps peacefully, the while his protectors smile down upon him, their faces reflected in the blue of his water coverlet. But when the sun frowns and the angry clouds gather, then the Resting One stirs uneasily and swift-moving whitecaps form as his hands beat upon the water.

This, tho, is most often in the winter months when the world is cold and gray and harsh and when the summer comes there is again the peace and the everlasting contentment of the high places pervading all about them.

Of late years, Man has tried to leave his mark upon the abode of the Resting One and upon the Six Great Mountains. But his mightiest endeavors become but delicate tracery upon the sides of the protectors and his boats thrown out upon the Lakes are but flecks that toss and spin as the leaping trout are gathered in. Man passes by and wonders, but the Resting One gives them no heed and the Six Great Mountains lie motionless in the summer sun, awaiting only the approach of the evil ones.

For long years only the growl of the bear or the soft breaking of branches as the deer passed by, disturbed the quiet of the Resting One. Then came the trader in search of fur, the miner lured by tales of gold, the settler in quest of a home. Today the road has set its mark upon the hillsides and the chug of the exhaust as the automobile thrusts its way into the heart of the range vies with the roar of the rushing mountain stream, as it threads its silvery way thru the gray cliffs to the Twin Lakes.

Higher in the hills quaking asp, aflame in the setting sun, stand out beyond backgrounds of velvet green pines. From out the glistening snow of the peaks, a boulder covered with moss, juts forth. Purple crocuses mingle with the vivid reds of the paint brush and delicate flowers of every imaginable hue timidly lift their heads to the blue above. The whole is one vast tapestry such as some giant might have used for a rug whilst he bent down to worship.

In all Colorado Nature presents no finer masterpiece and since the days when imagination first fired the spirit of the dauntless traders, passersby have stopped to pay the abode of the Resting One their silent homage.

The Twin Lakes and the Six Great Mountains, Lost Canon, Hope, the Twins, La Plata and Elbert, rest to the northwest of Buena Vista, 165 miles from Denver by the new Hard Pan route, 162 miles from Pueblo, 131 miles from Colorado Springs, and 16 miles from Leadville, one of the richest of the world's mining camps. They can be reached easily from any of the four cities and in each instance, the traveler wends his way thru pleasant valleys, over rugged mountains, on fertile plains along streams of icy translucence to his destination. Roads

now good, ever being bettered, mark the trail and the end of the journey is one all should see.

From Denver the new route, the shortest by 40 miles to Buena Vista, carries the traveler first to Morrison and then along highways fringed by giant red rocks and cottonwoods of olive green to the shelves thru Turkey Creek. Climbing steadily he reaches the top of the first range, then drops down to Conifer.

Proceeding along the trail first traveled, so history tells us, by the Spanish trader Juan de Onata in 1598, and in 1866 and later by the hardy gold freighters, he makes his way to Elk Creek, whence the peaks stand out on every side, snow covering their tops as some fair woman might throw a scarf around rounded shoulders. Bending and twisting, sinuous as the snake, the highway takes its course up hill, then down, past rugged battlements, into mantled hills of pine, where ever and anon, the ax of the lumberman has cut a jagged gash, creating some fantastic monster who seems to writhe and twist as the car approaches.

A last, long downward swoop and the traveler is at Bailey, where he meets his first view of the railroad whose iron trail cuts its way thru the canon. The ascent is easy and the road builder has followed the water grade with the railroad engineer. Past Shawnee and Singleton, thru the cathedral grove of pines at Cassels the machine goes on to Grant, where it leaves the main fork of the river and edges toward Kenosha Pass. The tinkling of a cow bell and the sound of the stream as it hurls itself against the naked rocks alone break the silence. Instead of the greens and blues of the valley the eye finds sullen grays and blinding whites until as the summit is reached the flats stand desolate and alone with only the fringe of mighty peaks about them.

Again the road leads downward and the Great South Park, a solid field of rich wire grass, comes to view. A sharp wind cuts across the open spaces but the car takes the bit and Jefferson, first seen as a spot in the distance, is soon reached. Then Como and the foot of Red Hill and another climb, this time thru reds and greens of surpassing beauty, brings the traveler to Silver Heels Peak and a full view of the back range. Fairplay, with its historic setting as one of the oldest placer mining camps in the state and its superb view of Mt. Bross, the Buffalo Peaks and Mosquito range, is the last town before Buena Vista. Ere that city is reached, however, the traveler cuts across the plains to 63 Ranch and into Trout Creek Pass, whence he obtains a fine panorama of peaks and range, passing en route the great Castle Rocks.

Then comes the finest part of the drive and its climax. Twining thru the pass, the machine enters into a series of hairpin turns and double loops. Up, up, it goes whilst the rays of the afternoon sun catch every point, dyeing them into all colors of the rainbow.

(Continued on page 14.)

COLORADO THE MOTORISTS' STATE

By Harry N. Burhans, Secretary Denver Tourist and Publicity Bureau

THE number of automobile tourists who come to Colorado over man-made roads to enjoy God-made parks is increasing by thousands annually. That interest in touring has suffered no diminution by reason of the world war is shown conclusively in the tremendous influx of tourists from distant states to the federal parks and to the Denver mountain parks in 1917.

Every part of Colorado is now accessible to automobile travel and the traffic over the state has increased since 1913 over 500 per cent. Colorado-owned cars have increased from 13,000 to over 63,000 and visiting tourists have increased from a few hundred to more than 40,000 in 1917. The vanguard of an army of tourists who have enjoyed the life of the open in the past and the countless thousands of motorists determined to see their own country are already beginning to come to Colorado.

Nowhere in the United States can the lover of nature, the man or woman jaded with war work, exercise his personal liberty and satisfy his every outdoor whim as in the national parks and forests in Colorado. The network of auto roads which traverse these recuperation spots, is but one of their many attractions. The numberless lakes and streams fed from perpetual snows yield unending pleasure and the keenest of sport to fishermen. There are opportunities without end for hiking, golfing, tennis and numerous other outdoor sports and delights.

The glory of an outing in the mountains is not only obtained in the fleeting scenes of grandeur as the car goes spinning along mile after mile thru stately forests and rugged canons, but in the shade of pines and spruces beside some murmuring stream; in cooking appetizing meals over an open fire; in sleeping on a fragrant bough bed; to feel, to breathe the wonderful mountain air, and to awake in the morning refreshed and ready for the

work and pleasure of another day and the scenic wonderland of the Rockies. Comfortable hotels and free auto-camps furnish delightful facilities for the comfort and care of the automobile tourist.

Throughout the country there is universal recognition of the fact that Denver is the gateway to the west, the entry way to twelve national parks and thirty-two national monuments. Across Colorado are sprawled the great ranges of the Rocky Mountains. Eastward lie the rolling plains, the fruitful valleys and the prairies of the wheat belt. The mountain wall of Colorado separates the east from the west, and the change is sudden and complete. Beyond the towering front range lie all the wonder places of the continent. Denver, as the link between the plains and the mountains, occupies a logical place as the hub of this western vacation area. It is the radiating point of many railroads and highways, over which thousands annually spread out to the numerous places of delight that surround it. The automobile and railroad service is making Colorado more and more the resort center of the nation. It is nearer to the center of population than any other region of equal grandeur.

The prediction made early last year by Franklin K. Lane that there would be no diminution in western travel, because of the world war, was splendidly realized.

There were more visitors in Rocky Mountain National park in 1917 than Yellowstone, Yosemite, Glacier, Mount Lassen, Crater Lake, Casa Grande and Mesa Verde combined.

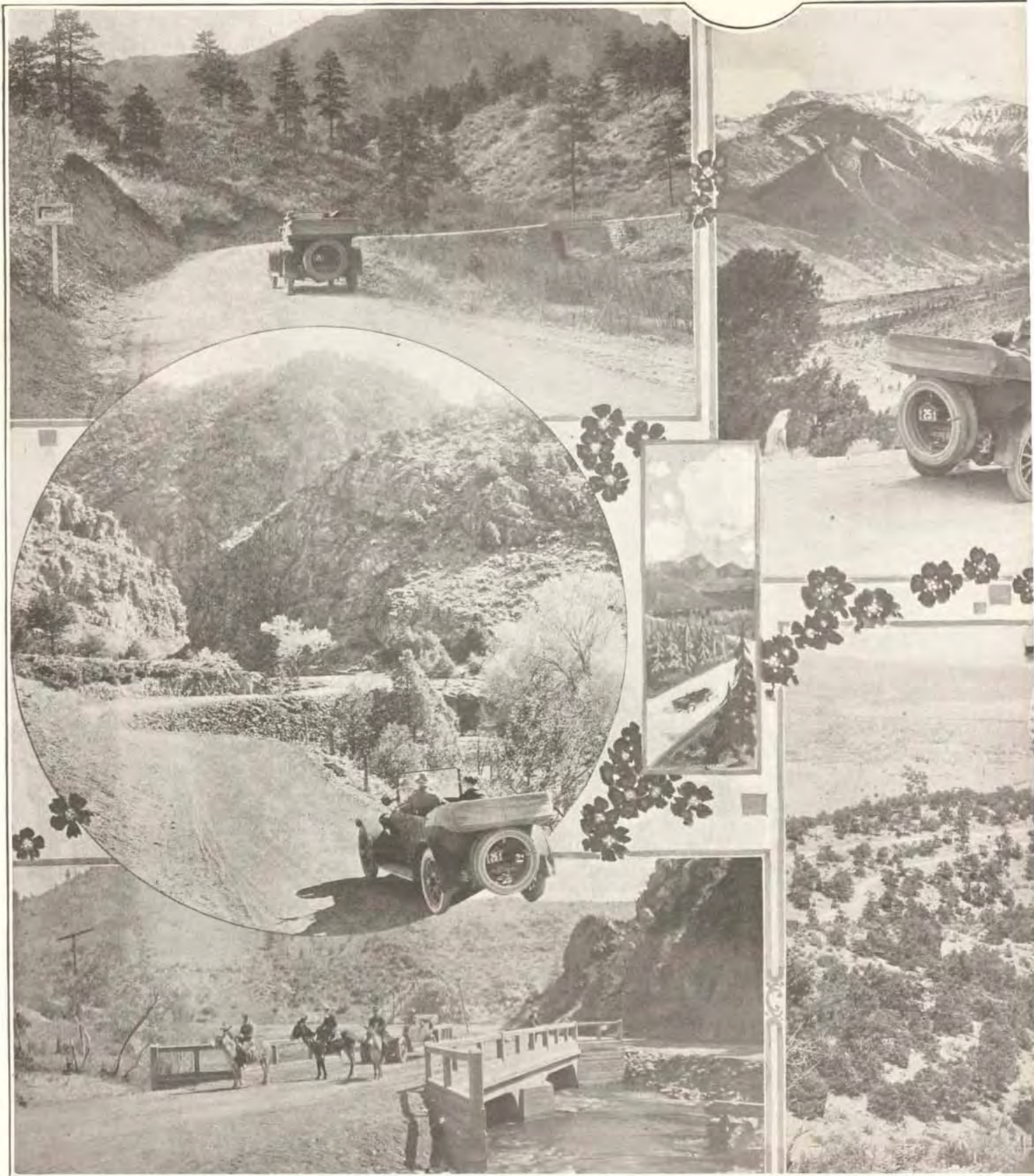
The Mesa Verde National Park, also in Colorado, doubled the number of visitors over 1916, and the two National Monuments in the State, Wheeler and Colorado, showed a vastly increased number of visitors.

(Continued on Page 22.)



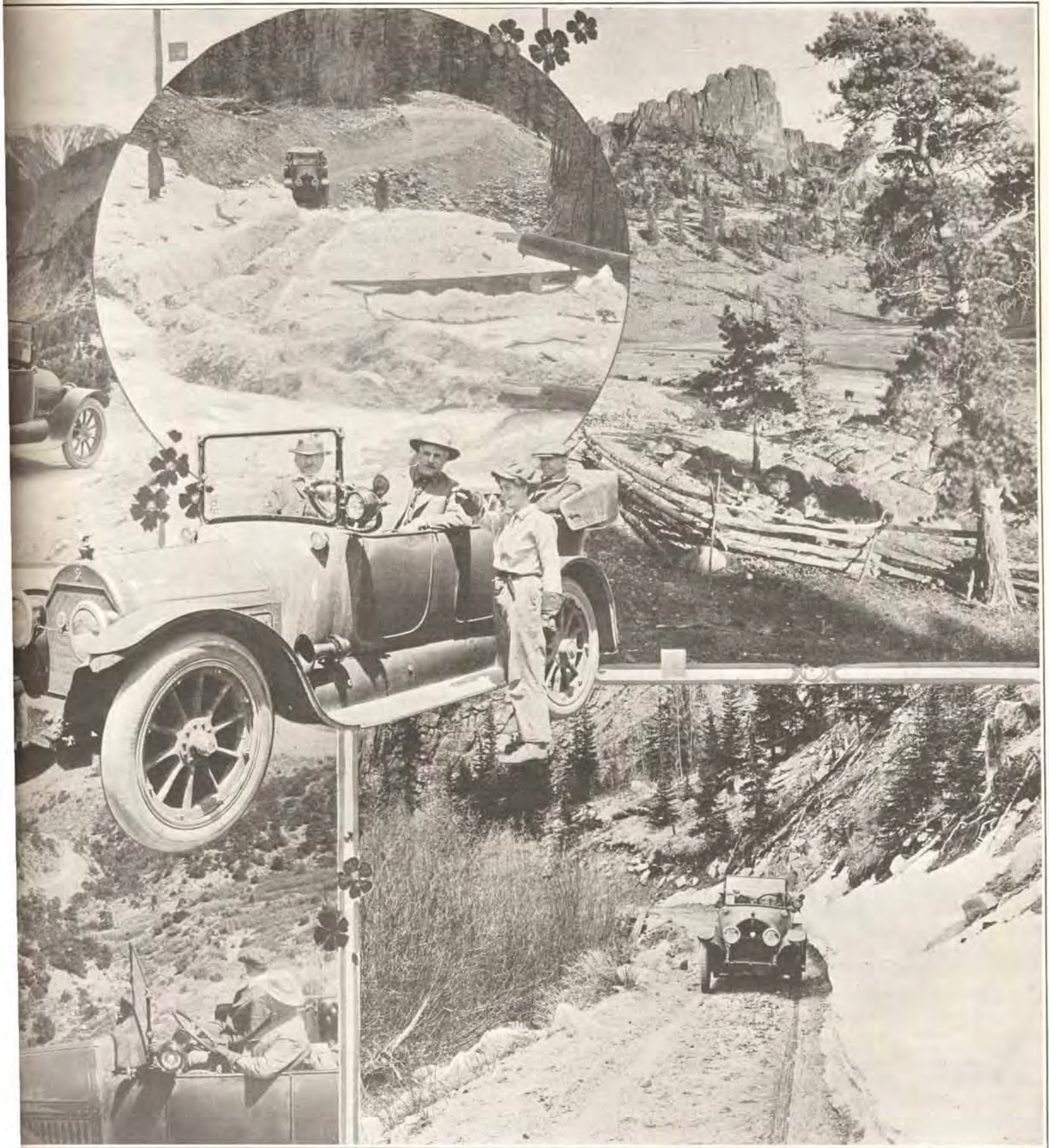
Glacial Lakes, Rocky Mt. National Park.

“Immovable, Immortal, Eminent”! Stand Colorado’s Towering



A few of the thousand beauty spots along the Hard Pan Triangle route. Top, left to right: A fine sweep of road approaching the bridge in Dead Man's Canon near Colorado Springs. A superb view of the mighty Princeton peak taken from the heights above Chalk Creek out of Buena Vista and showing the Chalk Cliffs in the foreground. Blocked by a snowslide 20 feet deep near the top of the Independence pass road, at a height of 10,000 feet. This is one of the finest rides in the state and the picture shows but a tithe of its beauties. Castle Rock, a towering cliff in Trout Creek Pass. Center: Hairpin turns twist towering cliffs. Cottonwood

Peaks, Guardians of the Peacefully Slumbering Valleys Below.



Hill, with the bridge at the foot, in the Upper Arkansas river canon. Bottom, left to right: Two kinds of horseless carriages on one of the new bridges in Bear Creek canon. On the crest of the hill with the road sweeping in sinuous loops to Priest canon below, a view from the Royal Gorge looking back toward Canon City. A May snow scene in Kenosha Pass where the road twines up along the mountain sides to the top of the range. Insert shows modern maid of range guiding travelers on way. Photographs taken by K. P. Howe, staff photographer, Colorado Highways Bulletin, May 19, 20, 21, 1918.

A Tri-City Route Thru The Heart of The Range

(Continued from Page 10.)

The top is reached and there, towering up from the plains below, stand the college peaks, mighty Princeton and Yale, with Jones, democratically, between them, and Harvard aloof to the right. To the left Ouray, Chipata, Shavino and Antero thrust their noses into the sky. Far to the right are the Six Great Mountains, the entire group higher than Pike's Peak.

Bewildering in their beauty, sublime in their immensity, these are the gateways to the Western slope, fitting guardians to the wealth of the western state.

But the traveler may start from Pueblo or Colorado Springs. If so, ere reaching Buena Vista, his will have been a journey productive in thrills and perfect scenery. From the Smelter City he will travel over lime shale roads, the best in the state, across the mesas, thru Florence, with its great oil fields, and to the mouth of the pass and Canon City. From Colorado Springs he will wind thru Dead Man's Canon and Salt Creek—where Lot's wife sits—past Penrose, first in an ever-circling loop climbing to the mesas, then thru the fertile fruit orchards which reach for miles to Canon City. Or it may be he will go thru the famous Ute Pass and over the divide to the Salt Works.

At Canon, if he possibly can do so, he will go over the skyline, his car seeming to leap from peak to peak, until at last, it appears as if only the void remains. On one side of him will stretch the valley a checkerboard of rich farms and orchards; on the other, the red foothills with the road winding, a mere thread below. It is a magnificent drive, such as only a man of vision could have projected.

Then the Royal Gorge trip! Imagine a twelve-mile drive, the road cutting its way in a steady spiral thru Priest canon. Gradually the plains below take shape and the foothills become dwarfed. The top is reached. Step to a little railed-in rockway; look down. Then if you are a normal human being, you will draw back sharply and on your next look make your way very cautiously and carefully to the ledge. It is the edge of the world with nothing but a man-made bit of rail between you and the Arkansas—a fine-spun silver chain, 3,000 feet below. Over the abyss a flashing bit of blue and black wings its way in supreme indifference increasing your own sense of insignificance. The pipe line and the railroad, great among engineering feats in their day, are but wriggling angle-worms, and the crawling train has become an ant laboriously bearing its burden homeward. The presence of laughing parties of picnickers about you is all that restores the balance to every-day life.

From that point on the drive up the canon over Parkdale hill and into Pleasant valley is one of those times when one reaches the condition of ultimate enjoyment of life. Towering cliffs and flashing waters are the traveler's companions until he reaches the valley, when

a rich pastoral scene, backed by the peaks of the Sangre de Cristo, meet the eye. Then comes Cottonwood hill with its wide sweeps and the approach to Salida with Princeton just appearing over the range. The last stretch is reached and over fine roads the traveler lets his car out to find stretching before him the panorama of the College Peaks and their companions of the range, steeped in the beauty of the Colorado sun.

Road Appropriations to Counties in 1918

DISTRICT NO. 1.			
County	Improvement	Maintenance	Total
Adams	\$63,500.00	.....	\$63,500.00
Arapahoe	0,375.00	\$ 750.00	7,125.00
Boulder	14,500.00	1,800.00	16,300.00
Clear Creek	3,000.00	1,040.00	4,040.00
Gilpin	1,750.00	550.00	2,300.00
Jefferson	45,094.00	6,156.00	51,250.00
Larimer	13,270.00	2,375.00	15,645.00
Logan	8,300.00	1,700.00	10,000.00
Morgan	6,350.00	1,350.00	7,700.00
Phillips	1,600.00	1,400.00	3,000.00
Sedgwick	1,900.00	700.00	2,600.00
Washington	4,300.00	2,000.00	6,300.00
Weld	23,500.00	6,500.00	30,000.00
Yuma	3,800.00	1,800.00	5,600.00
DISTRICT NO. 2			
Chaffee	2,000.00	2,100.00	4,100.00
Cheyenne	2,000.00	2,000.00	4,000.00
Douglas	2,200.00	1,800.00	4,000.00
Elbert	3,000.00	2,000.00	5,000.00
El Paso	17,500.00	4,500.00	22,000.00
Kit Carson	3,100.00	1,900.00	5,000.00
Lake	3,150.00	1,200.00	4,350.00
Lincoln	2,200.00	2,800.00	5,000.00
Park	3,000.00	1,000.00	4,000.00
Teller	2,950.00	2,050.00	5,000.00
DISTRICT NO. 3			
Baca	1,500.00	1,000.00	2,500.00
Bent	3,200.00	1,000.00	4,200.00
Crowley	2,400.00	800.00	3,200.00
Custer	1,200.00	800.00	2,000.00
Fremont	.....	10,000.00	10,000.00
Huerfano	3,000.00	1,000.00	4,000.00
Kiowa	2,200.00	800.00	3,000.00
Las Animas	9,100.00	2,900.00	12,000.00
Otero	6,950.00	2,050.00	9,000.00
Prowers	5,650.00	1,350.00	7,000.00
Pueblo	20,300.00	2,700.00	23,000.00
Mineral	500.00	2,000.00	2,500.00
Montezuma	2,500.00	1,000.00	3,500.00
Montrose	2,750.00	2,750.00	5,500.00
Ouray	1,500.00	1,500.00	3,000.00
Rio Grande	1,500.00	1,900.00	3,400.00
Saguache	2,300.00	2,200.00	4,500.00
San Juan	600.00	1,000.00	1,600.00
San Miguel	2,600.00	700.00	3,300.00
DISTRICT NO. 5			
Eagle	1,500.00	1,270.00	2,770.00
Garfield	5,500.00	1,000.00	6,500.00
Grand	.....	2,300.00	2,300.00
Jackson	.....	2,000.00	2,000.00
Mesa	4,200.00	5,800.00	10,000.00
Moffat	1,300.00	1,600.00	2,900.00
Pitkin	1,200.00	800.00	2,000.00
Rio Blanco	.....	2,000.00	2,000.00
Routt	3,000.00	2,000.00	5,000.00
Summit	.....	2,800.00	2,800.00
Grand Total	.....	.....	\$433,280.00
Equipment Fund:			
To be used for the purchase of road machinery and operation of same on the roads adjacent to Denver....\$33,000.00			

COLORADO HIGHWAYS BULLETIN

Published Monthly
by the



Colorado Highway
Department

Denver, Colorado.

With the approval of the Colorado State Auditing Board.

Address all communications to Colorado Highway Department, attention Pyke Johnson, editor, Colorado Highways Bulletin.

Owing to the necessarily limited edition of this publication it will be impossible to distribute it free to any persons or institutions other than state and county officials actually engaged in the planning or construction of highways, instructors in highway engineering, newspapers and periodicals and civic associations. Others desiring to obtain Colorado Highways can do so by sending 10 cents for each number desired. Associations desiring to distribute the magazine can obtain it at cost in lots of from 500 copies up provided only that orders are sent in before type is re-distributed.

Vol. I. June, 1918 No. 1

THE WAR AND GOOD ROADS.

Twelve months ago the railroads of the United States handled practically all of the freight traffic without strain. Today, the enormous increase in troop and supply movements has created a revolution in transportation problems which has left a permanent impress upon this country. The commercial motor truck has come into its own, and where once steam reigned supreme, long lines of motor trucks now serve as feeders for tremendous stretches of country.

With the evolution of the motor truck has come an evolution in road-building which has already become a problem demanding the immediate attention not only of manufacturers and shippers, but of road-builders, engineers, and even the national authorities at Washington, D. C., to say nothing of automobilists generally. More than 90 per cent. of the roads in this country were constructed to bear only moderately heavy traffic, and the heavy loads and sharp tires of the motor truck are speedily bringing to the front an insistent need for a heavier type of road which must eventually replace the light-surfaced highways of other days.

A bill is already before Congress authorizing the expenditure of huge sums for the upkeep of state roads torn to pieces by war travel, and sooner or later, as the use of the motor truck becomes more widespread, new budgets must be undertaken to cover the enormous increase in costs.

THE FEDERAL AID ROAD ACT.

Thus far the United States government has appropriated to Colorado \$83,690.14 for rural post-road projects and some \$60,000 for forestry roads for the first year's work in a program extending over a period of five years. Roughly speaking, the total amount allotted to this state by the U. S. for the construction of rural postal roads will amount to \$1,600,000. Contrary to a quite general impres-

sion, this money does not pass into the hands of the state, but is administered on state roads by the national government. In order to obtain this allotment, each state must meet the government with an appropriation equaling the national expenditure, and all contracts and projects must be approved by Federal authorities. Maintenance costs must be met by the state.

The act is one that eventually will be of great value to each state, but the fact should be borne in mind that the appropriation to this fund by the state must necessarily limit its activities in other directions, particularly in a commonwealth of the size of Colorado, where the amount set aside for the first year totals close to 10 per cent. of the entire highway fund, growing to a total of 50 per cent. for the fifth year, if it is presumed that the state appropriation remains stationary during that period.

LIVING COSTS AND TRANSPORTATION.

Because of the general use of railroads as freight carriers, there has been a disposition to consider the road chiefly as a purveyor to the traveler in search of pleasure, yet good roads have a direct and important bearing upon the cost of living in each community. The city or town which possesses good roads within its own boundaries, but poor outlets, has a distinct asset within its gates, but not one equal to that of the community whose trunk lines place it in connection with points in all directions. Good roads cut down the freight costs, widen the selling field of farmer and merchant, and attract thousands of automobilists, with their thousands of dollars of buying power. Of what good is the head if the body is severed from it?

STANDARDIZED ROAD BUILDING.

There is a right way to do everything, and while experts sometimes disagree as to procedure, in general, broad, basic principles can be outlined for almost every phase of construction. Road building has now been reduced to a science, and deviation from its rules, save in exceptional cases, is hardly efficient. Years of close study of road-building conditions in this state have developed systems of construction, bookkeeping, etc., which may be considered as standard, and which, if generally employed, will serve to make county and state highways in Colorado uniform.

All of this material is at the disposal of the county commissioners and others interested in road work, and highway department experts are always ready to offer advice or suggestions in moulding the road-building in Colorado to standard.

There are many perplexing questions constantly coming up concerning road and bridge work, routing for trips and other matters of interest to the road-builder and the road-user. Insofar as is possible, the state highway department will be glad to answer any of these inquiries, and to that end will conduct a question box in future issues. Where immediate answers are desired, a note to Colorado Highways will be met with an immediate answer.

SALUTATORY

THE decision to issue this magazine was made by The State Highway Commission with the idea of furthering the highway interests of Colorado by getting into closer touch with the county commissioners of the State, who are the men in authority in levying local taxes for road building purposes and who have active charge of county highway construction, to the end that systematic co-operation in plans and general improvement, may be had. Team work is essential if Colorado's road work is to progress.

It is the desire of the Commission to secure the help and assistance of the road associations, motor clubs and business organizations whose members are interested in better roads. In addition we expect to feature the scenic trips of Colorado in such manner as to attract the attention of tourists.

We will publish facts that may be accepted as official and politics will not be permitted space. We would appreciate letters on road and tourist subjects and scenic and road views will be very acceptable.

We ask the help and assistance of all Coloradans in making this magazine an attractive, readable, State Highway periodical.

T. J. EHRHART,
Commissioner, State Highway Department.

Automobilists Will Hold New Tags from Year to Year

The 1919 automobile license tags for car owners will be a decided innovation in the way of license plates. Under the system in vogue since the state law became effective in 1913 new license tags were purchased each year. Under the new system just adopted by James R. Noland, secretary of state, a contract has been let to the R. Hardesty Manufacturing company of Denver for a plate or tag guaranteed for five years. Under this new plan the owner retains the same tag year after year. At the left end of this tag a slide plate 3x3½ inches is arranged so that it is fastened to the main tag or plate. The slide plate contains the year number, the seal of the state, the license number in miniature figures, and the letter A, B or C, according to the class of license represented. For example, cars that pay a ten dollar license carry the letter A; those paying a five dollar license carry the letter B; and those paying a two dollar and fifty cent license carry the letter C. This alphabetical arrangement is made to prevent persons owning five and ten dollar cars from running on a license that costs only two dollars and fifty cents.

This slide plate is a different color from the main tag and will be changed each year. The saving in the postage and express will amount to more than a thousand dollars a year, as these side plates weigh only a trifle. The tag-purchasing money saved will also amount to many thousands of dollars in the course of the five-year term. The original tag will cost the state twenty-seven cents each and is guaranteed for five years. The state heretofore has been paying 11 cents to 11½ cents for plates each year. The small slide plate is to cost not to exceed 2½ cents under the five-year guarantee from the Hardesty company. The new tag is generally conceded to be the best and most economi-

cal tag yet placed on the market. It is of eighteen gauge steel and the letters and figures are raised and are welded to the plate.

The tag proper will have a dark brown body, the numerals being aluminum. The slide plate for 1919 will be blue. This slide plate will be of a different color each succeeding year and the fact that it carries a state seal makes it a felony to counterfeit it.

The automobile fees, less the cost of tags and collections amounting to less than eight per cent of the total, are divided between the state and county commissioners for the building and upkeep of good roads. These collections have grown by leaps and bounds, the collections last year exceeding those of 1916 by approximately one hundred thousand dollars. For 1916 there were 47,500 licenses issued in Colorado. This number was increased to 65,000 in 1917 and it is expected that at least 80,000 will be issued in 1918. For 1919 the secretary of state has ordered one hundred thousand tags, anticipating that the business is going to continue to grow.



Photograph of New Automobile License Tag.

Field Notes From District No. 1, State Highways

CONTRACTOR STACK is working on the Golden road. Concreting was started on April 26, and if weather conditions hold good he should finish this work in forty working days. Under favorable conditions, the road will be open for travel July 1.

Work on the bridges from Morrison up to Evergreen is nearly completed, the only delay being caused by the non-arrival of the steel to this time. With the delivery of the metal work will be completed within two weeks.

The completion of these thirteen bridges will mark the substitution of steel bridges for wood on the entire road from Denver to Evergreen.

The work is being done by the Colorado Construction company. C. B. Sheeley and George Davis are in charge.

The department of improvements of the city of Denver is maintaining the roads from Morrison through the Mountain park system and over Lookout mountain and Genesee peak to the city of Golden. The city is doing this work, while the cost is divided between the city and the state highway department. The satisfactory manner in which the maintenance has been kept up is due to the "patrol" system used by Denver and affords a strong argument for the extension of this plan.

The work of this department is under the charge of W. F. R. Mills and Superintendent Steinhauer of Denver.

Work is projected on the Turkey creek road for further improvement from Morrison to Baileys, Colo. Reduced grades, easier turns and an improved drainage system are contemplated.

Widening and improvement of the Floyd hill road, in Clear Creek and Jefferson counties, will be undertaken this season.

A mile or more of the Denver-to-Morrison road will be resurfaced this year. Heavy travel has worn the highway down in spots, and these will be filled and gone over. Arrangements have also been made to see that the Arapahoe end of this road is brought up to standard.

Work has been started on the resurfacing of the north Golden-Denver road and with favorable weather conditions this highway should be in first-class condition within sixty days. The improvements will consist of scarifying and resurfacing of most of the portion west of Mt. Olivet.

In Adams county work is nearly completed on the new bridge over Clear creek on Boulevard F, just north of the city limits.

Following this road north along the great north and south highway, surfacing will be done in Boulder and Larimer counties during the present season.

On the Brighton highway the state maintenance outfit has scarified and reshaped the entire road to Brighton during the past two weeks. Surveys have been started for the hard surfacing of the first mile and a half of this road running north from the Denver city limits, and it is hoped that contracts will be let for this work within the next sixty days.

On the Denver-Limon road, which runs through Aurora and past the new recuperation camp, work was in progress all last year, and is now going on, consisting of grading and surfacing. The grading was completed last year from Limon to Deertrail, and also between Aurora and Bennett. Work is now being done between Deertrail and Bennett and Bennett and Denver on this same road.

Assistance was given by the state and counties to the town of Aurora to enable it to gravel that piece of the road which runs through the township.

South from Denver work has been started on the Denver-Littleton road by Contractor Charles Connor. Grading and bridge work is now in progress, and the contractor will make every effort to push this work to completion early this season. When this work is completed it will give a hard road from the center of the city of Denver to the town of Littleton.

From Littleton to Castle Rock the counties and state have surfaced the Colorado Springs highway, and now have a maintenance crew at work.

In Boulder county a convict camp is still at work upon the Nederland highway, which probably will be completed early this season. The camp will then be transferred to the South St. Vrain road, which will give the state another entrance to Estes park by way of Allens park.

In Boulder, Gilpin and Jefferson counties the road known as Coal Creek road will be finished this season by the completion of the four-mile stretch near Pine Cliff. This will furnish a new gateway into the Rollinsville and Nederland section of the state.

The convict crew in Larimer county is still at work on the Poudre Canon road. They are nearing completion of the Big Narrows, the most difficult section of the entire road.

Considerable work was done on the road to Estes park through Loveland canon last season, and it is contemplated that a good deal more will be done this year and next on it. This is the most important inlet to Estes park, and must be widened and graded to put it in good shape. Work is also in progress on the road from Loveland to the mouth of the canon.

In Boulder and Larimer counties the road from Lyons to Ester park was graded and drained and put into first-class condition during the past season by the state and the two counties. This road is subject to very heavy traffic, carrying the freight from the railroad into Estes park, and this improvement will make this entrance one of the best into the park.

In Jefferson county work has been in progress for the last two seasons on the Guy hill road and a great deal of progress has been made. Gilpin county has also put its end of the road in good condition for travel as well as the highway leading from Central City to Nederland.

In Larimer county the road through Estes park to Grand lake is now all under contract save for a six-mile stretch at the head of the Poudre river, which can be very readily completed when the other contracts have been finished. This will complete the road from Estes park over the divide to Grand lake, and it is hoped that the contractors will be able to finish the work this year. The state is paying the entire cost of this improvement. The road will be a link in the road from Denver to Loveland through Estes park, Grand lake, to Fraser and over the Berthoud pass to Idaho Springs, Golden and Denver. Its completion will afford automobilists another new trip of rare scenic attractions through the Rocky Mountain National park.

In Weld county the road from Brighton to Greeley and from Greeley to the Wyoming state line has been graded and surfaced. Work will be in progress this year on this line and the road will be kept in good condition. The road from Greeley to Loveland has been graveled by Weld and Larimer counties, and Weld county has graded and graveled the road from Greeley east toward Fort Morgan during the past season. Crews are now at work upon a new 600-foot concrete bridge over the Platte river on this road.

Federal Aid Act and Projects in Colorado

By James A. Whittaker, District Engineer, U. S. Office Public Roads

THE Federal Aid Road Act, which became a law July 11, 1916, appropriates the sum of \$75,000,000 for expenditures under direction of the Secretary of Agriculture to assist the forty-eight states in the construction of highways. This sum is made available to the amount of \$5,000,000 in the fiscal year 1917, and increases by a like sum each year until the fifth year, when the sum of \$25,000,000 is available. The Act carries an additional appropriation of \$1,000,000 a year for ten years to assist in the survey, construction, and maintenance of roads and trails within or partly within the National Forests.

Authority for the immediate administration of this Act was delegated by the Secretary to the Director of the Office of Public Roads and Rural Engineering. And the Director desiring closer contact with the State organizations, and as an aid to the expeditious handling of the questions involved by the Act, established ten district offices, in each of which is placed a district engineer as his representative.

Before the Act could be placed in effect, a careful and exhaustive examination of the State Laws was necessary in order to know in which States were properly authorized highway departments. Seventeen States were found to be not properly equipped, so in these additional legislation was necessary, but now, after the proroguing of the legislatures of these States, we find the administration of this Act embracing the Secretary of Agriculture and the highway departments of forty-eight States.

To the States is delegated the designation of projects, the making of surveys, and the preparation of plans and specifications of the proposed work. The expense incident thereof is entirely borne by the State. If the Secretary of Agriculture decides the project complies with the requirements of the Act, then an agreement is executed, by the terms of which, upon completion and approval of the work specified to be done, the Federal Government reimbursed the State the agreed upon pro rata part, which in no case shall exceed 50 per centum.

Local authorities of State sub-divisions, when soliciting their State Highway Department to approve and request Federal Aid for a particular highway, should first select a road which complies with the terms of the Act and the Rules and Regulations promulgated by the Secretary, namely it shall fulfill the postal requirements; shall be a section of the State Highway System; the improvement desired shall be substantial in character and shall meet at least the needs and demands of present traffic requirements. Unless the selected project will satisfy all of these requirements, they will avoid disappointment and save themselves and the State officials time and expense by not submitting such projects.

Up to and including February 28, 1918, forty-five States had submitted a total of 383 project statements, of which 265 have been approved, six disapproved, three cancelled, and four withdrawn. Plans, specifications and estimates have been approved to the number of 86. The total mileage covered by these projects was 4,453.66, and the total cost, \$28,164,672.77, of which the States asked the Federal Government to assume the payment of \$11,129,815.69. The types recorded include all classes from graded earth roads to the highest type of surfaced pavement, excepting therefrom wood blocks, which type has not yet been requested.

The procedure to be followed in securing co-operation from the fund appropriated for roads within or partly within the National Forests differs from the above inasmuch that the petition of the local sub-divisions after approval by the State Highway Department is filed with the District Forester, who investigates the merits of the projects, which, if recommended by the Forester, is then submitted to the Secretary of Agriculture and agreement executed, generally with the State Highway Depart-

ment, although in exceptional cases, with the official representative of the County in which the project is situated. The amount of federal funds is not expected to exceed 50 per cent. of the proposed cost. After perfecting the agreement, the Secretary, represented by the District Engineer of the Office of Public Roads and Rural Engineering, then undertakes the survey and construction and inspects the maintenance of the project. The expenditure of the joint funds for these projects is made directly by the representative of the Federal Government.

The ten offices for district administration are located at Portland, Oregon; San Francisco, California; Denver, Colorado; Minneapolis, Minnesota; Omaha, Nebraska; Fort Worth, Texas; Chicago, Illinois; Montgomery, Alabama; Troy, New York; and Washington, D. C. Colorado, with Arizona, New Mexico, and Wyoming, comprise District No. 3, for which the district office is located in the Tramway Building at Denver. The survey and construction of Forest Road Projects in Forest Districts 2 and 3 is under direction of this office.

For Federal Aid in these four States to May 1, 1918, Arizona has submitted four projects having a length of 56 miles and an estimated cost of \$321,576.99; Colorado, eight projects with a length of 172 miles and estimated cost of \$520,188.04; New Mexico, fourteen projects covering 244 miles and at a cost of \$866,982.33; and Wyoming, sixteen projects embracing 188 miles and estimated to cost \$387,366.88. The totals for the four States are forty-two projects covering improvements upon 671 miles, at a cost of \$2,096,114.14.

The Colorado projects comprise: (1) The Denver-Littleton in Arapahoe County, 3.95 miles of concrete road with gravel shoulders, estimated cost, \$74,396.98; (2) The Walsenburg-Trinidad in Huerfano and Las Animas Counties, one mile brick and 76 miles gravel, \$260,191.91; (3) Granite-Twin Lakes in Lake and Chaffee Counties, 11.94 miles of gravel and shale, \$37,089.80; (4) Rifle-Meeker in Garfield and Rio Blanco Counties, 30 miles gravel and earth, \$79,082.85; (5) Placerville-Norwood in San Miguel County, 2.99 miles graded earth, \$7,480.00; (6) Lamar-Springfield in Prowers County, 3.08 miles gravel and shale, \$10,030.20; (7) Norwood-Naturita in Montrose County, 26 miles, \$29,999.20; (8) Meeker-Craig in Moffat and Rio Blanco Counties, 17.5 miles, \$21,916.40.

The agreement has been executed for Project No. 1, and it is now under construction by contract let by the State Highway Department. The remaining projects have been tentatively approved by the Secretary. Plans and specifications for Projects Nos. 4 and 6 were received by the district office and forwarded for the Secretary's approval during April. Plans for the remaining projects had not been filed on May 1.

The forest road work in the same States comprises agreements for the location survey, plans and estimates of one project of 95 miles in Arizona and two projects covering 150 miles in Wyoming. Also, the location survey and construction of one project in South Dakota of 16.6 miles, estimated to cost \$57,500.00; and four Colorado projects which total 119.24 miles and cost \$373,422.00. The Colorado projects are: Sedalia-Decker Springs, 18.59 miles, estimate, \$36,402.00; Rabbit Ears Pass, 20.75 miles, estimate, \$20,500.00; Monarch Pass, 27.1 miles, estimate, \$83,450.00; and Durango-Silverton, 52.8 miles, estimate, \$233,070.00.

Owing to the necessity of aiding war industries and the production of war necessities, all agreements, whether for State or forest roads, includes a clause which makes the construction secondary to these purposes. And while the State officials and the Secretary may postpone construction during the continuance of the war, yet it is not at present thought that construction of the above projects will be seriously or continuously delayed.

On The Road with the Crews of District 2

ON the north and south highway in Douglas county surfacing has been completed from the county line to Colorado Springs. Provision has been made for the maintenance of this road for the coming season. Three concrete bridges are under construction in Douglas county and at least two will be constructed this year in El Paso county on this road.

It is also proposed to straighten out the line in El Paso county and eliminate some of the curves as soon as right of way can be secured.

From Castle Rock east to Kiowa the road is graded and in passable condition at this time. A new bridge is contemplated just west of the town of Kiowa on this road. The road will also be extended east from Kiowa to River Bend, joining the Limon road at that point.

The Perry Park branch of the North and South highway has been graded and the Cherry Creek road will be further improved during this season. The road from Sedalla to Decker Springs will be further improved this year, this work being done jointly by the U. S. Forestry department and the state highway department.

In El Paso county the road up Ute Pass and through Teller county and Park county will be further improved by grading and elimination of curves during the present season. It is intended also to further improve the continuation of this road down Trout Creek to Buena Vista where the highways link up with the Leadville road.

In Chaffee and Lake counties the improvement of the main road up the Arkansas river will be undertaken this season by the Federal and state governments. Federal Aid Project No. 3 is located on this road.

Further work will be done this year on the Independence Pass road as soon as weather conditions will permit.

It is hoped that work will be started on the Forestry Aid project over Monarch Pass this season. Maintenance will be kept up on the road down the river between Salida and Canon City.

Work will be done on the Platte river road between Fairplay and Jefferson county line in Park county.

Crews are working now on the road between Cripple Creek, Victor and Canon City and it is believed that this highway will be open this season. This road is along the right of way of the old Cripple Creek-Canon City railroad and will open a new route into the gold district, with some particularly fine scenery and a good grade.

Work is now being done on the road from Colorado Springs toward Limon, and on the highway due east from Colorado Springs. The road south to Pueblo has been graveled and will be kept in good condition throughout the season.

A gang has just completed work upon three new bridges and a fourth is proposed on the line of the Union Pacific highway in Lincoln county. Work is also in progress on the east and west main highway through this county as well as on the north and south connecting highway. With the exception of the character of the work the statement also holds true of Kit Carson and Cheyenne counties on the Golden Belt and Union Pacific highways.

The cut-off line between Colorado Springs and Canon City has been gone over and is now in good condition. This line affords a short cut from Colorado Springs to the Arkansas river road.

In Park county from Fairplay north there is now a good road over Hoosier Pass to Breckenridge, and in Lake the road from Leadville to Tennessee Pass is in first-class condition and it is expected that the pass will soon be open.

From Salida south the road up to Poncha Pass is in good travelable condition and is now open.

Log of Grand Mesa Road

THE following log of the Grand Mesa road from Delta, Colorado, to the Midland Trail has been compiled by the state highway department for the benefit of those interested in taking this trip across the mesa and into the oil shale country:

Delta hotel, go east two blocks.		Bridge	21.6
Turn right.		Bridge	22.6
Turn left	2.8	Upper Cottonwood creek bridge	24.9
R. R. Crossing.....	3.0	Gate	25.4
Turn right	3.2	Kiser Creek bridge	26.5
Turn left	3.8	Kiser Lake	30.6
Turn right	4.0	Bridge	30.9
Turn left	4.8	Daniels Lake	31.5
Turn right	5.1	Bridge	31.7
Turn left, bridge.....	5.3	Baron Lake to left.....	32.3
Take left-hand road.....	5.4	Camping Grounds to left.....	32.4
Turn left	6.8	Top of Grand Mesa.....	39.0
Turn right	8.5	Turn right	42.0
School to right	10.5	Bridge	42.7
Eckert	11.1	New road	48.9
Bridge	13.5	Turn right	52.3
Turn right	14.9	Cross road	53.5
Cedaredge	16.0	Collbran	54.4
Turn left	17.0	Plateau City	55.5
Turn right	17.2	New bridge	58.0
Turn left	19.3	Bridge	59.1
Turn right	19.5	Bridge, Junction Midland Trail	66.5
Bridge	20.4		

CONVICT CAMPS IN STATE.

Five convict camps are working on state and county highways in Colorado. These camps employ approximately 250 men under the direction of Mr. Thomas J. Tynan, warden, and his superintendents. They are working in Larimer, Weld, Garfield, Boulder and Pueblo counties.

FOREST SERVICE FUNDS.

Twenty-five per cent of the receipts from U. S. Forest reserves are turned over to the state by the National government and distributed pro rata, according to the average of forest reserve in each county. The money is divided by the county commissioners between the school and road funds, but at least 5 per cent must go to the schools. Probably 90 per cent of the total fund has been used in road improvement

Adams county now has an automobile for every ten persons of its population.

County Commissioners At Home and Abroad

COUNTY Commissioner M. A. Walsh and Ex-Representative James Dilts of Eagle county were in Denver May 7 to see about the improvement of the road over Battle mountain from Red Cliff through Gilman to Minturn. Four miles and a half of this road will be improved under the Federal Aid Road act.

Work on the Delta-Nucla road was the purpose which brought Senator Stephan to Denver May 6. Mr. Stephan was also particularly interested in the Grand Mesa road between Delta and Collbran.

Commissioner Gus Johnson of Jefferson county was in to talk over the improvement of State Route No. 1.

Commissioner Sam Greenwood of Boulder is taking a trip to the coast for his health. He is expected to return soon in greatly improved shape.

Commissioners Burns Mill and H. E. Miller of Boulder stopped in to check up on the improvement of the South St. Vrain road to Allen's park.

Commissioners Wagner and Galloway of Telluride, San Miguel county, are making plans for the improvement of the road to Rico.

Attorney Carpenter and Commissioners W. B. Dunham and W. I. Myler of Montezuma are preparing for work on the road from Dolores to Rico and from Mancos to Cortez.

Commissioner Robert Young of Walsenburg conferred with state officials on the road from Pueblo to Trinidad. The highway is included in Federal Aid Project No. 2.

Commissioner Robert Scott of Trinidad was also in in reference to the same project.

R. D. McDonald, one of the principal stockholders in the Tarvia Construction company, was in Denver recently to inspect the stretch of road which his company is constructing just outside the city limits on the Boulder road. Construction was delayed owing to the poor base material, but Mr. McDonald is confident that the road will prove up in good shape. Crushed gravel, thoroughly compacted and retreated with tarvia will be added to the surface and the Tarvia people will not conclude their work until satisfied. The state highway department has not accepted the contract yet, the Tarvia people guaranteeing its satisfaction. The work is an experiment in this state.

R. P. McDonald of the McDonald Construction company is in Salida erecting a superstructure on the Salida bridge across the Arkansas river.

The Weld county board was in en masse to talk over projects in their district with Commissioner Ehrhart.

Commissioner David Crocket and County Attorney Morgan of Arapahoe have outlined the work for the season in their district.

Commissioners Reickenberg, W. M. Smith and W. M. McCallum from Lincoln, as well as the mayor and the town council from Limon, have made plans for the improvement of the Golden Belt highway, and also the construction of concrete bridges for that road.

Commissioner Charles Engle of Rico, Dolores county, has been in to discuss the opening of the road thru Rico. It is hoped to include part of this road in one of the Federal Aid projects of the coming year.

Senators Wm. Adams and Geo. E. West are keenly interested in the Durango-Silverton road, which they hope to see pushed by the national government this season.

Dr. Bartlett, chairman of the road committee of the Civic and Commercial association of Denver, dropped in to confer with Commissioner Ehrhart about work on roads adjacent to Denver.

County Road Superintendent William Parish of Costilla county is devoting especial attention to the La Veta Pass road and the highway from Fort Garland to San Luis.

Commissioner W. H. Whalen and Superintendent of Highways Elmer Wiley of Gunnison county expect to improve Monarch Pass and the Crested Butte highways this season.

Commissioner James A. Stinson of Baca county is busy with details on the Lamar-Springfield highway. Part of this road is included in Federal Aid Project No. 6, and the rest of it in later Federal projects.

F. J. Bawden, county treasurer of San Juan, was in on his way home from Camp Pike, where he has been visiting his son.

Engineer James of Telluride dropped in while on his way east to talk over the situation in regard to San Miguel roads, especially the Lizzard head and Cedar highways.

Commissioners R. G. Webster and H. G. Tiffany of Adams county are at work on plans for improvement of the Boulevard F and Brighton and Limon roads.

Commissioner C. M. Morton of Sterling, Logan county, is looking after the graveling of the Platte river road and the opening up of the road north of Sterling.

Commissioner Edmund Becker of Grand county is pushing the work on the main highways in his district.

County Attorney Carl Seigfried of Ouray is interested in the improvement of the road from Ouray to Red Mountain.

Ex-County Commissioner Davis of Montrose called in on his way east to talk over the general road situation in his district.

Work on the Canon City road by the convict crew and further improvements on the Santa Fe trail east of Pueblo are among the matters Commissioner J. W. Thomson reports are under way. He was in Denver recently with John Cowden, chairman of the Crowley commissioners.

Washington, Yuma, Phillips, Logan and Sedgwick counties have also graded and opened new north and south roads connecting with the main east and west state highways.

The difficult hill between the towns of Georgetown and Silver Plume will be reduced to a 6 per cent. grade during the coming season under plans which are now being made, and complete surveys have been made over Berthoud pass for the reduction of the grade and the widening of the highway. A survey was also made from Silver Plume to the top of the divide, looking to the eventual completion of the road over Loveland pass.

The Blue Lodge of Colorado Road Builders

Not all of the road building is done by act of national, state or county government, even upon public highways. Occasionally there are men who see the need of a road in some section and who proceed to see that the road is built, upon their own initiative, and even at their own expense.

Such a one is "Cement Bill" Williams of Golden, Colorado, who was the first to initiate actual work on the Mt. Lookout road, now a connecting link from Golden to the Denver parks.

William Williams (to give him his full cognomen) decided in 1912 that the highway to the top of Mt. Lookout ought to be built. Reconnaissance work had already been done on the line by

James Maloney, Frank Morris and E. E. Montgomery of the State Highway department, and "Cement Bill" had his line of action pretty well established. Circulating among his friends in Golden, including Mr. Coors, Mr. Linder, Geddis & Seerie, and others, he raised a subscription of about \$2,500, a good part of which he donated himself. Then gathering a crew together he started out and put a mountain trail up to Windy Point following the line of Mr. Maloney's survey. That done he began actual construction of the road, getting as far as Chimney Gulch before his funds ran out. Others failed to fall in with his idea and the work was temporarily abandoned. Later the idea was taken up by the authorities and the superb road today, with very few changes, is a continuation of the "private" enterprise.

Fred Catchpole of Pagosa Springs, is interested in the raising of stock and sheep. Also he is interested in getting them to market. Wherefore and because of which he is interested in good roads. It was in 1912 that his beliefs and convictions began to make themselves felt in more than a local way. Previous to that time he had been working to get his stock to market and with that out of the way, the habit of good roads remained with nothing to keep its attention. So, Mr. Catchpole decided that there should be a road built over Wolf Pass from the San Juan to the San Luis valleys and from that time on, the State Highway department heard from him regularly. In order to further his work Mr. Catchpole, who is a banker, accepted place as county commissioner and the completion of the new outlet between the rich valleys last August, is in no slight way a tribute to his personal interest, aided of course by the residents of his section. Just now, Mr. Catchpole's activities extend to consideration of a road between Pagosa Springs and Chama, New Mexico, and it is a safe forecast that until that piece of highway is constructed, there will be little rest for state highway officials in this state and in New Mexico.

High in the list of those who have given their services freely in the interests of good roads in Colorado, appears the name of Dr. F. L. Bartlett, now chairman of the good roads committee of the Civic and Commercial Association of Denver. Long before the good road movement began to crystallize Dr. Bartlett was talking to anyone who would listen to him, and when the first road conference was called in 1906 he was one of the most active participants as President of the Colorado automobile club.

In 1912 the Chamber of Commerce initiated a road fund of \$2,500 for the improvement of the road from Denver to Limon and the amount was expended under the personal supervision of Dr. Bartlett. Later he was a leader in the movement for a state highway department and he is now everlastingly pounding away upon the theme of good roads with increasing force.

One of Dr. Bartlett's chief hobbies is the logging of roads and there are few in Colorado who can give him pointers upon any of the highways, county, state or national.

At the same time that "Cement Bill" was working on his road to Mt. Lookout, a group of active road enthusiasts in Idaho Springs were making plans for the improvement of their highway to Denver. At that time state funds were decidedly limited, county funds were at a low ebb and it looked as if any attempt at improvement was almost hopeless.

But the Idaho Springs Boosters were not to be deterred and finally, led by Father McCabe, himself one of the most persistent advocates of good roads in the state, the residents got together and decided to give the rest of the state an object lesson in road work.

A big meeting was held and a few days later, any visitor to Idaho Springs on business was referred to the road for his client. There Father McCabe, Mayor McClelland, Mr. Bush, Mr. Myers, Mr. Kimball and, in fact, most of the men and women of the city, might have been found, pick and shovel in hand, tackling Floyd hill. The result of their work was the improvement of a six-mile stretch which was made passable and put on a better grade.

Idaho Springs was not content, however, and not until the road had been finally brought to standard did they relax their efforts. And even now they are still at it.

The whole history of road building in Colorado is replete

with incidents of this kind and wherever there has been need of better highways there has arisen some leader to spur his friends on to the work.

In fact many of the older roads would never have been constructed were it not for this spirit of get-at-it.



"Cement Bill"



Dr. F. L. Bartlett



Fred Catchpole on the Old Pagosa Springs Express.

Road Plans for 1918

(Continued from Page 3.)

The alternate road is that from Dolores to Rico to Telluride, which comes under the head of state and county work. The work remaining on the project consists of the erection of two bridges—one at Rico, the other at the foot of Mt. Lores; the construction of 8,000 feet of road on Mt. Lores, and the completion of a 3½-mile stretch between Telluride and Ophir. The state will expend \$14,000 on this work, while the counties will add \$8,000.

The Fall river road is a link in a beautiful circle trip through the National Park and touching some of the finest views to be had in the state. Contracts have been let for 12 miles of the link remaining incomplete, and work is now under way on this strip. Six miles remains to be contracted for at the head of the Poudre river, but this is in open country and can be quickly linked up, once the heavier work is done. The remaining work of the project will cost approximately \$73,000, all of which expense will be borne by the state.

When this trip is opened the tourist will be able to enter Estes by either the Lyons or Big Thompson canons, skirt along the foot of Long's Peak, then go over the range by the Fall river route, which affords a panoramic sweep of the range beyond the conceptions of those who have yet to make the trip; pass on over to Grand Lake and return by way of Tabernash, Georgetown, Idaho Springs, and the Denver mountain parks.

The third loop project, and the least certain to be finished because of the inaccessibility of the road and the very short working season, is that over Independence. Running out of Leadville, this road will offer a loop which will permit the traveler to go to Glenwood Springs via Independence Pass and return via the Eagle river route. In the event that he is traveling through to points west, north or south, instead of making the circle, it will give him an alternate road in case of bad weather conditions. The cost of this work is estimated at about \$14,000. Counties do not contribute.

Outside of these three special projects, which are of the greatest interest because they are vital links, numerous other roads will be constructed during the present season. The entire fund on hand for the year for road work is \$835,889, of which \$242,818.81 is set aside for use on Federal Aid projects under the Federal act, which requires the state to expend at least dollar for dollar with the U. S. on roads approved by the government.

The largest sum appropriated by the state to any one county will be expended in Adams county, where construction and improvement will amount to \$63,500. Jefferson is second with \$51,250, while Weld will receive \$30,000. All figures save Adams include maintenance as well as other work. Elsewhere in this issue a table shows the distribution of funds for the entire year.

Vouchers issued for the month of April to the various counties reached the total of \$97,539.69, an indication that the various districts of the state are getting their work for 1918 well under way.

Colorado the Motorists' State

(Continued from page 11.)

The Denver Mountain Park System and the Denver City Auto Camp showed phenomenal increase in the number of visitors and campers. There was a large list of campers in the Mount Evans region, the center of the proposed Denver National Park.

The total number of visitors to all the national parks was 487,368.

The Yellowstone had 449 less visitors in 1917 than in 1916.

In 1917 the number of visitors at the Rocky Mountain over 1916 was 66,186.

The record shows 22,243 automobiles to the Rocky Mountain against a total of 19,441 for Yellowstone, Yosemite, Casa Grande, Sequoia and General Grant.

The number of visitors to Yellowstone, Yosemite, Glacier, Mount Lassen, Crater Lake, Casa Grande and Mesa Verde combined in 1917 was 109,765, as against 117,186 for Rocky Mountain.

Yosemite National Park had 2,452 more visitors in 1915 than Rocky Mountain National Park.

Rocky Mountain National Park had 82,676 more visitors in 1917 than Yosemite National Park.

Yellowstone National Park had 20,895 more visitors in 1915 than Rocky Mountain National Park.

Rocky Mountain National Park had 81,786 more visitors in 1917 than Yellowstone National Park.

The following is the total number of automobile visitors to the Rocky Mountain National Park from each state: Arkansas, 20 cars, 83 persons; Louisiana, 13, 67; Texas, 154, 643; New Mexico, 12, 62; Arizona, 19, 81; Colorado, 9,340, 42,537; Utah, 8, 20; Indiana, 32, 105; Montana, 5, 11; Illinois, 181, 638; Oregon, 7, 35; Michigan, 23, 81; Idaho, 6, 20; Wisconsin, 21, 66; Minnesota, 11, 36; North Dakota, 4, 14; South Dakota, 13, 43; Iowa, 311, 1,199; Nebraska, 1,318, 5,369; Missouri, 300, 1,175; Kansas, 748, 3,158; North Carolina, 1, 1; South Carolina, 3, 3; Georgia, 7, 36; Florida, 8, 35; Alabama, 6, 26; Kentucky, 6, 22; Mississippi, 9, 39; Ohio, 49, 216; Tennessee, 12, 43; Connecticut, 3, 8; Massachusetts, 4, 19; Rhode Island, 3, 6; New York, 35, 116; New Jersey, 10, 40; Pennsylvania, 14, 18; Maryland, 1, 4; California, 50, 209; Wyoming, 183, 683; Virginia, 1, 1; West Virginia, 3, 7; Oklahoma, 312, 1,251; Vermont, 1, 2; District of Columbia, 4, 9; England, 1, 4; Scotland, 1, 2; France, 1, 1; Greece, 1, 1; Canada, 2, 6; unknown, 623, 3,220; Rocky Mountain Transportation company, 8,747; wagons, 57; motorcycles, 111. This furnishes a total of 13,913 cars and 70,417 persons.

NIGHT DRIVE-AWAYS INAUGURATED

Night drive-aways have been inaugurated by the U. S. quartermaster department out of Detroit. The motor trucks travel in trains manned by 78 men, carrying 15 days' rations. The driving is done entirely by night.—Good Roads.

COLORADO HIGHWAY DEPARTMENT

STATE HIGHWAY COMMISSION

L. BOYD WALDBRIDGE, Chairman, District No. 3, Meeker.
LEONARD E. CURTIS, Vice-Chairman, District No. 2, Colorado Springs.

FRED J. RADFORD, District No. 3, Trinidad.
FREDERICK GOBLE, District No. 4, Silverton.
LAFAYETTE M. HUGHES, District No. 1, Denver.

T. J. EHRHART, Commissioner.

J. E. MALONEY, Chief Engineer.

COUNTY COMMISSIONERS AND DENVER ROAD OFFICIALS

ADAMS

R. G. Webster, Broomfield.
H. G. Tiffany, Stockyards Station.
Harry C. Flanders, Bennett.

ALAMOSA

A. E. Headlee, Hooper.
Cris Wallrich, Alamosa.
George E. Lake, Alamosa.

ARAPAHOE

Theodore Taylor, Englewood.
D. J. Crockett, Littleton.
Claude Cartwright, Aurora, R. F. D.

ARCHULETA

Fred Catchpole, Pagosa Springs.
John L. Bowell, Pagosa Springs.
R. L. Ewell, Chromo.

BACA

C. A. Wiley, Richards.
James A. Stinson, Springfield.
Onda Young, Two Buttes.

BENT

Levi Dumbauld, Las Animas.
B. T. McClave, McClave.
D. E. Heizer, Las Animas.

BOULDER

S. A. Greenwood, Boulder.
H. E. Miller, Longmont.
Burns Will, Boulder.

CHAFFEE

O. S. Mason, Buena Vista.
J. I. Glenn, Salida.
W. L. Philbin, Salida.

CHEYENNE

Walter Ramsey, Kit Carson.
A. I. Johnson, Wild Horse.

CLEAR CREEK

John W. Green, Silver Plume.
T. W. Cunningham, Georgetown.
F. A. Miller, Idaho Springs.

COSTILLA

J. M. Pacheco, San Pablo.
T. Mancho Garcia,
W. R. Morris, Ft. Garland.

CROWLEY

Wm. Broadhurst, Ordway.
Frank McNary, Sugar City.
John H. Cowden, Ordway.

CONEJOS

W. F. McClure, Antonito.
Frank Russell, La Jara.
H. L. Sellers, Manassa.

CUSTER

Harry Kettle, Westcliffe.
Jacob Beck, Westcliffe.
Chas. A. Barton, Silver Cliff.

DELTA

W. A. Shepherd, Delta.
Thomas J. Harshman, Cory.
Charles T. Rule, Paonia.

DENVER

Jas. A. Burnett, Mgr. Parks and Impts.
Fred Steinhauer, Supt. Parks.
F. J. Altvater, Highway Commissioner.

DOLORES

G. L. Garren, Rico.
Charles Engle, Rico.
H. M. Knight, Rico.

DOUGLAS

S. H. Stream, Sedalla.
G. F. B. Hood, Parker.
Jas. P. McInroy, Larkspur.

EAGLE

M. A. Walsh, Red Cliff.
T. J. Dice, Eagle.
Andrew Gleason, Gypsum.

ELBERT

C. E. Shaver, Fondis.
Fred L. Albin, Kiowa.
W. E. Holt, Mattison.

EL PASO

J. W. Potter, Colorado Springs.
Harry A. Scholton, Colorado Springs.
B. A. Banta, Colorado Springs.

FREMONT

J. V. McCandless, Florence.
G. V. Hodgkin, Canon City.
Jas. Belknap, Hillside.

GARFIELD

W. F. Adams, Glenwood Springs.
R. P. Coulter, New Castle.
George Newton, DeBeque.

GILPIN

Joseph Borzago, Black Hawk.
Neil McKay, Central City.
R. I. Hughes, Russell Gulch.

GRAND COUNTY

Simon Olson, Parshall.
Ed. Becker, Troublesome.
J. B. Stevens, Frazer.

GUNNISON

W. H. Whalen, Crested Butte.
Geo. L. Miller, Gunnison.
C. L. McDonald, Doyleville.

HINSDALE

O. D. Zeigler, Lake City.
E. W. Wiley, Lake City.
E. W. Soderholm, Lake City.

HUERFANO

Walter Hamilton, La Veta.
J. T. Trujillo, Red Wing.
Robt. Young, Walsenburg.

JACKSON

T. John Payne, Northgate.
W. G. Mellen, Coalmont.
Chas. L. P. Winscom, Walden.

JEFFERSON

R. L. Downs, Evergreen.
J. R. Cruse, Mt. Morrison.
Gus. A. Johnson, Golden, R. F. D.

KIOWA

A. S. Baldwin, Chivington.
Wirt Bailey, Towner.
Ed. Houston, Arlington.

KIT CARSON

James Dunn, Stratton.
A. L. Anderson, Burlington.
J. O. Hendricks, Seibert.

LAKE

B. H. Marvin, Leadville.
Dan Colahan, Leadville.
Geo. Bennett, Leadville.

LA PLATA

E. F. McCartney, Animas City.
Geo. Olbert, Oxford.
Jacob Fritz, Durango.

LARIMER

J. M. Graham, Loveland.
Harris Akin, Fort Collins.
C. M. Garrett, Fort Collins.

LAS ANIMAS

Frank Patterson, Alfalpa.
J. D. Cordova, Guldare.
Robt. C. Scott, Segundo.

LINCOLN

Alex. McCallum, Arriba.
W. M. Smith, Rush.
Ed. Reickenberg, Hugó.

LOGAN

C. M. Morton, Sterling.
C. M. Morris, Fleming.
W. E. Henning, Peetz.

MESA

C. Bower, Palisade.
Geo. W. Masters, Mesa.
Gover Rice, Grand Junction, R. F. D.

MINERAL

John L. Peters, Creede.
James Seward, Creede.
A. M. Collins, Creede.

MOFFAT

Thos. A. Forkner, Craig.
R. S. Hamilton, Hamilton.
R. B. Overholt, Maybell.

MONTEZUMA

R. B. Dunham, Dolores.
C. B. Kelly, Mancos.
W. I. Myler, Dolores.

MONTROSE

John W. Lamb, Montrose, R. F. D. No. 2.
Howard P. Steel, Montrose, R. F. D. No. 4.
Cary S. Heath, Montrose.

MORGAN

Jas. Hurley, Fort Morgan.
J. K. Samples, Brush.
J. H. Osborne, Wiggins.

OTERO

W. Frank Green, Rocky Ford.
Jas. W. McClain, Manzanola.
Geo. Barr, La Junta.

OURAY

J. H. Doran, Ouray.
W. S. Rose, Ridgway.
Geo. R. Croft, Ouray.

PARK

J. S. Singleton, Shawnee.
J. F. Rhodes, Fairplay.
E. S. Clark, Florissant.

PHILLIPS

Herman Poe, Holyoke.
Albin Johnson, Holyoke.
Lyman Foster, Holyoke.

PITKIN

R. M. Strawbridge, Aspen.
R. R. Bullock, Aspen.
J. J. Gerbax, Aspen.

PROWERS

Fred Williams, Wiley.
S. J. Higbeem, Carlton.
D. P. Knuckey, Holly.

PUEBLO

Geo. Herrington, Pueblo.
J. M. Sare, Pueblo.
J. W. Thomson, Pueblo.

RIO BLANCO

F. W. Miller, Meeker.
J. A. Bills, Meeker.
H. S. Harp, Meeker.

RIO GRANDE

Aug. J. Weiss, Del Norte.
W. W. Wright, Monte Vista.
G. W. Gates, Monte Vista.

ROUTT

Wm. Ellis, Steamboat Springs.
Wm. Scheer, Park Creek.
Henry J. Summers, Hayden.

SAGUACHE

Geo. Woodward, Saguache.
A. V. Shipper, Villa Grove.
Adam Deitrich, Center.

SAN JUAN

Gail Munyon, Silverton.
Edward Meyer, Silverton.
J. Ernest Shaw, Silverton.

SAN MIGUEL

T. B. McMahon, Telluride.
Geo. G. Wagner, Telluride.
J. R. Galloway, Norwood.

SEDGWICK

Edward Fischer, Julesburg.
Frank Nagel, Julesburg.
J. G. Mowbray, Red Lion.

SUMMIT

A. Lindstrom, Dillon.
W. H. Hampton, Frawley.
Eli Fletcher, Breckenridge.

TELLER

Tom Foster, Woodland Park.
H. J. Gehm, Cripple Creek.
I. N. Riley, Victor.

WASHINGTON

Homer Evans, Akron.
R. M. Buckmaster, Abbott.
E. A. Lewis, Burdette.

WELD

W. C. Levis, Greeley.
T. Elmer Howe, Greeley.
J. W. Birkle, Platteville.

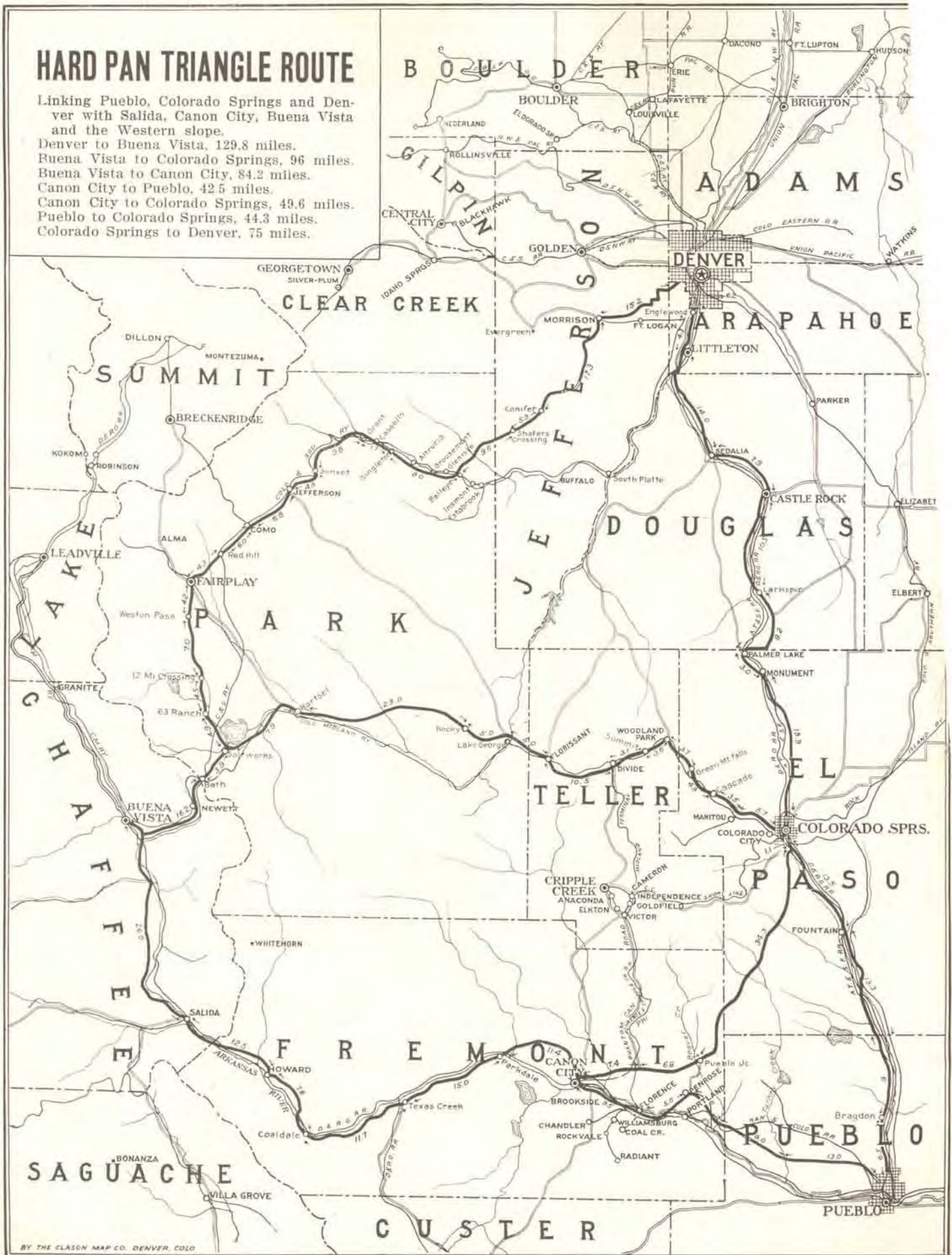
YUMA

Harry F. Strangways, Wray.
H. W. Jackson, Yuma.
Alex. Shaw, Kirk.

HARD PAN TRIANGLE ROUTE

Linking Pueblo, Colorado Springs and Denver with Salida, Canon City, Buena Vista and the Western slope.

Denver to Buena Vista, 129.8 miles.
 Buena Vista to Colorado Springs, 96 miles.
 Buena Vista to Canon City, 84.2 miles.
 Canon City to Pueblo, 42.5 miles.
 Canon City to Colorado Springs, 49.6 miles.
 Pueblo to Colorado Springs, 44.3 miles.
 Colorado Springs to Denver, 75 miles.



BY THE CLASON MAP CO. DENVER, COLO.