

Colorado Highways

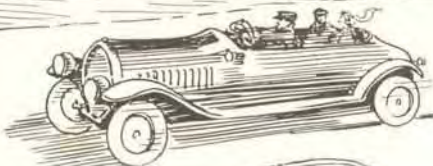
BULLETIN

Issued by the State Highway Department



Old Mount Antero and the Chalk Cliffs Looking Down From the Crest of Chalk Creek Heights Into the Valley and on to the Range From the Rainbow Route Road, Chaffee County.

July, 1918



State's Minimum Auto Tax Lowest in U. S.

COLORADO has the lowest minimum automobile tax in the United States, while but six states in the entire Union have a lower average fee. Twenty-three states collect an average amount per car of more than double Colorado's average while nine states average more than three times as much, according to an exhaustive table on national automobile taxes published in the first issue of the new magazine printed by the U. S. Office of Public Roads and Rural Engineering.

According to the same authority there are now 87,460 machines in this state or one for every 2.2 miles of road and one for every eleven residents. In the United States there are now 4,983,340 cars of all descriptions, or approximately 85 per cent of the total automobile output of the world.

In 1906 the total State registrations were approximately 48,000 cars, or less than 1-100 of the present number, while the revenues collected amounted to about \$193,-

000, only slightly more than 1-200 of the \$37,501,237 collected in 1917. Says the writer in Public Roads:

"At present all or a major portion of the motor vehicle revenues are applied to road work in all states, except Alabama and the District of Columbia. The tendency last year toward placing the expenditure of the motor vehicle revenues in the hands of the State Highway departments was very marked. * * *

"There are still 21 states in which motor trucks are registered at the same rate as pleasure cars. But the past year has shown quite a decided tendency to increase the fees required for heavy motor trucks. This increase is based generally on either the weight of the truck, its carrying capacity, or a combination of its carrying capacity and its horsepower. However, there is no evidence of any well-defined goal toward which this movement is tending."

The table compiled by the U. S. officials showing motor registration, licenses and revenues in 1917, follows:

State.	Automobiles	Total gross revenues	Motor-vehicle revenues		Average return per car	Population per mile of road	cars per mile of road
			Under highway department	Under local authorities			
Alabama	26,952	\$ 217,700.00			\$6.62	72	0.6
Arizona	19,890	117,643.00	\$ 117,643.00		5.91	13	1.6
Arkansas	28,693	205,176.50	191,175.00		7.15	62	.6
California	306,916	2,846,030.00	1,247,268.80	\$1,247,268.80	9.27	10	5.0
Colorado	87,460	296,808.00	136,615.65	136,615.65	3.39	11	2.2
Connecticut	62,723	1,080,757.31	1,080,757.31		14.48	20	4.5
Delaware	10,700	133,883.00	83,883.00		12.51	20	2.9
District of Columbia	515,493	55,928.00			3.61	24	
Florida ¹	27,000	170,000.00	25,500.00	144,500.00	6.30	34	1.5
Georgia	70,324	229,653.00		143,514.00	3.27	41	.9
Idaho	23,771	412,641.48	103,160.37	309,481.11	16.69	18	1.0
Illinois	340,292	1,588,834.69	1,588,834.69		4.67	13	3.6
Indiana	192,194	1,096,159.08		899,818.07	5.70	15	2.6
Iowa	254,462	2,249,655.19	112,482.76	2,024,689.67	8.84	9	2.4
Kansas ²	159,343	830,878.00		787,619.50	5.21	11	1.4
Kentucky	47,420	287,314.13	257,300.00		6.06	51	.8
Louisiana	28,394	166,834.67		150,151.32	5.88	65	1.2
Maine	38,117	491,696.30	487,873.00		11.84	19	1.8
Maryland	56,787	807,395.45	580,612.69	145,153.17	13.25	23	3.7
Massachusetts	147,310	1,969,994.00	1,731,552.00		11.30	21	9.3
Michigan	226,693	2,471,270.77	1,272,246.66	1,199,024.11	10.00	12	3.3
Minnesota	54,000	100,000.00	50,000.00		1.85	43	.6
Mississippi ³	35,000	250,000.00		175,000.00	6.83	54	.8
Missouri	147,528	617,942.50	572,372.30		4.19	23	1.5
Montana	42,749	290,936.00	130,921.20	130,921.20	6.81	11	1.1
Nebraska	148,101	451,303.00		400,000.00	3.05	9	1.8
Nevada	6,885	31,166.00		31,166.00	4.35	16	.6
New Hampshire	92,267	425,305.09	376,773.63		19.10	20	1.6
New Jersey	134,964	1,923,163.63	1,887,965.21		13.55	21	9.6
New Mexico	14,086	80,843.50	35,739.34	35,739.34	5.74	31	1.2
New York	338,682	4,284,144.00	2,222,130.12	2,061,983.88	10.55	30	5.1
North Carolina	55,950	321,922.63	214,114.41	12,835.92	5.75	43	1.1
North Dakota	62,993	211,536.12	105,707.82	72,164.14	3.36	12	.9
Ohio	346,772	1,766,426.88	1,609,781.02		5.09	15	4.0
Oklahoma	100,199	853,658.91	768,293.02		8.52	23	.9
Oregon	48,632	196,787.50	167,834.34		4.05	18	1.3
Pennsylvania	306,001	3,268,025.50	3,268,025.50		10.05	27	3.6
Rhode Island	30,267	346,117.50	313,350.94		9.34	17	17.1
South Carolina ⁴	38,332	113,556.71	22,157.49	88,629.98	2.96	43	.9
South Dakota	67,158	210,592.00		179,003.20	3.14	11	.7
Tennessee	48,000	322,200.00	289,980.00		6.71	48	1.0
Texas ⁵	192,961	858,978.50	720,119.85		4.45	24	1.5
Utah	21,576	170,707.25	170,707.25		7.09	19	2.4
Vermont	20,367	363,540.92	326,032.00		16.80	17	1.4
Virginia	55,661	518,565.84	492,170.47		9.32	40	1.0
Washington	79,680	519,526.00		435,129.00	5.69	18	2.2
West Virginia ⁶	31,300	359,339.45	276,048.62		11.48	46	1.0
Wisconsin	158,637	861,278.00	198,768.36	596,305.07	5.43	16	2.1
Wyoming	12,523	57,421.00		45,992.80	4.59	15	.8
Total	4,792,205	\$37,501,237.01	\$23,235,897.82	\$11,452,705.93	\$7.62	21	2.0

¹ Does not include 2,750 non-resident and 5,134 exempt cars.

² Includes motor trucks and motor cycles.

³ Approximate; exact data not obtainable.

⁴ Includes only period from July 1 to December 31.

⁵ Registrations during 1917. Total registrations for 3-year period, 192,000.

⁶ Does not include 1,721 non-resident registrations.

⁷ Does not include 2,827 tractors and 554 trailers.

NATION AND STATE JOIN IN ROAD PROJECTS.

WORK has been started on four forestry road projects which will serve to cut down the distance between main line points on four of the state highways. A final conference held between Commissioner T. J. Ehrhart, representing the state; R. E. Pratt, district engineer, U. S. Forest service, and A. E. Palen, senior highway engineer, U. S. Office of Public Roads, cleared up the last points on the triangular agreement and crews are now engaged in preliminary work.

The first project taken under consideration was that relating to the Sedalia-Decker Springs cutoff. This cutoff, which embraces a distance of 18.59 miles, shortens the distance from Denver to Cripple Creek by several miles and the work will be completed this year.

The second project is that over Monarch pass from Maysville on the eastern side of the range to Sergeant on the western. The mileage called for in the contract is 27.1 and work will be completed next year. The road is now in passable condition, but the new contract calls for an elimination of dangerous curves and a general reduction of the grade. The pass cuts 60 miles from the eastern slope to the west.

The Durango-Silverton project is so generally known as to require little comment. The work necessary to make the road traversable is 17 1/4 miles and when completed the cutoff will furnish a northern outlet for all southwestern Colorado, eliminating a present roundabout route of several hundred miles. The construction involved is of a most difficult nature and construction will hardly be completed before 1919.

The other project to be undertaken is that on Rabbit's Ear pass between Kremmling and Steamboat Springs, a distance of 20.75 miles.

The road is now in use but the work will improve it greatly and will make traffic conditions in that section of the state much easier.

CAST IRON ROADS PROPOSED.

The enormous growth in motor truck transportation has resulted in a serious proposal from New York's secretary of state that strips of cast iron, eighteen inches wide be laid on highways to bear the weight of the heavy tonnage now found on eastern roads.

Porthos Gate



A View on the Upper Arkansas River Valley Road in Fremont County Close to the Rock Tunnel. This Highway Is One of the Finest in the State. It Was Built Under Severe Handicaps.

BARDINE REDSTONE ROAD APPROVED BY U. S.

AUTHORITY for entrance into a co-operative agreement and for construction work on the Bardine-Redstone project, perhaps better known as the McClure Pass project, has been received by the local branch of the U. S. Forest Service thru Forester H. S. Graves, from Secretary of Agriculture Houston. The project calls for the construction of some 35 miles of road and when completed will cut more than 100 miles off the route from Hotchkiss, Paonia and Western slope points to Aspen. Taken in conjunction with the work now being done on the Bardine-Crested Butte project by the state, the new highway will also serve to decrease the distance from the Western slope to Gunnison and points east.

An estimate of the cost of the McClure pass work, places the figure at \$180,000, of which the state will pay \$90,000 and the national government a similar amount.

The project is not one of those included in the 1918 budget of the state highway department, hence its approval by the state must wait upon the next meeting of the highway commission at which time the project will be taken under consideration. In view of the fact that Federal Aid and Forestry projects now undertaken by state and nation will consume a very considerable portion of the state funds in the next five years, the new project will add a considerable burden, but state officials are desirous of taking advantage of the government aid, if possible.

The U. S. Forest Service officials will go ahead this year with location of the road, specification plans, etc., so that all will be in readiness for actual work on the road with the first touch of spring next year.

The proposed project will traverse the Muddy Creek drainage, opening up agricultural lands which it is estimated will be sufficient for 200 families. From that point it will cross Huntsmen's Hills in a general northerly direction toward Redstone and Aspen. The road will serve to link up Hotchkiss and Paonia, the coal camps of Somerset and Bowie and in general the stock ranches, agricultural and fruit lands and coal camps of the district.

The Bardine-Crested Butte link, on which the state is now working, runs in an easterly direction from Bardine, linking up with the main highway at Gunnison.

The History of Road Building in Colorado

By F. L. Bartlett, Chairman Good Roads Committee, Civic Association

ALL the early histories of the mountain and plains region of the Rocky Mountains are strangely silent regarding the building of the first roads, and such information as I have is mostly gleaned from the old settlers.

The first wheeled vehicles came over the Santa Fe Trail in 1828 en route for Santa Fe, New Mexico, just touching the extreme southeast corner of our state, following the Cimarron river. A few years later, about 1852, the trail was changed and went by the way of Fort Bent and down Timpas Creek, with a branch running up the Arkansas River to Canon City for the purpose of reaching the trapping stations located along the river.

For twenty years great wagon trains, often numbering as high as 400 teams passed over this great natural highway, each caravan doing its own road work as the case demanded, which was just sufficient to get them through. Five thousand pounds of freight was about the limit for eight mules or three yokes of oxen. There were no bridges and it often required 40 to 50 head of mules to pull one wagon across the river beds, while at flood times the caravans simply had to camp and wait. For a long time the lowest going rate for freight from Independence, Missouri, to Santa Fe was 10 cents per pound.

The first overland stage and mail line was started from Independence on July 1st, 1849. These stage coaches were elegantly built and beautifully painted, designed to carry eight passengers, with a guard of eight men on the outside fully armed. They were built water-tight in order to use them for ferries when the streams were too high for fording. The fare per passenger was \$240 each way, 40 pounds of baggage being allowed, any excess being at the rate of 50 cents per pound. The trip was made in two weeks when the Indians were not too thick and the weather was fairly good.

There are many places to be seen even at this late day on the old trail, showing the deep ruts made by the old coaches, covering sometimes a space 200 feet in width.

Meantime, along between 1850 and 1858 two other trails were laid out, one from Leavenworth, called the "Smokey Hill" Trail, headed towards Denver, the other from Atchison along the Platte River towards Colorado and Utah, called the "Overland Trail."

The first real stage line to Colorado was the Leavenworth and Pike's Peak Express Line, which made its first trip starting March 27th, 1859, reaching Denver June 7th, a trip of 71 days; this was mainly over a new and untraveled route, the stage company having to build the road as they progressed. A short time afterwards Horace Greeley was a passenger over this line and helped out with the shovel and pick.

The route followed was along the divide between the Solomon and Republican River, thence northwest to the south side of the Republican to its source, thence southwest to the headwaters of the Beaver, Bijou and Kiowa Creeks, thence along the pine ridge to Cherry Creek, thence along the high ridge on the north side of Cherry Creek to Denver. The route was laid out by B. D. Williams, our first territorial delegate to the Congress of the United States, who certainly knew his business as he kept on high, dry ground all the way. The total distance was 687 miles; afterwards the distance was reduced to 600 miles, and the average time each way reduced to 10 or 12 days.

About 1860 the line was reorganized and called the Central Overland California and Pike's Peak Express Company, a survey was completed over Berthoud Pass and along the Green River to Utah, and the road was partially completed, but after spending enormous sums of money the company went broke and the line was abandoned for the time being.

In 1861 Ben Holliday had bought up many of the old stage

lines and then controlled 3,300 miles of stage routes. Between 1861 and 1865 the Government was paying Holliday \$1,000,000 yearly for carrying a daily mail from the Missouri River to Placerville, California, a distance of about 2,000 miles over the Overland Route.

D. A. Butterfield was running a line from Leavenworth via the Smokey Hill Route to Denver and Salt Lake, while Holliday was sending a branch line from the Overland Trail into Denver via Julesburg and Fort Morgan. There was much rivalry and many record runs were made. Holliday made the trip himself for a test from Atchison, Kansas, to Placerville, California, 2,000 miles in 12 days. Albert Richardson made the run from Atchison to Denver in 4½ days, and Butterfield was advertising regular trips from the Missouri River to Denver in 8 days and often made them in 6 days.

Very little change has been made in the old Santa Fe Trail. The Smokey Hill Route followed what is now known as the "Golden Belt" Route, as far as Oakley, Kansas, thence followed directly west to Cheyenne Wells, Hugo, Limon, Deertrail and Bennett to Denver. It is exactly the Kansas Pacific Railroad route, or the Union Pacific Railroad of the present day. The old Leavenworth and Pike's Peak stage route is now practically extinct. The Overland Trail has been changed somewhat; it now starts from Omaha and is partly on the north side of the Platte, while in the stage-coach days it ran from Atchison and kept on the south side of the river through Julesburg to a point near Greeley, thence to La Porte near Fort Collins, thence to Virginia Dale, thence to Rock Springs, Wyoming. Three branches connected the Overland Trail with Denver, one across the plains to a point near Fort Morgan, another connecting at Latham near Greeley, another connecting at La Porte near Fort Collins; these old roads are practically the same as our present roads.

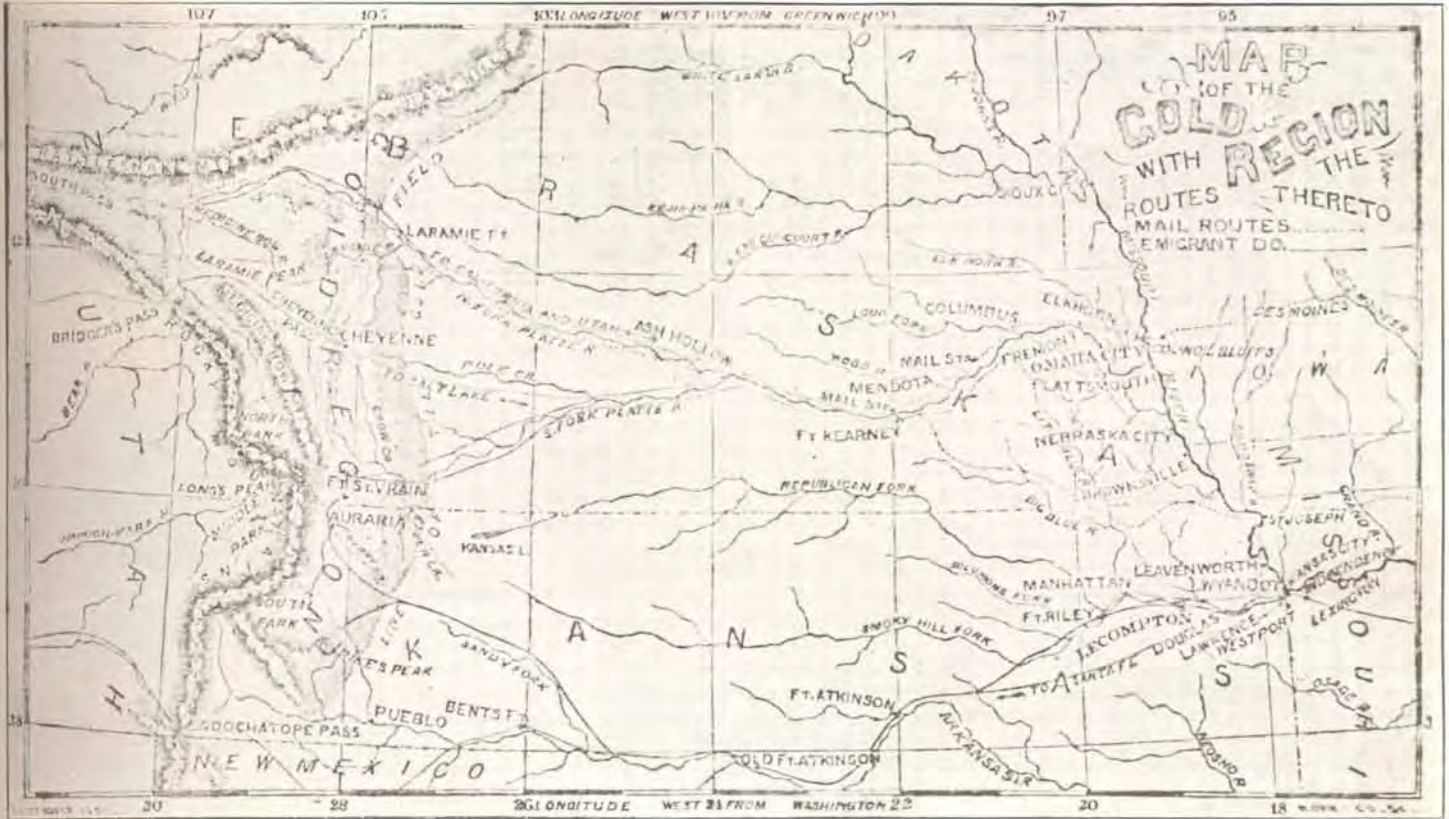
Thus it will be observed that the present Lincoln Highway does not follow the Old Overland Trail, had it done so we should have had nearly 200 miles of it traversing Colorado, instead of being side-tracked on an alternative loop as is now the case. I have been much interested in statements of the old timers that in the stage-coach days the roads did not become muddy even around Denver; where we now have after a slight rain very muddy roads, it is stated that in old times such was not the case. The reason given for this is that the top soil undisturbed for millions of years had become covered with a layer of sand, which packed hard under the wide tires of the freight wagons and stage coaches and became impervious to water.

At all events they were careful not to disturb the natural road bed and their only complaint was of sand. The Overland roads were so good that in 1860 a man by the name of Fortune built a steam wagon 20 feet long with driving wheels 8 feet in diameter intended to run between Atchison and Denver. It worked well on its trial trips, making 8 miles per hour. Its first trip to Denver was scheduled for July 4th, 1860. Then, just as in modern times, something went wrong with the steering gear and the excited driver in attempting to get out of town ran it through a building, wrecking both the building and the wagon. The disgusted Mr. Fortune concluded his name was "misfortune," and abandoned the scheme. Except for this, we might have had the automobile forced upon us 40 years earlier, thus advancing our prosperity in a tremendous degree.

Now comes a period from 1862 to 1870 when many stage lines were built. The first stage line was built between Denver and Pueblo in 1862, then followed the famous Barlow and Sanderson Lines, which were built throughout Colorado wherever there seemed to be a demand.

(To Be Continued.)

When Denver Was Auraria and Cheyenne Was in Nebraska—An Old Map



The Map From Which This Reproduction Was Made Was Published in the First Issue of The Rocky Mountain News in 1859 and as Far as is Known it is the First Road Map Ever Printed in the State. Note the Outline of the Range as Travelers of Those Days Thought It Was.

Rigid Standards Needed in Good Bridge Construction

THOUSANDS of dollars will be lost to the state this year as a result of the faulty construction of bridges in the past. The abnormally high waters of the Arkansas, Gunnison and Grand Rivers have swept out many bridges which must be replaced without delay and in many instances the loss is due to economy in construction where the expenditure of comparatively small additional sums would have served to obviate danger of washouts.

Ordinarily the structures so built might have lasted for many years but bridge construction can not be handled with an eye to normal conditions. The unusual heat of the early days of June caused a rapid melting of snow on the peaks which in turn flooded the creeks. In all cases such possibilities as this should be taken into account and sufficient sums should be set aside to insure structures capable of withstanding the enormous strain of high waters.

The present condition demonstrates forcibly the absolute need of greater care in the location and construction of bridges on all state and county roads.

No bridge should be built without well designed plans and specifications approved by the very best engineering authorities.

Careful consideration should be given to the location, the drainage area and the foundation. Ample water ways, wings of sufficient length to protect the approaches and construction adequate to carry a much heavier load than the bridges of the past, are important factors in the work.

It is poor economy to build a bridge which is inadequate in any of these respects and we should have a law requiring that all bridges and culverts should be built in conformity to a rigid standard design with plans and specifications to fit each location.

These standards should be approved by the best engineering advice obtainable and the construction work proper should only be done under competent and thorough inspection.

The subject is one deserving the most serious consideration of all county commissioners.

Good Roads Vital to Farming Communities

By E. D. Foster, Commissioner, Colorado State Board of Immigration

IN the settlement of new counties and the development of those in which settlement already has commenced the gasoline engine has solved old problems, but in their stead have come new problems, no less serious but vastly less difficult to solve. The automobile and the motor truck have annihilated space, but with equal force they have made poor roads no longer to be tolerated.

Until a few years ago there was a general hallucination to the effect that any kind of a road was good enough and that money spent on roads for any purpose other than making them merely passable in ordinary weather was wasted, but it is now recognized that there never has been a time or a circumstance in which poor roads were anything but poor economy. The necessities of pioneering and lack of funds for public purposes often has made poor roads an economic loss which it is difficult to estimate.

In the mind of the intelligent farmer who looks to Colorado for his new home one of the first questions which presents itself is that of transportation. Can he get his supplies from the railroad to his farm and transport his crop from the farm to the railroad at a reasonable cost, or is he to be financially handicapped and from the standpoints of time by poor roads, over which neither wagon nor motor truck can haul heavy loads or make good time? He knows that a farm with five miles of mud road between it and the railroad is frequently as thoroughly isolated as a farm 25 miles from the railroad with a connecting highway which is passable with reasonable loads under all ordinary conditions. Consequently when he applies for information as to his prospective home one of his first questions is, "How are the roads in that country?"

Some years ago Secretary Houston of the United States department of agriculture made some estimates as to the relative cost of transportation by railroad and over ordinary roads by wagon, finding that the cost of the latter means was from 35 to 45 times greater per ton-mile than the cost of shipping by railroad. The cost for railroad freight at that time was approximately four mills per ton-mile, making the cost of transportation by wagon road at that time, at his lowest estimate, 14 cents per ton-mile. Assuming that the average farm haul in Colorado to the nearest point is five miles, which probably is not as great as the actual average, the cost per ton by wagon over average roads was 70 cents, while the charge for transporting the same load an equal distance by railroad was two cents—an excess of 68 cents per ton for the five-mile haul by wagon.

At the same time the interstate commerce commission estimated the total annual tonnage of farm products and livestock moved over the railroads of the country at 200,000,000. On that basis the cost of a five-mile haul of the entire total by wagon road was \$136,000,000 more than the

cost of hauling the same total an equal distance by rail. Other figures prepared in other quarters at about the same time increased the total tonnage hauled to the railroads considerably but the commission's estimates are used here because of their conservative character.

It is probably true that the cost of hauling by motor truck over public roads can never be brought to as low a level as the cost of hauling over rails, but it certainly is true that the tremendous difference between the two cents at the present time can be lowered appreciably. The intelligent farmer of today knows that his problem is two-fold, including the question of producing a big crop and the equally important question of getting it to the nearest market with the least possible expense, and that is why he is concerned with the problem of good roads and is using every effort to induce the improvement of the highways and the construction of new ones along the line which he must take to reach the market from which he buys and to which he sells.

Since 1910 the population of Colorado has increased from 779,024 to 1,022,639, according to conservative lists this year. The average density of population has increased in the same period from 7.7 persons per square mile to 9.86, an increase of nearly 30 per cent. By far the greater portion of this increase is in what the census authorities classify as rural districts—those in which no large cities are located.

The inference is obvious and is borne out by other comparisons. The farming communities of the state are increasing in population at an unprecedented rate. Farm products for the entire state in 1916 were valued at \$91,152,770, compared with \$145,562,450 in 1917, the increase being due in part to the general advance in prices and in part to the fact that more land was cultivated in Colorado last year than at any one time in prior years. The United States census report for 1910 showed a total of 2,574,954 acres under cultivation, while a careful survey in 1917 showed a total of 4,073,250 acres under cultivation, an increase of more than 50 percent.

The present rate of increase in lands being put under cultivation is probably greater than the rate in any other state in the union. This alone furnishes proof that Colorado is feeling the effect of the westward tide of immigration more than any other state and is in itself the strongest argument for extensive road construction and improvement. Immigration and settlement halt abruptly at the edge of any district which is not fairly well supplied with adequate highway facilities, for poor roads are more discouraging to the prospective settler than is remoteness from railroads.

At present Colorado cannot anticipate any consid-

(Continued on page 20.)

Where a Glacier Once Slept—Snow Lake, in the Rocky Mountain Park



One of the Beauty Spots Along the Fall River Route in Estes Park, Larimer County.—Picture from Tourist Bureau.

Truck Users Urged to Send Data to State Council

A QUICKENING of the motor truck transport service in Colorado which will result in a very material decrease in waste of power and labor, is now under consideration by the Highways Transport committee of the State Council of Defense.

Broadly speaking the plan is to send out questionnaires to automobile dealers, motor truck owners and shippers generally throughout the state. In these the motor truck owner is asked how many trucks he has, what their style and capacity is, condition of roads, cost of operation and whether he could expand his service, if profitable.

The shipper is asked what he ships, what means he used to ship, the cost, etc.,

The purposes may be briefly stated. Use of motor truck transportation lines, will allow the farmer to retain his laborers on the farm all the time instead of diverting them to haul pro-

duce. Back door, immediate delivery will be secured, thus obviating the delays and congestion at rail points as well as freight charges from shipper to depot and from depot to consignee.

Danger of waste crops will be eliminated through co-operation with the U. S. Bureau of Markets.

From the motor truck owner's standpoint, the wasteful one-way haul will be eliminated, thus releasing both power and labor, the business will be standardized on an accurate accounting basis, and opportunities for increased business will be opened up as the farmer begins to realize the benefits from this service.

As a patriotic issue, motor truck owners and shippers are urged to answer questionnaires without delay and where they fail to receive one, write in to the State Council anyway.

The movement is expected to quicken interest in good roads and to result in more adequate funds for this important phase of transportation.

"World's Playground" to be Shown on Screen

Orpheum Theaters of Country Adopt Patriotic Policy of Advertising America First

THE world's playgrounds—Western America—are to be shown to 1,500,000 people a week for thirty weeks throughout the United States this fall and winter, as the result of an engagement made by C. E. Bray, of the Orpheum theatre circuit, largely brought about through the efforts of the Denver Tourist Bureau.

Mr. Bray declared that he had traveled through Continental Europe, the Orient, including Asia, China, Japan, the Philippines, and Africa, and that he had found scenery in western America that surpassed any that he had found in 200,000 feet of film taken in foreign countries.

"Nowhere in the world have I found such a magnificent opportunity to exploit unparalleled scenery as exists in the scenic West," said Mr. Bray. "No one has had the time to travel far enough to uncover the scenic treasures of this western country but I have been persuaded after visiting Denver to undertake to show in our travel weekly the scenic spots of western America."

Mr. Bray decided, partly as a matter of patriotic service, to replace the showing of scenes abroad in the Orpheum travel weekly with views of western United States. He started his campaign for movie films in the scenic West but it was not until he connected with the Denver Tourist Bureau that he found effective co-operation. Mr. Bray recently spent two or three days in Denver during which time he visited the Denver Mountain park system and the Rocky Mountain National-Estes Park. Contrary to the fixed policy of not showing city views in these pictures, Mr. Bray has consented to portray Denver, largely because of the fact that it is the gateway to twelve national parks and thirty-two national monuments, and Colorado Springs because of its being the hub of the scenery in the Pikes Peak region.

Coupled with emphatic recognition of the fact that the Denver Tourist Bureau is recognized as a leading factor in inducing travel to not only Colorado and the entire scenic West, Herbert Cuthbert, executive secretary of the Pacific Northwest Tourist Association, declared, while in Denver last week, that effective co-operation of the entire West was necessary to bring about the fullest development of western America in a tourist way as well as in the development of permanent settlers.

"There must be a cohesive organized effort to place our goods before the eyes of the world," said Mr. Cuthbert. "Our stock in trade is scenery and the scenic lure is only preliminary to attracting a permanent expanding population. It would be folly indeed to expend \$300,000 or \$400,000 in the creation of such a magnificent attraction as the Denver mountain park system and not follow it up with continued, persistent, effective publicity."

Mr. Cuthbert fills a unique field in that he is publicity manager for a community effort to exploit the scenic attractions of Vancouver, British Columbia, Washington and Oregon, in which effort he is backed by large legislative appropriations from the states named.

The annual summer drive of tourists to Colorado is under way with a large railroad travel, induced by the widespread publicity given the reduced railroad rates by the Denver Tourist Bureau, together with an unprecedented automobile travel. Check for three days at the Rocky Mountain National Park showed 1,804 automobiles from twelve states, with a largely increased number of visitors at the Mesa Verde National Park and other recuperation centers in the state over last year.

The Tourist Bureau scored a widely noticed hit by announcing to the entire country the western tourist rates in advance of information received by the railroads themselves. The active advertising campaign by the Bureau has placed Colorado practically alone among 5,000 summer rest places before the recuperation seeking public. A flood of letter and telegraph inquiries and the confusion created in railroad circles by war conditions has resulted in the establishment of a rate service department by the Tourist Bureau for the purpose of furnishing information concerning rates from all parts of the country to Colorado. The branch bureaus at Chicago, St. Louis and Colorado Springs have opened and are caring for a rush of inquiries.

700 ACCOUNTS KEPT BY DEPARTMENT.

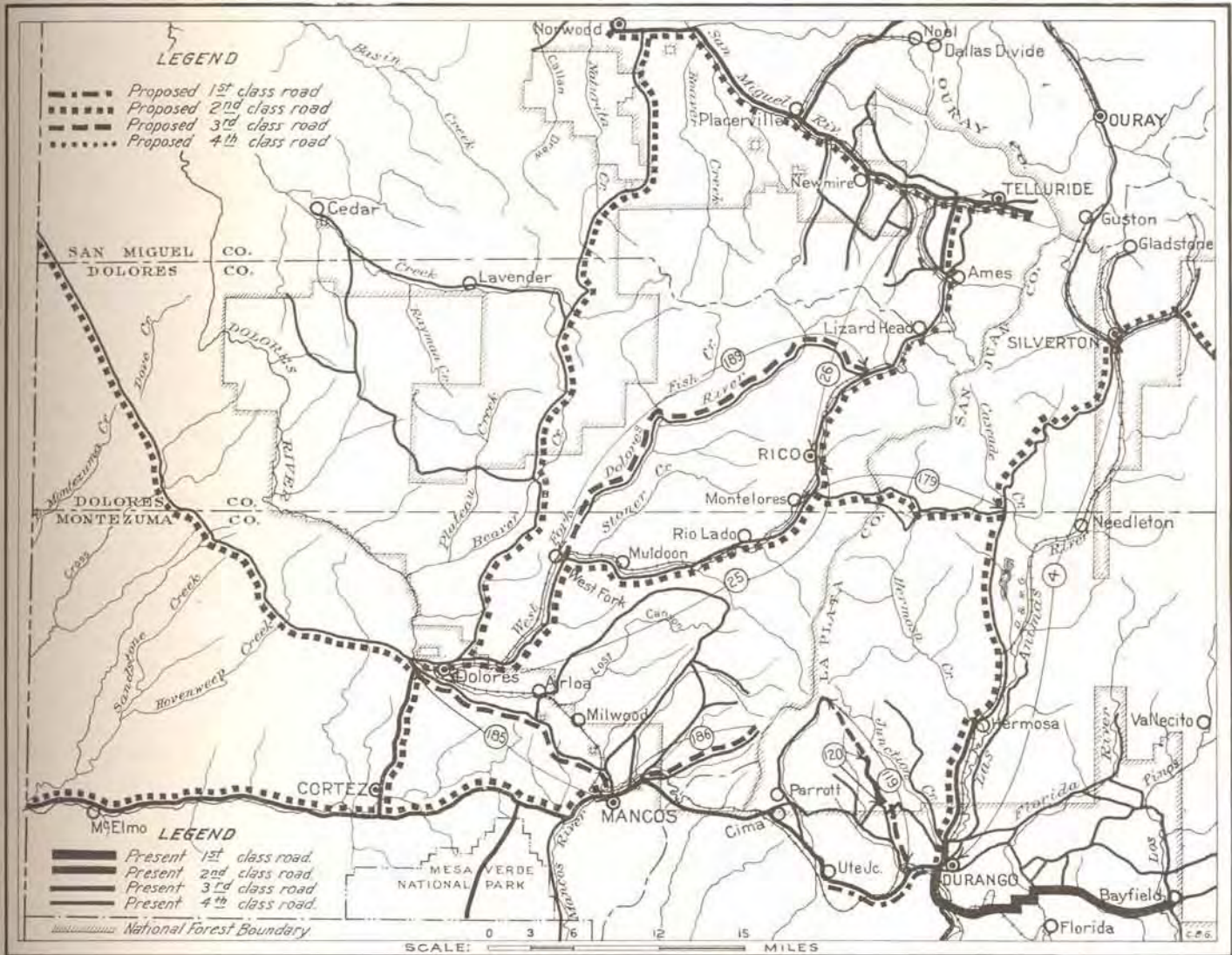
There are 700 accounts in the intricate bookkeeping necessary to the maintenance, construction and improvement of the state highway department. These include accounts with 62 counties, which are in turn sub-divided into as many as four accounts for each road in each county. In addition accounts are kept with the Public roads, Forestry and Federal aid departments of the U. S. government, and the various departments of the state government. Other branches of the work include office and field accounts within the department and accounts devoted to relations with private individuals, as the case of the purchase of materials and supplies incident to the work of the department.

Standard bookkeeping sheets are furnished to each of the counties for their accounts with the state and the imperative need of complete reports is indicated by the number of accounts, all of which inter-lock to some extent and none of which can be made accurate unless the information furnished is comprehensive in detail.

AUTOMOBILE LICENSES INCREASE.

More automobile licenses had been taken out in City and County of Denver up to June 11, than had been applied for in the entire year of 1917. Secretary of State James R. Noland reported 17,505 licenses issued at that time as against 17,083 during 1917.

U. S. Forest Service Plan for Development of Roads in Montezuma Forest



This Map Prepared by U. S. Forest Service Officials Sets Forth in Detail the Plan of Improvement of the Roads Leading to Mesa Verde Park, and Connecting All Main Points in the Forest. The Same Careful Scheme of Construction Has Been Worked Out for Each of the 17 National Forests in Colorado.

Comprehensive Plan Prepared for Roads in U.S. Forests

ACTING upon the belief that no road work should be done save upon a definite, pre-conceived plan, the engineers of the U. S. Forest Service have evolved a painstaking, thorough outline for the development of highways in the national forests which will, ultimately, throw open vast recreational areas of unsurpassed attractions to visitors in Colorado.

While much of the work remains far in the future unless larger appropriations are made by the U. S. government, a little is being done each year and because of careful plans which have been made, that little will all have its part in the final completion of the work.

Thousands upon thousands of acres of land in the national forests of Colorado are today practically inacces-

sible to the tourist. Included in them are some of the finest game and fishing preserves in the country, scenic wonders that eclipse many of those now known throughout the world and every conceivable attraction to the lover of out door life.

The area is embraced in seventeen national forests in this state and in each of them some work is now being done to open up the hidden beauties. The map which accompanies this article gives a graphic idea of the plan in Montezuma forest.

Here, in co-operation with the state, the U. S. service is pushing roads along the plan outlined in the map upon the theory long since adopted by the state highway depart-

(Continued on page 20.)

Auto Thieves Ltd. and Subsidiary Companies

By William J. Barker, President Denver Motor Club

THERE is no record at the Secretary of State's office of the above parent company and its subsidiaries ever having applied for a charter; nor are these companies incorporated or their operations in any sense "Limited" as the title would indicate.

In 1917 there were 740 cars stolen in Denver, 123 of which were never recovered.

From January 1st to June 4th of the present year there have been 464 cars stolen in this city, 73 of which were still "out" on the last mentioned date.

Inasmuch as the above named thriving companies operate at their fullest capacities during June, July and August, it may be readily seen that this year's record bids to far outstrip that of 1917. Estimating the value of cars stolen at an average of \$750.00 apiece, the thieves in Denver have to date made away with \$350,000.00 worth of property, and, with 73 cars unrecovered, \$33,872 worth of property is still in their possession or has been sold to innocent purchasers. Added to these amounts are thousands of dollars paid out by the insurance companies for reimbursements in the case of total loss and for repairs and damages, in most cases, where cars are recovered.

How to stop this wholesale thievery is a question puzzling not only to the Police Department and Courts of this State but to those of every other city and state in the Union.

Some cities have already adopted what is known as a locking ordinance that requires owners to lock their cars when leaving them alone. Such an ordinance the Denver Motor Club will shortly endeavor to have passed by the City Council. Still other communities require a man to show a deed and abstract of title when selling a car, very similar to that which accompanies the transfer of land.

Much has been said and written about the automobile thieving business and how to handle the thieves when caught. In the first place, comparatively few arrests are made, owing to the fact that cars are abandoned by those who steal them. Where a thief is caught it has been the history of such cases, in Denver at least, that in 75 per cent of the cases the thieves go scott free or with a reprimand. The reasons for this are several; first, the cars that are stolen by "Joy Riders" are generally taken by boys under 21 years of age,—in many cases the sons of more or less prominent families. Their fathers or relatives appear; offer to make good the amount of damage done; plead with you that Johnny has never done anything of the kind before; that the reform school would make a confirmed criminal of him; and finally you, Mr. Car Owner, consent to withdraw the charges, especially if the car has been put in as good or better condition than it was before the theft, by the parents or insurance companies. Denver's Police Court record shows comparatively few convictions where

thieves have been caught in this city. The District Attorney complains that the owners will not stand back of him for prosecution. The Police Department claims that a conviction is almost impossible where the car is not stolen with the intent to sell again; and not unfrequently of late the comment has been heard that the only way to handle the "Joy Riders" or "Professional Thieves" is with the old effective method used in handling horse and cattle rustlers in the days when Colorado was young.

The activity of the "car rustlers" is not confined to Denver-owned by any means. Of late the thieves have been especially attentive to the cars bearing license numbers above twenty thousand, or "State Cars." Twenty-eight cars from Colorado cities other than Denver, were stolen between Jan. 1, 1918, and June 4, 1918, and up to the latter date only seven were reported as recovered.

It behooves "out of town cars" to seek a garage while visiting the capital city and their owners to take the precaution of removing the distributor brush or installing some lock more effective than that on the ignition.

FOOTING FOR UNCLE SAM'S PACK MULES.

THE war is teaching us what can be done with automobiles, and this whole country is going ahead to put better roads under their tires. If present plans are carried out, 1918 will see over \$250,000,000 spent on our highways, a total more than 80 per cent above the previous high mark. Despite the war scarcity of capital, Texas is going to put \$25,000,000 into improved roads this year, as compared with \$5,000,000 last year. Arkansas has gone up from \$4,000,000 to \$12,000,000. In Oklahoma, Tulsa county (the center of the oil region) is spending \$1,750,000 on weatherproof highways. Iowa is duplicating last year's investment of \$15,000,000. Iowa can certainly afford it, the way the price of corn keeps soaring, and thirty millions of real money ought to take the slithers and sludges out of some of the main trails through the corn belt at least. The rest of the country is not lagging very far behind the Middle West in this matter, for railway blockades and embargoes on needed freight have convinced most of us that transportation is not a luxury even when gasoline is burned to obtain it. Uncle Sam has to get in and out of his cantonments, shipyards, training camps, arsenals, and warehouses, and is putting up his share of the costs. Of course there are some belated brothers who cannot see the sense of such improvement, as witness that odd bill introduced in the New York Legislature to forbid five-ton government trucks from using certain state highways; but these curios only illustrate the general progress. Most of us know that the automobile can pull its share of the load in our war and are willing to give it a chance. The Kaiser is about the only one who really wants bad roads in our U. S. A.—Collier's Magazine.

COLORADO AUTOMOBILE RECEIPTS, 1917.

During the year 1917 the sum of \$305,391 was collected from automobile licenses by the state. Of this amount \$137,558.61 was given to the counties and a like sum to the state highway department for use in road work, the remainder, \$30,273.78, being expended in the cost of collection.

Over the Spanish Trails to Mesa Verde Park

FAR off on the southwestern edge of the state stands Treasure Mountain. Crowned by dazzling layers of snow the year round, the old peak looks down upon the tip of the San Juan basin to the west, while to the east its waters tumble into the fertile San Luis.

Far back in the sixteenth century bands of Spaniards, ever searching for the fabulous golden cities of Colorado and the northern country, worked their way thru the valleys along the San Juan and on around the foot of Treasure mountain to the San Luis. No trace of the golden loot was discovered yet, instead, gold and silver were lodged in the mountains while the valleys offered endless wealth to those who cared to till the soil.

At the southern side of the mountain were the healing waters (Pagosa Springs). Here the Utes assembled yearly to bathe in the warm waters and cure their ills.

White men visited these springs and heard tales of wonderful cures; Mexicans carried the stories to the missions in New Mexico, yet so stirred was the imagination of the adventurers of that age that nothing save virgin gold could catch their attention.

Years later Lieutenant Pike and his expedition penetrated thru into the country but playing their part in the Burr conspiracy (as historians tell us) they gave little heed to the wonders resting about them, and it was not until comparatively recent times that actual settlement of the fertile regions began.

Then again it was gold that brought about the rush; this time, however, the gold of the hill. Del Norte at the foot of Treasure Mountain on the east was settled as distributing point for the San Juan mining camps; Pagosa Springs came to life as the home of huge lumber camps and later as a cattle and farm country; Mexicans entered the country in droves to take up farms and to go into the stock business.

As the country became more settled railroad loops were built and with the teaming business quieting down, Del Norte and Pagosa settled down to the business of farming.

Now the cycle has moved around again, good roads have opened up direct routes, the famous Wolfe Creek pass highway has been completed across the range and once more these towns are on the direct route of travel and destined soon to become famous among globe trotters as terminal points of the great pass.

Today travelers in ever increasing numbers are going over the pass entering the state from New Mexico on the south, from California on the west, going to the pass via Pueblo from the east and from Saguache on the west. The Mesa Verde with its historic ruins is one objective, the entire state may be the other. The trip today is one of the finest Colorado affords. Another year when the Durango-

Silverton link is completed, it will be the world's greatest, on the authority of noted travelers.

The Coloradoan who desires to see this country must enter it from one of two points today—La Veta pass which lies to the west of Walsenburg and south of Pueblo, and Saguache, to which point the traveler may come from Pueblo or Colorado Springs via Canon City and Salida, from Denver and points north, or from the Gunnison and the western slope.

Most automobilists prefer to take circle trips and it will be from this standpoint that the trip will be here described.

The main line point first reached on the route whether the traveler comes from the east or the north is Pueblo on the main north and south highway.

Traveling over the finest roads the state affords, the automobilist cuts straight to the south to Walsenburg, traveling for first block along fine farms in sight of the Greenhorn range with the Spanish peaks far to the southwest. At Greenhorn crossing where stands an old well that was used by the early freighters to water their stock, a first glimpse of the back range, the famed Sangre de Christo mountains, is obtained and as the traveler goes on, he swings into the mesa country where lies Huerfano county, so called because of the Orphan Butte which stands alone on the plateau giving county and creek their names, and long ago used as a landmark by the pioneers.

Over the hills and down in the valley is found Walsenburg where are some of the largest coal mines in the state. Here the automobilist leaves the main highway and turns on the Spanish Trail to the south toward La Veta. Sage brush marks the way with here and there stock grazing on the hills and the Spanish Peaks towering up to the left.

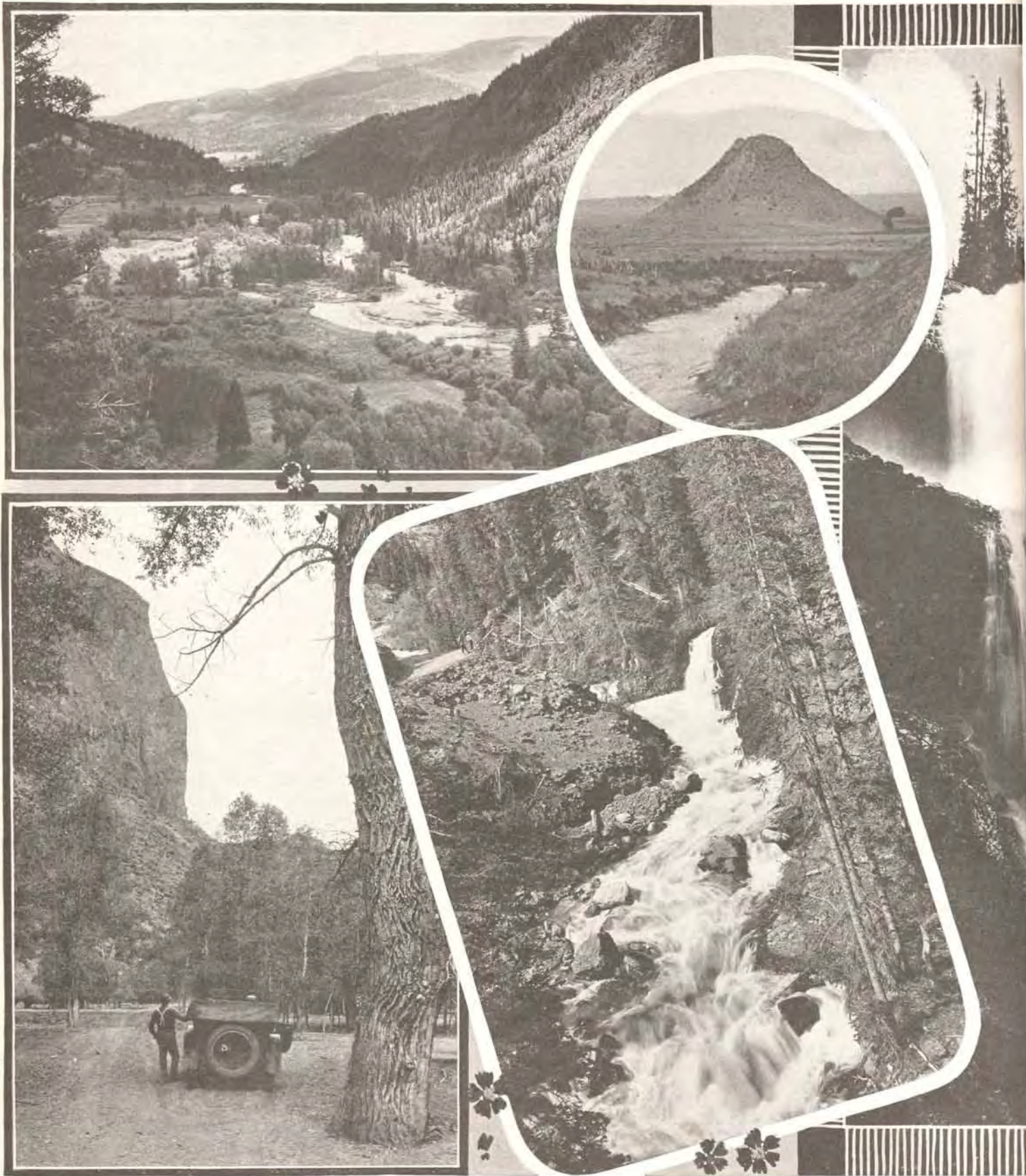
La Veta, along which runs the Cucharas creek, is reached and with it the gateway to La Veta pass, one of the most accessible and most easily traversed of all Colorado's highways over the divide.

Old Baldy mountain greets the traveler as he enters the pass and driving along a way lined with scrub oak, he goes over the abandoned narrow gauge railroad around Muleshoe bend over South Abeta creek to the heights beyond, where clusters of fine pine trees and groves of beautiful quaking asp everywhere meet the eye. Snow roads have been built out along the road to accommodate the winter traveler, but in summer the nearest drifts are several hundred feet above the road, dense vegetation everywhere mantling the hills.

Far in the distance appears Sierra Blanca with its striking rock effects and from this point on the great old mountain is never lost to sight. The junction of broad and narrow gauge railroads is met and for miles the highway skirts along the edge of the Trichera estate, one of the old

(Continued on page 14.)

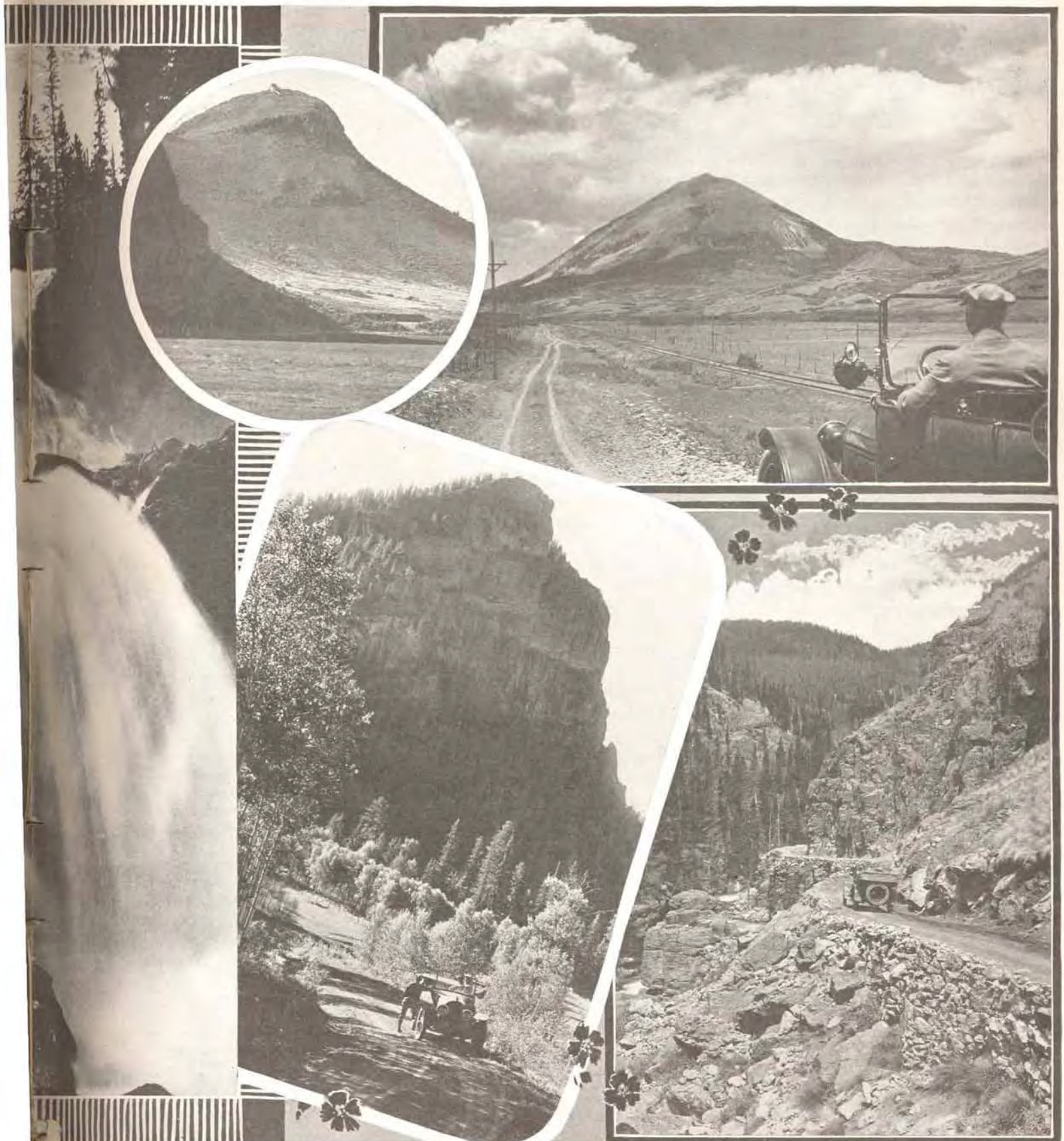
Rushing Streams Fresh From the Snow Lands Greet the Traveler



Striking views along the Spanish Trails highway leading from Pueblo across the state via the La Veta and Wolf Creek passes. The highway traverses the fertile valleys of the San Luis and the San Juan. At the top, left, is shown a scene on the Wolf Creek pass in Rio

Grande county. At the right appears a view of La Veta peak marking the entrance to the pass. The huge waterfall in the center is found on Wolf Creek, while the circles are views of the Orphan Butte which Huerfano county takes its name, a famous old land mark

Who Makes His Way Along the Spanish Trail Over Wolf Creek Pass



early days and (right) the old observatory of the College of the Southwest which sets on the heights above Del Norte. The views at the bottom are, left to right, Wagon Wheel Gap, where Lieut. Pike once rested in Mineral county; A typical scene in Wolf Creek pass, show-

ing stream, road and peaks; Indian Head cliff near Pago Springs, Archuleta county, marking the western entrance to Wolf Creek pass; and a view of the shelf road over the pass. Photographs taken June, 1918, by K. P. Howe, staff photographer for Colorado Highways.

A Trip That Will Delight Every Traveler

(Continued from page 11.)

Spanish land grants now used as a game preserve where may be seen buffalo, deer, elk, and other wild animals roaming about at their leisure behind heavy wired fences.

The San Luis Valley lies before the western entrance to the pass and for miles the car speeds on its way between bountifully irrigated farms, thru Garland where stood the old fort of Indian days, thru Blanca and on across to Alamosa and the Rio Grande river.

Here the traveler may make a diversion if he sees fit, along the road to New Mexico to Taos and Santa Fe. This was the route that De Vesca and his band are assumed to have traveled in 1528 and the district is rich in stories of those early days, as it is rich today in sheep, cattle and farm produce.

Leaving Alamosa, still in a westerly course, the Spanish Trail traveler proceeds across the valley to Monte Vista, on one side of him the beautiful rugged lines of the Crestone peaks with Blanca in the background, in front of him in the far distance La Garita range to the right, and the Hog Back mesa and the San Juan range to the left. Monte Vista with its miles upon miles of irrigated farm lands is passed and Del Norte comes into view and with it the entrance to the back range.

The road enters the Rio Grande forest and at the south fork of the Rio Grande the machine turns to the left to begin the ascent of Wolf Creek Pass, one of the most remarkable road engineering feats of modern times as well as one of the most beautiful of all Colorado's passes.

High cliffs tinted with brilliant reds and vivid greens guard the entrance to the pass and as the traveler passes them his car begins to climb along a narrow shelf road high up on the hill sides. Far below the creek winds and bends along and while the roadbed is solid and perfectly safe, the automobilist bending over is treated to a decided thrill.

Thru a way lined by stately Douglas firs and Western yellow pines, past Engleman spruce the road goes, bending and turning in fantastic contortions that a moderate grade may be maintained. Again the creek forks and still the car climbs. The rush of waters increases and water falls are seen on all sides dropping from ice caps and fields of snow to the creek bed. Everywhere trees and flowers are in abundance and the heavy snows confined by them make the pass one which for water effect cannot be equaled in the West.

The summit of the pass is attained at an elevation of 10,800 feet and here the traveler may step out into snow drifts carefully swept from the road to register his name with those of travelers from all parts of the United States.

The South Fork source is reached and from this point on to the foot of the pass it is Wolf Creek which keeps the traveler company on his way. The western side of the slope is somewhat the steeper and surpassing views are to

be had as cliff after cliff of striking color comes to view. Sheep mountain guards the Western entrance and with it Indian Head, a remarkably life-like reproduction of a warrior's face. The San Juan river is crossed, cattle are seen grazing along the road, the lumber mills come into view, then Pagosa Springs with its hot springs.

Here the traveler may go on to Durango and the Mesa Verde (to be described in a later issue) or he may divert thru Cumbres pass to Chama and New Mexico.

On his return if he seeks eastern Colorado he must retrace his steps over Wolf Creek to Del Norte from which point he may take the foothills route to Saguache or go on to Monte Vista there to take the Gun Barrel road to Saguache or go on back direct to Pueblo via La Veta.

If he goes to Saguache (the Gun Barrel is being repaired now) he will find a delightful town situated at the foot of the Cochetopa hills. Turning northeast, he may speed along one of the finest roads in the state in the shadow of the range whence a view of unusual beauty is had all the way. Thru Villa Grove and on up to Poncha Pass the highway takes him into Salida where the College Peaks come into full view. Few trips are the equal of this drive anywhere.

From Salida the Hard Pan Triangle trip may be made direct to Pueblo via Canon City, to Pueblo via Ute Pass and Colorado Springs, to Denver via the Turkey Creek, or to Leadville and points beyond via the Holy Cross way. In any instance fine roads, fine scenery and comfortable travel await the traveler.

TRAFFIC POLICE IN MOUNTAIN PARKS.

The day of the mountain park speeder and automobile road-hog is done, according to an announcement from James R. Noland, secretary of state. While the city owns and maintains the mountain park drives, its officers have no jurisdiction there in the way of arresting violators of the automobile laws. The secretary of state maintained inspectors there last summer, but they were without police power. They accomplished good results, but as they could not make arrests these results were not permanent.

Under an arrangement just agreed upon between Mayor Mills and Superintendent Adams of the state constabulary, members of the state police are to be stationed on the mountain drives with due authority to arrest all violators of the automobile laws.

Mayor Mills, Superintendent Adams and Secretary Noland will work in harmony with the view to so regulating traffic that a drive through the mountain parks will be a real pleasure.

CITY PROVIDES NEW CAMP.

Forty tents have been placed in Genesee park by the city for use by automobile tourists. An electric line has been run to the camp and free water and light will be furnished all tourists. Use of the camp is free in its entirety for a two-week period.

West Needs Interstate Military Highway

By W. H. Emmons, Secretary Rocky Mountain Military Highway Association

THE good roads enthusiast, who a few years ago was looked upon by his fellow men as more or less of a dreamer, is today regarded as the pioneer in the preparedness movement. This has been proven in France and the countries of Europe where the good, permanent roads have proven a great factor in the military operations of the last three years.

Those men now back of the movement to build a national military highway from Montana to Texas, thru the states of Wyoming, Colorado and New Mexico are the ones who have been talking and urging good roads in their respective states for many years. Today the movement which they have been so consistently urging all these years, is assuming a far greater importance than ever before.

The Rocky Mountain National Military Highway Association was organized in Denver just a year ago. At the preliminary meeting delegates were present from all the states interested, and a temporary organization was then formed. Until within the last six weeks it was not felt that the time had arrived for active work. Now such a time has come. The railroads of the country have proven inadequate to the handling of the great amount of traffic which must be moved on account of war conditions. Already in some sections of the country the motor truck is regarded as a permanent means of moving freight, and in order to move this freight quickly and cheaply, good roads are needed.

There is no section of the country that offers the resources that does that territory included in the states mentioned. The government has today in each one of these states, great army posts, headquarters depots as well as other great industries, all of which have their part in the successful conclusion of the war. A great highway run-

ning from the Canadian border on the north to the Mexican border on the south would not only connect these army posts and kindred points, but also permit of the quick transportation of troops, supplies, etc., in addition to opening up an immense territory from which grain, cattle, iron and in fact almost everything needed can be drawn in almost unlimited quantities.

Already the attention of Congress has been called to the importance of these military highways, and it is the aim of the Rocky Mountain Military Highway Association to first enlist the support of every state thru which this proposed road passes in the construction of this highway. One of the first steps to bring about this will be the holding of meetings in Montana, Wyoming and New Mexico, and in Colorado, probably at Ft. Collins and at Trinidad in order that local organizations may be formed which will aid the larger body.

The second step will be to enlist thru the support derived from the cities and towns of these states, the support of the members of Congress from the states in order that the government may first of all send a commission here to look into the necessity of this route, and have engineers map out the line. If this can be accomplished we believe that the results sought, viz., the construction of a permanent road north and south, will be secured.

The Association has already prepared some maps and other data which show the proposed route, the territories to be reached, the resources which will then be quickly available for government needs, and copies of these will be sent to any one interested on application either to T. J. Ehrhart, State Highway Commissioner, Capitol Building, Denver, or to the Secretary at 415 Chamber of Commerce Building, Denver.



At the Foot of the Quaking Asps on the Wolf Creek Pass Road in Rio Grande County.

COLORADO HIGHWAYS BULLETIN

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

Vol. I.

July, 1918

No. 2

TRANSPORTATION COSTS.

NO road is of economic value to the community unless the reduced cost in transportation resulting from its construction is sufficient to equal a fair return on the investment year by year. In other words road accounting must be placed on the same basis as that of railroad construction in which an account called operating income shows the reduction in costs year by year as income produced by the improvements.

The enormous increase in highway transportation has so outstripped the bookkeeping department that there is today no known system which accurately shows the economic value of a highway.

As a result the evident fallacy of confining estimates of costs of transportation to overhead and depreciation charges of the vehicle driven, has become general, yet ultimately the cost of road construction and maintenance falls back directly upon the traveler in his capacity as a taxpayer as well as upon the ultimate consumer of goods carried over the highway.

No table of highways transportation costs can be complete unless this very important item is taken into consideration. And when it is the statistician will find that his estimate of road appropriations has not only been inadequate, but that its inadequacy annually costs the community loss in transportation costs of surprisingly large sums.

THE COUNTY COMMISSIONERS.

High up in the mountains, far out on the fringe of the eastern wheat fields, in the fruit districts and where the miner's tools ring out against coal and precious metal ores, the county commissioners of Colorado are doing their "bit" to keep the highways open for travel.

Ofttimes the passing automobilist encounters them at the head of road crews grimed by the dust of the road. Again they are to be found wrestling with knotty problems of construction or engaged in hot debate with property owner who fails to recognize the value of a highway thru his land.

These are the men who are the backbone of the good-road movement in the state and too often, the citizen "lying upon a silver bed, dreaming dreams of gold," forgets the progress made by them in the brief span of years which separates the era of good highways from that of cow trails and wagon ruts.

The heritage of good roads which they leave, will be their monument.

ROAD METAL.

One of the most expensive items entering into the cost of road construction is that of the road metal or surfacing material. Where hauls of any length are required, the figure for this work frequently runs into sums that have a very material effect upon the final expenditure.

Generally speaking, Colorado has less difficulty in this regard than most of the other states of the Union. Good gravel abounds, but sometimes test pits are not sunk to as great a depth as they should be before the trial is given up.

In other instances it is cheaper to purchase an abutting piece of land outright where the owner objects to use of his gravel, than to attempt hauls of any distance.

Consideration of these two facts by contractors will sometimes keep their costs down, give them better metal and enable them to proceed more promptly in their work.

SPEED "FIENDS."

The day of the foolhardy who delight in testing the speed of their automobiles on mountain roads, should be ended. The man who endangers his own life might be permitted to do so were it not that he jeopardizes those of other and saner individuals.

Colorado needs a stringent law which will place a heavy penalty on all who offend and the statute should be in effect when the 1919 season begins.

"PERMANENT" ROADS.

There are no permanent roads. Truck traffic demolishes the heaviest concrete highway within a year while a day of continuous travel of heavily-loaded, narrow-tired wagons, plays havoc with a graveled surface. The most lasting form of surfacing known today is vitrified brick and haulage costs makes use of this prohibitive in most sections. Continuous and thoro maintenance is the only way in which a main thoroughfare can be kept up to standard, regardless of the kind of metal used in its construction.

\$322,239 Awarded to Roads Near Denver

THE sum of \$322,239.42 will be expended by the county, state and national governments on roads adjacent to Denver during the present season according to estimates made by officials of the state highway department. The figure includes the special state project known as the Fall River road, which will give travelers a round trip through the Grand Lake-Estes Park country from Denver, on which \$24,000 will be spent; the Denver-Littleton Federal Aid concrete road which will require \$84,196.42; and Sedalia-Decker Springs cut-off to Cripple Creek from Denver which, it is estimated, will cost \$24,418.

Of the total amount \$49,407.49 will be contributed from the U. S. Public Roads and Forestry funds; \$242,581.93 will be furnished from the state highway fund; and the remainder, \$30,250 will be supplied by Adams, Arapahoe and Jefferson counties.

The total revenue from the half mill levy from Denver, Adams, Jefferson and Arapahoe counties is \$183,035, hence the total expenditure is about 90 per cent in excess of funds supplied by this section. The expenditure by the state alone is \$59,546.93 in excess of the levy from these counties.

The entire appropriation with the exception of the special projects mentioned, will be devoted to the betterment of main highways out of Denver, including grading, maintenance, elimination of curves and construction of concrete culverts and bridges.

The report in detail is as follows:

ADAMS COUNTY—On Road 2 from the city limits on Boulevard F north to Broomfield, \$35,400 has been apportioned. This sum was set aside to defray part of the expense incident to the re-grading, draining, and applying of Tarvia on a three and one-mile stretch. Of this sum a balance of \$11,700 will be expended on concrete approaches to the new bridge across Clear Creek and to re-grading and re-surfacing of the highway from the end of the Tarvia stretch to Broomfield, as well as for the second application of Tarvia. All told four applications of Tarvia will be necessary to complete the road, one of which has already been placed, while the other three are to be applied at one-year intervals.

From Bennett north to Watkins on Road 7, \$4,440 has been set aside for graveling.

The sum of \$23,660 has been apportioned for use in re-grading and putting down concrete on a stretch of 1.7 miles commencing at the subway and going north on the Brighton road, No. 49.

Maintenance on all state highways in Adams, Arapahoe, Jefferson and Douglas counties will be taken care of from an appropriation of \$33,000 set aside for equipment and operation on roads adjacent to Denver.

ARAPAHOE COUNTY—On Road 7 near Watkins, \$1,375 has been set aside for graveling.

On Road 31, between Strassburg and Limon the sum of \$4,500 has been set aside for graveling.

On Road 3, \$750 has been set aside for maintenance on the road from Denver to Wolhurst.

The further sum of \$46,997.93 will be expended by the state on laying concrete on the stretch between Denver and Littleton under the Federal Aid act.

JEFFERSON COUNTY—On the South Golden road, state route No. 62, \$32,834 has been set aside for the completion of the grade, putting in of bridges and culverts and laying of concrete, to complete the hard surface road from Denver to Golden.

On the North Golden road route No. 1, \$4,004 will be used for scarifying and re-surfacing.

On Road 27, \$10,260 has been set aside for the purpose of eliminating curves and leveling up the grades from Denver to Morrison.

On Road 35, \$2,000 has been set aside for improving the grade from Morrison to Conifer through Turkey Creek.

The further sum of \$2,052 has been set aside for maintenance of roads 21 and 27, included in the mountain parks system.

MISCELLANY—The sum of \$24,000 has been set for the special state project known as the Fall River road. This provides for construction of three miles of road at the head of the Fall river to the Poudre river and is in addition to two other contracts for stretches of road on this highway, now in force.

The sum of \$12,209 will be expended by the state on the Federal Aid project from Sedalia to Decker Springs.

A concrete bridge has been constructed at Morrison at a cost of \$4,500 during the year.

ANCIENT ROAD BUILDERS.

When or where the first road was built is not known. Herodotus speaks of a great Egyptian road on which King Cheops employed 100,000 men for a period of ten years. According to the historian, this road was built of massive stone blocks, 10 feet deep, lined on both sides with temples, mausoleums, porticoes and statues. The streets of Babylon are said to have been paved as early as 2,000 B. C., and several well surfaced roads radiated to the neighboring cities. Carthage, before its fall, was the center of a highly developed road system. The ancient Peruvians had a wonderful system of national roads connecting all the principal parts of their empire.

Bridges were also built by the ancients at a very early date. The Euphrates, at Babylon, was crossed by a stone bridge prior to 2000 B. C., and it is known that the Chinese built bridges as public works as early as 2900 B. C.—Good Roads Year Book.

DO NOT LEAVE DIRT ON CROSSINGS.

Carelessness in leaving dirt and stones on railroad crossings has caused serious alarm of maintenance of way departments of the railroads, says the Iowa Highways Bulletin. The dirt and stones fall between the planking and dirt and in the end a situation arises which might easily cause the derailment of a train.

Highway Department Rules on Expenditures

Adopted at Meeting of Dec. 17, 18, 19 and 20, 1917, under authority of Sec. 5, Article II, of the Highway Law, Approved April 20, 1917.

1. **DEFINITIONS.** In work on State Highways and State Routes, "Construction" includes the cost of all labor, materials and supplies used in the original building of the roadway and its appurtenances, including clearing, grading, ditching, fencing, bridges, culverts, retaining and protecting walls and other structures forming a part of, or appurtenant to, the roadway, and surfacing the roadway, and also the cost of rights of way, legal services, supervision and other necessary overhead expenses connected with such work.

"Construction" also includes the cost of all labor and materials used in adding to the original value, when new, of the roadway and its appurtenances, in the form of betterments and improvements.

"Maintenance" includes the cost of all labor, materials and supplies used for restoring, or tending to restore, the roadway and its appurtenances to their original condition or value, when new, including dragging, grading, resurfacing and repairs to bridges, culverts, walls and other structures, and all overhead expenses involved in such work.

The cost of replacements of roadways, bridges, culverts and other structures appurtenant to the same, is included in Construction or Maintenance, according as such replacements add to the value, when new, of the roadway and its appurtenances, or merely restore, or tend to restore, the same to their original condition or value.

When replacements add to the original value, the part of the cost representing merely restoration of original value is chargeable to Maintenance and the balance to Construction; as, for example, when a wooden bridge is replaced with a more expensive and more valuable concrete bridge, the part of the cost represented by replacement of a wooden bridge of the original type is chargeable to Maintenance, and the balance of the cost to Construction.

"Equipment" includes all machines, tools, horses and other animals, tents, apparatus and appliances owned by the Department and used for work on State Highways and State Routes. The use of such Equipment, including the cost of operating the same and a reasonable allowance for interest, depreciation and wear and tear, is chargeable to Construction and Maintenance, in proportion to its use for each of the same.

2. **FUNDS.** All funds appropriated by the State Highway Commission, for the construction, improvement and maintenance of Highways shall be expended under the direction and supervision of the State Highway Commissioner.

3. **CONTRACTS.** All contracts for work upon State Routes or State Highways which is paid for entirely from the State Highway Fund shall be advertised and awarded by the State Highway Commissioner at the office of the State Highway Commission in Denver, or the work may be done by day labor under the immediate direction of the State Highway Commissioner, if the Commission shall so direct.

4. **ADVERTISEMENTS.** All work upon State Routes or State Highways the estimated cost of which shall exceed \$3,000.00 shall be advertised for contract by the Board of County Commissioners of the County in which the work is located, if the County contributes to the payment, or by the State Highway Commissioner, if the State pays the entire cost of the work.

Such advertisement shall be placed in one paper published daily in the City of Denver and shall run for fourteen issues prior to the letting of the contract, and the advertisement may also be placed in one paper published at the County seat of the County in which the work is to be done, for two issues, one each week prior to the letting of the contract, if so ordered by the Commission, or the Highway Commissioner.

5. **BIDS and CONTRACTS.** If the bids received do not exceed the estimated cost by more than ten per cent. (10%) the contract shall be let to the lowest responsible bidder.

If the bids exceed the estimated cost by more than ten per cent. (10%) all the bids shall be rejected, and the work may be readvertised, or it may be done by day labor, or by convict labor, or the Highway Commission may contract with the County to do the work, as the State Highway Commissioner and the Board of County Commissioners shall decide. In case of any disagreement as to the method to be adopted, the work must be readvertised, and let by contract, except as noted in Rule 3.

6. **APPROPRIATIONS.** Appropriations by the State Highway Commission are made in specified amounts to certain designated State Routes or State Highways, or sections thereof, and the amounts so appropriated together with the amount pledged by the County must be expended upon that particular piece of work and cannot be used elsewhere, unless the State Highway Commission shall give its approval in writing to such change in the expenditure of the appropriation, but no such approval shall be given which involves a departure from the terms of the State Highway Budget then in force until a proper amendment is made in the Budget.

7. **BUDGETS.** Appropriations are made by the State Highway Commission in accordance with the budget for each year, adopted in pursuance of Article V of the Highway Law, and it is necessary for the Counties to have their budgets for work upon State Routes and State Highways in the office of the Highway Department on or before November 15th of the preceding year, in order to obtain consideration in the making of the State Budget.

8. **PAYMENTS.** Where work is done by the Counties under the terms of the appropriations made by the State Highway Commission and of agreements entered into by the Counties, the County shall pay for the total cost of the work by voucher and warrant, and the County Clerk shall file with the Department his certified statement each month in duplicate, following the forms prescribed by the Commission, giving the date, voucher number, name, service rendered or material furnished and amount of voucher. A voucher for the State's portion will be made out and the amount forwarded to the County Treasurer by the State Auditor, as soon as practicable after receipt of the Clerk's statement.

9. Payments by the State Highway Commission to the Counties will be made only upon certified statements in duplicate, under signature and seal of the County Clerk, and the County Clerk shall furnish the State Highway Commissioner copies of any original bill or voucher when called for.

10. **BRIDGES.** No payment will be made by the Department on any bridge unless the plans and specifications for the same have been approved by the State Highway Commissioner before the letting of the contract is advertised.

The type of bridge must be decided upon before asking for bids, and proposals must not be received upon more than one plan if any payment from the State Highway Fund is expected.

11. **SEAL OF COMMISSION.** The seal used by the former State Highway Commission, with the change approved by the Commission, and now in the office, is hereby declared to be the official seal of the Department, and is to be affixed to all contracts and agreements entered into by this Department.

Extract from the minutes of a meeting of the State Highway Commission held on Tuesday and Wednesday, May 15th and 16th, 1917:

"In accordance with paragraph 1 of Section 5 of Article II of the Highway Law, the regular meetings of the State Highway Commission shall be held at the office of the State Highway Department in Denver, on the second Mondays of the months of January, April, August and November of each year at 10 o'clock in the forenoon."

District Engineer R. E. Pratt of the U. S. Forest Service, has been active in preliminary work on roads in the national forests. Recently he made a trip to Wyoming to take up work on forests in that state.

Engineers from the U. S. Office of Public Roads have been in the field a good part of the month in this state and in others under the immediate jurisdiction of the Denver branch.

MILES OF ROAD IN COLORADO.

The total mileage of all highways in Colorado is 40,067. Of these 7,083.49 miles are state highways.

FEDERAL AID PROJECTS.

Six state road stretches have been approved by the U. S. government under the Federal Aid Road act, while others are now under consideration.

Road Work and Road Builders the State Over

COMMISSIONERS Borzago, McKay and Hughes of Gilpin county and residents along the Coal Creek highway have been in conference with Commissioner Ehrhart over a survey and estimate furnished by Engineer Boles of Boulder county, calling for the completion of a link of four miles which would make the entire road available for traffic from Denver thru to Rollinsville and Nederland. Plans for making the road trable this year were discussed.

Commissioner Burns Will of Boulder, was in Denver recently discussing elaborate plans for road betterment which he and Commissioner Miller have undertaken this year. Graveling of the north and south highway from Broomfield to Lafayette is included in the work, the improvement to follow work now under way from the Tarvia stretch to Broomfield.

Commissioner Bob Young of Huerfano, has the road to the top of La Veta pass in first-class condition for travel.

Lewis R. Glenn, son of Commissioner Glenn of Chaffee, has been summoned to Mare Island for naval service. Mr. Glenn now has two boys in the service.

Chief Engineer James E. Meloney, who suffered from a severe attack of erysipelas following his trip to the southern part of the state, is again at his desk.

Road Superintendent Froelick of Lincoln county, was in Denver recently to take up plans for road improvement in his county.

George S. Clason, who returned recently from a trip thru the east, says that highway conditions generally in the east are serious owing to the heavy motor travel, which has torn up the roads generally.

Commissioners Headlee, Wallrich and Lake of Alamosa, have purchased a new truck for road work.

The diagonal mile and a half of road on the Morrison highway has been graveled by the Arapahoe commissioners. Work is also being done on the road from Petersburg to Ft. Logan, and on the highway near Byers.

Commissioner Philbin has finished work on the temporary bridge across the Arkansas at Salida. Work on the permanent structure has been interfered with somewhat by high water, but is now being rushed thru.

The commissioners of Conejos are improving the road from Alamosa south. They are also interested in seeing work started on the Cumbres pass road, preliminary surveys of which were run last year.

Pueblo and Crowley county commissioners are pushing the establishment of the road on the north side of the Arkansas river from Ordway to Pueblo.

The LaVeta pass road thru to Fort Garland has occupied the attention of the Costilla County board.

Commissioners Kettle, Beck and Barton of Custer, are working on the Hardscrabble road from Silver Cliff to Florence.

The road to Grand Lake and that over Rabbit Ear's Pass are holding the attention of the Grand County commissioners.

Work covering a mile of the road between Lake City and Creede is now under way by the Hinsdale board.

The Mineral commissioners are working on their road from Rio Grande county to Creede and will soon have a standard highway there.

The Ouray commissioners expect to have the bridge recently washed out on the road from Ouray to Ironton, replaced shortly.

The Pitkin board is just beginning work on the Independence pass road. The point of construction is well up to the top of the pass and weather conditions have been exceedingly unfavorable for work.

Routt county is working on the road from Steamboat Springs west to Craig and from Steamboat south to State Bridge.

Commissioners Scott and Young of Las Animas and Huerfano counties were in conference in Trinidad last month looking over the surveys for the new Federal Aid road between Walsenburg and the state line.

State Road Inspector W. R. Allred has been out on a trip looking over work of reconstruction of bridges recently destroyed in Perry park.

State Engineer Roy Randall has been supervising bridge work at Boyero in Lincoln county.

Numerous letters from road workers, professional and otherwise, have been received by the department since the appearance of the first issue of Colorado Highways. Readers of the magazine are urged to send in road data, personals, pictures, and anything that will be of interest to the men of the road.

Chief Inspector Whitmore has the outfits under his direction working on the Cherry Creek road, the Boulder road just north of Denver, and the North Golden road. Another team outfit is hauling slag from the slag dumps at the old Grant smelter to the Clear Creek bridge, where filling-in work is in progress. Still another team crew is at work between Strassburg and Byers.



Panoramic view of Cold Springs, Gilpin county, with Commissioner Joseph Borzago proffering a drink of water to Editor Stull, while Commissioner Neil McKay takes his from the cup.

News From the Road Gangs in District No. 3

DURING the season of 1917 the State Highway department appropriated the sum of \$97,118.28 for work on the state highways in the eight counties of District No. 3, Pueblo, Crowley, Kiowa, Otero, Bent, Prowers, Las Animas and Baca. The counties added a total of \$76,732.55 to this sum from their budgets, making a total for the year of \$173,850.83.

In addition to this figure it may be conservatively stated that the counties expended close to a similar amount on the improvement, maintenance and construction of county highways.

The figure for 1918 will be about the same amount with an amount of \$260,000 (total construction) added by the U. S. government and the state for work on the Federal rural post route from Pueblo to the New Mexico state line.

How much actual work will be done on the highways in this section is problematical, depending entirely upon the general labor conditions which are now beginning to cause road builders, the country over, considerable anxiety.

Surveys have been completed for the work on the Federal aid road from Pueblo south and as soon as plans and specifications have been approved, it is planned to begin work on this highway.

The expenditure will be devoted largely to eliminating bad curves, grading and surfacing. When finished the highway will form the last link of an improved road all the way from Cheyenne on the north to New Mexico on the south, following the course of the proposed military highway.

Incidentally it will furnish travelers a splendid outlet to the state from north north and south tapping all of the main state highways on the east and west en route.

The Santa Fe Trail east from Pueblo county thru Crowley, Otero, Bent and Prowers county to the state line is in excellent condition for travel and the tourist traffic has been growing steadily on it during the past month. The route forms one of the most attractive gateways into Colorado from the east.

Work is progressing steadily on the Phantom canon route into Cripple Creek and commissioners expect to have the highway ready for travel this summer. The route follows the old road-bed of the Florence and Cripple Creek railroad going thru a canon replete with magnificent views. The highway will cut down the distance between the points and will undoubtedly lure many travelers.

The El Paso county commissioners have lined the entrance to Ute pass with a heavy rock wall at the most dangerous point of the climb. The highway is today a boulevard and one of the most popular routes in the state.

County improvement is being carried on steadily in Pueblo county where the lime shale furnishes a road metal which is scarcely outrivalled by any found anywhere.

The Hardscrabble road from Texas Creek to West Cliff is in good condition. Travel along the Upper Arkansas river road has been heavy and little of it has been diverted to the Hardscrabble for a side outing.

The Arkansas river reached a higher tide mark during the past month than can be recalled in the history of Salida and other points at the upper end of the stream. Two bridges were carried away.

The road from Buena Vista to Colorado Springs via Trout Creek and Ute passes is in excellent condition. The junction of the highway with Turkey Creek is made at the Salt Works

and from that point on to Colorado Springs travel is increasing each day as the summer season gets into swing.

The highway from Walsenburg over La Veta pass is in excellent condition now. The only bad stretch is from Baldy to Washington Springs on the road to Alamosa, a distance of 5.6 miles. An outfit of 18 teams and 30 men are engaged in surfacing this piece and the road should be brought up to standard in 60 days. In the meantime the highway is passable. This will furnish an excellent outlet to the San Luis valley with a maximum grade of 4 per cent. over the pass.

GOOD ROADS AID FARMER

(Continued from page 6.)

erable extension of its railroad facilities, so the problem admits but one answer—the construction of highways which shall make the present railroads accessible from every part of the state. That and the proven economy of transporting over good roads, compared with transporting over poor roads, constitute irrefutable arguments for the assertion that the work of road improvement must be considered only in its infancy.

As good roads tap the rich lands which are remote from railroads and as yet unoccupied they will become thickly settled and intensively farmed. In this age of motor transportation they will be made as easily accessible from railroad points as are the now thickly settled communities more conveniently located. The modern farmer judges his distance from town not in miles but by the time it requires to make the trip and by the loads he can haul. Improved roads eliminate distance and poor roads magnify it.

There are few considerations as vital to the future of the development of the agriculture communities as is the question of highways. The present program of the state in this direction will determine largely the immediate future of the immigration question. A constructive policy will promote settlement mightily and an ultra-conservative policy will retard it for years to come.

U. S. FOREST ROAD PLAN

(Continued from page 9.)

ment that a trail is better than no road and that once an area is opened up, that improvement will follow as a matter of course when traffic develops.

In each case the service first charted the state highways and roads already entering the forest area and then proceeded to use them in their scheme of main highways.

The general plans are outlined in the office of District Forester R. Smith Riley by District Engineer R. E. Pratt and the plans and specifications which have been made up include estimates on cost of the work down to the last detail, giving the Service a fund of information which will enable them to expand and complete the work without delay, once funds are available.

The Blue Lodge of Colorado Road Builders

"BOB" HIGGINS.

In State Treasurer Robert Higgins, Colorado Highways introduces to the public the man who holds all world records for automobile riding without using his own car. On his own word "Bob" Higgins has traveled 140,000 miles in Colorado and in all the distance he has not driven 100 miles himself.



"Bob" Higgins.

Mr. Higgins first became interested in good roads in 1904 and he has been going strong ever since. With Charles R. McLain, Carl Johnson, Judge Dean, J. Y. Munson of Berthoud and others, he was instrumental in the organization of the Colorado Good Roads Association and he was elected president of that body in 1911. That convention was attended by 1,184 delegates,

all of whom paid their own expenses, and as Mr. Higgins expressed it, it was the beginning of the real movement for good roads. Everybody went home fighting mad and all started building roads right away.

With "Jake" Thompson Mr. Higgins secured the extension of the Santa Fe trail from Hudson, Kans., to Pueblo, and later he worked with Charles R. McLain in securing the Rainbow route, Holy Cross Way, Northern Gateways, the Golden Belt and numerous other road projects now realities.

He was president of the state association of county commissioners for five straight years and is today vice-president in numerous roads associations.

He retires from office this fall and thereafter is going to devote his time to "whittling, chewing tobacco and promoting more good roads."

H. L. JENNESS.

When the time comes for the advance to Berlin, Lisle Jenness, engineer, expects to be one of the men who survey the route for the troops. And if it so happens that there is some fighting along the way, Lisle will feel that he has a perfect piece of work on hand.



H. L. Jenness.

Jenness was one of the boys called in the last draft and the word found him ready and eager to go. Fighting has not been in his line in the past, but he is going into it with the same painstaking thoroughness as that which has featured his work in the highway department.

A graduate of West Denver high school, the new recruit to Uncle Sam, has been in the engineering game for eight years.

His first four years in the work were spent in general surveying after which he became a member of the Rio Grande engineering staff. He has been with the highway department a year and when called was engaged on the plans for the Meeker-Craig Federal Aid project, one of the important jobs the department now has on hand.

Always a careful, conscientious worker, Lisle has won many friends throughout the state and he carries with him to his new work the best wishes of the entire highway department.

CHARLES R. McLAIN.

The successful road builder is more than a practical diagnostician of the ails and woes of pit-runs, sub-bases and whatnot. He must be a man of vision, able to imagine the roads of the future, and capable then of making others see as he sees.

Such a type is Mr. Charles R. McLain, to whose foresight Colorado today owes some of its finest bits of road work, tasks which appeared impossible to many when he first suggested them, but which stand completed, as enduring monuments to him.



Charles R. McLain.

The Upper Arkansas river road from Canon City to Salida is one of the bits of construction which many laughed at when Mr. McLain first suggested it. It was necessary to survey that road by dropping surveyors with ropes over the sides of cliffs and tons of dynamite were used in the actual building, but the result was a superb piece of highway which is one of the most traveled in the state today.

The sky line which links the peaks above Canon City, the Gorge trip which climbs to a height of 3,000 feet above the Arkansas river were two of his projects, and the road from the Springs to Canon City another.

Mr. McLain projected these roads then stepped back and did the grubbing for the money while others constructed them. Incidentally he was fighting all the time for better highway laws and played a large part in securing the present statute.

He is on the firing line today, as alert as ever, and always in the front rank of the men who are seeking to develop Colorado's resources.

RALPH W. SMITH.

Others have built roads, but Mr. Ralph W. Smith, first president of the Denver Motor Club, had a task which was greater. He built sentiment. Ten years ago or so, Mr. Smith decided that it was time that the people of Colorado should be brought to an appreciation of what good roads meant. There was only one way to teach them—by traveling among them. Road tours were organized and the farmer was treated to a series of discussions of road work. The Midland trail and the north and south highways were Mr. Smith's hobbies, but he gave to good road work generally service of incalculable value. Mr. Smith served two terms as Motor Club president and later served in the same capacity in The Colorado State Automobile association. He is today the oldest executive save one in point of service in the A. A. A., of which he has been vice-president nine years. While now engrossed in war work for the government, Mr. Smith retains an active interest in good roads, and like other pioneers in the work he is always ready to give freely of his time for the cause.



Ralph W. Smith.

"Good roads add directly to the value of property, lets have more of them," is his slogan.

Road Notes From Crews in Districts 4 and 5

THE road from Meeker to Craig is in the best shape it has been in. There are a few rough spots from Meeker to Axle, but from Axle to Craig the highway is in first class condition. The contract calling for a reduction of the grade and a widening of the road on Wise hill has just been completed. The road is now 20 feet wide with a grade of 5.8 per cent. at this point.

From the top of Wise hill to within a mile and one-half of Craig, crews are now grading the new location of the road which eliminates several hills, and widens the highway. This contract is now two-thirds completed. One and one fifth miles of the road are finished, but not yet open to travel. The work will cost \$5,000.

Surveys have been made from the foot of Wise hill to the Moffat-Rio Blanca county line, which will eliminate hills and generally better the road which is travelable, but is only eight feet wide.

From the Rio Blanca line to Meeker the road is in excellent condition over Nine Mile hill. The entire highway will probably come under the Federal Aid act of 1919, when all of the dangerously narrow stretches will be eliminated. The highway is the most important in the northwestern section of the state and the improvements already made will serve to greatly facilitate traffic in this district.

The highway between Montrose and Grand Junction is in good shape and is being used constantly in the delivery of produce and other freight materials.

Engineer J. H. Bertholf, of the State Highway department, has just completed surveys for a Federal Aid road which will extend from Norwood through Naturita to Paradox, beginning at the south line of Montrose county about two miles west of Norwood and ending at Dry Creek, a distance of 26 miles. This survey will supplement the Federal aid project from Placerville to Norwood, a distance of 15,770 feet.

This highway, work on which will probably begin in 1919, is already passable, but is a dirt road and subject to the most severe traffic conditions of any dirt highway in the United States. The road is used for the transportation of heavy ores from the famous carnotite fields in the southwestern part of the state and the heaviest type of motor trucks are used on it. The result has been that the road has been torn to pieces and funds donated by the chemical companies using the ore, have been necessary to supplement state and county funds to keep the road open.

The proposed government project will greatly improve the highway, bringing it up to standard and opening the section to general travel.

The road beyond Placerville to Telluride in San Miguel county is in top condition.

Surveys have just been completed and construction will start at once on the Burns Cliff highway, which when completed will open the road between Lizard Head and Rico. This is on the main highway from Montrose to Dolores and when finished the work will open up the entire section to the southwestern boundary of the state, including the famous Mesa Verde national park. Tourists will then be able to go from any point on the eastern slope to Grand Junction and thence via this highway into the Cliff Dwellers' ruins. Cars cannot pass Ophir at this time.

In addition to the work at Lizard Head, there is an uncompleted section from Ophir to Lizard Head for which contracts have been asked. This is difficult rock work on the side of the hill and in the canon. Under favorable conditions it should be possible to complete the work this year, but labor scarcity may extend the construction into 1919.

Work contemplated by county commissioners of Dolores this season includes two and one-half miles of grading and two bridges, one of which will cross the Dolores, the other over Horse Creek.

In Montezuma county a contract has been let for grading and a bridge near Montelores on the same highway. The grading calls for a section one and three-fourths miles long near Montelores.

A new steel and concrete bridge is now being put in near Cedar Creek across the Cimarron river on the Montrose-Gunnison highway half way between the two points.

The road from Alamosa up the San Luis valley to Poncha Pass is in very good condition, with the exception of a few miles where the road is built along a drainage canal, which is a little rough. The highway on from Poncha Pass down the Arkansas is in first class shape for travel.

The convict crew working in the Grand Canon above Glenwood Springs is progressing slowly but surely through difficult construction. They will be on this work until next year. The road is now passable but is being widened and the grades reduced.

EASTERN COLORADO ROAD NOTES

The road from Fort Lupton through Hudson to Wiggins and Fort Morgan has been graded and partially surfaced in Weld and Morgan counties. Weld has also opened up the road from Greeley to the northeast toward Sterling, giving a new outlet to that fertile country. Work will be in progress this year.

The convict camp which has been in this section for the past few seasons is still at work and rendering very satisfactory service in the grading and surfacing of the highways.

In Morgan county the Platte river road has been graveled from the Weld county line through Fort Morgan to Brush and to the Washington county line. This road is now in excellent condition. The road has also been improved from Brush south to Geary and through Washington and Yuma counties east to the state line.

The county superintendent of roads in Morgan county, Glenn White, has operated his truck and grading outfit very successfully these last two seasons, and the roads in this county are in excellent shape.

In Logan county the Platte river road has been graded and graveled throughout the entire county and will be maintained and kept in good condition during the coming season. Logan county has also worked up the road from Sterling east to Greeley and will do considerable grading upon that stretch. They are also opening a road from Sterling north to the state line to accommodate the settlers in the northern end of the county.

The road from Sterling east over the Platte river has been surfaced through the sandhills and has been put into good condition by Logan and Phillips counties clear through to the state line.

The Platte river road through Sedgwick county has been graveled and permanent bridges constructed and put in good condition to the state line.

TESTS OF ROAD MATERIAL.

Tests of surfacing material used in construction of Colorado highways are made at the road material testing laboratory of the University of Colorado at Boulder, by the department of civil engineering in charge of Professor Milo S. Ketchum, C.E., and Assistant Professor H. E. Phelps, C.E. Fifty-pound lots are used.

COLORADO HIGHWAY DEPARTMENT

STATE HIGHWAY COMMISSION

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

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

T. J. EHRHART, Commissioner.

J. E. MALONEY, Chief Engineer.

COUNTY COMMISSIONERS AND DENVER ROAD OFFICIALS

ADAMS

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

ALAMOSA

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

ARAPAHOE

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

ARCHULETA

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

BACA

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

BENT

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

BOULDER

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

CHAFFEE

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

CHEYENNE

Walter Ramsey, Kit Carson.
A. I. Johnson, Wild Horse.
J. W. Shy, Cheyenne Wells.

CLEAR CREEK

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

COSTILLA

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

CROWLEY

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

CONEJOS

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

CLUSTER

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

DELTA

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

DENVER

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

DOLORES

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

DOUGLAS

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

EAGLE

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

ELBERT

C. E. Shaver, Fondis.
Fred L. Albin, Kiowa.
John M. Wood, Kuhn's Crossing.

EL PASO

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

FREMONT

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

GARFIELD

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

GILPIN

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

GRAND COUNTY

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

GUNNISON

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

HINSDALE

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

HUERFANO

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

JACKSON

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

JEFFERSON

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

KIOWA

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

KIT CARSON

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

LAKE

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

LA PLATA

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

LARIMER

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

LAS ANIMAS

Frank Patterson, Alalfa.
J. D. Cordova, Gulnare.
Robt. C. Scott, Segundo.

LINCOLN

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

LOGAN

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

MESA

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

MINERAL

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

MOFFAT

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

MONTEZUMA

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

MONTROSE

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

MORGAN

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

OTERO

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

OURAY

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

PARK

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

PHILLIPS

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

PITKIN

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

PROWERS

Fred Williams, Wiley.
S. J. Higbee, Carlton.
A. P. Knuckey, Holly.

PUEBLO

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

RIO BLANCO

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

RIO GRANDE

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

ROUTT

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

SAGUACHE

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

SAN JUAN

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

SAN MIGUEL

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

SEDGWICK

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

SUMMIT

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

TELLER

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

WASHINGTON

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

WELD

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

YUMA

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

SPANISH TRAILS ROUTE

linking Denver, Colorado Springs, Pueblo, Canon City, Salida and all Colorado points with the Mesa Verde National park, Wolf Creek Pass, and thru routes from the east to New Mexico and all southern points and Utah, California and all western points.

