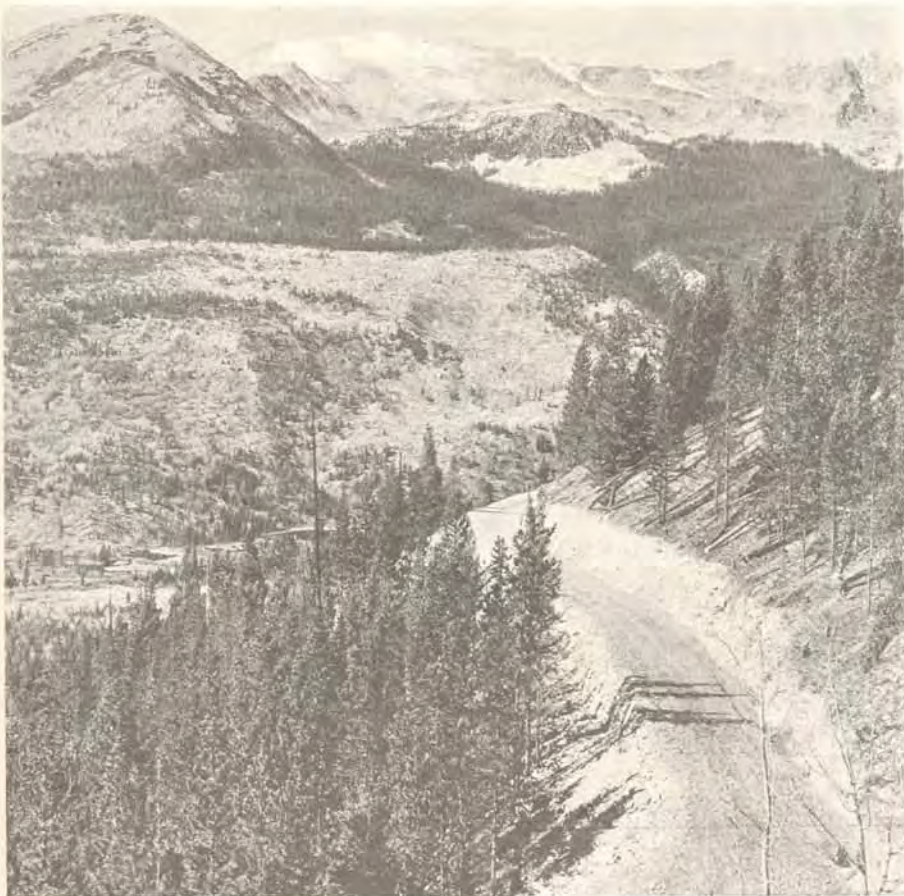


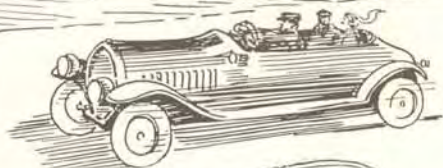
# Colorado Highways BULLETIN

Issued by the State Highway Department



*Completion of the Fall River road over the Highline Drive was one of the projects included by the State Highway Commission in this year's budget. The road on the Western Slope side.*

January, 1919



# COLORADO HIGHWAY DEPARTMENT

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H. W. Jackson, Yuma.  
Alex. Shaw, Kirk.



*Close-up view of tunnel on the Cache la Poudre Canyon road, Larimer County.*

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BULLETIN**

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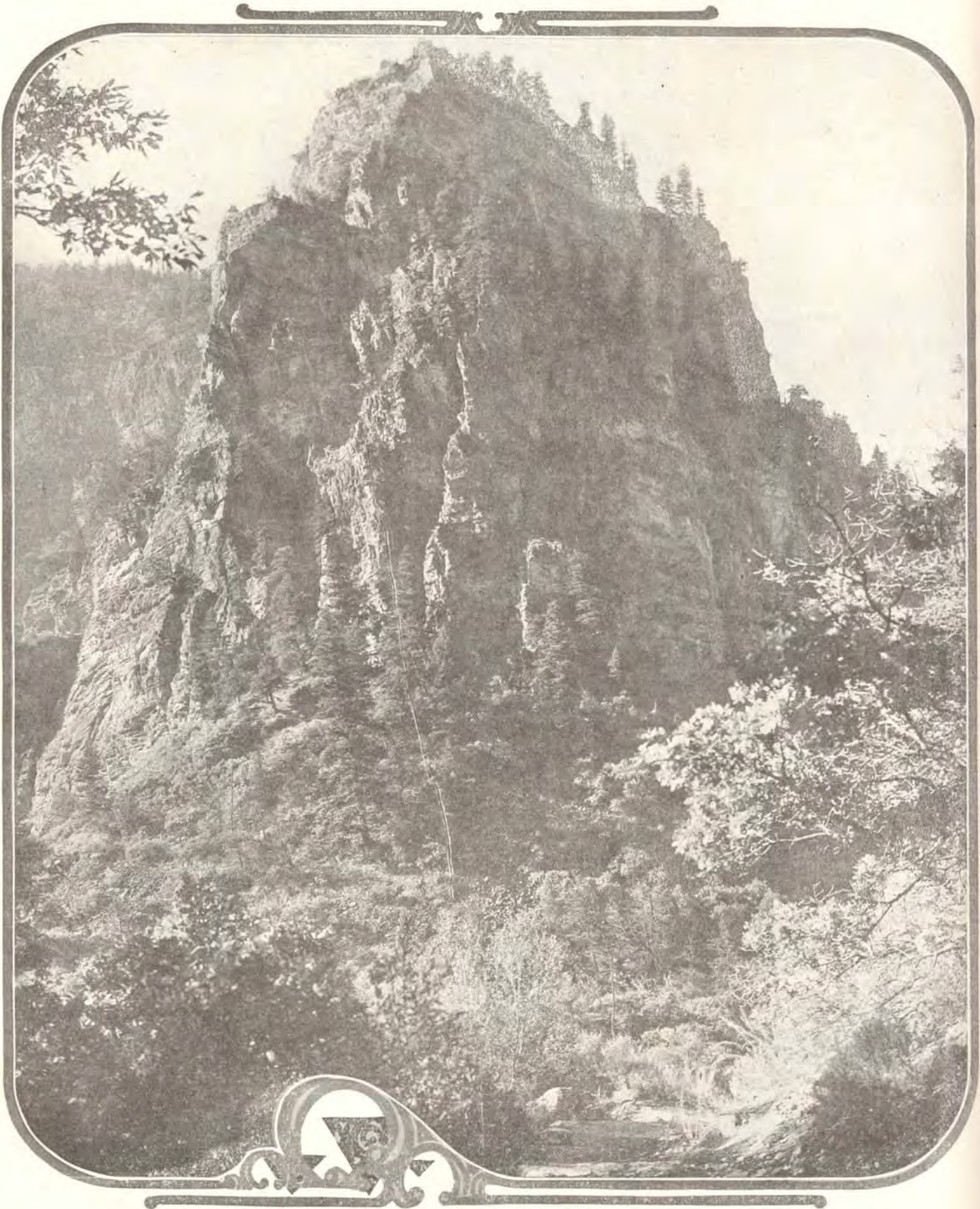
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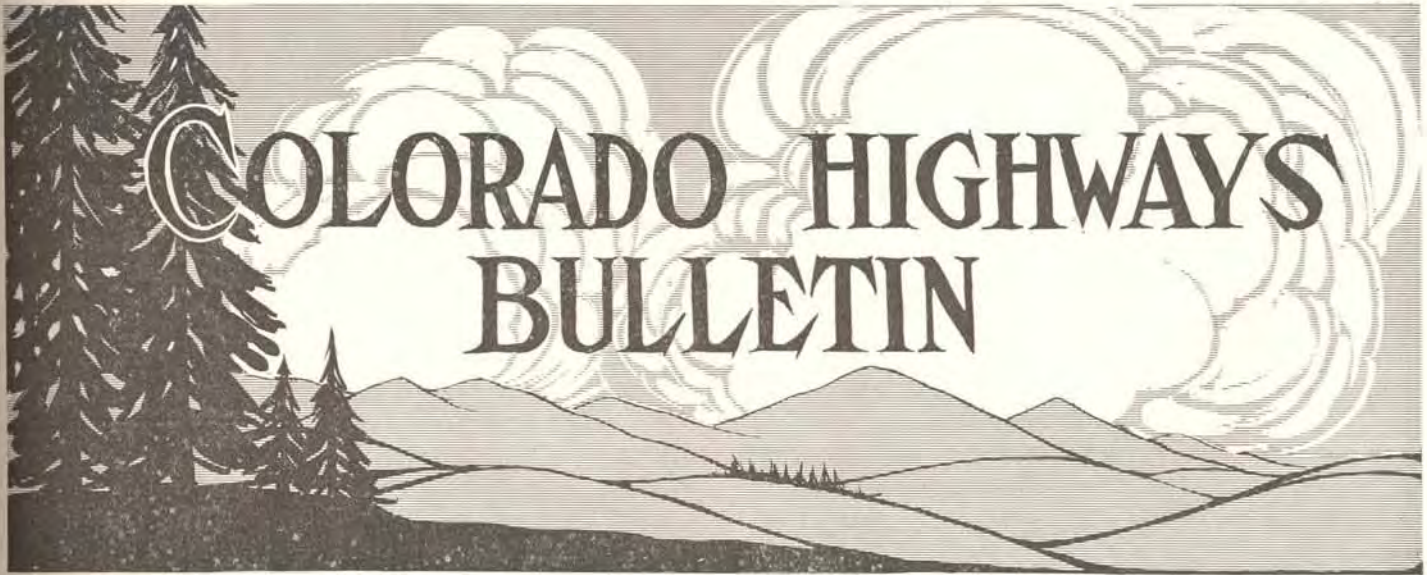
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Subscription Price, \$1.00 per year.

Frowning, Implacable, Rear Anon Vast Bulks, the Warders of the Grand



*One of the stupendous pinnacles which are encountered thruout Glenwood Canyon in Garfield County.*



Vol. II

JANUARY, 1919

No. 1

# The \$20,000,000 Highway Bond Issue

*Colorado's After-the-war Road Program*

IN accordance with the spirit of the times the Highways Transport Committee civic and road organizations have determined that, instead of asking a \$10,000,000 bond issue for the construction of better roads in Colorado, it will ask \$20,000,000. The joint resolution for the submission of an amendment to the state constitution authorizing the bond issue has been framed and will be introduced at the coming session of the legislature. A thorough educational campaign is to be conducted to acquaint the voters with the value of good roads. The people will not be asked to vote the bond issue, not upon the haphazard statements of the past, such as the citation of isolated instances wherein some farmer was able to move his crop to market with the minimum of time and labor because of the motor truck and surfaced roadway, but upon actual operating costs over given roads for a given period of time.

The voters of Colorado are not asked to do the extraordinary in voting this bond issue. A bill is to be presented in Congress for an amendment to the present federal aid road act which will, if passed, provide \$500,000,000 for work on the highways of the United States during the next seven years; Illinois is voting \$60,000,000; Pennsylvania, \$50,000,000; Washington, \$33,000,000. Colorado has gained the reputation of being one of the most progressive states in the Union on the road question. It is imperative that she keep this position, for in addition to the necessity of encouraging highways industries this state must provide for the enormous tourist travel that inevitably will flow thru the scenic gateway of the West.

It is a well known fact that, with all its ills, war

brings compensating benefits to humanity. Highway improvement that will double and treble the productiveness of the soil, advance civilization and provide work for the men temporarily withdrawn from industry, must and will be the great benefit derived from this war.

It was so in the days of Rome. Roman roads, radiating from the Eternal City to all sections of Europe, advanced civilization more rapidly than her armies, her laws or her art. The Appian Way is just as famous, and has been infinitely more useful to civilization than the Coliseum.

The resolution, which will be passed by the legislature and submitted to the people of the state for a vote, is in accordance with a nation-wide movement. It is an amendment to Section 3, Article II of the Constitution, and in describing the urgent necessity for the bond issue, the following language is used: "Whereas, the prosperity and comfort of the citizens of the State of Colorado, as the state develops, are becoming more and more dependent upon the condition of the public highways of the state, and under existing law it is impracticable and often impossible to construct and maintain highways thruout the state so that the same shall be permanent and capable of the highest and best utility and service" The amendment then follows.

After quoting the provisions under which bonds may be issued, the proposed amendment provides that "in addition to the amount of debt that may be incurred as above, the state may contract a debt by loan for the purpose of creating a fund to be expended as provided by law, by the State Highway Commission for the construc-

tion and improvement of public highways in the State of Colorado; said debt to be evidenced by registered coupon interest-bearing bonds not exceeding \$20,000,000.

"Said bonds, to an extent not exceeding million dollars, shall be dated June 1, 1921; not exceeding million dollars, dated June 1, 1922; and not exceeding one million dollars, dated June 1 of each year thereafter, until not exceeding the total amount of million dollars has been issued, but no bonds shall be issued after June 1, 1925; and said bonds shall be payable at the option of the State of Colorado at any time after ten years from their respective dates, and shall be absolutely due and payable fifty years after their respective dates, and shall be of the denomination of one hundred dollars each, or any multiple thereof. The interest on said bonds shall be payable semi-annually at the rate of five per cent per annum, at the office of the State Treasurer, or at some place in the City of New York, U. S. A., and the principal of said bonds shall be payable at the office of the State Treasurer.

"The general assembly shall, as by law provided, enact all such laws as may be necessary with reference to

said bonds and with reference to carrying out the projects and purposes herein specified."

There is another angle to the question which will carry a local appeal. The vast, uncultivated lands of the West must continue to lie idle until adequate transportation facilities are afforded so that they can be profitably worked. The West does not have the network of railroads possessed in the East, and consequently it must develop a great highway feeder system if it is to take its proper place in the progress of the Union. To develop such a feeder system the West must be able to meet the requirements of the federal aid act if it is to participate in the allotments from the \$500,000,000 federal aid appropriation. It cannot do this, Colorado cannot do this, unless the State Highway Commission is given funds with which to match the federal aid appropriations. Colorado cannot afford to stand still while other states around it, benefiting from federal aid and their own efforts, go forward by leaps and bounds and leave the now dominant state of the inter-mountain region far behind in the march of progress. Not only would it be humiliating, but ruinous to the commonwealth.

## Mountain States Ask Liberal Treatment

*By H. C. Allen, Engineer Idaho Highway Commission*

**T**HAT the United States government should adopt a more liberal policy toward the states in its appropriation for road funds and that the old plan of requiring the state to raise a dollar for each dollar spent by the government, should be discarded, was the opinion expressed by H. C. Allen, state highway engineer of Idaho, who was in Denver to meet L. W. Page, of the U. S. Bureau of Public Roads, recently.

"Our property and valuation will not permit of our meeting the government on an even basis when funds of millions of dollars are under consideration," said Mr. Allen, "and certainly most of the other mountain states are in the same plight.

"Mr. Page, I understand, agrees with our opinion in this, but it cannot be too strongly emphasized, and the members to congress who represent the West should make it a point to insist upon modifications of the present rulings, at an early date."

Idaho is face to face with a difficult problem in its road construction, according to Mr. Allen.

"Our funds are derived from a \$1,000,000 bond issue passed in 1917, to apply on so-called permanent construction work. This bond issue is taken care of by a special tax levy which applies on interest and sinking fund.

"The money itself is expended upon 2,000 miles of designated state highways which we are opening up only slowly as we have much expensive construction, little road material and a constant demand for maintenance and improvement.

"Our automobile tax ranges from \$15.00 for the small cars to about \$30.00 based upon weight. Of this fund, however, only 25 per cent. goes to the state, the rest being turned over to the counties for road work in their highway districts. We have no supervision over this work at all, but have established a plan of co-operation whereby the state districts divide the expense, the work then being done under our office.

"The biggest problem now confronting us is the construction of links of highways seriously needed. We have only trunk lines in our state system with connecting links between them. These must be built up in order to develop our resources, particularly the mining section of the state, and the problem is too much for the limited funds at hand.

"One of the handicaps which we have to face in common with other states is an increase in motor truck traffic. In Idaho this class of travel is especially important as we must depend upon it in a large measure for our transportation, but in consequence of the appearance of heavy units upon the roads, we are faced by an ever-increasing need of maintenance.

"It is my personal belief, and it cannot be too strongly emphasized to suit me, that the vehicle which does the damage to the road should be the one to pay for the maintenance, or some reasonable part of it anyway.

"Hence I favor a graduated tax on the motor truck which shall be based upon its tonnage of weight and which will serve to give back some part of the sum which the truck's travel costs us in repairs."

# Our Unoccupied Lands and the Settler

*By the Colorado Department of Immigration*

FOR the first time in history Colorado is putting under way an active campaign for a more intelligent program in the settlement and development of her great unoccupied areas, including both those now classed as a part of the public domain and those now privately owned but unproductive.

Early in December Governor Gunter called a meeting for the purpose of considering the problem and suggesting to the General Assembly plans in this direction, summoning to the conference men who have more than casual interest in state development and who have given thought to the best way in which it is to be promoted. Among those present in the Senate chamber when the meeting was called to order were representatives of the United States Reclamation Service, the State Board of Immigration, the Colorado Development Federation, the Denver Civic and Commercial Association, the State Land Board, the State Agricultural College, the State University, the Railroad Immigration Service and several citizens who are interested in the work.

After an all-day conference, former Governor Ammons, who presided, named a committee to consider and recommend legislation by which Colorado may avail itself of the proposal of Secretary Lane of the Department of the Interior and to consider ways and means of bringing into operation in Colorado a plan somewhat similar to that now in operation in California, by which the state reclaims and develops the land and sells it to settlers on annual installments covering a long period of years. These installments are little more than crop payments, but they eventually wipe out the entire principal.

The committee, which is composed of Governor Gunter, former Governor Ammons, Governor-elect Shoup, John E. Field, engineer of the State Land Board; George W. Martin of the Rock Island Railroad, Cass E. Harrington of the Colorado Development Federation, President A. A. Edwards of the State Board of Agriculture and Edward D. Foster, commissioner of the State Board of Immigration, met in another all-day session during the following week and resolved itself into smaller committees to care for the details of both plans. Definite plans probably will not be announced until the measures are submitted to the Legislature, but it is certain that the proposed legislation will be in the direction of a more progressive, intelligent program than ever will be possible under the present laws of the state.

Under the Lane plan the state and Federal governments co-operate, the former providing the land and the latter doing the reclamation work. It is anticipated that the Federal aid will go beyond the point of furnishing water for the irrigation of arid land and will provide for the erection of suitable buildings, fences, etc., so that the farm may be in shape for immediate work on the part of

the settler, thus solving one of the gravest problems of immigration work.

As a general rule, the new settler has but little money. He brings his brains and his energy and pits them against the fortunes of the elements and the hardships of pioneering. Here it is expected that the newcomer will find the land ready for the plow, the farm ready for his family. Payments will be arranged on an amortization plan which will give him years in which to pay off his debt to the government, paying a little each year, his payments carrying the interest and a portion of the principal. In this way he will be able to pay for his farm and improvements in 30 or 40 years, the annual payments amounting to little more than ordinary crop payments.

Such a plan enables the settlement of unoccupied lands by earnest, intelligent men who have families to support and whose cash capital is not much more than enough to provide them with the necessary farming equipment and to maintain their families until the land shall have begun to pay dividends. It may safely be said that fully half of the total number of immigrants coming to the West each year are of this class. They have intelligence and energy but small capital, and usually they have families dependent upon them for support during the years while they are earning farms of their own.

Both plans—the California plan and that suggested by Secretary Lane—contemplate a financing provision of this sort, and it is possible that the state plan may go even further and provide that the settler may borrow a stipulated amount over and above the amount still due on the land after the first payment is made. By a provision of that sort any man with ordinary talent and industry cannot fail if he selects land capable of production and is not himself ignorant of the problems of farming.

While nothing definite has been announced as to the manner in which the Lane plan can best be carried into effect in Colorado, it is believed the committee may determine to seek Federal aid in the settlement of lands under government reclamation projects already settled, rather than to seek the construction of new projects at the present time. By adopting such a plan the work will be greatly facilitated, as the land can be made ready for returning soldiers and sailors and other settlers within a short time, while the planning and completion of an irrigation system is necessarily a matter of years.

The long delay which Secretary Lane's program involves is one of the principal objections to it, and thus far the objections have been met only with the statement that the prospective settler can find employment on the projects under construction and can thus earn and save enough to make an initial payment on the land after the completion of the project. It is a fair answer but it is doubtful if the great mass of prospective farmers will be

(Continued on page 24)

# The Proposed State Motor Vehicle Law

**N**EXT to highways, Colorado's big acknowledged need today is an equitable and comprehensive motor-vehicle law. Without such an enactment that will safeguard the interests of the roadbuilders, the autoists and the public alike, it is a waste of good money to construct and maintain highways.

Our present auto law was enacted in 1913. At that period we had approximately 8,000 automobiles in Colorado. Furthermore, the auto even in that late date was considered by many as a "passing fad." Since then it has become a commercial and domestic necessity by leaps and bounds until today we have more than 90,000 auto motor-vehicles of one sort and another operating in Colorado—and with the ending of the war we will have 20,000 more here within the next twelve months.

It became my duty in 1909, as secretary of the Fire and Police Board of Denver, to issue and control the motor-vehicle licenses of Denver—there then being no state law. As I remember it, when I retired in June, 1912, we thought we were "going some" because we had 5,000 autos on the license rolls here. We now have about 20,000.

Following my election as secretary of state two years ago it again became my official duty to take supervision of the motor-vehicle business, not only in Denver, but thruout the state. It required only a brief experience with the state law to show that it was entirely inadequate. But the legislators had not yet been educated to the importance of the question, and the appeal by the highway commission, the county commissioners and myself for a new enactment fell upon deaf ears.

Since then a concerted effort has been in progress for better roads and better auto laws by all who are interested in Colorado's advancement; and because of my official experience in handling the automobile license business it fell to me to draw up a rough draft for submission to the State Highway Commission, the county commissioners and various auto and commercial clubs, preliminary to a new and satisfactory enactment being presented to the legislature in January.

A careful study of the laws of all of the other states shows that no two are alike. Some are as slipshod as our own. Others are worse. Two or three, California, New York and Illinois, contain the best features. What is needed, and what we will have during the course of the next five years, will be a uniform law in each state—local conditions, of course, varying some minor rulings. For the present we can only do our best to have enacted in Colorado a set of motor-vehicle laws that will be a model for those of other states.

First and foremost, we must consider rules and regulations governing the operations of autos of all classes, from the flivver to the monster truck. These rules and regulations, as set out in the draft of the new law, are

*By James R. Noland,  
Secretary of State*

made so elastic that the State Highway Commission, either on its own initiative or on written complaint from a majority of any board of county commissioners, may limit the speed and the weight of the load that may be operated over any highway. The State Highway Commission is also empowered to fix the width of tires on trucks and trailers.

No general speed limit is fixed other than that the bill as drafted reads: "Every person operating a motor-vehicle of any description on a public highway of this state shall drive the same in a careful and prudent manner, having regard to the width, traffic and use of the highway, and at a rate of speed so as not to endanger the property of another, **or the life or limb of any person** (which includes the operator); provided further, any city or town within the state may make and enforce reasonable ordinances, rules and regulations concerning the speed of such motor-vehicles within such city or town, provided that no such ordinance, rule or regulation shall limit the speed of such motor-vehicles to less than the rate of eight miles an hour in crossing highway intersections, or less than the rate of fifteen miles an hour in other parts of such city or town; **provided further**, the State Highway Commission is hereby authorized and empowered to limit the speed of such motor-vehicles on any thoroughfare over which such commission has control \* \* \* and the State Highway Commission or the properly constituted authorities of any county, city or town may set apart driveways, speedways or boulevards under their control for the exclusive use of passenger or other motor-vehicles \* \* \* and the speed of motor-vehicles being operated on any mountain roads shall be limited to 30 miles an hour on level stretches for the distance of half a mile, to 20 miles an hour on grades of more than 2 per cent., to 15 miles an hour on wide curves and to 8 miles an hour on sharp turns or curves."

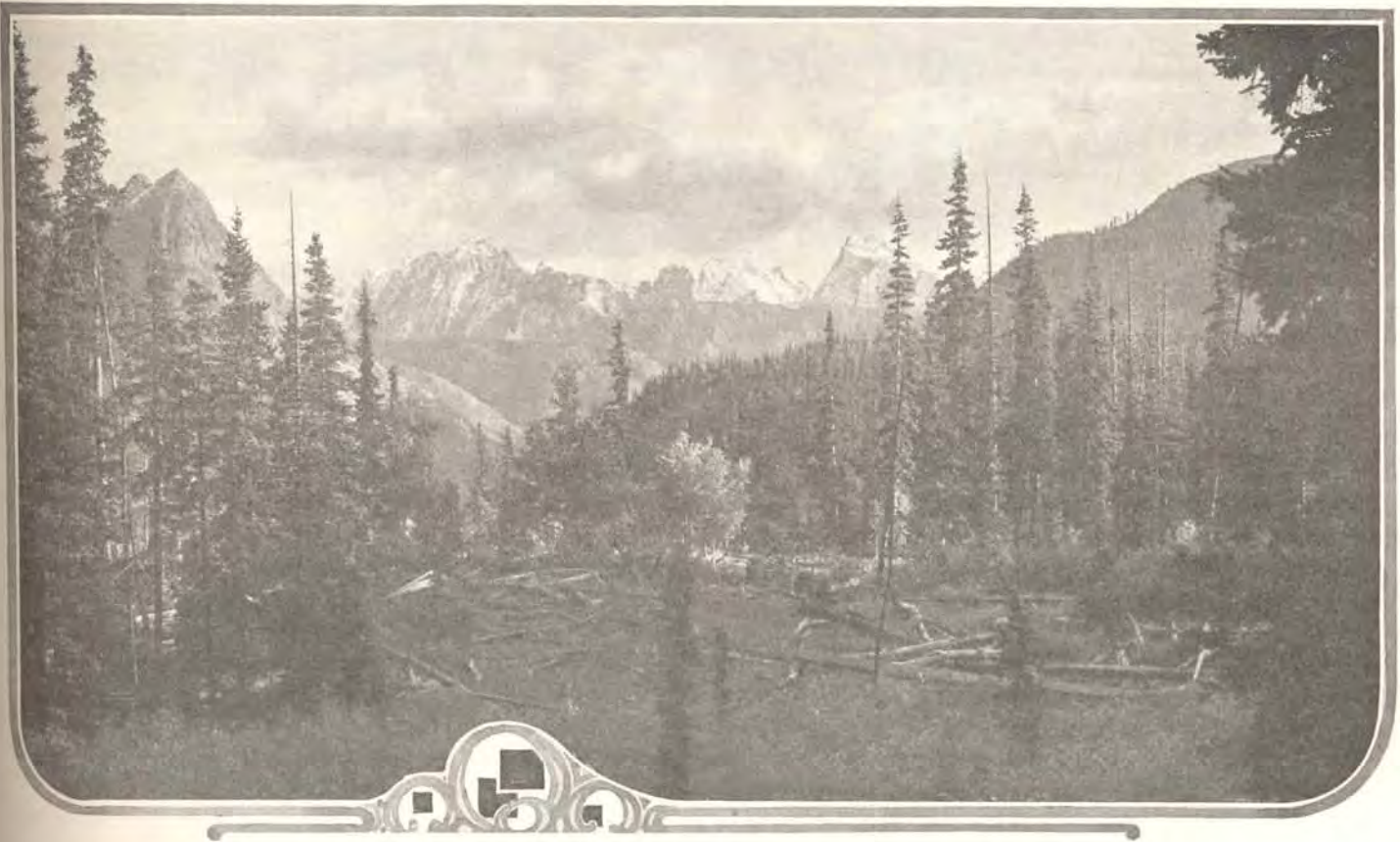
A section is incorporated making it unlawful for any person while under the influence of liquor or of any exhilarating or stupefying drug, to operate a motor-vehicle.

The nearest justice of the peace or other proper trial court is designated to hear a complaint against any person violating any of the provisions of the proposed new law—the county road fund and the state road fund each to receive one-half of any fine that may be imposed. A limited number of state auto license inspectors are provided for, both with and without pay, and are given full police powers when acting under bond to the state. This is one of the very urgent needs of the new law.

In the early days, a horse-thief stealing a ten-dollar cow-pony was chased for days, if need be, and when caught was hanged to the nearest tree. In these days any old thief seems at liberty to steal a \$500 or \$5,000 au-

(Continued on page 28)





*When this jagged skyline meets the motorist's eye as he travels over the Durango-Silverton road, he knows instinctively that he is gazing upon the famous Needles of the San Juan.*

## May Increase Federal Aid Appropriations

*By Logan Waller Page, Late Chief U. S. Public Roads Service*

**I**NCREASE in the Federal Aid road act appropriation, coupled with modifications of the act which will make its provisions more flexible and more equitable were forecast by Logan Waller Page, late Director of the U. S. Bureau of Public Roads, and one of the foremost authorities on roads in the United States, on the occasion of his recent visit to this city, and just before his death in Chicago.

"Everywhere in the United States the demand for good roads is crystallizing," said Mr. Page, "people who had not thought of the subject a few years ago, today recognize the economic value of better highways, and it is my belief that this sentiment will soon find its reflection in Congress.

"At the present time the Post Office and Post Roads Committee of the Senate has under consideration amendments to the Federal Aid act which will, if passed, add some \$500,000,000 to the road fund to be expended over a term of years, which with the state and local funds will aggregate probably \$1,000,000,000.

"Thus it is proposed to make immediately available the sum of \$50,000,000, the sum of \$75,000,000 which will become available July 1, 1919, a similar amount for use beginning July 1, 1920, and in the four years following

the sums of \$100,000,000 annually are to be provided for road work.

"These expenditures, the bill provides, will be made under the Federal Aid act provisions with two new amendments.

"The first of these would make possible the expenditure of these funds on other than roads designated as rural post routes, thus eliminating the limitation which has worked much hardship on state departments in the past since there are many important highways which do not come within the post route definition.

"The second and more important of the two refers to the clause which now provides that the states shall meet each government appropriation on a dollar for dollar basis. There are seven mountain states which cannot meet the provisions of the new appropriation, since a limited valuation does not give them enough funds. There are other states not quite so badly situated but still unable to cope with the proposed increase.

"Accordingly the senate committee has under consideration a classification of states according to their valuations and mileage, under which it is probable that there will be roughly speaking, four classes as follows:

(Continued on page 27)

NOT all of the travel which makes Colorado its goal each year is directed to the mountains. True it is that thousands annually seek recreation and health in the cooling breezes of the pine-clad hills, but there are other thousands whose purpose is more directly concerned with the more practical side of life and who come here in search of land on which they may farm and produce.

To such a class the billowing plains of the eastern section of the state have made a strong appeal in the past and while it cannot be said that the land there is available for homesteading, there are always opportunities for purchase presenting themselves to the thrifty farmer and possessing possibilities of a sure income.

Years ago Eastern Colorado was considered chiefly as a means to an end. It was on the direct route of travel to the Pike's Peak region in the early gold rush, and hunters and gold seekers passed through in 1858, 1859 and 1860 with scarcely a thought to the potential source of wealth under their feet.

From points along the hog back as far as seventy miles away, the first view of Pike's Peak was to be had, and with that point as a goal the travelers pushed forward, intent upon nothing but getting to the famous mountain as quickly as possible. Incidentally it was Pike's Peak which was always the mecca for gold seekers in early days, and as pioneers have said, years before gold was discovered in the Cripple Creek district the feeling, almost an intuition, existed that the peak was the depository for untold wealth.

As the rush continued, there grew a consequent demand for supplies, and in the wake of the miners came the cattle men. In Eastern Colorado they found an ideal location for their herds, miles upon miles of open range, few fences, good watering spots and a long open season.

So to a time which extended to as late as 1900 cattle grazing was the chief industry and thousands of Texas longhorn cattle grazed on the open prairie.

But the evolution continued. Homesteaders were attracted as the lands in the East became exhausted and the constant crops of natural grass gave rise to the belief that something more could be raised. One by one the homesteaders edged their way into the reserves of the cattle growers, acre by acre the land was broken and tilled, and gradually the cattle men saw their stock of rangy Texas steers reduced, while in their place came herds of pure bred stock. Today scarcely a longhorn remains of the thousands which once roamed at will throughout the district.

As the settlers increased in number the counties grew in wealth. Roads were called for and the trails were broken through, linking up the settlements. Farm pro-

# Prairie Schooner, Texas Dogie and Motor Car

## *A Kaleidoscope of Eastern Colorado*

duction increased steadily and with it there was a perceptible growth in the volume of dairy produce. Denver and the cities close to the range called for food, and Eastern Colorado produced it in variety and in quantity.

At first the homes were nondescript in character. Some lived in dugouts, others raised "shanties" built of the most convenient material at hand. Today these have either disappeared or are used as storehouses. Fine homes and prosperous farms dot the section, and dairying on an intensive scale is under way.

Prosperity has set its seal on the section and yet the development has just begun.

With the increase in road work and the gradual advertisement of Colorado as a state of fine scenery, health-giving ozone and opportunity, travel turned to the Centennial state. Nine-tenths or more of this today enters through one of the eastern gateways and in consequence the automobile travel is reaching enormous proportions. Not all of this is through travel, as has been pointed out. But whether it is or not, each traveler who goes through buys a meal here and there, purchases fuel, tires or some other supply, leaves some wealth behind him. Small individually, the sum in the aggregate has become considerable, any the revenue, while perhaps not noticed now, would be missed if cut off.

But the plans for the future do not forecast such action. Instead there is an increasing demand for good roads everywhere in Eastern Colorado. Primarily the farmer wants them as a means of transportation which will enable him to get his produce to market. The advent of the motor truck as a commercially practical vehicle has widened his marketing range, has stimulated his production and at the same time has called his attention to the fact that he must have good roads. Hence he is demanding them and he is getting them as may be attested to by the fact that all of the counties have increased their road funds in the past five years to a very marked extent, while the call for more aid from state and nation daily becomes more insistent.

As these roads are constructed they afford, in turn, diverse routes for the automobile traveler. They permit him to venture from the main highways, to penetrate into points off the main line, little known in the past, but possessing none the less some of the finest farms in the section. In consequence the farmer finds the value of his property enhanced. The prospective purchaser is able to see it, knows that it is accessible to a main highway and is accordingly, more ready to enter into a bargain for it.

Today there are three chief routes into the eastern section: The Platte Valley road, which cuts thru from the northeastern section into Greeley and the main north and

(Continued on page 27)

ONE of the bills to be presented at the coming session of the general assembly as a subsidiary measure in connection with the \$20,000,000 bond issue for better roads, and backed by the Highways Transport committee, the State Highway Commission and motor interests of the state, is the so-called "motor truck" bill.

# Digest of Proposed Motor Truck Law

## *For Regulation of Common Carriers*

This bill, if enacted into law, would give the Public Utilities Commission of the state "power and authority to supervise and regulate every transportation company in this state; to fix the rates, fares, charges, classifications, rules and regulations of each such transportation company; to regulate the accounts, service and safety of operations of each such transportation company; to require the filing of annual and other reports and of other data by such transportation companies; and to supervise and regulate transportation companies in all other matters affecting the relationship between such companies and the traveling and shipping public."

The definition of the term "transportation company" is given in the bill as "every corporation or person, their lessees, trustees, receivers or trustees appointed by any court whatsoever, owning, controlling, operating or managing: (a) any automobile, auto truck, stage or auto stage used in the transportation of persons or property as a common carrier for compensation over any public highway in this state between fixed termini or over a regular route, and (b) any automobile, auto truck, stage or auto stage used in the transportation of persons for compensation over any public highway in any city, town or city and county, and affording a means of transportation similar to that afforded by street railways and in competition therewith, by indiscriminately accepting and discharging passengers; provided, that the term 'transportation company,' as used in this act, shall not include corporations or persons their lessees, trustees, receivers or trustees appointed by any court whatsoever, insofar as they own, control, operate or manage taxicabs or hotel busses, or any other carrier which does not come within the term 'transportation company,' as herein defined."

In defining the jurisdiction of the Public Utilities Commission the proposed act says: "The Public Utilities Commission of the State of Colorado, in the exercise of the jurisdiction conferred upon it by this act, shall have power and authority to make orders and to prescribe rules and regulations affecting transportation companies, notwithstanding the provisions of any ordinance, franchise or permit of any incorporated city or town, city and county, or county, and in case of conflict between such order, rule or regulation and any such ordinance, franchise or permit, the order, rule or regulation of the Public Utilities Commission of the State of Colorado shall in each instance prevail."

The act does not apply to interstate commerce except as permitted by the constitution of the United States and the acts of Congress. In further definition of the term "common carrier," the bill says: "The term 'com-

mon carrier,' when used in this act, includes every railroad corporation, street railroad corporation, express corporation, dispatch, sleeping car, dining car, drawing room car, freight, freight-line, refrigerator, oil, stock, fruit, car loaning, car renting, car loading and transportation companies as defined in section 1 (c) of this act; and every other car corporation or person, their lessees, trustees, receivers or trustees appointed by any court whatsoever, operating for compensation within this state."

For violation of its provision the bill provides a fine of \$1,000 or imprisonment in the county jail not exceeding one year, or by both such fine and imprisonment, and further provides that anyone who refuses to obey any rule, order or regulation of the Public Utilities Commission is guilty of a misdemeanor and punishable by the penalties just named.

The safety and emergency clauses are attached to the bill.

## Distribution of Bond Issue

The State Highway Commission made up a tentative budget for consideration in connection with the distribution of a \$10,000,000 bond issue. The figures used will, of course, have to be doubled if the \$20,000,000 issue is adopted by the people, and the highway budget accepted as satisfactory. In arriving at its basis of distribution the commission sought to arrive at a conclusion fair to all counties in the State. It first distributed the fund upon a valuation basis in each of the five road districts, distributed upon a road mileage basis and averaged:

District No. 1 (14 counties) .....	\$5,210,259
District No. 2 (10 counties) .....	\$1,340,024
District No. 3 (11 counties) .....	\$1,653,696
District No. 4 (17 counties) .....	\$1,041,859
District No. 5 (10 counties) .....	\$ 755,438

If proportioned by State road mileage:

District No. 1 .....	\$2,215,447
District No. 2 .....	\$1,906,158
District No. 3 .....	\$1,873,724
District No. 4 .....	\$2,300,559
District No. 5 .....	\$1,703,506

Or, if the two last computations are averaged:

District No. 1 .....	\$3,712,853
District No. 2 .....	\$1,623,391
District No. 3 .....	\$1,763,710
District No. 4 .....	\$1,671,201
District No. 5 .....	\$1,229,472



*At first glance this scene might suggest the cotton fields of the Sunny South—but, actually, it shows the harvesting of a bumper bean crop in Weld County, Colorado.*

# National Transport Bureau Recommended

## *Results of Chicago Meeting Summarized*

Creation of a permanent national bureau of transportation, together with continuance of state organizations, was recommended as one of the most important steps in the work of reconstruction at the meeting of highway transport officials from all parts of the United States in Chicago.

As a result of the deliberations of the meeting, upon a motion introduced by the Colorado delegate and seconded by Michigan, the committee went on record as favoring these points:

The enactment by Congress of an amendment to the present federal aid road act which would provide \$500,000,000 for work on the roads of the United States during the next seven years.

The creation of a federal road commission of five skilled engineers, who should have charge of the expenditure of this fund in conference with the highway commissioners of the various states.

The construction of a national system of highways, the location of which is to remain in charge of the state highway departments.

Changes in the present federal aid act which would do away with the restrictions now limiting federal aid to roads on 70 per cent of the mileage of which there is post delivery and of the limitation of \$10,000 per mile under federal aid.

Reports from all sections of the country showed that it has been possible to bring about a marked increase in marketing through improved transportation wherever the road would stand the traffic. The conclusions reached were that all that is necessary today to add untold wealth to the resources of the country, together with an enormously stimulated production of all kinds of supplies, is a road system which will not only open up the virgin territories of the West and South, but which will quicken the pulse of trade in the most congested districts of the East.

In standing by the creation of a federal road commission, the officials of the body expressed their belief in the

feeling now generally prevalent throughout the United States among road men, that the time has come when transportation on the highways is deserving of more substantial recognition than that accorded it as a bureau, which, while it has been as efficient as the limitations of the laws have permitted, would be dignified if elevated to the rank of a commission, and would make possible representation of five different districts of the United States with their diverse needs.

As for the future of the highways transport committee, the work already done by the voluntary organizations has opened such a vast field for research in the economic life of the country that it is believed this work should be continued as a branch under the proposed road commission by salaried men who should be experts in the field, and who would give all of their time to a close development of the problems which the present committee has thus far only had time to uncover. In this field are classified the subjects of utmost importance to the future development of the United States, as follows:

A study of the relationship of transportation to the cost of living.

A study of the development of the railroad lines through a vast new business which would be brought to them through the utilization of every highway as a "feeder."

A study of the relationship between the cost of transportation on an earth road as compared with that on gravel and hard-surfaced highways with the idea of placing before the residents in every community what the improvement of the road means to the business of each one of them, whether he be in the city or the country.

An analysis of the traffic limitations imposed by grades and research which would disclose at what point it becomes cheaper to carry a smaller load up a steeper grade than to carry a larger load a longer distance at a lower grade. The effect which utilization of highways for

(Continued on page 28)



A peaceful farm scene in Adams County, with the Continental Divide looming grandly on one side, and a hard-curfaced road gradually approaching from Denver on the other.

# State Highway Appropriations---1919

More Than \$1,000,000 Included in Budget

**M**ORE than \$1,000,000 was appropriated by the State Highway Commission for highway work at its meeting from December 17 to 19, 1918. It is to be noted, however, that the fund derived from the Federal Aid Road Act, amounting to \$320,819.83, is to be considered as a resource and expended in conjunction with the particular project funds appropriated from the state road funds, so that the total amount to be expended in connection with the State Highway Commission's work will be approximately \$1,360,000.

The estimated receipts from all sources for the fiscal year ending November 30, 1919, to be expended under the direction of the highway department, are as follows:

Internal Improvement Income Fund, and		
Internal Improvement Permanent Fund .....	\$ 125,000.00	
Fund from the licensing of automobile trucks and motorcycles .....	205,000.00	
Fund from the one-half mill state levy, 98½% .....	700,685.45	
Interest and miscellaneous .....	12,500.00	
<b>Total .....</b>	<b>\$1,043,185.45</b>	
Estimated amount to be expended for Administration purposes being 4% of \$1,043,185.45 .....	\$ 41,727.42	
Leaving a net balance available for the State Highway work of 1919 .....	\$1,001,458.03	
Amount required for meeting the obligations of the state during the year 1919:		
Federal Aid Postal Road Funds .....	\$ 320,819.83	
Federal Aid Forestry Funds .....	99,738.50	
	<b>\$ 420,558.33</b>	
<b>TENTATIVE PLANS FOR FEDERAL AID PROJECTS FOR THE STATE TO PROVIDE ONE-HALF .....</b>	<b>\$ 397,492.12</b>	
	198,746.06	
	DISTRICT 1. Preliminary Estimate	State to Provide
LARIMER COUNTY—Improvement of Road 51—Big Thompson Canon, to Estes Park—20 miles .....	\$90,000.00	\$45,000.00
ADAMS COUNTY—Pavement on Brighton Road—2 miles .....	43,000.00	21,500.00
YUMA COUNTY—Grading and Drainage, Wray to Idalia—15 miles .....	10,000.00	5,000.00

WELD COUNTY—Pavement from Greeley city limits, 1 mile south.....	21,000.00	10,500.00
BOULDER COUNTY—Pavement, Boulder city, East ½ mile; Longmont city, South ½ mile .....	21,000.00	10,500.00
LOGAN COUNTY—Pavement, Sterling city, South ½ mile .....	11,000.00	5,500.00
MORGAN COUNTY—Pavement, Ft. Morgan to Brush, ½ mile .....	11,000.00	5,500.00
		<b>\$103,500.00</b>
	DISTRICT 2. Preliminary Estimate	State to Provide
EL PASO COUNTY—Pavement, Colorado Springs, North ½ mile .....	\$31,500.00	\$15,750.00
	DISTRICT 3. Preliminary Estimate	State to Provide
PUEBLO COUNTY—Pavement, Pueblo East—2 miles .....	\$44,000.00	\$22,000.00
PROWERS COUNTY—Grading and drainage, 30 miles, Lamar South.....	12,000.00	6,000.00
BACA COUNTY—Grading and drainage, 15 miles, Springfield North .....	6,000.00	3,000.00
OTERO COUNTY—Pavement from Rocky Ford, East ½ mile .....	11,000.00	5,500.00
Pavement from La Junta, ½ mile West .....	11,000.00	5,500.00
		<b>\$42,000.00</b>
	DISTRICT 4. Preliminary Estimate	State to Provide
DELTA COUNTY—Pavement from Delta South ½ mile .....	\$11,000.00	\$5,500.00
COSTILLA COUNTY—Grading and drainage, Ft. Garland to San Luis—17 miles .....	10,200.00	5,100.00
MONTROSE COUNTY—Pavement from Montrose, North ½ mile .....	11,000.00	5,500.00
OURAY COUNTY—Bear Creek section—Grading on new location .....	18,000.00	9,000.00
		<b>\$25,100.00</b>
	DISTRICT 5. Preliminary Estimate	State to Provide
MESA COUNTY—Pavement, Grand Junction, East ½ mile .....	\$11,000.00	\$5,500.00

(Continued on page 19)

# Road Outlook of Forestry Service

*By the U. S. Forestry Service*

**P**ENETRATING into the forest depths, edging their way along the sides of dizzy cliffs, chancing the perils of swamp and glade, the men of the U. S. Forest Service are today acting as the advance guard of the road builders of the country. Where other agencies devote most of their effort toward the reconstruction or improvement of roads already constructed, the Forest Service is still engaged in pioneer work and many a tale of adventure has come out of their work.

Last year, the work of the service was the first to be cut down by the war, since for the purposes of immediate war-making their task was of little importance. This year they will be on the job again with renewed life, and wherever the national forests are to be found, there will be seen the forest gangs at it harder than ever. All told \$5,750,000 will be expended on this work this year, of which \$2,800,000 will be derived from the funds of the service, the rest from the co-operative funds of states and counties.

Out in Oregon, for example, we find a crew engaged in clearing a way for a road along the south side of Lake Quinalt in the Olympic peninsula. Trees of enormous diameter block the way, but back of this timber is production and the world needs food, so in the face of unheard-of difficulties the work goes on.

Down in the southeastern part of Colorado rest the Needles of the San Juan, rated as among the most rugged points in the United States. There is a section of country which has never been opened to travel, thru solid rock and skirting a roaring creek. Seventeen miles of cliff must be dropped into the valley below, switchbacks and hairpin curves must be located, but the road will complete the last link in a 1,200-mile trip, and the men of the service do not turn back.

On the north side of the Columbia river in Washington locations have been completed for a connecting link in the main state trunk highway. A railroad must be re-located, cliffs must be tumbled down, dynamite in car-load lots will be needed. The work will be under construction with the first touch of spring.

From Canyonville to Galesville in Douglas county, Oregon, there is a trail today which leads thru the heart of the Umpqua forest. That trail must be widened that travel may flow freely along the Pacific highway.

Again in Oregon there is a stretch of road known as the Zigzag Government Camp way. The West is nothing if not blunt and the title is precise. Two stretches of that trail are impassable for machines today. Completed they will open up for Portland a circle trip to Crater lake of surpassing beauty. It is hoped that the work will be completed this year.

Down in Arizona there are two east-and-west main highways, but no connections between them from the Rio Grande river to the road from Phoenix to Ash Forks in Western Arizona and, moreover, people living at Clifton, but 30 miles away from the cool breezes of the range, must travel to California to escape the blaze of the summer sun. So, the Forest service, in conjunction with the counties, has projected a north-and-south road 94 miles long from Clifton to Springville, which will not only let people into the hills, but will open a market for millions of feet of matured timber which today can only be brought out by pack saddles.

In New Mexico the Tijeras canyon runs down to the east of Albuquerque. At its head lies a valley of grazing and farming lands. Firewood can be had there also in abundance. It must be brought out, and so a road 14 miles long will be pushed thru the canyon.

Where the Humboldt forest rests in northern Nevada, will be found one of the most promising new gold fields in the world. Isolated in the winter, but poorly linked up in summer, Elko county is not anywhere near capacity production. But it will be for a road 50 miles long known as the Charleston-Jarbridge project, will probably be under way with spring.

One of the chief difficulties which travelers have encountered in entering Yellowstone Park from Wyoming has been the lack of good roads, so a project has been drawn up which will improve the road from Dubois to the western boundary of the Teton forest. This in turn will be linked up with the highway thru the Jackson hole country. At Dubois the road will connect up with three transcontinental routes and will thus afford the traveler an optional route of great charm in his journey to the famed park.

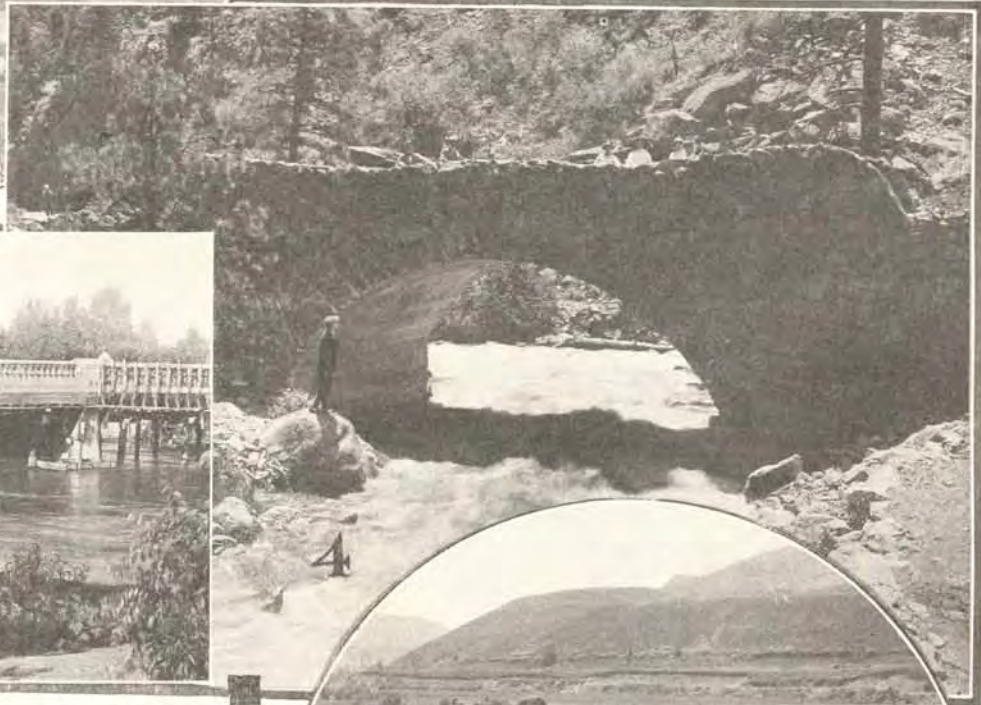
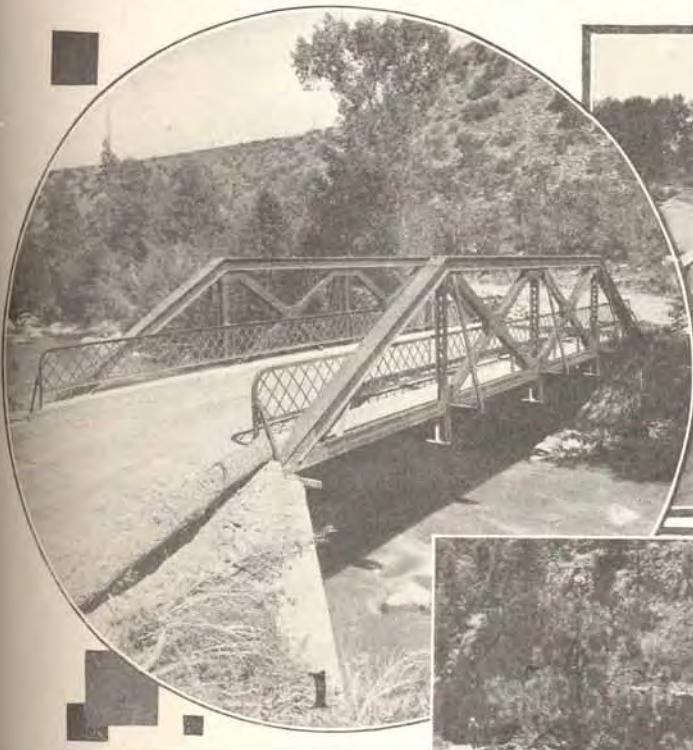
Another link in a transcontinental route which has been seriously needed will be constructed in Utah when the highway is pushed thru from Ephraim to Orangeville, a distance of 46 miles. This will link up with the road thru the noted Paradox valley of Colorado, where are mined the precious carnotite ores and will give the thru traveler an outlet both to the east and west.

Then we have Idaho. Here is the Galena-Summit section of the Ketchum Clayton road, not only a link in an important trunk highway, but a route which will open a new district for grazing, agriculture and mining—a land of beautiful background, diverse scenery and resources.

Finally the Service is planning to invade the notorious Nigger hill west of Missoula in Montana, and by a heavy construction operation will open a new road on grade.

And with the release of state funds made possible thru passage of the Bankhead bill, new sums of money will be at hand to aid the Service in its great work.

Bridges Are the Sign Posts Along the Highway of Motor Transportation



1 Modern bridge construction across the Roaring Fork, Pitkin County. 2 Old style bridge across the South Platte near Kersey, Weld County. 3 Unfinished concrete slab bridge to replace No. 2. 4 An example of picturesque bridge construction, suited to surroundings, Middle Boulder Canyon. 5 Slab construction bridge in Bear Creek, above Morrison, Jefferson County. 6 Solid steel railroad bridge on the Phantom Canyon Route, Fremont County. Nos. 1, 3 and 5 built by State Highway Commission.

# Grade Limits and Traffic Conditions

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

THE tables published herewith are compiled from information gathered from many sources and we have endeavored to reduce them all to a common cost basis in order that the cost per ton-mile might be of value for comparison.

The loads carried are as originally recorded. In some of the items recorded the charges seem low, for instance, the gas consumption on the two heavy trucks.

The two trucks in use by the State Highway Commission show in detail the costs per mile and per ton-mile, of gross weight, except that the item of tires and repairs was spread over the entire work of the two trucks.

It will be noted that the average cost per ton-mile for the truck, both heavy and light, and the cost per ton-mile for the light and heavy touring cars agrees very closely.

Of the tests recently undertaken by Mr. A. U. Johnson, Consulting Engineer of Chicago for the Portland

Cement Association, the table published here presents only the results for what he calls "The Commercial Haul." This was very clearly the difference in the gas cost on the several classes of roads.

The use per ton-mile, gross weight, and also per ton-mile of pay load, is shown in the table.

The costs given in these tables are per ton-mile of weight of car, plus weight of load or gross weight. If it is desired to get the equivalent cost per ton-mile of pay load, it can be obtained by dividing the cost given, by the pay load in tons, and multiplying by the gross weight in tons. For instance, a five-ton truck, with a five-ton load one way—one mile=15 ton-miles gross,

$$\begin{aligned} &\text{pay load} = 5 \text{ ton-miles,} \\ &\text{if cost is given as } \$0.10 \text{ per ton-mile, then,} \\ &0.10 \\ &\text{---} \times 15 = \$0.30 \text{ per ton-mile pay load.} \\ &5 \end{aligned}$$

THESE TABLES GIVE ACTUAL RECORDED COSTS OF OPERATION OF TRUCKS AND WEIGHT TONS LOAD

Designation	Character of Road	Total Tons Hauled	No. Trips	Vehicle			LOAD		Total Average Weight	No. Miles Run
				Out	In	Average	Weight			
No. 1	Paved streets	1,203	679	2,7500	1,7717	.....	0.8858	3,6358	7,103	
No. 2	Paved streets	1,181	549	2,7500	2,1511	.....	1.0755	3,8255	6,522	
No. 3	Graveled roads	10,836	10,561	2,8750	1,0260	.....	0.5130	3,3880	94,549	
No. 4	Sand, adobe and gravel surfaced	6,621	5,790	3,1000	1,1435	.....	0.5717	3,6717	54,465	
No. 5	Paved and gravel surfaced city streets	11,040	6,033	3,7250	1,8300	.....	0.9150	4,6400	54,337	
No. 6	Paved and gravel surfaced city streets	7,359	1,423	4,7300	5,1714	.....	2.5857	7,3157	12,248	
No. 7	Paved and gravel surfaced city streets	7,729	1,355	5,4375	5,7038	.....	2.8519	8,2894	11,747	
No. 8	Paved and gravel surfaced city streets	12.35	52	0.8500	0.3500	0.1250	0.2375	1.0875	1,100	
No. 9	Country and mountain roads	.....	.....	2,4000	.....	.....	0.4000	2,8000	9,982	
No. 10	Country and Mountain roads	.....	.....	2,5000	.....	.....	0.4000	2,9000	9,687	
No. 11	Country and mountain roads	.....	.....	2,5000	.....	.....	0.4000	2,9000	10,031	
No. 12	Country and mountain roads	.....	.....	2,5000	.....	.....	0.4000	2,9000	10,103	
No. 13	Country and mountain roads	.....	.....	2,2500	.....	.....	0.4000	2,6500	11,100	
No. 14	Paved streets	.....	.....	2,3500	.....	.....	0.3500	2,7000	10,369	
No. 15	Paved streets	.....	.....	2,3500	.....	.....	0.3500	2,7000	11,838	
No. 16	Paved streets	.....	.....	2,3500	.....	.....	0.3500	2,9000	12,170	

Nos. 1 to 5 inclusive, trucks hauling medium loads.  
 Nos. 6 and 7, heavy trucks hauling heavy loads. The very low cost per ton mile of these would seem to indicate that some of the items recorded are low.  
 No. 8, light trucks; package load, short trips.  
 Nos. 9 to 16, touring cars—passenger cars.  
 Nos. 3, 4 and 5 have the interest and depreciation included in the total.

THESE TWO TRUCKS USED IN CONSTRUCTION WORK AND HEAVY HAULING—THE

No.	Character of Road	Time	Weight in Tons			Miles Run	Days Worked 8 hrs.	Total Ton Miles	Time per Hour
			Vehicle	Out	In				
No. 17	1 to 5% grades—Heavy road bed, loose gravel	7 mo.	5.00	5.0	.....	1,382	27	10,427.50	30
No. 17	6 to 7% grades—Firm road bed, adobe	2 mo.	5.00	5.0	.....	1,611	39	12,025.00	30
No. 17	Light grades—Firm road bed, gravel	2½ mo.	5.00	5.0	.....	1,785	37	13,312.50	69
No. 18	1 to 5% grades—Heavy road bed, loose gravel	2 mo.	5.0	5.0	.....	1,189	24¾	9,022.50	45
No. 18	6 to 7% grades—Firm road bed, adobe	2 mo.	5.0	5.0	.....	780	27	5,850.00	2
No. 18	Light grades—Firm road bed, gravel	2½ mo.	5.0	5.0	.....	1,991	47	14,808.00	10

Average number miles per 8-hour day was 43.  
 For Truck 18 the average cost per mile was \$0.7245  
 For Truck 17 the average cost per mile was \$0.7145  
 In the Investment or Interest and Depreciation record, the life is assumed as 4 years, and interest is charged for the balance.  
 All of these figures are based on a cost of 28c per gallon for gasoline; 60c for cyl. and trans. oil, and 20c per lb. for grease

RECORDS OF COST OF OPERATION OF TOURING CARS

No.	Character of Road	Weight of Machine and Load	Miles Traveled
No. 19	5-passenger car—over all classes of roads and streets	4,850 lbs.	22,000 in 22 mos. 53,350 ton miles
No. 20	2-pass. Runabout, box body—Sandy and gravel roads; med. grades	1,800 lbs.	15,000 in 16 mos. 13,500 ton miles



If the pay load was carried both ways, the gross weight=20 ton-miles, pay load=10 ton-miles,

0.10  
or  $\frac{0.10}{10} \times 20 = \$0.20$  per ton-mile pay load.

In our cost figures gasoline is charged at 28 cents per gallon, for Nos. 17, 18, 19, 20 and 21; for the others the price per gallon varies from 24 to 28 cents per gallon

(Editor's Note—The tables herewith presented are the first of the kind ever compiled, and will give a scientific basis for talking better roads. In his next article Mr. Maloney will draw his conclusions from the facts established.)

## Tables Prepared by State Highway Department

TABLE OF EXPENSE OF ONE-TON AND TWO-TON TRUCK UNITS

Designation	WEIGHT		Per Mile Exp.		Per Mile		Per Mile				Per Gross				
	Unit	Vehicle Load	Av. Gross Wt.	1st Cost	Lic. & Taxes	Ins.	Int. & Depr'n	Gas & Oil	Tires	Repairs	Driver	Misc.	Per Mi.	Ton Mi.	
21	1 Ton	3,000	1,000	2 Tons	\$1,936.00	\$0.0036	\$0.0048	\$0.0571	\$0.0204	\$0.0209	\$0.0133	\$0.0742	\$0.0074	\$0.2017	\$1.008
22	2 Ton	3,600	2,000	2.8 Tons	3,200.00	.0056	.0080	.0977	.0345	.0185	.0136	.1149	.0106	0.3034	.1083

This table was published in motor section of daily paper, and we have added the License, Tax and Insurance items. The ton-mile figure is for the gross weight. It was published as a maximum cost table for good road conditions.

From Engineering Record of November 7, 1918. Art. by A. U. Johnson, Consulting Engineer. Practical tests of the varying consumption of gasoline by 5-ton White trucks upon different classes of roads.

NOTE:—This table is based upon the records given by Mr. Johnson, but transposed to give an expression of the consumption in gallons of gasoline per ton-mile of gross weight and also for live or pay load. The "Commercial Haul" test only is used here.

Consumption of Gasoline per ton-mile in gallons for Gross Weight of 4.75.

Weight of Truck	Weight of Load	Total Load	Consumption of Gasoline per ton-mile in gallons for Gross Weight of 4.75.						
			Earth Clay	Gravel Fair	Gravel Good	Bituminous Macadam somewhat worn	Brick Fair	Brick Good	Concrete Good
2.75 tons	2.0 tons	4.75 tons	0.0364 gals.	0.0293 gals.	0.224 gals.	0.222 gals.	0.0213 gals.	0.0184 gals.	0.0179 gals.
2.75 tons	2.0 tons	.....	0.0865 gals.	0.0695 gals.	0.05315 gals.	0.0527 gals.	0.0506 gals.	0.04375 gals.	0.04295 gals.

Considering the live or pay load of 2 tons only, the consumption per ton-mile was:

### COSTS OF DIFFERENT WEIGHTS—ALL COSTS PER TON MILE ARE FOR THE GROSS WEIGHT. EXPENSE

Item Cost	Gas and Oil	Tires	Repairs	Garage	Insurance	License and Taxes	Driver	Interest and Depreciation	Total	Per Mile	Cost per Ton Mile on Gross Weight	No.
\$1,000.00	\$ 441.32	\$ 180.00	\$ 18.60	\$108.00	\$140.00	\$ 80.00	\$ 1,200.00	\$1,062.00	\$ 3,229.92	\$0.4547	\$0.1251	1
2,000.00	368.07	180.00	.....	108.00	140.00	80.00	1,200.00	1,062.00	3,138.07	0.4811	0.1257	2
3,000.00	2,231.35	2,373.18	3,441.58	945.00	750.00	709.12	15,959.87	.....	26,410.10	0.2793	0.0824	3
4,000.00	1,546.80	931.35	566.44	550.00	421.87	517.42	9,792.81	.....	14,326.69	0.2630	0.0716	4
5,000.00	2,255.00	934.60	608.57	550.00	421.85	320.60	10,302.30	.....	15,392.92	0.2833	0.0610	5
6,000.00	753.12	200.00	3.50	100.00	136.75	92.52	1,750.00	1,339.32	4,375.21	0.3572	0.0488	6
7,000.00	863.79	200.00	133.50	100.00	130.30	88.40	1,750.00	1,276.16	4,542.15	0.3866	0.0466	7
8,000.00	23.00	17.00	2.50	10.00	6.00	5.00	125.00	15.98	204.48	0.1858	0.1709	8
9,000.00	495.79	516.31	467.14	188.95	121.25	87.60	957.57	1,430.75	4,175.36	0.4183	0.1494	9
10,000.00	328.00	426.35	294.05	148.55	125.00	90.00	830.58	1,475.00	3,717.53	0.3838	0.1323	10
11,000.00	382.04	607.59	590.64	150.85	125.00	90.00	666.99	1,475.00	4,088.11	0.4075	0.1405	11
12,000.00	316.97	748.62	265.90	156.85	125.00	90.00	827.06	1,475.00	4,005.40	0.3964	0.1367	12
13,000.00	372.00	688.61	185.89	167.50	85.00	64.40	1,011.78	1,003.00	3,578.18	0.3224	0.1216	13
14,000.00	301.68	366.30	440.08	146.00	73.12	56.80	947.16	862.87	3,194.01	0.3080	0.1141	14
15,000.00	372.20	211.75	291.47	160.50	73.02	56.80	1,299.54	862.87	3,328.25	0.2811	0.1041	15
16,000.00	430.47	411.43	267.13	164.00	73.12	56.80	961.07	862.87	3,226.89	0.2652	0.0982	16

Average of 16 items above \$0.108

and expense are not complete—gas, oil, tires and repairs being very low.

### EXPENSE BROKEN DOWN INTO THREE PARTS FOR THE THREE PIECES OF WORK UNDER DIFFERENT CONDITIONS.

Drivers' Expense per Mile	Gas and Oil		Repairs and Tires		Investment		Taxes, License, Ins.		Total Cost		No.	
	per Ton-Mile	per Mile	per Ton-Mile	per Mile	per Mile	per Ton-Mile	per Mile	per Ton Mile	per Mile	per Ton-Mile		
0.181	\$0.024	\$0.147	\$0.0195	\$0.166	\$0.022	\$0.2205	\$0.0296	\$0.038	\$0.005	\$0.7525	\$0.101	17
0.155	0.0207	0.157	0.0213	0.166	0.022	0.2205	0.0296	0.038	0.005	0.7425	0.1019	17
0.157	0.0209	0.121	0.016	0.166	0.022	0.2205	0.0296	0.038	0.005	0.7085	0.0935	17
0.23	0.028	0.190	0.024	0.166	0.022	0.2205	0.0296	0.038	0.005	0.7903	0.1074	18
0.28	0.035	0.154	0.021	0.166	0.022	0.2205	0.0296	0.038	0.005	0.8043	0.1114	18
0.196	0.019	0.112	0.015	0.166	0.022	0.2205	0.0296	0.038	0.005	0.6333	0.0894	18

For Truck 17 the average cost per ton-mile was \$0.0946.

For Truck 18 the average cost per ton-mile was \$0.0954.

When the car is in use.

costs \$125.00 per mo.

### EXPENSES RUNABOUTS USED BY THE HIGHWAY DEPARTMENT.

Expense	License, Taxes and Insurance	Repairs, Oil and Gas, and Garage	Depreciation and Interest	Total Expense	Per Mile	Per Ton-Mile
	\$423.00	\$2,624.75	\$1,705.83	\$4,748.58	\$0.216	\$0.089
	46.72	801.00	267.91	1,213.13	0.081	0.090



1919

COLORADO possesses many things to boast of and be thankful for: scenic beauties comparable with the most attractive spots on the earth; a climate unequalled anywhere; irrigated, agricultural lands, producing the most wonderful crops of alfalfa, sugar beets, wheat and other grains; fruit of all kinds of most delicious quality; thousands of acres of dry farm lands, yielding bountiful, profitable crops of forage and grains; millions of acres of pasture land over which ranges immense herds of the best bred cattle and sheep in America; great areas of col, oil, oil-shale lands; the richest of gold, silver, lead and zinc mines; unlimited water power.

Colorado is classified by the best authority in America as the ninth state in improved highways. Numerous and varied business opportunities—vast, undeveloped resources, with the most brilliant prospects for the future, surely sufficient to inspire every citizen with state pride and a get-together spirit, which, if crystallized into unselfish action, and an all-together push would place our state—COLORADO—in its entitled position “IN THE SUN.”

### The Arteries of Commerce

Down in Baca County there is a certain ever-increasing volume of trade which flows out of Colorado into Kansas. Up in the northwestern fringe of the state, tonnage originating in Colorado seeks an outlet in Wyoming. In certain sections of the east and the west the tide is ebbing out instead of coming in. Why?

The answer reaches down into the fundamental principles of economics. It touches in a small, concrete way, upon the problems which today press more closely upon the nations of the world than at any earlier period in history. It presents an axiom which cannot be evaded and which must be fairly met.

Trade always follows the cheapest channel. If it costs less for the people of the western end of the state to trade in Utah, they will trade there. If Denver is not as accessible as Kansas City, then business will follow the course of lesser resistance.

We are living in an age of industrial miracles. In Indiana the city of Indianapolis, through a remarkable web of transportation lines, is gradually drawing to it the business of a wonder section of production. Trade which once flowed in other directions is being attracted to the Hoosier city more and more, and prosperity has set its insignia upon the aggressive Middle Western hive.

In a like manner arteries of trade once hardened by

inaction are being galvanized into life all over the country with the coming of the motor truck, and through this comparatively new medium of transportation, those centers which have been dormant for years, are suddenly springing to the forefront in the battle for commerce.

It has been too much the habit to look upon the road as an end to pleasure. Loose thought has said “the road costs too much to build for the passenger travel. Let it go.” And it has been allowed to go, and as its capacity for tonnage decreased traffic has stagnated, production diminished or diverted, and the humming wheels of progress have slowed down, stopped, rusted.

These conditions must not be allowed to obtain in Colorado. All who live in this state desire to see Colorado the center of a vast area of activity. They who glimpse into the future see our lands settled and producing, our mountains of wealth developed, our cities crowded with throngs of travelers.

But they only see these things who know the meaning of the developed road. Without the road there can be no load. Without swiftly pulsing arteries the heart cannot beat, and in this case the road linked up with the rail lines must be the arteries—the cities, the heart.

Colorado must have more roads, more good roads, roads which will stand the smashing impact of the laden argosies of the prairies. We must build and build now if we are to meet the swiftly growing competition of our neighbors on all sides. We must provide a closely connected network of highways which shall penetrate into the mountain fastness, challenge the rushing creek with the roar of the traffic, ribbon the fertile valleys.

No detail is unimportant in this vast picture of Colorado resplendent. The time is at hand for the co-ordination of all our effort toward an efficient transportation. Let the by-ways feed the highways, the highways the railways.

Only if we center upon this plan with a broad vision for the future can we be successful.

Colorado needs roads. Let us have them NOW.

The State of Utah has completed the floatation of its \$1,200,000 bond issue for state road purposes, by the sale in one block of \$500,000 during the latter part of November. Up to that time \$700,000 of the issue had been sold, but the remainder of the issue had been held up by the capital issues committee in Washington. With the removal of restrictions the Palmer Bond & Mortgage company of Salt Lake took the entire remaining block of \$500,000.

# State Highway Appropriations, 1919

(Continued from page 13)

SUMMIT COUNTY—Grading and drainage .....			13,000.00	\$6,500.00
				\$12,000.00
Total .....				\$198,350.00
Addendum—There is also hereby appropriated to meet the Federal Aid Fund:				
For Project No. 2 .....			\$25,000.00	
For Project No. 4 .....			2,590.00	
SPECIAL STATE PROJECTS—				
Fall River Road — Construction in				
Grand and Larimer Counties.....			\$70,000.00	
Independence Pass .....			9,000.00	
South Golden Road Pavement .....			5,109.59	
Brighton Road .....			10,633.71	
Bear Creek Bridges .....			4,807.46	
Denver-Limon Road .....			554.01	
Golden Approach to Lookout Mountain .....			1,600.00	
				\$101,704.77
Total .....				\$522,263.10
Balance available for all other purposes.....				\$479,194.93

The following amounts are to be expended for construction improvement and maintenance of State Routes in the various counties of the state. The work is to be done by the Highway Department directly, or under agreements made, or to be made with the counties, or with the cities and towns, as provided in Section 5 of Article II of the Highway Act, and upon such parts of such routes as are designated, and for such purposes as are specified by the Highway Commission in making the appropriations; and all such work is to be in conformity with the rules and regulations of the Highway Department, and under the direction and supervision of the Highway Commissioner and subject to his approval. These amounts are exclusive of, and in addition to, expenditures for Federal Aid, Forestry and Special State Projects in the various counties. It is expected that each county will add from its county funds, in accordance with its ability, further funds for the work to which each of the following items relates, under agreements to be made between the Department and the counties:

DISTRICT No. 1.

Equipment Fund—

To be used for the purchase of road machinery and operation of the same on the roads adjacent to Denver, either on construction or maintenance... \$30,000.00

The following funds to be used for construction and improvement of State Routes, and their maintenance in the counties named:

DISTRICT No. 1.

	Federal Aid	Road Fund
Adams County .....	\$43,000.00	\$ 5,000.00
Arapahoe County .....		6,500.00
Boulder County .....	21,000.00	13,000.00
Clear Creek County .....		7,000.00
Georgetown-Silver		
Plume Road .....		1,500.00
Gilpin County .....		5,500.00
Jefferson County .....		3,900.00
Larimer County .....	90,000.00	5,000.00
Logan County .....	11,000.00	12,000.00
Morgan County .....	11,000.00	9,000.00

Phillips County .....	4,000.00
Sedgwick County .....	3,000.00
Washington County .....	7,000.00
Weld County .....	21,000.00
Yuma County .....	10,000.00

\$135,400.00

DISTRICT No. 2. Federal Aid

	Federal Aid	Road Fund
Chaffee County .....		\$ 7,500.00
Cheyenne County .....		7,000.00
Douglas County .....		9,000.00
Elbert County .....		8,000.00
El Paso County .....	\$31,500.00	10,000.00
Kit Carson County .....		10,000.00
Lake County .....		6,000.00
Lincoln County .....		10,000.00
Park County .....		4,500.00
Teller County .....		10,000.00

\$ 82,000.00

DISTRICT No. 3. Federal Aid

	Federal Aid	Road Fund
Baca County .....	\$ 6,000.00	\$ 2,300.00
Bent County .....		8,000.00
Crowley County .....		4,000.00
Custer County .....		3,000.00
Fremont County .....		9,000.00
Huerfano County .....		6,000.00
Kiowa County .....		7,000.00
Las Animas County .....		7,000.00
For Federal Aid Work on Road 29, from Trinidad N. E. ....		
		10,000.00
Otero County .....	22,000.00	3,500.00
Prowers County .....	12,000.00	4,000.00
Pueblo County .....	44,000.00	9,500.00

\$ 73,300.00

DISTRICT No. 4. Federal Aid

	Federal Aid	Road Fund
Alamosa County .....		\$ 3,000.00
Archuleta County .....		6,500.00
Wolf Creek Pass .....		
		1,000.00
Conejos County .....		6,000.00
Costilla County .....	\$10,200.00	2,000.00
Delta County .....	11,000.00	3,000.00
Dolores County .....		5,000.00
Gunnison County .....		13,500.00
Hinsdale County .....		2,000.00
La Plata County .....		2,000.00
Mineral County .....		5,000.00
Wolf Creek Pass .....		
		1,000.00
Montezuma County .....		8,000.00
Montrose County .....	11,000.00	3,000.00
Ouray County .....	18,000.00	1,000.00
Rio Grande County .....		2,000.00
Saguache County .....		7,000.00
San Juan County .....		1,000.00
San Miguel County .....		16,000.00

\$ 88,000.00

DISTRICT No. 5. Federal Aid

	Federal Aid	Road Fund
Eagle County .....		\$ 21,000.00
Garfield County .....		16,800.00
Grand County .....		5,000.00
Jackson County .....		5,000.00
Mesa County .....	\$11,000.00	10,000.00
Moffat County .....		18,000.00
Pitkin County .....		4,000.00
Rio Blanco County .....		1,000.00
Routt County .....		9,000.00
Summit County .....	13,000.00	1,000.00

\$ 90,800.00

Contingent Fund ..... \$ 9,694.93

# Development Thruout Eastern Colorado

*By the State Immigration Department*

**T**WENTY-EIGHT counties lying wholly or partly in the plains district of eastern Colorado have an area of 31,534,060 acres, or about 47.5 per cent of the area of the state. These counties in 1909, as shown by the reports of the U. S. Census Bureau, produced crops valued at \$32,119,595, or 63 per cent of the value of the state's entire crop output that year.

These counties include the two largest irrigated districts in Colorado, the South Platte watershed and the Arkansas Valley. Increase in cultivated acreage in these two districts has been comparatively small in the past nine years, the increase in the value of crops raised in 1918 being due more to increased prices than to increased production. Ten of these counties, with an area of 10,391,520 acres, or a little more than one-third the area of the entire district, produced crops in 1909 worth \$21,718,274, or about two-thirds of the value of the crops produced in the twenty-eight counties. These nine counties are Bent, Boulder, Jefferson, Larimer, Logan, Morgan, Prowers, Sedgwick, Weld and Otero, the last named at that time including what is now Crowley County.

Since 1909 the other counties in this district, which make up the great non-irrigated region of eastern Colorado, have enjoyed a wonderful development. Agriculture is their principal industry, supplemented by dairy-farming, stock-raising and poultry-raising. The acreage of land cultivated in these counties has increased perhaps 200 per cent in the past nine years, so that today the twenty-eight eastern Colorado counties produce more than 70 per cent of the farm crops grown in the state, and the value of all their crops for 1918 was approximately \$103,000,000, or more than twice the value of all crops produced in the state in 1909.

These figures are given to illustrate the magnitude of the advance made in this part of Colorado within the past decade. All agricultural sections of Colorado have enjoyed remarkable progress in this period; but no district, with the possible exception of parts of northwest Colorado, have shown such remarkable increases in acreage of land under cultivation or in the value of farm output. This increase has been due largely to the development of farming without irrigation along scientific lines, and the wide introduction of dairy herds and poultry to supplement the income of the farmer from his regular cash crops.

Bank deposits are perhaps the best index of the prosperity of any community. The bank deposits of these counties, exclusive of Denver, on November 1, 1918, were approximately \$95,000,000, or about 63 per cent of the deposits of the entire state exclusive of Denver. No data are available on bank deposits for preceding years earlier than 1916, but in many of the counties there were no banks in 1909 and the deposits of the district, exclusive of

Denver, Colorado Springs and Pueblo, have increased more than 150 per cent in the past decade.

A natural result of this development has been a very substantial increase in population in this district in the past decade. Scores of new towns have been established here in the past few years, and the older towns have shown remarkable progress in business activities and in the character of public improvements. One very noticeable indication of the prosperity this section of Colorado is enjoying is the large increase in the number of school buildings and of teachers employed, and a marked improvement in the character of school buildings. While there is much room for improvement in this direction in some parts of the district, principally those lying far from railroads, it is no more than fair to say that there is perhaps no agricultural section of the United States where the population is so small per square mile of area that enjoys better school facilities.

Another result of the large increase in cultivated acreage and the consequent increased demand for farm lands has been a very marked increase in land prices. Of course the increase in land prices has not been peculiar to Colorado. The high prices for farm products resulting from the war have pushed up land values in nearly every agricultural district in the country, but in very few sections have the increases been more marked than they have in eastern Colorado. The reasons for this are that much of this land a few years ago was regarded as of no value except for grazing purposes, and its price was fixed accordingly. Experience in the past decade has shown that a very large percentage of the land in eastern Colorado can be farmed profitably, which has resulted in the fixing of an entirely new standard of land values.

While highway extensions and improvements have been rapid in this section of the state in recent years, they have hardly kept pace with the general development, and much work along this line is needed that farmers may market their crops at the lowest possible expense. In parts of eastern Colorado excellent farm lands are being cultivated at a distance of 40 miles or more from railways, though this section of the state is far more adequately supplied with railroads than the mountain sections and the Western slope. In order that farmers raising crops this far from shipping points may market them at a profit, it is essential that highways be well improved and in good condition. A few years ago the opinion was quite generally held that plain earth roads, well graded, would always be sufficient to care for the needs of this part of the state. Recent experience has shown, however, that as motor transportation increases, and especially truck service for the hauling of crops, some sort of surfacing of a fairly permanent character will be required here, just as in other parts of Colorado.



Making hay on one of the fine mountain ranches of Gunnison County. No better hay is grown in the West than that which comes from Colorado's mountain ranches.

# The Dairy Industry in Eastern Colorado

*By the Colorado Department of Immigration*

IN no section of Colorado has the dairy farming industry shown more rapid development in the past five years than in the non-irrigated counties in the eastern part of the state. During the same period farmers in these counties have been uniformly prosperous, and perhaps no single factor has had more to do with this prosperity than this same increase in the number of milch cows on the farms.

Reports of county assessors made to the State Tax Commission showed a total of 73,768 milch cows in the state in 1913. Reports from the same sources show a total of 137,126 milch cows for 1918, an increase of 72.3 per cent. The following figures give the increases in the number of dairy cattle shown by assessors' reports in nine of the leading dry farming counties during the same period:

	1918	1913
Baca .....	2,020	34
Cheyenne .....	1,981	.....
Elbert .....	5,703	4,548
Kiowa .....	1,683	.....
Kit Carson .....	5,353	4,225
Las Animas .....	1,790	910
Lincoln .....	3,172	.....
Washington .....	2,445	.....
Yuma .....	2,905	.....
Total .....	26,052	9,717

The increase in the number of dairy cattle in these nine counties, in the past five years, based upon assessors' reports, is 168.1 per cent. There are always discrepancies between the number of dairy cattle for the entire state as reported by county assessors and by the U. S. Department

of Agriculture, but whether or not these figures show accurately the number of milch cattle in the counties named, they undoubtedly show with reasonable accuracy the percentage of increase for the period covered.

It is quite generally agreed that the increase in dairy farming in this district in the next five years should be even more marked than it has been since 1913. A considerable number of creameries, cheese factories and like establishments have been put in here within the past few years, and every county in the district is now seeking to interest local and outside capital in further developments in this direction. The success that has attended dairy-farming operations here since 1914 is the best evidence of what may be expected from further increases in the industry.

Scarcely a well-established farmer in any of these counties now is without one or more dairy cows, and the number of silos for preserving winter feed for milch cows has increased with wonderful rapidity since 1911. Yet the counties named alone could well support fully four times as many dairy cattle as they have at present, and undoubtedly nearly all farmers in this section would be benefited by increasing their dairy herds and raising larger acreages of forage and other feed crops in proportion to the acreages planted to wheat and other small grains.

As another evidence of the increase in prosperity in this district in the past five years, which has been due largely to increased dairy-farming activities, it should be noted that the assessed value of all property in these nine counties in 1913 was \$93,781,780. In 1918 the assessed value of all property in the same counties was \$164,090,605.

# How Colorado People Saved \$140,000,000

*By the State Immigration Department*

**M**ANY conservative bankers and other business and professional men who are close students of financial and economic conditions were genuinely alarmed during the summer of 1918 at the rapidity with which Colorado money was being taken to meet national demands, with no clearly apparent compensating current of cash coming into the state. They feared that this state would not be able to meet the heavy demands for the purchase of Liberty Bonds and War Savings Stamps, and to continue making liberal contributions to the Red Cross and associated war agencies without impairing its cash reserves and perhaps dangerously weakening its banks.

Others who gave the subject little study only wondered how all this money could be taken from the state without injuring business. Whenever the total amount the state was expected to subscribe in a new Liberty Loan was announced, hundreds of people held up their hands in despair and proclaimed that Colorado would simply never be able to raise that amount.

But Colorado never failed. Its quota was subscribed in every Liberty Bond campaign, it met all requirements for the Red Cross, the Y. M. C. A., the Salvation Army and for all other war work funds, and usually exceeded the amount expected of it by a few million dollars.

Up to date this state has purchased Liberty Bonds and War Savings Stamps and has subscribed to war funds to the amount of approximately \$140,000,000. This amount of money has been taken out of the state, much of it to be spent in Europe and in transporting troops and supplies across the Atlantic, yet Colorado people have seldom been more prosperous than they have been in the year just ended. Bank deposits on November 1, as reported on the call of the comptroller of the currency, were approximately \$258,000,000, or nearly \$1,000,000 more than they were on the November call for 1917!

This is a record that few states can equal. Colorado has not enjoyed any large amount of war business, as have Eastern, Northern and Southern states and the Pacific slope territory. Its manufacturers have done a considerable amount of war contract work, but the total has not run into hundreds of millions of dollars, as has been the case in other sections of the country.

Yet the people of Colorado have met all demands made upon them for the support of the war, and have done it proudly and eagerly. They have sent \$140,000,000 into other states and other countries, most of it never to return, and yet at the close of business for the year just ended they have more cash in their banks than they had a year ago!

No finer tribute could be paid to the resources of this state and to the loyalty and industry of its people. They

have raised the money necessary to meet the heavy added obligation of the year by working harder, producing more, bringing latent resources of the state into beneficial use and by saving as they have never saved before. Of course prices for nearly everything Colorado produced were much higher than they are normally, but the same was true of everything Colorado people had to buy. The experience of the year just ended has shown something of the benefits to be derived from a further development of Colorado's resources, for much of the money necessary to meet the extraordinary obligations caused by the war was made available from the cultivation of land that many Colorado people have long thought would never be farmed profitably, from working mines that had been declared "played out," and from opening up new fields of manufacturing and other industry.

Of course all the money subscribed for various war activities did not go out of Colorado in 1918, but it has all been taken within the past two years. Bank deposits are \$30,000,000 more at the close of this year than they were at the close of 1917. Loans and discounts on the books of the banks are slightly in excess of what they were a year ago, but the increase has been less than \$2,000,000 for the entire state.

The records of the State Immigration Department show that the increase in area of land cultivated in 1918 was approximately 550,000 acres over that of 1916. This is a partial explanation of how Colorado has been able to meet its added obligations and to have more money than it had before. The state's farms produced crops valued at about \$147,000,000 in 1918, against \$91,000,000 in 1916. The factories of the state produced nearly \$200,000,000 worth of goods in 1918, against \$136,000,000 in 1914.

Stockraisers received perhaps \$5,000,000 more for their stock marketed in 1918 than for that sold in the preceding year, and the total for the preceding year was the highest on record to date. The reports of the U. S. Department of Agriculture showed a very material increase of all classes of livestock on hands on January 1, 1918, over the same date in 1917, and there will perhaps be further increases shown for January 1, 1919.

These data give some idea of how the people of Colorado have been able to make the showing they did in 1918. But they show even more forcibly what should be accomplished in the near future through further development of latent resources. Mining has been at rather a low ebb in the state during the past year, chiefly because of labor shortage and other conditions growing out of the war, yet large companies have perhaps never done more development work in a single year than they did in 1918, and the results of this work will show in increased production for 1919.

# Facts For Investors

*There's urgent need in Colorado for legislation that will make possible the collection of accurate data on crop yields, livestock output, farm profits, etc., for every county in the state, so that prospective settlers may be correctly informed.*

**B**ECAUSE of the rapid increase in cultivated acreage in Colorado, and because of the constantly changing relations between the acreage of irrigated and non-irrigated land cultivated, there is exceptional need in Colorado for annual reports from every county on the acreage and yields of all crops and on the amount of livestock marketed.

Under existing conditions such a report in this state is available only once in ten years, when the federal census report is compiled. These reports are made for the year preceding that in which the census is taken, so that the latest detailed report of this nature is for 1909. Since that time there has been a large increase in the acreage of non-irrigated land in cultivation, with a comparatively small increase for irrigated land.

For these reasons and others it is extremely difficult to make accurate reports of the acreage and production of crops for the entire state each year without accurate annual reports from all the counties. In 1909 the acreage of irrigated land in cultivation was very high in proportion to the acreage of non-irrigated land, and the average yields per acre were therefore exceptionally high. Since that time the large increase in non-irrigated land in cultivation has resulted in a very considerable reduction in the average yields per acre, but it is impossible to calculate these yields accurately without detailed annual county reports.

The bureau of estimates of the U. S. Department of Agriculture is constantly confronted with this difficulty, as are all other agencies that make any effort to show crop production in Colorado each year. Recent checks on the figures for 1918, made through reports from threshers in the various counties, under federal supervision, show that there are considerable errors in estimates for the year, both in average yields per acre and in acreage cultivated, for all grain crops grown in the state. Undoubtedly there are like discrepancies in estimates for other crops.

Average yields used by the various agencies making estimates are in nearly all cases too high. In many cases the estimates on acreage in cultivation are too low. The result is that the information which the State of Colorado is furnishing to people in other states, with a view of



*A fair farmerette helping to gather a fine oats crops in Montrose County.*

bringing them here to make their homes, is inaccurate and misleading.

Errors of this kind can be corrected only through some system of accurate annual reports from each county, such as are available in states like Kansas, Iowa, Missouri, Wisconsin and many others, which obtain and compile accurate reports by counties each year. In most states collecting such data annually the county reports are compiled by assessors when they make their assessments.

If there is need for the collection and compilation of such statistics in thickly populated counties such as those in the states named, there is certainly much more need for the same class of work in counties of a state like Colorado, where the acreage in cultivation is being increased each year, and where the state itself and most of its commercial organizations are constantly working to obtain new settlers and to bring vacant arable lands under cultivation. Colorado should be in a position to tell prospective settlers accurately what yields of all farm crops they may reasonably expect to make in every county in the state. If information of this kind furnished is inaccurate, and especially if it is more encouraging than the facts justify, then Colorado must plead guilty to obtaining many of its new settlers under false pretenses.

A law has been on the statute books of Colorado for a good many years providing for the collection of data of this nature by county assessors. Apparently this law is not workable, for it has never been enforced. Undoubtedly a bill will be introduced before the state legislature this month intended to correct the faults in the present law.

# Our Unoccupied Lands and The Settler

(Continued from page 7)

content to work as day laborers for four or five years as a condition precedent to entering upon actual farming operations.

California has met with almost complete success in the trial of the colonization plans first tried by Australia, New Zealand and other progressive countries. The plan adopted there has been found to meet most of the difficulties which face any definite campaign of colonization, providing adequate facilities to the new settler on terms which make it possible for him to live while bringing his land to a productive state.

The financial problem unquestionably is one of the most important to be considered in any immigration campaign, and unless some method of overcoming the financial embarrassments of the average settler is discovered and included in the campaign it is bound to fall far short of the volume of the results which will follow the adoption of a more intelligent plan. Naturally, most of the immigration into the West comes from those who have small means. The man of wealth is not to be expected to go voluntarily into the arduous work of pioneering. He leaves that to those less comfortably endowed with this world's goods. The history of pioneering and the settlement of the West points conclusively to the fact that most of the pioneer work is done by the man who comes with little and counts on the opportunities of the future to "cash in" his intelligence and energy.

This is the very class of man which the West wants, but without substantial help such men can scarcely hope to succeed. The time is gone when they could select from millions of fertile acres. Today the quantity of unoccupied land which is of such quality that the state can conscientiously give it to the newcomer and encourage him to develop it is small indeed. Vast areas of government land are still open, but most of the land is subject to some material objection and practically every acre has been scanned by homesteaders in the past, who went on to other and more promising fields.

The past ten years have worked marvelous changes in the West. They have seen hundreds of thousands of acres of the best land taken over by the settler, leaving that which is good only for grazing by reason of lack of rainfall, altitude or character of the soil and surface, or fair farm land in districts remote from railroads. Land in the latter districts is essentially good for stock-growing and for little else until railroad development comes, for a farmer cannot raise and market crops at a distance of many miles from the railroad. He must drive his crop to market.

As the only logical solution of the problem of diminishing farm land areas open to the settler, the progressive state must take on itself the burden of making farm lands

of lands now not suitable for cultivation and of making it possible for the newcomer to locate on the uncultivated lands with the chances favoring success, not failure. In other words, when the once bountiful supply of free farm lands is gone or materially diminished, the state must make farms, and on those lands now suitable for farming, if properly developed, it must do that development work and so arrange the financial problems that wealthy pioneers are not necessary to settlement. A wealthy pioneer is an anomaly.

Colorado has shown splendid form during the war period of nearly two years. It has shown a degree of public spirit and foresightedness which no one thought possible in the routine days before the war. It remains now only to maintain that spirit, to appreciate the fact that upon the program adopted today depends the state's development for the next half century. The opportunity is here; nothing is needed save the ability to grasp it, to capitalize it by adding those elements which convert opportunity into accomplishment.

Men experienced in the problems of land settlement and the reclamation of unoccupied areas have found new inspiration in the possibilities which a comprehensive policy of development offers. California has learned from New Zealand and Australia, and today is leading the states of this country in the only sort of development work which can follow the golden era of the vast public domain, now gone forever.

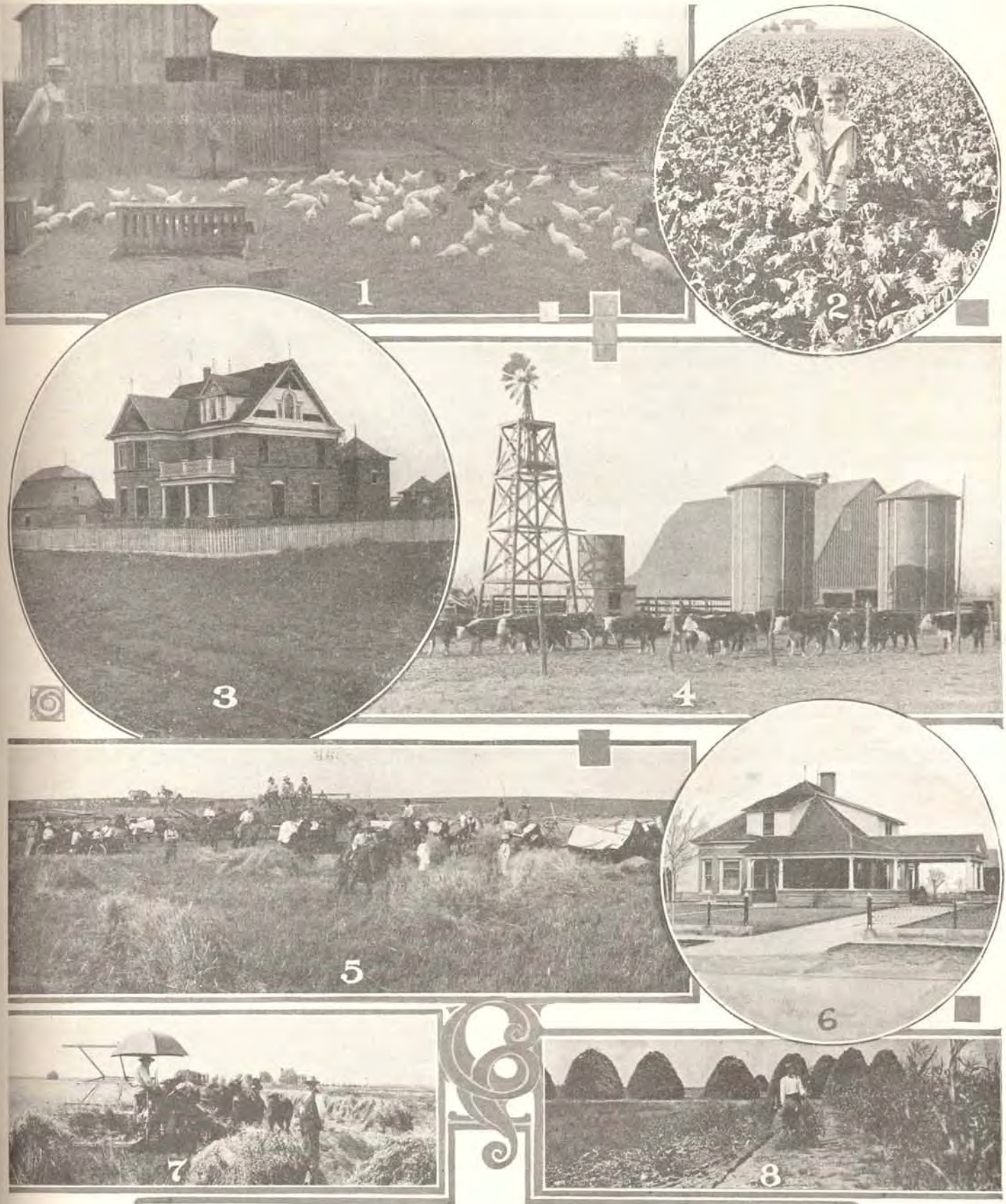
The time is gone when Colorado can say to the returning armies, "Here are millions of fertile acres within reach of market; take them and make your own fortunes." Today the public domain of the state is isolated or unfit for farming, with few exceptions. The good land near the railroads is gone forever. Railroad development will open still more areas, but the great future of settlement lies in the intensive policies adopted by progressive countries. Farms must be made and turned over to the soldier or sailor, not as a gift, but as an opportunity which he can capitalize successfully with little more than his brains and his muscle.

In that sort of development the future of Colorado lies. The Federal government is beginning to appreciate the fact, and Colorado, to profit most and to do most for her soldiers and sailors, must put herself in the front ranks of the progressive states.

Among the states which have taken the lead in compiling and preserving accurate records of agricultural production and development are Kansas, Iowa, Wisconsin, Nebraska, Utah, New York and California. Within the past half dozen years a dozen or more states have provided for the collection of such data and many more have outlined plans for such work in their legislative programs for 1919.



How Some Eastern Colorado Farmers Increase Their Bank Balances



1 Poultry Farm near Sterling. 2 Field of Sugar Beets near Pueblo. 3 Farm Home in Cheyenne County. 4 Scene on a Prowers County Stock Farm. 5 Harvesting Wheat in Yuma County. 6 A Phillips County Farm Home. 7 Harvesting Oats in Prowers County. 8 Ready for the Thresher—a Washington County Wheat Crop.

# A Real Basis For Immigration Work

*By the Colorado Department of Immigration*

THE first essential of intelligent immigration or colonization work is knowledge of the district which it is proposed to colonize. Without that knowledge the immigration agencies of a state cannot intelligently picture the advantages of the state or warn prospective settlers of the difficulties and handicaps they must overcome if they are to be successful, and it is as unwise to fail to know the discouraging features as it is not to know the encouraging features of land settlement and development. If he is to be treated fairly, the settler must know the good and the bad about the district in which he proposes to locate.

Time was when the settlement of lands was the only concern of the immigration agent; when he cared only for the small reward which early settlement of the land brought him and thought nothing of the future of the settler. That day, however, is gone, and rightly so. Today the intelligent, far-seeing immigration agent or colonizer knows that permanent success of his work can be built only on the permanent success of those who constitute his raw material. He is selling successful farming, rather than land, for land which has been shown to be good farming land sells itself.

The Colorado Department of Immigration recognizes that fact and uses every effort to prevent settlement of the state by men who, by reason of a lack of capital or experience, or both, are foreordained to failure. It appreciates the fact that settlement is encouraged as the settlers of today succeed. If they are successful the rest of the work is simple, for there is no greater immigration agency than the success of those who have come from other states and have succeeded in Colorado. Every successful immigrant is a walking advertisement for the state, and every failure is a lasting handicap to the work.

But intelligent information, covering both the encouraging and the discouraging features, can be given only in cases where the department itself is informed, and there is no greater weakness in the work of the department today than the fact that no person or state institution knows the real truth about Colorado—its unoccupied lands and their character and fitness for farming. Government soil surveys are inadequate because only a small portion of the state has been covered, and there is no state survey.

There is nothing to show where lands are capable of irrigation and where they must be farmed under approved dry-farming methods; what lands are suitable for grain and what for potatoes or fruit or sugar beets. There is no record of the vast tracts of privately owned land which offer the best solution of the land-settlement question, but which can not be colonized intelligently until their location, soil characteristics, terms of sale, etc., are known and charted.

With a view to gathering this sort of information and the information which shows crop yields in every district as a guide to the prospective settler, the Immigration Department will give its support in the Twenty-second General Assembly to two measures which are calculated to increase the immigration facilities of the state wonderfully and at the same time provide for securing the information which the government has sought so earnestly during the war and which was not and could not be made available.

One measure will seek to strengthen the present plan of gathering agricultural and industrial statistics by placing the authority in the hands of the county assessors and requiring strict compliance with their duties under suitable penalties. Another will deal with the initial problem of a state survey, providing an appropriation to make it possible for the state to take an accurate inventory of its opportunities. Both of these acts will provide for active co-operation between the department and the State Agricultural College.

The present law for the collection of statistics is wholly inefficient, as it provides merely additional duties for county assessors and makes no provision for compensation and provides no penalty for failure to comply with the law. Various efforts have been made to carry it into effect, but without avail. The legislation to be submitted in January will have the support of both the Immigration Department and the Agricultural College and will remedy many of the defects of the present law.

Since the outbreak of the war Colorado has been called upon repeatedly for statistical information—information on which the government authorities could base their estimates for the future, but the information given too frequently was the result of mere conjecture. In the more progressive states of the Union the statutes provide for the collection annually of information of this sort, and its value in a hundred directions has been proved repeatedly, particularly during the period of the war, when the federal government was forced to marshal all its assets and to judge of the future by the record of the past.

There is no difficulty in securing the attention of families in other states whose eyes are turned to Colorado. The Immigration Department hears every month from hundreds who want to come to Colorado and who await only that definite sort of help which can place them on the land to which they are best adapted and where their chances of success are best. The gravest problem with which the department has to cope is that of the hiatus between the time when the newcomer definitely determines to come to Colorado and the time when he advises the department that he has secured a permanent location here.

In that interval, without a comprehensive survey of the state and its possibilities, neither the Immigration, nor any other department can give him real help. He must select for himself, taking the word of real estate dealers with only such additional information as this department can give him from its library of estimates and conjectures. Every effort is made to adhere to conservative encouragement, but definite knowledge is lacking. It can be supplied only by an accurate survey of the state and by the collection of statistics annually which will make a complete agricultural and industrial history of every section of the state.

The importance of this work is double in view of the tremendous westward tide of immigration which is to come. It cannot be stemmed, for only in the west are there great bodies of unoccupied lands suitable for agriculture. Colorado can profit immeasurably if it will proceed at once to put all its agencies at work to secure the sort of information which is essential to the intelligent direction and guidance of the new-comer. Without that information immigration work must always fall far short of its possibilities.

## May Increase Federal Aid

(Continued from page 9)

"First, states where the government will spend not more than 80 per cent. to the state's 20; second, states where the government will spend not more than 70 per cent. to the state's 30; third, states where the government will spend not more than 60 per cent. to the state's 40, and fourth, where the government will spend not more than 50 per cent.

"With these amendments and with the greatly increased funds, so made available, it is my belief that the government will be in a position to aid the states very materially in one of the most important constructive works now facing the Union."

Asked for his opinion of the solution to the problem now presented by the enormous increase in heavy motor truck traffic, Mr. Page said that he is unalterably opposed to permitting motor trucks to travel on roads not designed to carry the load, a statement which applies to practically all of the highways in the country.

"The solution to this question rests in remedial legislation," said the director. "Motor trucks should possibly be limited to about 450 to 500 pounds dead weight to every running inch width of tire, which would provide a reasonable factor of safety on roads with a 6-inch base. It is unfair, unjust, to expect the taxpayer to pay for roads, then stand by and see them torn to pieces by commercial vehicles operated for the profit of the individual.

"Sooner or later this legislation will have to come or we may expect to see road work stopped. And that, of course, is impossible if the future prosperity of the nation is considered."

Regarding the establishment of a national system of highways, Mr. Page was of the opinion that the Federal Aid road act contains ample authority for the building of

such a system by agreement between the Secretary of Agriculture and the State Highway Departments.

"The road problem is a state and local one" was his view. "We are not building our highways for transcontinental transportation, because the cost of such operations is too great to ever permit them to become competitors to the railroad.

"What this country needs is better county highways, better state highways. Each one reflects material benefit upon its community, and accordingly, upon the nation. Give us good county and state highways and immediately you have not one but a series of transcontinental highways if you care to designate them as such, since you will have complete communication across the country. But road building is not carried on for pleasure travel. We want that of course, but the fundamental, economic reason for the road, is its commercial value, which is and will always be local."

Mr. Page was in Denver for several days during which time he had conferences with the western district engineers of the U. S. Bureau of Public Roads. He also conferred with officials of the U. S. Forest Service concerning road construction in the national forests, as this work is conducted by the Bureau of Public Roads. Mr. Page met many state road officials and in general sought to get into touch with road conditions throughout the West, in which he was keenly interested.

Talking before the members of the Civic and Commercial Association, he praised Colorado's system of roads very highly, recalling his visit here of twelve years ago when roads existed chiefly in name and contrasting them with the network of highways which is gradually being built up in the state now.

He was accompanied by J. E. Pennybacker, of the Washington office, who also acted as secretary of the U. S. Highways Council during Mr. Page's tenure of office as chairman of that body, and by A. E. Lodes, also of the Washington office.

## Prairie Schooner, Texas Dogie

(Continued from page 10)

south highway; the Union Pacific highway, which wends its way from Kansas thru the middle section, and the Arkansas Valley route on the south. Each of these roads is today in first-class condition.

Not long ago a trip on any of them would have been described in terms of superlatives, but not pleasant superlatives. Now with grading generally completed and heavy coatings of gravel packing in, the way is clear for a decided increase in traffic.

This is not enough, however. Sooner or later one of these roads must be hard-surfaced, perhaps all of them, and Eastern Colorado will not be content until that day comes. Passage of the proposed bond issue will clear the way. In the meantime maintenance and improvement work will be done to the utmost limits permitted by the present inadequate funds.

## The Proposed State Motor Vehicle Law

(Continued from page 8)

tomobile and, if caught, he gets off with a lecture. If the legislature adopts the anti-thief law in the proposed new enactment, the joy-riding and other sort of auto thieves will get penal sentences. As one safeguard against thieves, it is proposed to have all garage and repair shop keepers maintain records of all machines stored or repaired when the owner of such auto is not a personally responsible resident of that immediate locality. And even tampering with an auto without the consent of an owner is made an offense.

Considerable may be said as to the proper license fee to be charged for motor-vehicles and motor trucks and trailers. For the passenger car I think the rating of the Society of American Engineers (known as the S. A. E.) is to be preferred. It is better known and is in many ways desirable. Taking this as the rating, and fixing a minimum charge of \$4 for autos rated up to and including 20 horsepower, then charging an additional 30 cents per horsepower, would not work a hardship. This would bring Fords and cars of that class within the minimum fee and carry some of the heavier and palatial cars up to as high as \$25. And with the present rapid growth of the auto business, we will collect in auto licenses for the highway funds of the state, from \$800,000 a year and up, starting in 1921, and without working a financial hardship on autoists.

The most equitable charge for trucks would seem to be a minimum charge of \$10 a year on all trucks having a combined weight capacity of truck and load of two tons or less. Over two tons, an added charge of \$5 per ton of combined weight and carrying capacity up to a truck having a combined weight capacity of truck and load of 14 tons. In excess of 14 tons, an additional fee of \$10 per ton should be charged. Provided further, "the State Highway Commission is hereby given full power and authority either on complaint of any board of county commissioners or upon its own initiative, to limit, restrict or prohibit the operation of any motor truck or trailer on any highway when in the judgment of such State Highway Commission the operation of such motor truck would be unduly injurious to such highway." A somewhat smaller charge is suggested for trailers, but they should be governed as trucks.

At a conference held between the secretaries of state of 25 different states, a year ago this fall, we devoted two days to automobile license laws and regulations. The only part of Colorado's law that was acknowledged to be superior is the section providing for the collection of fees and the delivery of license plates by county clerks. This works admirably, but I think the clerks should be allowed a fee, even tho small, for their extra trouble and labor, and I hope the legislature will view it in the same way. In one state, the secretary of state told me he employs more than 100 auto clerks and inspectors to collect \$1,

500,000 a year. I collected more than \$400,000 this year with the aid of the county clerks and a total of seven clerks and inspectors.

The proposed new Colorado law limits the expenses of auto clerks, inspectors, postage and printing to five per cent. of the total collected. Another section provides that the auto license money shall be divided equally between the state highway and the county highway funds, after deducting the stipulated expenses which will be incurred for administering the business.

One of the main objections to the sections governing the present auto license law is that it costs as much to register an auto December 1 as it does on January 1 of the same year—and all licenses expire December 31. Adopting the regulations of many other states, I am suggesting that all autos registered prior to August 1 of any year shall pay the full annual rate; after August 1 and till November 1, one-half the annual rate; after November 1, a rate equal to one-fourth the annual rate. This seems to me only fair and equitable. Then, too, about 85 or 90 per cent. of the new cars are registered before August 1.

It will not be possible to change the license registration fee schedule until January 1, 1920, as we will be collecting under the present rate for at least three months of 1919 before the legislature can well adopt the proposed new rate. But even so, if the growth of the auto license business continues at its past ratio—and there is every reason to believe that it will—the state and county highway funds will divide more than \$500,000 between them during 1919.

The want of space prevents me from going into the provisions in the proposed new law for the elimination of glaring lights and other phases designed to protect the highways, the auto owners and the public alike. I hope, however, to have a complete copy of the new enactment in the hands of all interested before the legislature meets.

## National Transport Bureau Recommended

(Continued from page 12)

commercial purposes throughout the United States 365 days in the year would have upon the prosperity of the country and in turn its effect upon the export trade, thus linking up the question of highways, railways and waterways. And finally a close investigation into comparative operating costs on steam and electric railways, waterways and highways, with a view to distributing the volume of trade into its proper economic channels, so that there could not at any time be any competition between the four, but instead a co-operation which would be of benefit to all.

During his visit in Denver and just before his death in Chicago, Logan Waller Page, late director of the U. S. Bureau of Public Roads, inspected and approved the concrete road from Denver to Littleton, built by the State Highway Department in connection with the government.

# The Blue Lodge of Colorado Road Builders

By *Smith Riley, U. S. District Forester*

**R**OBERT E. PRATT was born January 5, 1885, at Parkville, Missouri, and received his early education in the public schools and high school and at Knox College, at Galesburg, Illinois.

He came to our western country in 1905 and did his first surveying for Mr. W. M. Clarke, who had contracts with the government for extensive surveying work. For him he worked two years as chairman and rodman and was highly regarded by Mr. Clarke.

In 1907 he began work on public land surveys, when that work was done under the old contract system. For five years he continued this work and for three years of this time was chief of party. During this time he passed the civil service examination as classified transitman and later as U. S. surveyor. He was employed for some time in southern Colorado on the survey work (which work is very complicated) and it is interesting to note that his work at that time has been recently checked up and has received the approval of the land office and that one of its officials complimented Mr. Pratt on its accuracy.

He was transferred to the Forest Service in June, 1912, and his work with the service and his success in it are most interesting when considered in retrospect. He was possessed of the energy and adaptability, the resource and executive ability that guarantee success in a high degree.

His first work with the Forest Service was the surveying of June 11 claims, which was begun in June, 1912. Later he took up the work of organizing the section of geography. This includes all field surveys; reconnaissance, topographic and entry; the necessary mapping and drafting and the compilation of the Forest Atlas for the district. As may be easily seen, such varied work would require an unusual combination of qualifications and Mr. Pratt demonstrated his ability to handle all of this work efficiently. His Manual of Topographic Surveying is a standard work in the Forest Service and is consulted by other bureaus.

He introduced many new ideas, standardized the work, installed a system of filing and of cost keeping and in general inaugurated a smooth running policy for this department.

In the latter part of 1917 this work, as well as that

of hydro-electric engineering and road engineering, were consolidated and the office of engineering was created under the supervision of Mr. Pratt, confirmation of his appointment as district engineer being made on May 1, 1918. This was a well deserved appointment and a recognition of his six years of faithful, tireless and progressive service.

Mr. Pratt's policy of spending the Forest Service money which is allotted for roads was well defined and rigidly adhered to. Appeals for co-operation from the Forest Service in road building are numerous and obviously not all of them can be given assistance.

The merits of each proposed project were carefully examined and put to the test Mr. Pratt had outlined for himself. He asked "What was the need for the road? What communities or interests would be served by it? Could it be made to serve effectively the interests of the ranchers through whose district it would pass? And, finally, would it form, when built, an important link in the road system which it was his constant aim to expand and develop?"

Only such roads as passed this careful inquisition were approved, but when a project had earned his approval it also received his earnest and unstinted effort to push it to completion.

He would visit the proposed location and examine feasible routes. He would confer with the county officials and determine the amount of co-operation that could be expected, the terms under which it could be gotten and arrangements for its distribution. When the moneys became available, he gave the work the benefit of his supervision and advice, all with the underlying plan of obtaining the maximum in results at the minimum of expense and all—as is apparent from his work—with a well defined and comprehensive system of roads in mind as a basis for all his actions.

Those who have read his many articles in the Colorado Highways Bulletin can appreciate the vision and grasp of the subject which he displayed, and those of us who worked with him knew well the constant effort he made to have his ideas put into actual working.

We feel keenly the loss of Mr. Pratt in both our personal and official relations and regret most deeply the passing of a brilliant fellow worker and loyal friend.



*The late Robert E. Pratt.*

# Highway News and Notes on Work in Field

**C**OMPILATION of the State Highway Commission budget this year brought out the fact that the road fund raised by the counties in Advisory District No. 1 amounts to more than the total amount available for expenditure by the State Highway Commission for the ensuing year. District 1 includes Denver.

For 1919 the State Highway fund proper amounts to \$1,043,000, while the amount raised by the counties for road work is \$1,054,000.

The State Highway Commission favors construction of roads, built in connection with the U. S. Forestry Service, by contract instead of by day labor. Its reasons for this attitude are given in the following resolution: "Be It Resolved, That this board authorize Commissioner Ehrhart to enter into a modified agreement, if possible, with the Bureau of Public Roads on a 50-50 basis with a request that the work be prosecuted on a more efficient, economical and expeditious plan, and that this department be furnished with monthly reports as to the cost and progress of the work, and recommend that all Forestry projects be done by contract."

A new and scenic route for motorists, leading from Lyons into the Rocky Mountain National Park by way of Allen's Park, will be opened to motorists when Boulder County completes reconstruction of the old St. Vrain road. A convict crew has started work on the project, which will require two seasons for completion.

County Commissioners of Jefferson County have asked that the road between Morrison and Golden on the west side of the hogback be declared a state road. The State Highway Commission has requested that a survey be made and submitted to it in connection with the matter.

Two new concrete bridges on the Denver-Colorado Springs road, one-half mile south of Castle Rock, were completed and put into use during December, 1918.

The big molybdenum deposits at Climax, in Lake County, have been opened by completion of the Leadville-Dillon road as far as Climax on the Leadville side. The Dillon side has not been put into shape yet.

Surfacing of the Golden approach to the Lookout Mountain Gateway in the Denver Mountain Parks has been completed, and the worst road feature in connection with the Mountain Park trip eliminated.

The Battle Mountain road above Red Cliff, in Eagle County, is to be improved during the coming season. This road has one of the most dangerous grades of any road in the state. The grades are to be standardized from Red Cliff to Minturn over Battle Mountain.

The rocky canon road above Glenwood, upon which a convict crew of twenty-five men has been working for three years, will probably be completed next season. Only four more miles of heavy construction remain to be finished.

The road from Pueblo to the Huerfano River, which crosses the Santa Fe Trail at the latter point, is to be completed next season. A convict crew is surfacing it with gravel.

Two miles of very bad road between Trinidad and Stonewall in Las Animas County has been surfaced and regraded at a cost of \$4,000. This completes an important connection between Trinidad and the San Luis Valley over La Veta Pass.

Federal Aid has been asked by the Archuleta County Commissioners for relocation and grading of the road from Pagosa Springs south to the New Mexico line, to connect with the road from Chama, New Mexico.

The Highway Commission expects work to start this spring on the forestry road over Monarch Pass in Chaffee and Gunnison Counties. The work has been held up by war conditions heretofore. The grade will be reduced considerably.

The State Highway Commission's repair and maintenance crew has been engaged on work on roads leading into Denver from all directions, keeping steadily in the field all winter. Work was done on roads running from Denver to the Army General Hospital, Brighton, Golden and Morrison, Broomfield and Bennett.

A modern steel and concrete bridge across the South Platte River at Merino will be constructed by the County Commissioners of Logan County during the coming summer. It will be 640 feet long and will replace an old wooden bridge at that point.

## Demonstration Roads Endorsed

Lieutenant Governor George Stephan of Delta, who is an enthusiast on good roads and author of the highway commission bill, has written State Highway Commissioner T. J. Ehrhart a letter commending in warm terms the plan to build short sections of hard-surface roads near the principal cities and towns of the state, in order to demonstrate their value to the public. In the course of his letter the lieutenant governor says: "I am of the opinion that one-half mile of cement road approaching the larger towns will do more to educate the farmers and citizens of outlying districts than the same amount of money expended for literature and lectures. I think a practical demonstration is what is necessary in order to awaken public interest. The people of Colorado could well afford to expend fifty million dollars in constructing a comprehensive system of highways and the only reason that the state is not investing that amount in highways is that a large percentage of people do not realize the benefits to be derived from good roads, and therefore am strongly in favor of actual demonstration of good roads by constructing small stretches near the various small centers of population."

# Road Work and Road Builders the State Over

**W**L. PHILBIN and J. I. Glenn, county commissioners of Chaffee county, appeared before the State Highway Commission at its last meeting to advise the commissioners of the needs of their county. Chaffee county had to contend with several wash-outs last year, which carried out three bridges on state roads and four bridges on county roads, hence needed a little additional assistance upon a new state bridge which they are putting in.

Similar misfortune occurred in Gunnison county, which lost thirteen bridges, according to Elmer Wiley of that county, who came to Denver in regard to the new road through Crested Buttes, which the county is desirous of completing. State Highway Commissioner T. J. Ehrhart suggested to the highway commission that the board authorize the county commissioners of Gunnison to have a survey and estimate made of the Wauneta Springs road, which he has already asked be declared a state road.

The county commissioners of Mesa county sent John A. Sprott to the meeting as their duly accredited representative, to ask for \$12,500, to be met dollar for dollar from county funds. The Midland Trail runs through their county and the construction of the High Line Canal has compelled the county to build a number of bridges that otherwise would not have been considered. Mr. Sprott also asked that road 31-S, which runs from White-water due west to Unawep Canyon, be made a Federal Aid project. Mr. Ehrhart suggested that the county commissioners put this request in writing so that it might be acted upon in connection with other projects of the same nature.

B. A. Banta, county commissioner from El Paso county, reported a shortage of funds, due to certain building conditions last year. On account of this, he said, surfacing of the Pike's Peak ocean-to-ocean road and surfacing of the Canon City road, had not been done.

F. L. Rouse, chairman of the Highways Transport committee of Colorado Springs, was a visitor at the State Highway Commission's office last month, and reported that a great stretch of country between Limon and Ordway, 65 miles from Colorado Springs, was being settled rapidly. A number of auto trucks are employed in this section to haul beans to the market.

Inauguration of the survey for relocating parts of the road up the Big Thompson Canon in Larimer county, as well as widening and regrading it in spots, took place a few days ago with a large party of road officials in attendance. In addition to State Highway Commissioner T. J. Ehrhart and Chief Engineer J. E. Maloney, of the

commission, those present were: Highway Commissioner E. E. Sommers, County Commissioner Graham, and County Engineer James Edwards of Larimer County, Assistant State Highway Engineer J. R. Cheney and J. M. Johnson, highway engineer of the U. S. Public Roads office. The commission appropriated \$90,000 for this work.

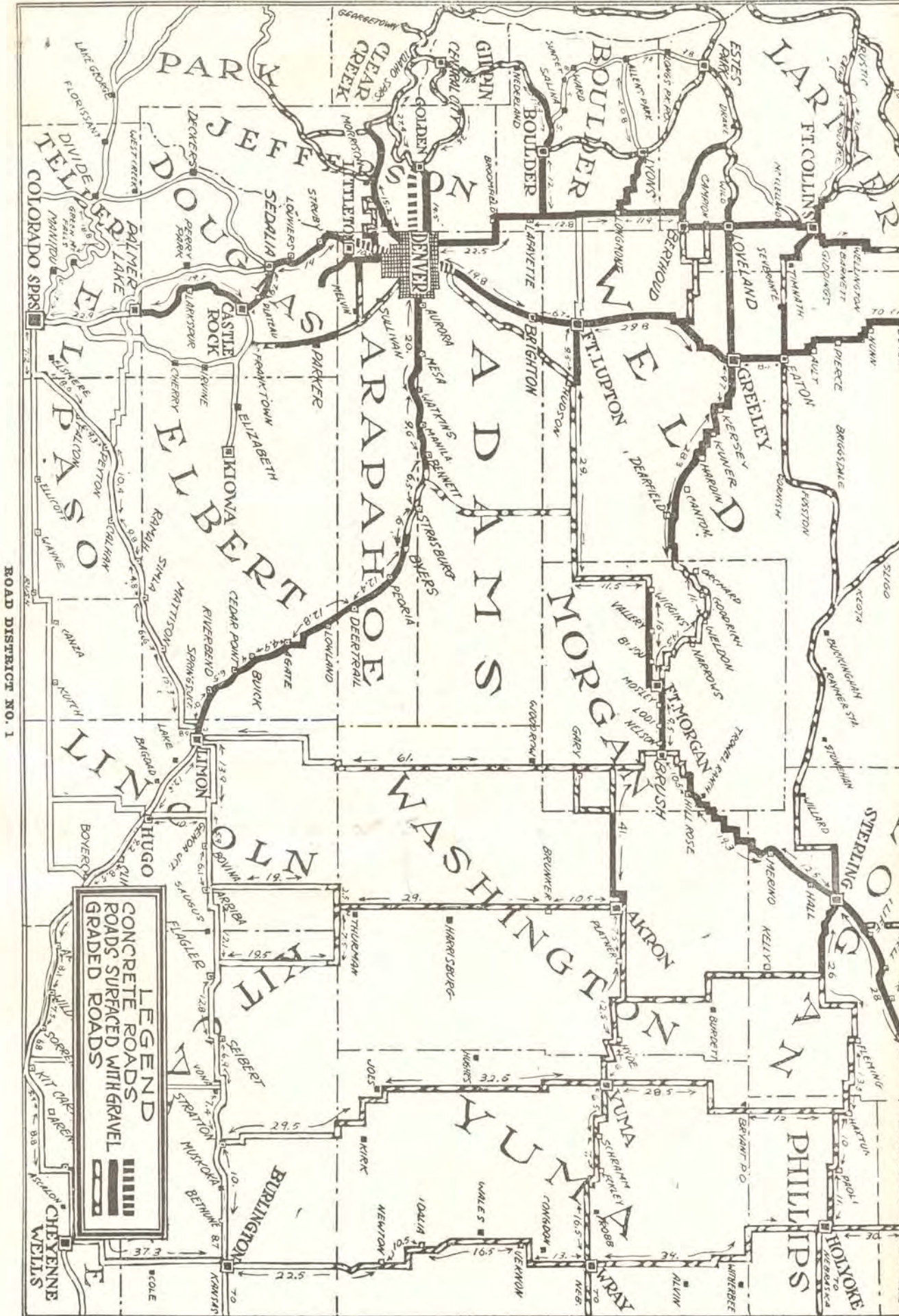
The following road officials were here during the first week in December to confer with the late Logan Waller Page of the U. S. Bureau of Public Roads: B. J. Finch, San Francisco, and L. E. Hewes, Portland, district engineers of the U. S. Bureau; T. W. Norcross, assistant chief of the U. S. Forest Service, Washington; L. F. Kneipp, district forester, and J. P. Martin, district engineer, U. S. Forest Service district No. 4 from Ogden; State Highway engineers, H. E. Severson, Wyoming, C. C. Cottrell, Nevada, and H. C. Allen, Idaho.

## Passenger Car Traffic

*(Extract from paper by E. J. Mehren, Editor of Engineering News-Record, at the convention of State Highway officials held at Chicago, December 11, 1918.)*

"The spiritual justification that I claim for a national system of highways is based on the extent to which passenger car traffic has developed between the various states. There was a time when the passenger car was considered an agency for recreation only. We now see it in a different light and realize that it is an important instrument of business.

"Nevertheless, I am willing to claim justification for a very heavy expenditure by the Federal Government for highway construction solely on the basis of passenger car travel for recreational purposes. On Labor Day of this year I stood just below Colonel Cody's grave, in the Denver Rocky Mountain Park, and watched hundreds of cars pass by on the road beneath. The majority of them carried Colorado licenses, but a goodly number showed tags of Wyoming, Utah, Kansas, Nebraska, New Mexico and other trans-Mississippi states. I maintain that each of the cars that had come from another state into Colorado carried back men and women who were better citizens of our common Union, who had a better appreciation of the glory of our country and who were more firmly convinced than ever before that for the maintenance and defense of this nation, no sacrifice is too great. 'Not by bread alone does man live.' Spiritual forces are still the mainsprings of all great endeavor and hold this nation together no less certainly than they did in the Revolutionary War or in the great war. We have had a wonderful demonstration during this war of the unity of our people. That unity was fostered and secured by the various agencies of transportation and intelligence which have wiped out sectional lines and taught the east and west, the north and the south.



ROAD DISTRICT NO. 1