

THE
STATE TEACHERS
COLLEGE OF COLORADO
Greeley, Colo.

SEP 13 1919



COLORADO HIGHWAYS BULLETIN

September, 1919

Board Devises 1920 Federal Aid Budget
Several F. A. Roads Already Completed
Men, Machinery and Macadam Make Trail
Big Wheat Tonnage Demands Good Roads
Good Work Planned and Done in Grand Co.
State's Share of War Material is Increased
Fall River Road Progressing

Issued by the
State Highway Department

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NOTE—In the appended list of county officials the first name in each county is that of the county clerk, the second name is that of the county surveyor, and the last three names are those of county commissioners.

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TELLURIDE—J. H. White, Victor; Arthur, Jr., Cripple Creek; T. J. V Cripple Creek; Tom Foster, Woodland; I. N. Riley, Victor.

WASHINGTON—L. Roy Cummings, Elbert; Lewis, Akron; Homer I. Akron; R. M. Buckmaster, Abbott; Lewis, Burdett.

WELD—Chas. E. Littell, Greeley; Stimson, Greeley; A. F. Peters, Me Elmer Rowe, Greeley; J. W. Birkle, Greeley.

YUMA—John Adcock, Wray; A. C. Wray; Harry F. Strangways, Wray; Jackson, Yuma; Alex. Shaw, Wray.



Entrance to public park and free camping ground of City of Trinidad, donated by C. F. & I., and maintained by Trinidad Chamber of Commerce.

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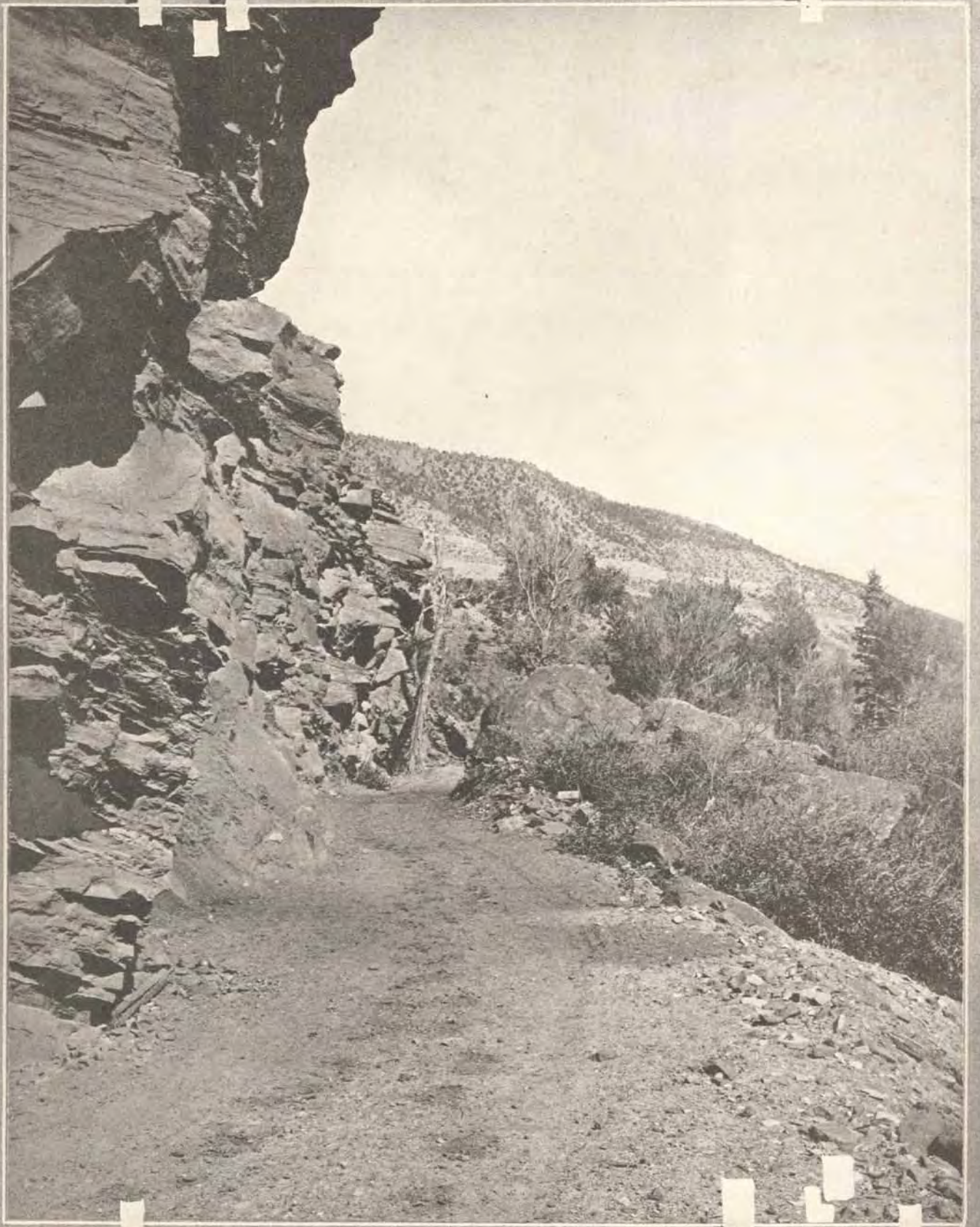
Denver, Colorado.

With the approval of the Colorado State Auditing Board.

Address all communications to Colorado Highway Department, attention J. G. Hilliard, editor, Colorado Highways Bulletin.

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

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The famous stone wall of Southern Colorado and monumental tributes to pioneer heroes.



Board Devises 1920 Federal Aid Budget

Sums to be Used in Four of the Five Districts of Colorado are Determined, With Appropriate Amounts Designated to the Various F. A. Projects. District No. 2 Remains to be Outlined. Counties Will be Asked to Contribute so as to Make State Funds Match Those Given by Government.

THE State Highway Commission at its meeting of August 11 appropriated the sum of \$1,683,000 for the furtherance of federal aid projects in 1920. Appropriations were made for all districts except No. 2, which were deferred owing to the unavoidable absence from the meeting of Commissioner E. E. Nichols of that district. The session, which was the regular monthly meeting, was presided over by Chairman E. E. Sommers of District No. 1 and continued over parts of three days.

The monthly meeting of the State Highway Commission was held Monday, August 11, 1919, at the Capitol, with Chairman E. E. Sommers presiding.

The secretary was instructed to correct the minutes of the meeting of July 14, 1919, so that the resolution in regard to the distribution of trucks from the U. S. Government to the Highway Department reads: "That the basis of distribution of 97 trucks received shall be on the basis of 40 per cent to District No. 1, 15 per cent to District No. 2, 17 per cent to District No. 3, 15 per cent to District No. 4 and 13 per cent to District No. 5, all equipment received hereafter to be distributed to the various counties according to the agreements which may be entered into by the Highway Commission."

Resolution No. 151, making appropriation to Jefferson County on the basis of \$2,500 of state funds to \$1,500 of county funds, was made to read, "\$2,500 state funds and nothing for Jefferson County."

On account of the revenue from the state not being in sufficient amount to meet the federal aid apportionment from the federal government for the years 1919 and 1920, so that there would be a shortage of funds to meet the fed-

eral aid apportionments of approximately 25 per cent of the total, it was decided that all counties in which federal aid projects are now laid out be required to appropriate 25 per cent of the cost of such projects and each board of county commissioners will be furnished with a copy of a resolution requesting an immediate reply so that the Highway Commission may be informed of the decision of the respective counties in this regard.

The sum of \$12,500 was apportioned to Boulder County on a 1 to 1 basis, \$4,000 of this amount for construction of a bridge on South Fork near Lyons and \$8,500 for repairs on the Lyons-Estes Park Road.

The sum of \$6,000 was appropriated to Montezuma County on a 100 per cent basis.

State Highway Commissioner Ehrhart's approval of contracts to the following firms for road construction was ratified:

Contract of M. J. Kinney for construction of concrete pavement on the Brighton Road.

Engineers' Construction Company contract for concrete pavement on the Greeley Road.

Contract of Colorado Bridge & Construction Co., for concrete pavement on the Boulder Road.

Contract of Colorado Bridge & Construction Co., for concrete pavement on the Longmont Road.

Contract of Monarch Engineering Co., for a bridge across Lake Creek near Granite.

Contract to Montrose County for Section A, Federal Aid Project No. 7.

Contract of A. R. Young for painting the old tramway powerhouse, \$375. Also contract to A. R. Young for installing electric light switches and plug attachment, \$215. Also contract to A. R. Young for plumbing in the amount of \$515, and also the additional cost for extending pipe line and putting in crossing at curb at entrance to powerhouse, the sum of \$76.54.

The sum of \$1,080 was appropriated to Montrose County on the basis of 100 per cent state funds.

The sum of \$1,250 was appropriated to Chaffee County on a basis of 1 to 1.

The sum of \$5,000 was appropriated for the special state project known as the Independence Pass Road.

The State Highway Commissioner was instructed to purchase four 4-wheel combined road graders and scarifiers at a cost of not to exceed \$4,500, three to be used in District No. 1 and one in District No. 3.

The salary of the stenographer's position, now occupied by Mrs. M. Horst, was increased from \$100 to \$125 per month, to take effect August 1, 1919.

The salary of Superintendent of Construction W. W. Whitmore was increased from \$200 to \$225 per month, to be effective from August 1, 1919.

The salary of Chief Inspector C. E. Brook was increased from \$150 to \$175 per month, to date from August 1, 1919.

Mr. Fritz Altvater was appointed a mechanical engineer at a salary of \$175 per month, to take effect August 1, 1919.

Superintendent of Construction N. I. Jacobson, on the Fall River Road, was authorized to include in his expense bills the cost of the operation of his truck, which has been used for the state by Mr. Jacobson to haul men and supplies to and from his camp, at the rate of 15 cents per mile. This is to include the mileage from the date of June 1, 1919.

The following appropriations for federal aid projects were adopted:

FEDERAL AID PROJECTS FOR 1920.

DISTRICT NO. 1—\$1,041,085.

Vernon Canon	\$ 35,000.00
Denver-Morrison	87,000.00
Denver-Colorado Springs	110,000.00
Littleton South—	
Morgan-Brush	58,000.00
Ft. Collins south.....	58,000.00
Loveland south	58,000.00
Boulder east	58,000.00
Longmont south	58,000.00
Brighton-Ft. Lupton	176,000.00
Idaho Springs to Central City.....	40,000.00
Yuma to Idalia.....	16,000.00
Yuma to Burlington.....	14,000.00
Total	\$748,000.00

DISTRICT NO. 3—\$442,461.00.

County 15,000, State 15,000.

County.

Las Animas—Trinidad to Hoeme.....	\$ 20,000.00
Pueblo—Pueblo east	70,000.00
Crowley—Ordway east and west 16 miles.....	40,000.00
Fremont—Canon City east.....	40,000.00
Kiowa—Eads east and west.....	25,000.00
Otero—LaJunta west	80,000.00
Prowers—Lamar east and west.....	90,000.00
Baca—Springfield north	20,000.00
Bent—East	60,000.00
Total	\$445,000.00

DISTRICT NO. 4.

Del Norte-Saguache	\$ 30,000.00
Durango	80,000.00
Silverton-Ouray	50,000.00
Placerville-Dry Creek	30,000.00
Montrose-Delta	50,000.00
Rico-Lizzard Head	40,000.00
Total	\$280,000.00
Allotment \$390,406.00.	

DISTRICT NO. 5—\$338,352.00.

Eteamboat east	\$ 30,000.00
Maybell to state line.....	60,000.00
Grand Junction-Palisade	50,000.00
Grand Junction-Fruita	50,000.00
Gilman-Minturn	20,000.00
Total	\$210,000.00

The following resolution was adopted:

Be it Resolved, That the State Highway Commission of the State of Colorado does hereby release, relinquish and transfer unto the United States Government and to the department thereof having control of the national parks and highways therein, the control, management, maintenance and supervision now exercised by said Highway Commission of the public highways located and situated within the boundaries of the Rocky Mountain National Park in the State of Colorado, with the exception, however, of what is known and designated as the Fall River Road, which is now in process of construction and shall be completed by said State Highway Commission; and upon the completion thereof the maintenance, control and supervision of said excepted road shall pass to the United States Government as in this resolution provided.

The salaries of field engineers were made within the limits of \$175 to \$200 per month and the State Highway Commissioner and Chief Engineer were authorized to promote such field engineers to the salary of \$200 per month when they deem it to be to the best interest of the service. The classification for salaries of draftsmen was increased to the limit of \$150 per month and the Commissioner and the Chief Engineer were authorized to promote such draftsmen as may demonstrate their efficiency to the class carrying that salary.

(Continued on Page 21)



Commercial Street, Trinidad, Colo., still part of the Santa Fe Trail and a leading thoroughfare of the fourth city of Colorado. Forty years ago the street was crowded with ox teams, which have given way to a thorough saturation of motor vehicles.

Men, Machinery and Macadam Make Trail

Dick Wootton's Dream of a Santa Fe Trail Worthy of the Name is Being Realized Through the Efforts of Contractors Working Under the Direction of Commissioner Fred J. Radford of District No. 3. Plenty of Romance and Tragedy Attached to the Early Days of the Trail.

MUCH of the romance and adventure in the history of the days before our state abandoned its swaddling clothes and its irresponsible youth to step into its place as one of the great states of the Union, is to be found in the study of the history of Southern Colorado.

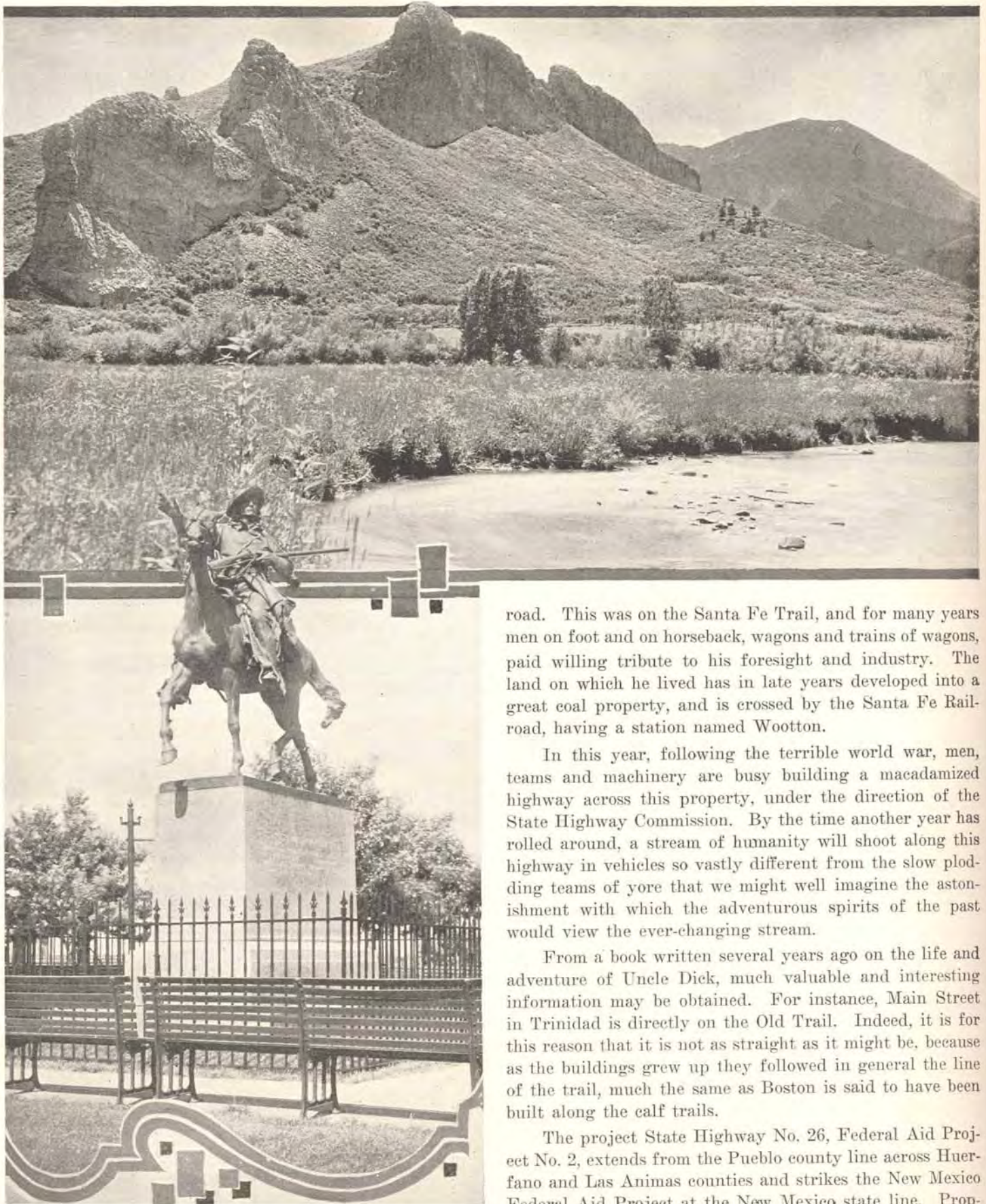
The Santa Fe Trail, as it is known by all the West, was but a trail in those days, and the oldest men now living were but children. A trail it still remains in name, although destined soon to become a splendid highway, surfaced and ready to bear the burden of countless industrial and pleasure automobiles as they serve as a means of communication in a manner undreamed of in the days when the pony and horse cart bore the cargoes of human freight and its accompaniments. Civilization traveled westward and the empires of the great West expanded and grew until now they rival and may ultimately excel the wealthy and over-crowded East.

One seldom stops to think now that the town of Santa Fe, the goal of this trail, is the oldest civilized town save one in the United States. Within a day's motor journey of the city of Trinidad, a little more than three hundred years ago the adventurous Spaniards, pushing northward into the vast unknown, established here the first permanent human habitations, which for generations maintained its

hold in the sunlit land, and furnished the destination or resting place for those virtuous and intrepid early Americans to whom we should extend our gratitude for our present homes in a beautiful and happy land.

The Santa Fe Trail started properly at St. Louis. It was established early in the century and ultimately reached the golden shores of California. The people of Missouri in 1825 secured a Congressional appropriation of \$30,000 for the building of a better road to Santa Fe. The survey was made, but the road was never completed. The first Santa Fe Trail was directly westward from Independence, Missouri, to the mountains of Colorado near Trinidad, thence south to Taos, north of Santa Fe. Later the favorite old Santa Fe Trail was along the Arkansas, thence across to Cimmaron and thence in a direct line to Wagon Mound, Las Vegas, etc.

Attracted by the possibilities of adventure and profit, a young man not out of his 'teens set out with a trading party for the West in the year 1836. This young man, then known as Richard Wootton, and in later years and until he passed over the Great Divide, familiarly and affectionately known as Uncle Dick Wootton, finally settled down on a homestead a few miles south of Trinidad, where, through government aid, he was enabled to establish a toll



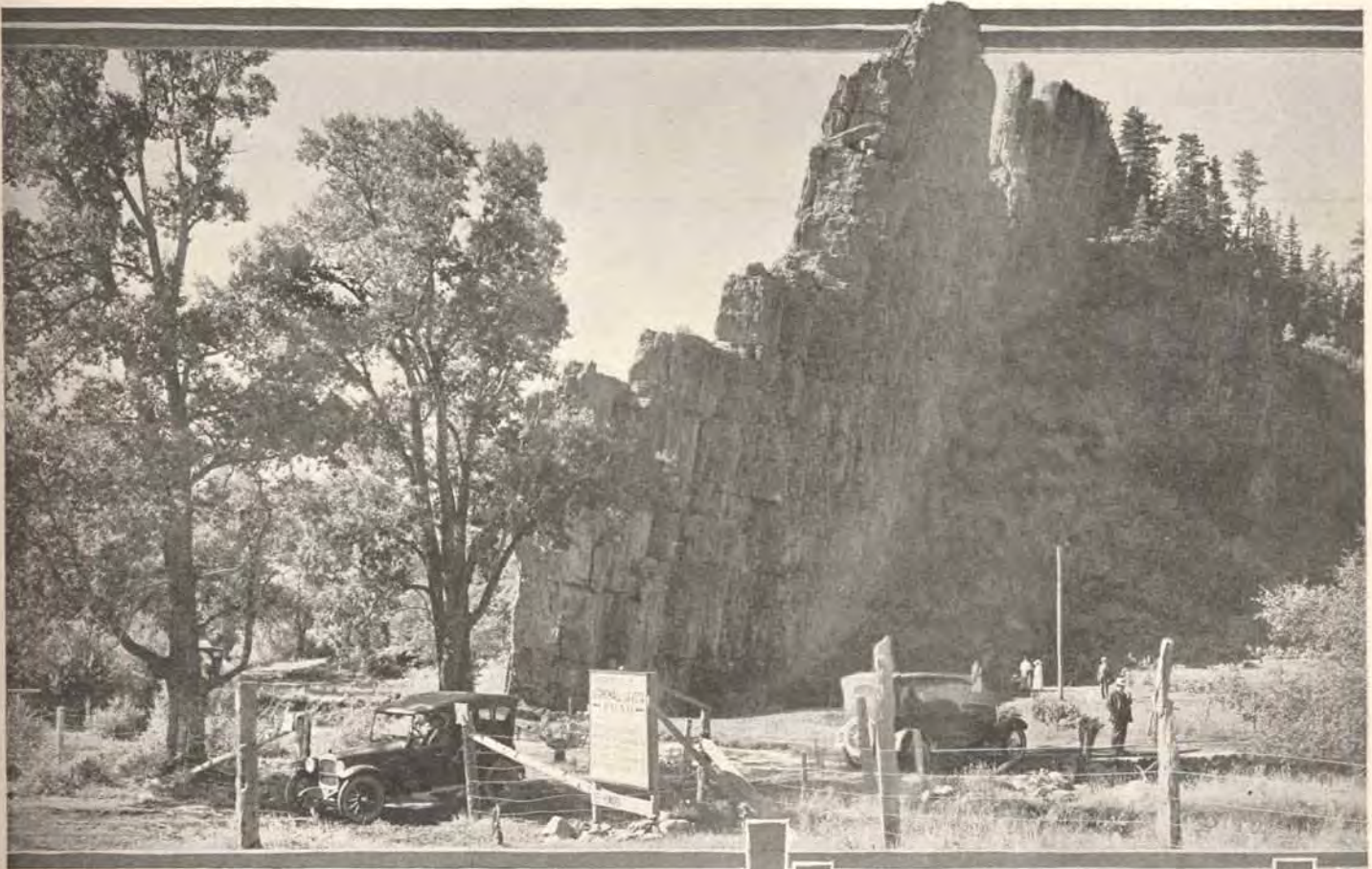
Top—Section of stone wall and the Western Spanish Peaks south of LaVeta, showing Cuchara Creek near Cuchara Pass. Statue of Kit Carson, City Park, Trinidad.

road. This was on the Santa Fe Trail, and for many years men on foot and on horseback, wagons and trains of wagons, paid willing tribute to his foresight and industry. The land on which he lived has in late years developed into a great coal property, and is crossed by the Santa Fe Railroad, having a station named Wootton.

In this year, following the terrible world war, men, teams and machinery are busy building a macadamized highway across this property, under the direction of the State Highway Commission. By the time another year has rolled around, a stream of humanity will shoot along this highway in vehicles so vastly different from the slow plodding teams of yore that we might well imagine the astonishment with which the adventurous spirits of the past would view the ever-changing stream.

From a book written several years ago on the life and adventure of Uncle Dick, much valuable and interesting information may be obtained. For instance, Main Street in Trinidad is directly on the Old Trail. Indeed, it is for this reason that it is not as straight as it might be, because as the buildings grew up they followed in general the line of the trail, much the same as Boston is said to have been built along the calf trails.

The project State Highway No. 26, Federal Aid Project No. 2, extends from the Pueblo county line across Huerfano and Las Animas counties and strikes the New Mexico Federal Aid Project at the New Mexico state line. Properly speaking, therefore, it runs onto the Santa Fe Trail at Trinidad. It is also a part of the Colorado-to-Gulf Highway, the Florida-to-Colorado Highway and the whole distance of the National Old Trails.



It is therefore destined to see an immense amount of travel from east to west and from north to south. At the present time it is being graded by three separate contractors, employing an immense number of laborers, teams and machinery. It will be twenty feet wide and after grading will be covered with a layer of crushed limestone six inches thick in the center and tapering to three inches at the sides, all of which will be properly rolled and compacted, so that eventually it will present a hard, even surface. It will then be possible to make the entire trip from the New Mexico line to Denver on macadamized roads.

The road runs along the eastern base of the mountains until it reaches Trinidad, where it strikes into the mountains and crosses Raton Pass at an altitude of 8,000 feet. For the whole distance it traverses one of the largest coal mining districts of the West, where immense amounts of coal and coke are produced. East of the road is an important and rapidly growing agricultural community. A part of the land is under irrigation, but the greater part is devoted to so-called "dry land" farming. Here many hardy settlers from the South and Southwest are building homes and helping to make the desert blossom as the rose. Few people realize the immense possibilities of farming in the dry land section. It is destined to produce large quantities of foodstuffs for the feeding of the nations.

Leaving Pueblo County line the first town one reaches is Walsenburg, a city of about 4,000 people located in a rich coal mining district. From there south the road passes a number of small coal mining towns, passes through the



Top—Section of the stone wall which extends for 150 miles north and south through New Mexico and Colorado. At bottom is grave of Corp. Cruz Torres, First New Mexico Cavalry, murdered July 13, 1865.



Rebuilt residence of old-time character, Dick Wootton, on the old toll road, which he built fifty years ago across Raton Pass. Wootton crossed the plains in 1836 and did as much as any other man to encourage travel westward. His memory is highly honored.

town of Aguilar and in twenty miles more reaches the city of Trinidad.

Trinidad is one of the earlier settled places, having attained considerable importance in the early Santa Fe Trail days as a trading and outfitting center. It is now a prosperous city of 15,000 people, the fourth city in size in Colorado. Is on four railroads and destined sooner or later to be a city of much importance.

On the northern limits of the city is a mountain known as Simpson's Rest. On top of this mountain is the grave of an early day resident, George Simpson. It is related that at one time he found refuge from the Indians at that point, and requested that it be the resting place of his mortal remains. The point is now surmounted by a large electric sign, which bears the word "TRINIDAD."

Immediately to the south of Trinidad is one of the most beautiful and picturesque peaks in America, named Fisher's Peak or Raton Mountain. The following notes give something of the history of this famous mountain:

(From "Notes on the Overland March of the 'Army of the West,' " en route from St. Louis via the Santa Fe Trail through Southern Colorado and New Mexico to California under Col. Kearney.)

"It was in the year 1846 that we were crossing the Purgatory, or River of Lost Souls—*Rio de las Animas* in Mexican—and camped on its banks, under the shadow of the Raton Mountain. Magnificent views of mountain and plain had almost beguiled us into forgetfulness of fatigue and annoyance on the march. In front was the Raton Mountain, with its precipitous cliffs and mesa-like top and with its sentinel peak standing guard at its northern end.

"During one of our halts Capt. Waldemar Fischer of the St. Louis Artillery ascended the peak and Lieut. Emory named it after him. It is 'Fisher's Peak' on the map.

Those of our volunteers and of the regulars with us, who in New and Old Mexico and in California perished in battle or by disease, are nearly all forgotten; but the adopted citizen is immortal in geography. When he came down from the peak he said to us:

" 'Ah, gentlemens, I did find a little flower up dere, and did wish my goot wife could be dere; but I have him—see—in my pocketbook, and I send him in a letter, and den she say—Oh, if only my Waldemar was here.' "

Trinidad is the Mexican name for Trinity. It is on the banks of the Purgatory, changed after years of usage to the local name, "The Picketwire."

One views with interest the streets crowded to capacity with modern automobiles and then reads with amusement a local item published forty years ago in a Trinidad paper to the effect that the city council contemplated an ordinance prohibiting the owners leaving their ox teams tied along the street, because of interference with traffic.

This was in the days of Unele Dick Wootton. After outfitting with supplies at Trinidad, the slow-moving stream of humanity behind ox carts, teams, and on horseback, struck south and in a few miles paid toll to Unele Dick for the privilege of using the road he had constructed under territorial charter over the Raton Pass. A photograph herewith shows the house (now much enlarged) in which he lived, and at least one of the trees to which he attached the chain that served as a gate to his toll road. The new highway passes this house.

A short distance south of this house is an ancient grave, bearing on the headstone the following inscription: "Cruz Torres—Corporal 1st New Mexico Cavalry. Murdered July 13, 1865." The highway also goes directly past this grave, which marks an epoch of our history that can never be repeated. It represents the bold, free life, fraught



La Primera Casita, or the first cottage, summer home of Commissioner Fred J. Radford, District No. 3, at Stonewall, Colo., 34 miles west of Trinidad. The real stone wall is only one-quarter mile distant and there are 14 other fine cottages of Trinidad people there, costing up to \$3,500 each.

with adventure and danger, that the early and hardy pioneers lived, that we might reap the benefit.

A few of the pioneers of this part of the state, among whom are Judge Archibald, State Senator De Busk and others, have an interesting stock of tales about the early days which space does not permit reproducing.

The few distinct tales now in existence, and the distinctive land marks, are rapidly losing their identity as the years go by, and soon there will be but the indistinct memory left. The D. A. R., however, are patriotically preserving by monuments along the Santa Fe Trail, markers that will keep alive the memory of the old Santa Fe Trail. Likewise in Trinidad is the Kit Carson Monument and park (the gift of another old timer, Daniel L. Taylor) to further perpetuate the memories of the past.

As time goes on the present road will give place to a macadam highway, and that to the paved, making traveling a pleasure and delight to the citizens of the future. Let us then from time to time gratefully refresh our memories with thoughts of those hardy pioneers who made it all possible.

Demand Highway Reports

Highway reports as well as weather forecasts have been made a phase of the work of the United States weather bureau in several states and so valuable has the service proved to be that a national demand for its extension is springing up.

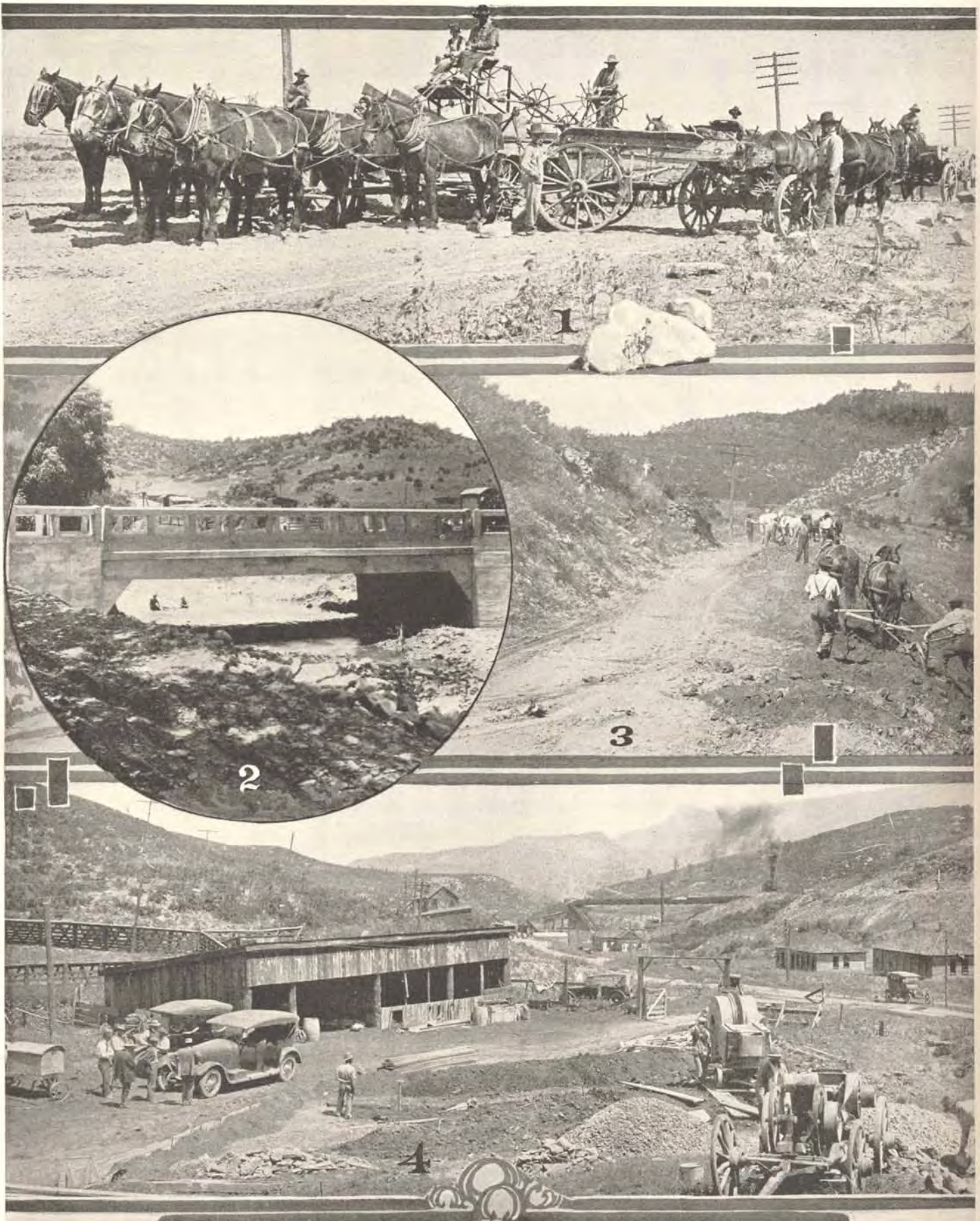
Lieut. Col. J. M. Ritchie of the motor transport corps has been designated by Secretary of War Newton D. Baker as a member of the highways transport committee of the council of national defense.

A network of communicating roads which serve to bring all parts of the island into close touch with its principal towns is planned on Catalina Island. Several automobile lines are already running on daily schedules, a bank has been established at Avalon and the entire island is awakening to new life as a result.

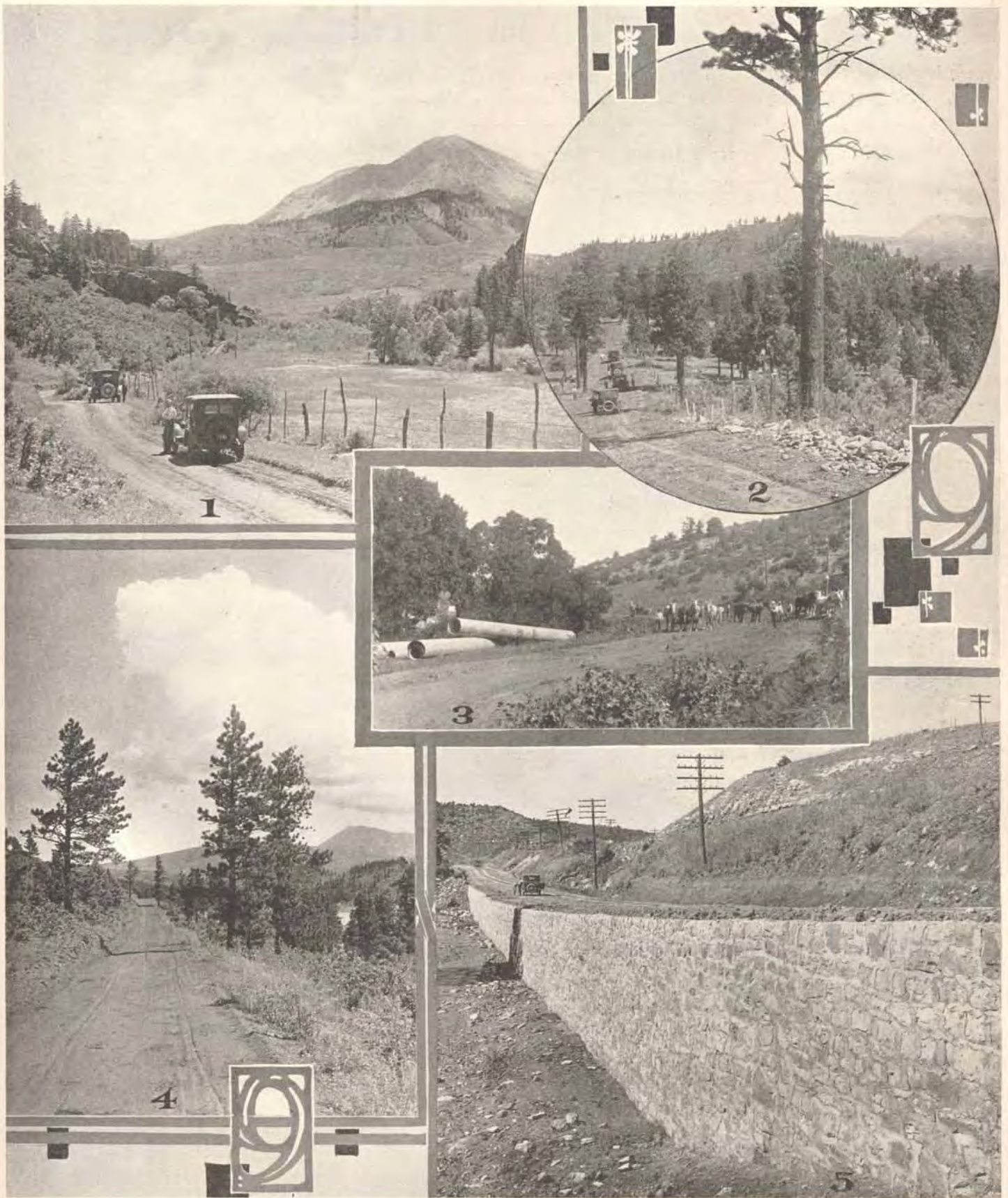
As the Bulletin goes to press many delegates from seventeen states had arrived at Durango, Colo., for the convention of the National Old Trails Association. Standish L. Mitchell, secretary of the Automobile Association of Southern California, was in the chair for President J. M. Lowe of Kansas City, who was East on business. Mitchell had piloted a party of several cars from Los Angeles by way of Gallup, N. M. The visitors were to be entertained later by a trip into Mesa Verde National Park.

Plans are being completed by the Rocky Mountain Automobile Trades Association for the biggest and best convention of members of the industry ever held in the West. The third annual convention of the Mexico, Utah, Idaho, Northern Texas, Western Kansas and Western Nebraska will be held in Colorado Springs October 6, 7 and 8. At least 1,000 members of the industry are expected to attend this three-day meeting.

No contractors appearing and the community fearing that the federal aid it had secured would go by the board, public spirited citizens of Riverton, Wyo., organized the Riverton Construction Company with a capitalization of \$50,000 to build a 35-mile strip of the Wind River Road between Riverton and Jackson Hole, which will afford a new route to the southern entrance to Yellowstone National Park.



Road building in Commissioner Radford's District, No. 3, Southern Colorado. 1. Elevator grader outfit at work on Federal Aid Project No. 2, eight miles south of Trinidad, August, 1919. 2. Concrete bridge over Raton Creek near Trinidad. 3. Allen & Lafferty's teams grading on Raton Pass, eight miles south of Trinidad, toward Raton Pass, August, 1919. 4. Work on concrete culvert where the road begins to climb Raton Pass. Santa Fe train in distance is one-fourth mile from Raton Tunnel.



Scenes, work and achievements in District No. 3, August, 1919. 1. Looking through a break in the stone wall toward one of the Spanish Peaks. This wall is continuous from Colorado Springs to the Texas line. 2. Road No. 70 from Stonewall to LaVeta, Spanish Peaks to right, $3\frac{1}{2}$ miles north of Stonewall, along the wall. 3. Allen & Lafferty road grading outfit working near Trinidad. 4. Section of Road No. 70, July, 1919. Showing Monument Lake, five miles north of Stonewall. 5. Completed rubble wall 12 feet high, 5 miles from Trinidad on Federal Aid No. 2, just south of Starkville, August, 1919.

Several F. A. Roads Already Completed

Interesting Report by Chief Engineer J. E. Maloney of Colorado State Highway Commission Shows that Rapid Progress is Being Made by State and Government at Finishing Federal Aid Road Projects in the State. Details of Work on Some Forty Projects are Given Herewith.

WORK is proceeding rapidly on important road projects in all the five districts of Colorado. Chief Engineer J. E. Maloney of the State Highways Department makes an interesting report this month in which he details the degree of completion on all Federal Aid work.

The report announces the completion of the Denver-Littleton Road (concrete) and that the bridges over the canals on Boulevard F, or Federal Boulevard, are very nearly completed. The Floyd Hill wash is repaired and the improvement of the road from Floyd Hill to Bergen Park, between Idaho Springs and Denver and on the west approach to the Denver Mountain Parks, is well under way.

Work has been begun on the Fort Morgan Road and contractors are ready to begin on the Brighton Road. Work at Pueblo will be started at once. Grading is in progress on all sections of the Walsenburg-Trinidad Road, concrete being the nature of the work on Sections C and B. The upper section of the Granite-Twin Lakes Road (No. 3) has been completed by Superintendent Harlan with day labor. Grading on Rifle-Meeker Road No. 4 is 90 per cent complete, with surfacing 22 per cent complete. Work is finished on Lamar-Springfield Road No. 6 and the county is now placing gravel on the surface.

Surveys and plans are complete for a dozen other important projects. The North and South St. Vrain roads, badly washed out by recent heavy rains, are being rapidly repaired and measurements have been made and plans are being drawn for a concrete-iron bridge to replace the one on the road from Petersburg to Fort Logan which was recently washed out.

Chief Engineer Maloney's report is as follows:
Denver, Colorado, Aug. 7th, 1919.

Mr. T. J. Ehrhart,
State Highway Commissioner,
Denver, Colorado.

Dear Sir: I desire to report as follows upon the condition of the engineering and construction work under charge of this department:

FEDERAL AID PROJECTS.

Denver-Littleton, No. 1—Completed.

Walsenburg-Trinidad, No. 2—Grading work in progress on all sections. Concrete work in progress on Sections C and B. Work in charge of Superintendent Whitmore and Engineer E. E. Montgomery. Field Engineer Hal Barnes and party on Sections C and D. Field Engineer Francisco and party on Sections A and B. Field Engineer Renó on surveys, maps and estimate. Inspectors Smith, Beal, White and Palmer on concrete, piling and office work.

Granite-Twin Lakes, No. 3—Upper section completed by Superintendent Harlan and day labor. Bridge at Lake

Creek advertised and contract awarded to Denver Steel & Iron Works. Lower section ready to advertise if desired. Field Engineer Edwards and party in charge of the work.

Rifle-Meeker, No. 4—Grading 90 per cent completed. Surfacing 22 per cent completed. Field Engineer P. C. Thurmond and party in charge of work.

Project No. 5—Withdrawn.

Lamar-Springfield, No. 6—Work completed. County now placing gravel on surface. Field Engineer I. C. McBride in charge of work.

Naturita-Norwood, No. 7—Project statement and plans completed and approved by U. S. office. Contract awarded to County of Montrose. Field Engineer Becker in charge.

Meeker North to County Line, No. 8—Project statement in. Surveys and plans 100 per cent complete. Field Engineer Snelson in charge.

Big Thompson Canon Road, No. 9—Surveys and plans completed. Work advertised. No bids received. Work postponed to fall. Assistant Engineer E. E. Montgomery in charge of surveys.

Denver-Brighton, No. 10—Surveys and plans completed. Work re-advertised. Contract awarded to W. J. Kinney of Denver. County will meet difference. Field Engineer Randall in charge.

Wray-Idalia, No. 11—Surveys completed. Plans 90 per cent completed. Contract submitted, ready to be filed. Field Engineer Randall and Field Engineer Edwards in charge.

Greeley-Denver, No. 12—Surveys and plans completed. Contract awarded to Engineers' Construction Company of Greeley. Field Engineers Randall and Edwards in charge.

Denver-Boulder, No. 13—Surveys and plans completed. Approved by U. S. office. Work to be contracted by Colorado Bridge & Construction Company.

Longmont Road, No. 14—Surveys and plans completed. Approved by U. S. office. Work to be contracted by Colorado Bridge & Construction Company. Field Engineers Randall and Edwards in charge.

Merino Bridge, No. 15—Surveys complete. Plans waiting establishment of road as post road. Field Engineer in charge.

Morgan-Brush, No. 16—Surveys and plans completed. Contract awarded to Colorado Bridge & Construction Company. Field Engineers Randall and Edwards in charge.

Colorado Springs Road, No. 17—Surveys completed. Records received from county engineer July 11, 1919, and are now being put in shape to send to U. S. office. Surveys by Mr. Ford, county engineer.

Pueblo East, No. 18—Surveys and plans completed. Work advertised. Two bids received, both over estimate. It was understood that there would not be enough funds to bring this stretch to the cemetery gates from the city limits

and the matter was talked over with County Commissioner Herrington. It was agreed to put in the project to the cemetery gate and Pueblo County was to put in enough money to carry the work to that point, if the bids ran over the appropriation. Arrangements were made by the commission with the Orman & Vedder Construction Company to do this work at the engineer's estimate for flag concrete or at an agreed figure for gravel and concrete, subject to the approval of the engineer.

Lamar-Springfield, Nos. 19 and 20—Surveys 90 per cent and plans 75 per cent completed. Field Engineer Byrnes in charge.

Rocky Ford, No. 21—Surveys and plans completed. In U. S. office. Field Engineer Ernest Montgomery in charge.

La Junta Road, No. 22—Surveys and plans completed. In U. S. office. Field Engineer Ernest Montgomery in charge.

Delta-Montrose Road, No. 23—Surveys under way. Engineer J. Bertholf in charge.

Ft. Garland-San Luis Road, No. 24—Surveys and plans completed. Approved by U. S. office. Work advertised. No bids received. Work re-advertised August 8. Bids to be received August 22. Field Engineer J. Cheney in charge.

Montrose-Delta, No. 25—Surveys completed. Plans 10 per cent completed. County Engineer Fielding in charge of surveys.

Ouray-Red Mountain, No. 26—Surveys completed. County Engineer Winnerah in charge of plans and surveys.

Grand Junction-Palisade, No. 27—Surveys completed. Plans 50 per cent complete. Engineer J. Bertholf in charge.

Blue River Road, No. 28—Surveys complete. Plans 80 per cent complete. Field Engineer A. Tanner in charge.

Turkey Creek Road, No. 29—Morrison-Bailey. Surveys complete for 15 miles. Plans 10 per cent complete. Field Engineer Donovan in charge.

Denver to Hospital, No. 31—Surveys 100 per cent complete. Field Engineer Walters in charge.

Morgan-Brush, No. 38—Surveys completed. Field Engineer R. Randall in charge.

Burlington North, Nos. 43-44-45—Surveys 100 per cent completed. Plans 30 per cent completed. Field Engineer Edwards in charge.

Canon City-Denver Road, No. 47—Surveys under way. County Engineer Ford in charge.

Castle Rock-River Bend, No. 50—Surveys 90 per cent completed. Plans 30 per cent completed. Field Engineer Littlefield in charge and County Engineer Matthews assisting.

Lamar North, No. 57—Surveys and plans completed. Field Engineer H. C. Byrnes in charge.

Lamar-Springfield, No. 58—Surveys 80 per cent completed. Plans 50 per cent completed. Field Engineer Byrnes in charge.

Las Animas City East, No. 59—Surveys and plans under way. Field Engineer Geo. Beach in charge.

La Junta Road, No. 60; Rocky Ford Road, No. 61;

Manzanola Road, No. 62; Fowler Road, No. 63—Surveys and plans completed. In U. S. office. Field Engineer Ernest Montgomery in charge.

Ft. Garland-San Luis, No. 64—Surveys completed. Field Engineer J. Cheney in charge.

Ouray-Silverton, No. 65—Surveys completed. Plans under way. County Engineer Winnerah in charge.

Rico North, No. 67—Surveys started. Engineer J. Bertholf in charge.

Monte Vista-Saguache and Saguache-Del Norte—Surveys completed. Plans started. Field Engineer J. Cheney in charge.

Craig West, No. 74—Surveys under way. Field Engineer Carson in charge.

Grand Junction-Palisade, No. 77—Surveys under way. Engineer Bertholf in charge.

Battle Mountain, No. 78—Surveys 75 per cent completed. Engineer E. E. Montgomery and L. Jenness in charge.

Steamboat Springs North, No. 60—Surveys and plans under way. Field Engineer Carson in charge.

Denver to Morrison, No. 30—Surveys completed. Field Engineer Walters in charge.

Denver to Brighton, No. 32—Surveys completed. Field Engineer Walters in charge.

Ft. Collins South, No. 33—Surveys completed. Field Engineer Spitzer in charge.

Greeley, Three Miles, No. 34—Surveys completed. Field Engineer Spitzer in charge.

Longmont South, No. 36—Surveys completed. Field Engineer Spitzer in charge.

Boulder East, No. 37—Surveys completed. Field Engineer Spitzer in charge.

Wray-Schramm, No. 40—Surveys completed. Field Engineer Edwards in charge.

Naturita to Top of Norwood Hill, No. 66—Surveys begun. Field Engineers Becker and Fleming in charge.

Durango-Mancos, No. 71—Surveys under way. Field Engineer Cheney in charge.

Bayfield to Dyke, No. 72—Surveys under way. Field Engineer Cheney in charge.

Kremmling North to Muddy Creek, No. 75—Surveys under way. Field Engineers Polhamus and Evans in charge.

Surveys for the Fall River Road have been completed from the end of the work on the east side to the top of the ridge, dropping down to the lakes on the west side by Field Engineer Becker and party.

Field Engineer Huntington is running the line of survey to meet Mr. Becker's survey at the top of the divide from the west side.

Superintendent of Construction Jacobson reports the completion of the work to the end of the Hokasono contract and he is now working on the line to the top of the hill.

Superintendent McQueary expects to start work on the top of the ridge within a few days so as to do as much as possible in that altitude while the weather is favorable.

(Continued on page 22)

Big Wheat Tonnage Demands Good Roads

Not Only for Tourists and Sightseers Must Good Roads be Built in Colorado, but for Movement of the Crops and Produce, Which Have Increased by 75 Per Cent in the Last Decade and are still in Their Infancy. Roads in Wheat Districts Would Also Accommodate Automobile Traffic from East.

BY HOWARD D. SULLIVAN

THE development that has taken place in all lines of industry in Colorado in the past ten years has taxed the transportation facilities of the state to their utmost. There has been comparatively little railroad building in the Centennial State in the past decade, yet the tonnage of freight that is now being transported into and out of the state is perhaps fully 75 per cent greater today than it was ten years ago and the volume of freight being hauled within the state has shown an almost equally large increase.

This enormous increase in tonnage of freight accounts in a measure for the greatly increased demand for better highways. Ten years ago there was not a mile of hard surfaced road in the state outside of the incorporated cities. There was very little surfaced road of any kind in Colorado then. In the plains counties highways were little more than worn tracks across the prairie, with the grades that nature made and an occasional bridge or culvert. In the mountains the roads were moderately good where there were roads, but the grades were heavy, the turns were sharp and the tracks were narrow.

Yet there was less demand for highway construction then than there is now. Those who were forced to travel over such highways as were available were used to just such highways as they had and were not particularly ambitious for better ones, especially if it were necessary to increase the tax levy to get them. There were few automobiles any place and very few in Colorado. There were no motor trucks and farm tractors. There was little farming except near the railway lines, and the livestock that was raised in the more remote districts did not need highly improved roads over which to tramp to market.

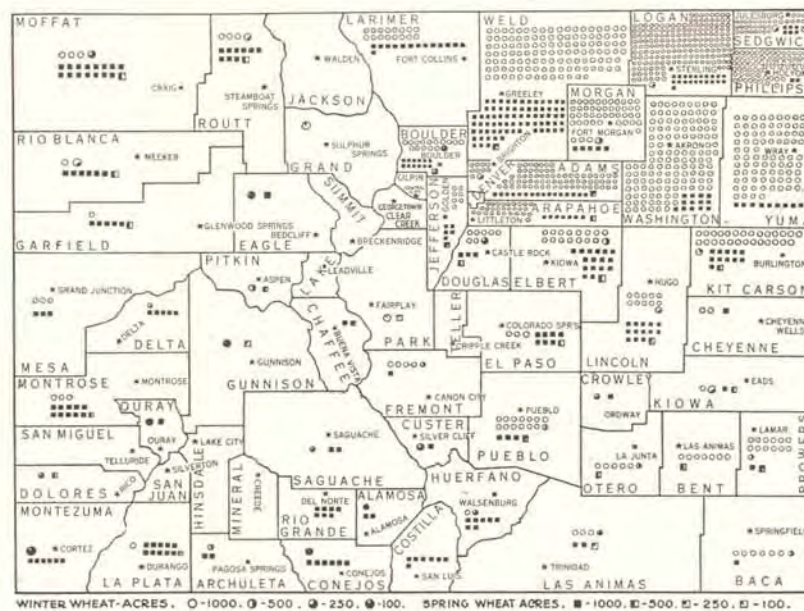
But all that is changed today. Whereas the amount of wheat grown in Colorado in 1909 was but little more than was required to supply the needs of Colorado people,

there are today being shipped from the state perhaps 7,000,000 bushels annually, or about as much as was raised in 1909, and there still remain about 10,000,000 bushels to be moved about more or less within the state to supply the needs of Colorado people. That is not an especially large amount of wheat for a big state like Colorado, but the increase has been very

marked in the decade and has required a vast improvement in transportation facilities to meet it. The increase in production of other crops has been equally marked. The value of metals produced, when the newly developed metals such as vanadium, uranium, tungsten and molybdenum are considered, has increased considerably in the past ten years, and the tonnage of ore that must be handled to produce the same amount of values has increased very sharply. The output of the state's factories has increased steadily and the production of coal is nearly twice what it was ten years ago.

Naturally this heavy increase in tonnage to be transported has placed a vast burden upon the highways of the state, for the simple reason that there has been very little railroad development in the past decade. Automobiles, trucks and wagons are moving thousands of tons of freight of various kinds today over highways that were only trails a decade ago, and yet the railroads are hauling more freight than they ever hauled before. There is a more urgent demand for good roads in Colorado today than there has ever been because it comes from nearly all the people and it is principally an economic demand. The farmer feels that he can well afford to pay \$1 more on each \$1,000 of the value of his farm if by so doing he can market his crops more quickly and can save \$10 in marketing expense for each \$1 he spends in road taxes.

When the period of real road development began in Colorado the demand for improved roads came chiefly from those who are interested primarily in increasing tourist



This map shows the distribution of winter wheat and spring wheat in Colorado this year, as indicated by the acreage reports made to the State Immigration Department by the several county assessors.

(Continued on page 22)

Good Work Planned and Done in Grand Co.

Federal Appropriation of \$35,000 is Made for Muddy Creek Road and State Gives Sum to Repair Road from Grand Lake to Fall River. State Also Gives Sum for Discretionary Use of County Commissioners. Grade on Copeland Hill Reduced. Steel Bridge Across Grand at Parshall Big Help.

Grand County, Colorado, is getting results along road building lines by co-operating with the State Highway Commission. The county's foremost newspaper, the Kremmling News, of which George Swan is editor, is also a big factor in stimulating interest in improving highways and in keeping citizens well informed on work accomplished.

Chairman Simon Olson and Commissioner J. H. Cather of the Grand County board of county commissioners attended a recent meeting of the State Highway Commission and secured additional appropriations totaling \$3,400 for Grand County roads, declares the News. They were assured that engineers would be here soon to begin work on the Muddy Creek Road, for which an appropriation of \$35,000 federal money was approved a few months ago.

Of the new appropriations of state road funds, \$3,000 is to be used as the commissioners may direct on state primary roads in the county. This will enable the commissioners to carry on the improvements started this year and which have been hampered greatly by the lack of funds.

Upon showing the Highway Commission that the funds appropriated were not sufficient to complete the repairs on the road connecting Grand Lake with the new Fall River Road to Estes Park, the commission gave the Grand County commissioners \$400 in addition to the funds already appropriated for the road.

Under direction of Chairman Simon Olson of the county commissioners the county road outfit is improving the Williams Ford Road by reducing one of the most dangerous and difficult grades, known as the Copeland Hill. The hill, formerly 10 per cent to 18 per cent grade, is being rebuilt on the survey made several years ago by County Surveyor F. I. Huntington, which provides for a maximum grade of 7 per cent.

The road will be lengthened considerably, but the additional mileage will be more than compensated for by the elimination of the steep pitches and dangerous curves that made it impossible for cars to negotiate the hill in any gear except low.

Another big improvement in the Williams Ford Road for which the people who travel that way should thank Mr. Olson is the steel bridge across the Grand River at Parshall. The bridge was ordered last year and was opened for travel last spring. It replaced a wooden bridge that had become a constant menace to the lives of those who drove over it and a continual source of expense to the county. The new bridge is a permanent structure with broad, substantial approaches and will withstand the assaults of spring floods for many years.

County Commissioner J. B. Stevens, of the Fraser District, has had men working on the Cottonwood Divide Road the last two weeks, and the culverts and small bridges

that have been washed out or destroyed by traffic have been replaced with new ones. There were two small bridges near the Tovey Ranch that were broken into kindling wood, leaving dangerous holes that threatened serious damage to cars. These have been rebuilt and the road is now in first class condition.

Mr. Stevens has had the Berthoud Pass section of the main highway in his district well taken care of this year and it is in better condition than ever before. The pass was opened a month or more earlier this year than in any previous year, owing to the lightness of the snow on top, and the extreme dryness of the spring and summer has made it possible to work the road without interruption. Mr. Stevens has taken advantage of the conditions and has had much work of a permanent nature done. One of the big improvements is the placing of plank driveways across the numerous corduroy bridges on the steeper parts of the hill. These give cars and wagons a smooth track over the rough log bridges.

Another big improvement in the county roads, for which credit must be given to the present board of commissioners, is the building of the so-called Blayney fill. For years the Blayney hill has been a bugbear to motorists and to those who have been forced to drive over it with teams. At the foot of the hill was the Blayney lane, which passed over two rickety wooden bridges and through the bottom land that was flooded every spring, leaving an impassable bog. County Surveyor Huntington laid out a new grade which provided for using the gravel taken off the hill to build a new grade through the lane. With the help of state money this work was accomplished this year, Robert Williams, Jr., being the contractor. The new grade is 1,900 feet long and resembles somewhat the fill built to replace the old Kremmling Viaduct on the Blue River Road. It is above high water at ordinary flood stages and gives a permanent, solid roadbed that will be passable at all times.

By taking the gravel from the hill to make the fill, the grade has been reduced so that cars have no difficulty in making it. The work cost \$3,100.

The bridges across the Grand River have been repaired temporarily, but next year, the commissioners have been assured by the highway commission, state help will be provided for the building of a street bridge to replace the present wooden structure.

In Commissioner Cather's district concrete culverts have replaced several wooden ones and the road has been straightened in many places, eliminating dangerous curves and steep ditches in the Blue River Road. Some improvements have been made in the Muddy Creek Road and additional work is being done on this road now.

A. F. Polhamus has been selected by the State High-

(Continued on page 22.)



Begin to Talk Bond Issue

IN November, 1920, Colorado will be called upon at the general election to vote upon the question of a \$5,000,000 bond issue for the furthering and betterment of the good roads system of the state.

The people of the state of California voted a \$40,000,000 good roads bond issue on July 1, 1919, by a majority of 8 to 1. By this action of the citizens of the Golden State will be created the third fund of the kind there, and results are already apparent in highways of the finest sort in almost every direction.

But Colorado has better natural road surfaces than California, and the good roads program in the Centennial State is being carried on here very rapidly with the state funds available and the extremely hearty co-operation of the federal government, which seems to be taking a very especial interest in Colorado's good roads ambitions. If the bond issue is carried a year from next November this state will have about enough money for all the roads it can find men and machinery to build. In fact, state and government have laid out a program for 1919-20 which contemplates the expenditure of a sum about equal to next year's proposed bond issue, although the 1920 program has not been completed.

It is absolutely necessary to the continued prosperity of the state that this bond issue carry. That it will "make the grade" appears assured, but no right-minded citizen should take any chances on his neighbor going wrong on the subject. There are always some misinformed or wilfully obdurate people who choose the wrong road and others who sow seeds of dissension against any worthy project. It is none too early to begin talking in favor of the 1920 good roads bond issue. Colorado should do as well as California, in which state they are wondering who the one fellow in every eight who voted wrong really was.

A synopsis of the bill which proved so popular in California appears in this issue, and gives readers an idea of what they propose to do in that state. It was supplied to the State Highway Bulletin by the Los Angeles Chamber of Commerce at our request.

Should Make 1920 Program

CHIEF ENGINEER J. E. MALONEY is very anxious to see fixed definitely the road-building program of Colorado for 1920. As soon as the schedule for next year is complete he will be able to make his surveys, plans and specifications for the work to be done.

Then construction work can start early in the spring, instead of being delayed until summer.

Some departments of state are inclined to demur at the spending of money for preliminary work, such as surveys. However, this part of road building is just as important as the real physical work that comes later, and it must be done with even greater care and precision. It is by no means a waste of time and money, but a great saving can be made if surveys and plans are made well in advance of the season when climatic conditions make it possible to build the roads. Valuable time is wasted if surveys are not made until time when the actual construction should begin.

It is to be hoped that the 1920 program will be devised as soon as possible, and that no stones of expense disapproval will be placed in the way of the state engineer when he starts to anticipate next year's work this fall by sending out his surveying crews to the roads designated by state and government to be built in 1920.

Heavy snows sometimes fall in September in parts of the state where new roads are needed and from that time on weather conditions will more and more impede the progress of the state engineer's workers.

Otero's Ambition

A MAP drawn according to the latest government requirement for Federal Aid projects is found on the back of this number of the Highway Bulletin. The map shows Federal Aid Project No. 62, in Otero County, which will be first advertised Monday, August 18, and the contract for which will be let September 2. This project extends from Manzanola a mile in the direction of Fowler and calls for a mile of standard concrete pavement, 18 feet wide. The estimated cost is \$28,000.

At the same time there will be advertised a mile of concrete road one mile east from Fowler and another mile one mile West from La Junta, both also on the Santa Fe Trail. Succeeding annual state road programs will provide for the connecting up of intervening spaces, so that Otero County will in all likelihood be crossed from east to west by a solid ribbon of concrete within three years. Otero will probably be the first county in Colorado to enjoy such a distinction.

Pueblo County also has an ambitious program, which will carry it to the western Otero County boundary with a paved road. With the completion of such a road across both Pueblo and Otero counties the Santa Fe Trail will of a truth become a wonderful artery for Eastern automobile traffic into Colorado. The distance across Otero County is

40 miles. The distance to be added in 1920 is four miles, which in addition to the four miles to be laid this year will comprise 20 per cent of the total distance, or a start which will insure early completion.

The survey for the eight miles of concrete to be built this year and next in Otero County was completed as recently as June 15, giving but little time for advertisement for bids. It is this sort of action which is going to carry Colorado's ambitious road building program through in record time.

Federal Aid Project Index

THE tremendous scope of the work planned and now being done by the state of Colorado with the useful adjunct of federal aid along road-building lines is indicated by the following table of routes prepared by Chief Engineer James E. Maloney for the State Highways Bulletin. No citizen can fail to be impressed with the work in contemplation, which is here set forth succinctly and should be saved for ready reference:

- No. 1—Denver-Littleton.
- No. 2—Walsenburg-Trinidad.
- No. 3—Granite-Twin Lakes.
- No. 4—Rifle-Meeker.
- No. 5—Withdrawn.
- No. 6—Lamar-Springfield.
- No. 7—Naturita-Norwood.
- No. 8—Meeker north to county line.
- No. 9—Big Thompson Canon.
- No. 10—Denver-Brighton.
- No. 11—Wray-Idalia.
- No. 12—Greeley-Denver.
- No. 13—Denver-Boulder.
- No. 14—Longmont Road.
- No. 15—Merino Bridge.
- No. 16—Morgan-Brush.
- No. 17—Colorado Springs Road.
- No. 18—Pueblo east.
- No. 19-20—Lamar-Springfield.
- No. 21—Rocky Ford Road.
- No. 22—LaJunta Road.
- No. 23—Delta-Montrose Road.
- No. 24—Ft. Garland-San Luis Road.
- No. 25—Montrose-Delta.
- No. 26—Ouray-Red Mountain Road.
- No. 27—Grand Junction-Palisade.
- No. 28—Blue River Road.
- No. 29—Turkey Creek Road-Morrison-Baileys.
- No. 30—Denver to Morrison.
- No. 31—Denver to Hospital.
- No. 32—Denver to Brighton.
- No. 33—Ft. Collins south.
- No. 34—Greeley, three miles.
- No. 35—Plattsville south, 2 miles.
- No. 36—Longmont south.
- No. 37—Boulder east.
- No. 38—Morgan-Brush.
- No. 39—Akron-Brush.

- No. 40—Wray-Schramm.
- No. 41—Sterling-Merino.
- No. 42—Cherry Creek Road to Colorado Springs Jct.
- Nos. 43-44-45—Burlington north.
- No. 46—Limon east 10 miles.
- Nos. 47-48—Canon City-Denver Road.
- No. 49—Colorado Springs-Denver Road.
- No. 50—Cheyenne Wells north.
- No. 51—Castle Rock-River Bend.
- No. 52—Woodland Park-Cripple Creek.
- No. 53—Buena Vista-Salida.
- No. 54—Buena Vista-Divide.
- No. 55—Peyton-Ramah.
- No. 56—Farmers Highways.
- No. 57—Lamar north.
- No. 58—Lamar-Springfield.
- No. 59—Las Animas City east.
- No. 60—LaJunta Road.
- No. 61—Rocky Ford Road.
- No. 62—Manzanola Road.
- No. 63—Fowler Road.
- No. 64—Ft. Garland-San Luis Road.
- No. 65—Ouray-Silverton.
- No. 66—Naturita to top of Norwood Hill.
- No. 67—Rico north.
- No. 68—Monte Vista-Saguache.
- No. 69—Delta-Montrose.
- No. 70—Delta-Hotchkiss.
- No. 71—Durango-Mancos.
- No. 72—Bayfield to Dyke.
- No. 73—Walden-Rand.
- No. 74—Craig west.
- No. 75—Kremmling north to Muddy Creek.
- No. 76—Same as No. 4.
- No. 77—Grand Junction-Palisade.
- No. 78—Battle Mountain.
- No. 79—Blank.
- No. 80—Steamboat Springs north.

Counties Asked to Help

In order to prevent \$900,000 of the money appropriated by the federal government for road work in Colorado from being given to another state, the State Highway Commissioners have authorized the sending out of letters to counties, asking them to appropriate 25 per cent of the state's share of the expense of constructing roads in their respective counties. About \$120,000 has been kept for Colorado already through the assistance of the counties.

Members of the board also authorized the signing of the contract for the building of the \$90,000 road project in the Big Thompson Canon. This road and one through the South St. Vrain Canon, which the commissioners also plan making a federal aid project, lead to Estes Park.

Arrangements for the spending of \$25,000 by the state and Boulder County are being made to rebuild the roads in that county which were washed out during the recent heavy rains.

State's Share of War Material is Increased

Colorado Will Receive from Government's Surplus of Army Supplies 384 Army Trucks and Cars Instead of 200 Originally Allotted. Complete List of Material Available for all States is Given. Commissioner Ehrhart Orders Carload of Iron Fence Posts from Uncle Sam's Store.

COLORADO is scheduled to receive 358 motor trucks and twenty-six passenger cars for highway improvement from the federal government, according to an interesting communication setting forth the amount of war materials available for the state highway departments of Colorado and other states just sent to Congress by C. F. Marvin, acting Secretary of Agriculture.

The communication sets forth the four allotments of trucks and the two allotments of passenger cars to Colorado and declares that these allotments are final.

The allotments of trucks follow:

First, ninety-seven.

Second, forty-one.

Third, seventy-one.

Fourth, one hundred and forty-nine.

The two allotments of passenger cars are seventeen Fords and nine other cars.

Highway Commissioner T. J. Ehrhart on August 16 wired an order to the War Department for a carload of iron fence posts, which he had been informed are available for state purposes.

A request for construction and operating equipment based on the estimated needs of the several states was sent to the War Department. The Secretary of War in reply-

ing to the request stated that the War Department would deliver to the Department of Agriculture out of the surplus in the United States or France a sufficient amount of equipment to meet the estimate, which is as follows:

Four hundred road rollers, steam and gas driven; 700 concrete mixers; 600 road graders; 400 elevating graders; 200 sprinkling wagons; 200 road oilers; 125 derricks, thirty to sixty feet boom; 100 piledriver outfits complete; 200 complete air drill outfits; 250 steam pumps up to four inches; 150 centrifugal pumps up to four inches, with power; 75 diaphragm pumps, gasoline driven; 500 rock crushing outfits complete, capacity 125 tons to 200 tons per day; 200 clamshell, orange peel and bottom-dump buckets; 125 road scarifiers; 50 caterpillar and drag-line excavators; 700 road and railroad plows; 300 roter plows; 160 automotive cranes; 3,600 trailers for tractors; 1,000 miles industrial railway track; 200 industrial railway locomotives; 3,500 industrial railway dump cars; 15,000 feet rubber hose, 5,000 feet steam hose; 40 portable asphalt plants; 200 steam shovels, capacity one yard or less; 6,500 dump wagons; 250 conveyors, gravity and power; 35 donkey, 200 hoisting and 75 gasoline engines, 5 to 30-horsepower; 375 complete steam drill outfits; 250 portable air compressor outfits with power; 100 boilers, 15 to 40-horsepower; 275 electric motors, 2 to 50-horsepower; 1,300 pulley blocks.

Fall River Road Progressing

PROGRESS as rapid as possible under the untoward physical circumstances which obtain there is being made on the Estes Park-Grand Lake Road, now being built by state and government. The survey has been completed by Field Engineer Frank I. Huntington from the west side to the top, and construction is well under way on the "High Line."

It has been found that a maximum grade of 6 per cent will suffice for the west end of the road. The road is practically finished to Milner Pass, a distance of 5.3 miles. The use of T.N.T. and compressors has greatly expedited work on the Estes Park-Grand Lake, or Fall River Road, as it is sometimes called. Following is a report of Field Engineer Huntington to State Chief Engineer Maloney on the progress of construction of this road:

Hot Sulphur Springs, Colo., Aug. 14, 1919.

Mr. J. E. Maloney,
Chief Engineer,

Denver, Colorado.

Dear Sir: Have to report that I have extended the western slope surveys of the "Fall River Road" up and on to the "High Line" and connected with the terminus of the Becker surveys on top. Beginning at Sta. 1-50 of the

old McQueary contract, the distance to Becker's terminal is 2.46 miles and the maximum grade is 6 per cent with a considerable section under 6 per cent.

Construction is well under way on the High Line, and am carrying it up the cross section as fast as the timber is removed—about 3,600 feet has been cleared to date. The T.N.T. does a clean job of this.

The road is nearly finished to Milner Pass, a distance of 5.3 miles, there being about ten days hand finishing, and the installation of a few culverts to complete same.

I have pulled off the force on the work between the foot of the grade and Grand Lake, as the work was progressing in an unsatisfactory manner, due to the lack of proper construction supervision. This work consisted of about one mile of new road, and now lacks the finishing touches, which can be applied when the connecting link of road is built to Grand Lake next year.

Am well pleased with the compressor and air drill. We can easily run 175 feet of holes a day, which is equivalent to the work of about 36 hand drillers.

Yours very truly,

(Signed) FRANK I. HUNTINGTON,

Field Engineer

Board Devises 1920 Federal Aid Budget

(Continued from Page 6)

San Juan County was appropriated \$1,000 on a basis of 1 to 1.

Delta County was apportioned \$1,500 on a 1 to 1 basis.

There was appropriated \$10,000 for construction on Road No. 70 in the county of Las Animas, to be expended under the supervision of Commissioner Radford, \$5,000 to be retained from the budget appropriation to Las Animas County for 1920.

A committee consisting of Mr. Sommers, Mr. Nichols and Mr. Radford was appointed to confer with Governor Shoup to request that he include in his call for a special session of the Legislature some relief for the State Highway Commission in the way of providing additional revenue to cover federal appropriations for federal aid projects.

Commissioner Eshhart was instructed to purchase a Twin City tractor for the use of District No. 1 in grading and scarifying roads, the cost of this tractor not to exceed \$3,500.

Commissioner Ehrhart was instructed to approve the amended agreement between the D. & R. G. R. R. and the State Highway Commission for the construction of a side track at the lime quarry in Huerfano County, Colorado, construction of this siding to be paid for by the State Highway Commission in the sum of not to exceed \$3,450.

A communication from the County Commissioners of Weld County was read regarding the controversy between the Commissioners of Weld County and the McDonald Construction Company relative to the Hyle Bridge in Weld County. They ask the commission to stand one-half the cost of exposing the piers of bridge for the purpose of making an examination of them. The letter claimed that reports are being circulated to the effect that the piers were not constructed according to specifications of State Highway Department and that they are defective. The sense of the commission seemed to be that the commission would stand one-half of cost of the examination, which, in the opinion of the County Commissioners of Weld County, would cost about \$1,000 for each of the thirteen piers.

Commissioner Ehrhart was directed to enter into a contract with Dooling Brothers and Hoffman & Crook for construction work through the Big Thompson Canon, known as Federal Aid Project No. 9, as per terms and prices in their proposal as follows:

Force account proposed by Dooling Brothers and Hoffman & Crook for the construction work through the Big Thompson Canon between Loveland and Estes Park, Federal Aid Project No. 9, under the following conditions and rates, the State Highway Commission reserving the right at any time to terminate the agreement if unsatisfactory:

For ordinary labor, \$3.50 per man per day, which it is understood is now the going rate for such labor, and in the event it shall later become necessary to pay an increased rate for such labor, then such rate as may become agreed upon between the party of the first part and the parties of the second part, not to exceed the sum of \$4 per man per day.

For teams employed in said work, the sum of \$3.50 per day when at work and the sum of \$2.25 per day when idle.

For the camp outfit, including cooking outfit, dining room, sleeping quarters, drilling equipment, etc., \$200 per month.

For salary of camp superintendent, \$150 per month and board.

For salary of time keeper, \$100 per month and board.

For corral man, \$100 per month and board.

For night watchman, \$75 per month and board.

For rental of tools, as follows: For time actually in use, blade machines, \$1 per day; wagons, 50c per day; carts, 50c per day; fresnos, 25c per day; plows, 35c per day; slips, 15c per day, and mormons, 15c per day.

Repairs, picks, shovels, steel and all other small tools required to be paid for at cost, the party of the second part agreeing to take over such of said tools, shovels, steel, etc., as shall at the close of the work be found to be usable, at such price as shall be agreed upon by appraisement, arrived at by two appraisers, one to be chosen by each of the parties hereto.

All material, powder, railroad fares, freight, insurance, etc., to be paid for by the party of the first part at actual cost, it being the intention of this agreement that all legitimate expenditures incurred in the prosecution of said work shall be considered and added together in arriving at the basis of actual cost. Thereupon and after the arrival of said figure of actual cost, fifteen (15%) per cent additional shall be allowed and be paid to the parties of the second part, to be their compensation for their obligation of general supervision, actual personal superintendence and general office and clerical hire.

It was agreed that during the progress of the work, a representative of the State Highway Commission shall at all times be in direct charge of operations.

Big Progress in Jarre Canon

THE federal fellows are making great progress on the Jarre Canon Road, which extends from Sedalia west to Deckers, on the south branch of the South Platte River. For ten miles of its length the road is superb and it will be completed this fall, there remaining about an equal distance to be completed. Besides affording easy access to some of the finest scenery in Colorado, the road eliminates the dangerous Nighthawk Hill, which was formerly the only route to Deckers, and forms an important link in the road from Denver to Colorado Springs by way of Deckers, West Creek and the Ute Pass, through Woodland Park, Cascade and Manitou. Also it makes easily accessible by a new and beautiful route the beautiful Platte Canon resorts, such as Buffalo, Pine and Baileys, and forms one-half of a circle trip to those points, the return portion of which would be Elk Creek Canon and either Bear Creek or Turkey Creek Canons. The Jarre Canon Road will be one of the most useful in this part of the state, both for commercial and scenic purposes.

"Illuminated" Road to Springs

Seventy-five miles of illuminated highway between Denver and Colorado Springs is the latest plan of the State Highway Commission. E. E. Sommers, chairman of the commission and principal speaker, told the members of the Lions Club at their meeting recently. It will be the only highway of its kind in the world, Chairman Sommers said. The trucks and other road building equipment recently secured from the War Department will be used in making the improvements.

The speaker told of the co-operation he had received from Colorado senators in his efforts to secure the army trucks and 100 tons of T.N.T. when he was in Washington. He explained the apportionment of trucks to the different states, and said Colorado had received a supply of tents, crushers and other equipment for road building as well as trucks.

James R. Noland, secretary of state, told members of the club that there was now in Colorado one automobile for every ten persons, or a total of 110,000 registered automobiles so far this year. Last year he said but 82,000 cars were registered. There are 19,000 cars registered in Denver, he said.

He reminded the club that an act passed at the last session of the legislature placed a minimum license tax of \$5 on all automobiles, and that above that the cars were taxed according to their factory price.

Several F. A. Roads Already Completed

(Continued from page 15)

Field Engineer Cheney completed his work on the Twin Lakes Road so that Superintendent of Construction Harlan can carry this work as far forward toward the top of Independence Pass as possible this year.

The Floyd Hill washout spoken of in the last report was repaired and the work on the improvement of the road from Floyd Hill to Bergen Park is under way under Superintendent Williams.

Many washouts have been reported to this office during the past month, due to the very heavy rain storms—particular damage being done on the North and South Saint Vrain Roads. Some bridges were washed out in many of the counties. The bridge on the road to Ft. Logan, near Petersburg, was washed out. Measurements have been made and plans are now being drawn for the replacing of this bridge with a concrete-iron structure.

The contractor has started work on the Ft. Morgan Road, and Contractor Kinney is about ready to start on the Brighton Road. Contractor Orman reports that he is ready to start work on the Pueblo work.

Bridges over the canals on Boulevard F are very nearly completed.

I desire again to call your attention to the desirability of an early decision on the plans for 1920, as it will be a great advantage to us in pushing forward the surveys and plans so as to have them ready for spring work.

All of which is respectfully submitted.

J. E. MALONEY, Chief Engineer.

Big Wheat Tonnage Demands Good Roads

(Continued from page 16)

travel to and through the state. Tourist roads were the first laid out by the State Highway Commission. Tourist roads were the first built and advertised.

The demand for tourist roads is just as strong today as it was then and there are hundreds of miles of wonderfully fine scenic highway in Colorado as a reward to those who first realized the need of making our mountain scenery accessible. As a further and more substantial reward it is generally conceded by those whose task it is to count the tourists and relieve them of some of their war profits that there has never been so many of them in Colorado as this year.

But added to the call for good roads for tourists is another and even stronger call for good roads for Colorado people—for the farmer, the stockman, the miner and the manufacturer. Everybody wants good roads, and most everybody is beginning to realize that the only way to get good roads is to pay for them.

The State Immigration Department has had prepared a "Wheat Map of Colorado for 1919," the first map of the kind ever made for the state. It shows the distribution of both winter and spring wheat in the state, as indicated by the reports of county assessors. A glance at the map will show where wheat is grown in Colorado and how extensively. A small symbol is used to represent each 1,000 acres of wheat grown, and the counties in the northeast corner of the state are so crowded with these symbols that there is hardly room left for the names of the counties. Four counties in this district have grown more wheat this year than was grown in the entire state in 1909, and seven counties here have about two-thirds of the state's wheat acreage.

Good Roads Planned and Done

(Continued from page 17.)

way Commission to survey the new route for the Kremmling-Martin Road, and Mr. Polhamus has arrived at Kremmling.

An appropriation of \$35,000 of federal funds was secured for the improvement of this road earlier in the year. The highway commission plans call for numerous changes from the present route, the widening of the road and the reduction of all the steeper grades.

Mr. Polhamus is considered one of the best engineers in the state. He has been a resident of Grand County for many years and will bring to this government work an intimate personal knowledge of the conditions to be met and obstacles to be overcome that is expected to expedite the survey.

It is not expected much will be accomplished this year beyond the completion of the survey and the starting of preliminary construction work. The highway commission has been hampered all year by lack of efficient engineers and, the county commissioners were told, it was impossible to start the work earlier for this reason.



FRED GOBEL, Colorado Highways Commissioner for District No. 4, Southwestern Colorado, has been a resident of Silverton for upwards of twenty years. He is a prominent lumber and coal dealer of that city and has been its mayor. He has always been an ardent advocate of good roads.

Some of the most picturesque portions of Colorado are found in the district of Commissioner Gobel. It surrounds the Mesa Verde National Park and the Rocky Mountains are seen at their best at various localities there. It is already much traveled by tourists and with the development of good roads already under way the number of visitors will be increased manifold.

The pet project of Commissioner Gobel is the Durango-Silverton Highway, a Forest Service project, and next in his affections is the Silverton-Ouray project, which is really a continuation of the same road and is largely reconstruction work. Mr. Gobel was the first appointee on the Highway Commission after the four original members quit, and has served four years in his present capacity.

The A. A. A. reports that the greatest transcontinent motor traffic in history will flow westward this summer.

Concrete in Pennsylvania

Over 376 miles of reinforced concrete roads, costing more than \$13,450,000, have so far been let in Pennsylvania under the \$50,000,000 bond issue program voted last fall.

Up to July 28 the Pennsylvania State Highway Department had let contracts for 470 miles of roads this year. That more than 376 miles of this should be the highest type of reinforced concrete indicates that Pennsylvania is spending its money wisely.

The information bureau of the Pennsylvania State Highway Department, which has given out the above figures, says that advertisements of new work will continue throughout August and September, so that before the end of the active letting season the concrete mileage will be appreciably increased.

Utah Leads in Concrete

Contracts awarded for concrete highway construction in Utah from January 1 to June 28, 1919, show that a total of 741,513 square yards has been let.

Although this yardage is not so great as that contracted for in a number of other states, it nevertheless has brought to Utah the distinction of having awarded, this year, the greatest concrete pavement yardage per 100,000 of population of any state in the Union. According to latest figures available, Utah population is 373,351, and this gives to Utah 198,797 square yards of concrete pavement per 100,000 population.

A number of other highway paving projects in Utah are being promoted for concrete or are about to be placed under contract and before the end of the active letting season the total yardage will be considerably increased, and it is expected that this will enable Utah to retain its present distinction.

Compressors Save Labor

A total of 200 feet a day, as compared with the thirty feet which so far has been the maximum highway record with a double jack and hand drill, is expected to be attained with air compressors which the State Highway Commission received this month. The two compressors are of the portable type, weigh 8,500 pounds each, generate forty horsepower and carry a pressure around the drum of 130 to 140 pounds. They are mounted on four-wheeled trucks so that they may be easily transported. One of them will be sent to E. B. Harlan, who is in charge of construction on the Independence Pass highway, and the other will go to I. W. McCrary, who is carrying on the Fall River Road building near Granby.

Only Roads Get "Illuminated"

Chairman Sommers of the State Highway Board declares that inasmuch as roads are about the only things in the Nation that can get "illuminated" any more, it seems meet and fitting that the highway to the Springs should be "lit up" with real lights.

DATE	NO.	BY	CHKD.	BY

STATE OF COLORADO
STATE HIGHWAY COMMISSION

PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY

FEDERAL AID PROJECT No. 62,
OTERO COUNTY.

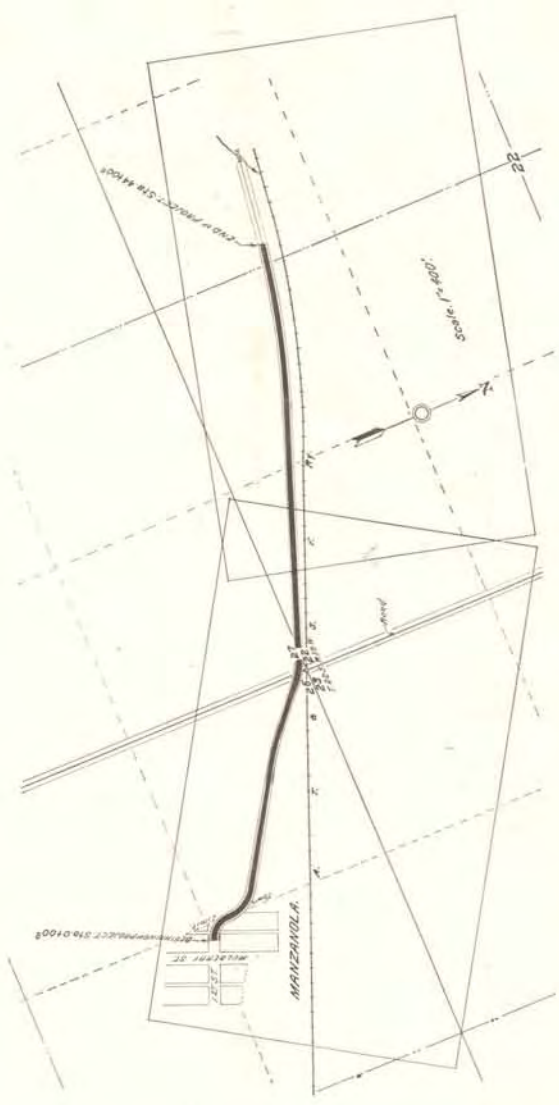
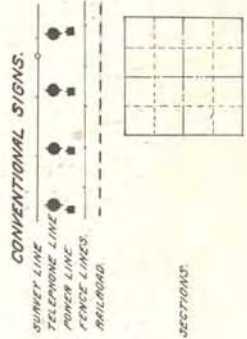
SCALE: PLAN 1"=100 FT.
PROFILE 1"=10 FT. VERT. CURVE 1"=100 FT.
GRADE LINE ON PROFILE IS SHOWN AT THE CORNER OF FINISHED ROAD.
LENGTH OF PROJECT 4500 FT. OR .85 MILES

INDEX OF SHEETS.

SHEET NO. 1, TITLE PAGE

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6	33 - 49	
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RECOMMENDED FOR APPROVAL

CHIEF ENGINEER

STATE HIGHWAY COMMISSION

RECOMMENDED FOR APPROVAL

DISTRICT ENGINEER

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER

DIRECTOR