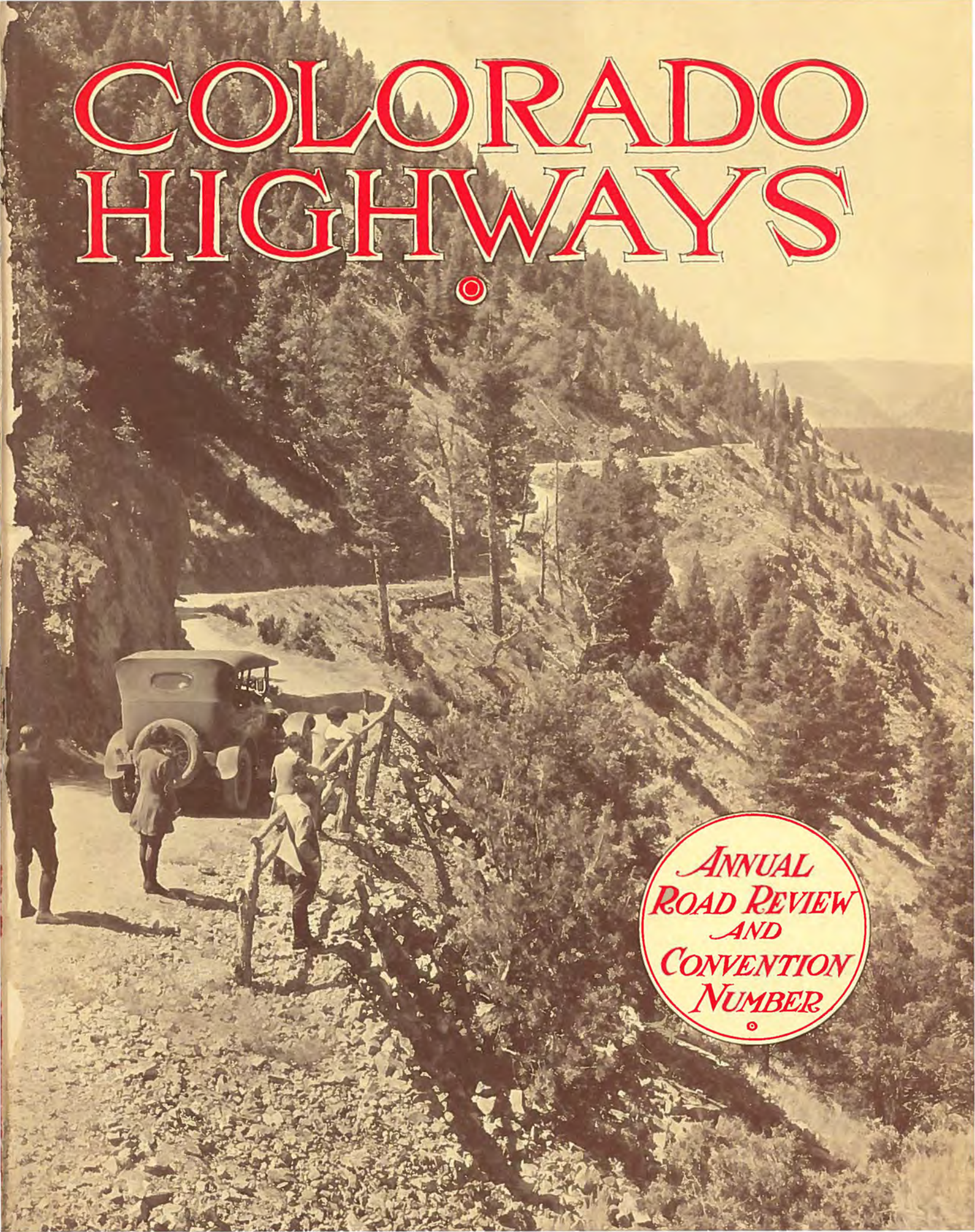
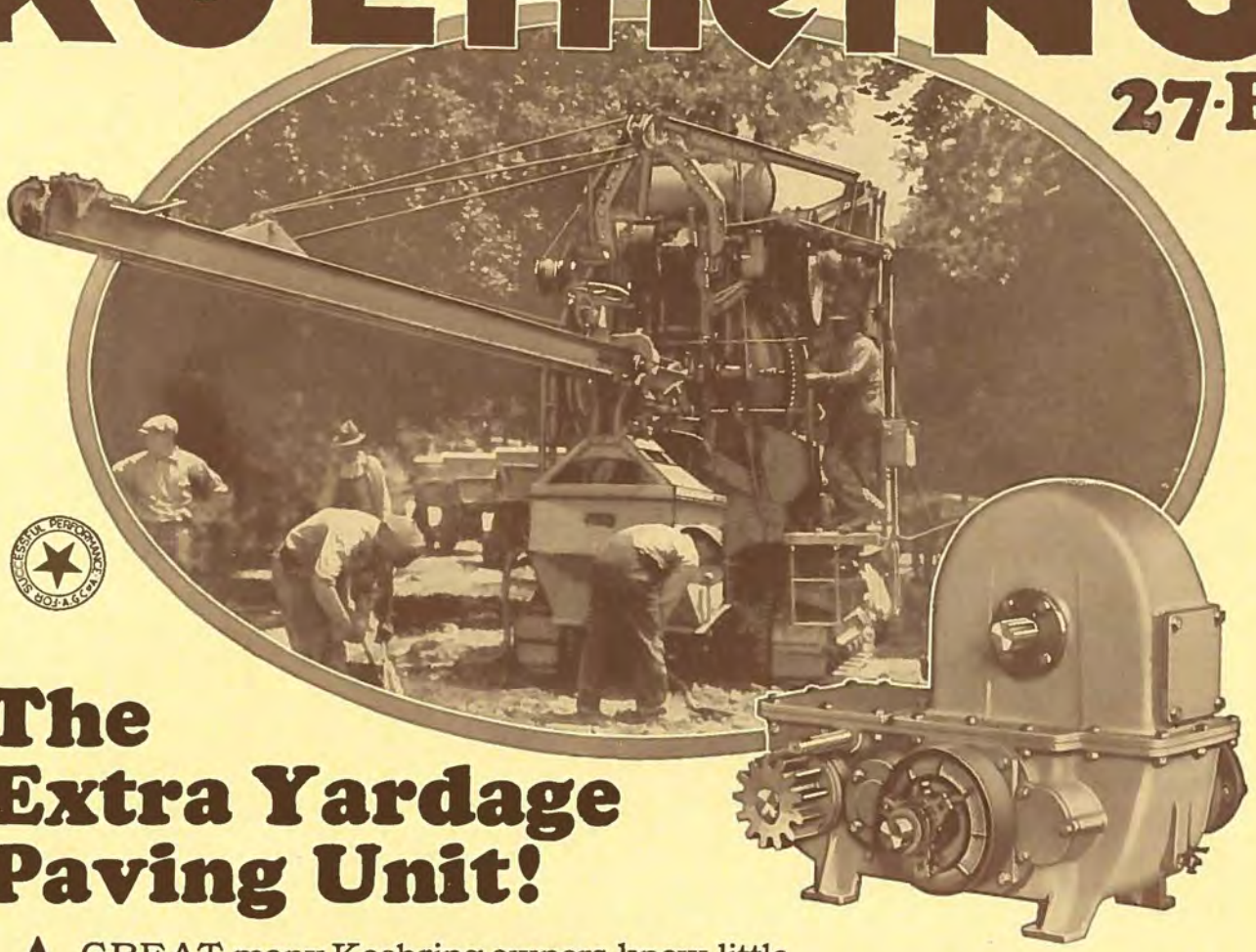
COLORADO HIGHWAYS



ANNUAL ROAD REVIEW AND CONVENTION NUMBER

The Greater KOEHRING 27-E



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ALPHABETICAL INDEX TO ADVERTISERS

Colorado Highways

JANUARY, 1926

M. W. BENNETT, EDITOR

SIDNEY HAHN, Adv. Mgr.

Vol. V. No. 1.

CONTENTS

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Articles on the subject of road building and highway development in the West are solicited. Manuscripts should be addressed to the Editor, with return postage. Photographs should accompany articles whenever possible. Manuscripts not found available will be returned promptly.

10 CENTS A COPY. **$1.00 A YEAR.**

OUR COVER PICTURE

The cover scene on this month's issue of COLORADO HIGHWAYS are reproductions of views on State Road No. 11, between Kremmling and State Bridge, in Grand County. While not as highly improved as some of the other main roads in the "hill sections" of the state, yet motorists say there are more thrills to the mile on this highway than can be found on any other in the state.

State Road No. 11 forms a link in the Federal Aid System in Colorado and during the summer months carries considerable traffic. It is the purpose to build this road more substantially later when state and local funds become available and traffic justifies. Photo by courtesy of Denver Tourist Bureau.

Colorado Highways
"BETTER ROADS"
VOLUME V. JANUARY, 1926. NUMBER 1

Editorial Foreword

BUILDING highways in Colorado is a "he" man's job. It is a sure-enough engineering problem.

In this state we find road builders conquering nature, in her very sternest moods. Here we find officials, keeping faith with their public in road matters. Each year finds new roads blazed across desert and mountain range.

And so it is fitting that we should pause to take stock of what we have done during the past decade. Our road builders have solved many problems. Yet many more remain to be solved. Some are our problems alone; others deal with the development of the nation as a whole.

During the past few years tremendous strides have been made in the development of Colorado's road system. Scores of miles of new roads have been added to the system each year. Our highway engineers have forged ahead against tremendous odds. The maintenance problem has been handled in a manner that has met with considerable success.

MAJ. L. D. BLAUVELT
State Highway Engineer

In another section of this issue of COLORADO HIGHWAYS the reader will find reports on the progress made by the Highway Department during the year just ended. These include reports from the engineers and maintenance supervisors in the field. They detail the vast amount of effort being put forth to provide the traveling public with improved highways.

The automobile and truck have come to stay. So has the improved highway. Both play an important part in our present-day scheme of things.

No amount of opposition can stop the good road program. It goes hand in hand with the progress of the nation.

We are faced with a problem of highway financing after 1926. And like all other problems with which the people of Colorado have been confronted in the past, it will be solved—and solved in a big, broad way.

Several plans have been suggested. One which seems to be the most practical is the "Pay As We Go" plan. Under this plan the "users and abusers" of the roads bear the burden of their construction and upkeep. We believe this right and proper. This plan is sponsored by the Motor Club of Colorado. It has been approved by the State Highway Advisory Board.

Adoption of this plan, which will probably be submitted to the voters at the next general election, will result in the State Highway Department being held directly responsible for the construction and maintenance of all the principal roads in the state.

The adoption of the "Pay As We Go" plan also will enable county road officials to concentrate their efforts on the improvement of "feeder" roads, thus extending the road system to the very doors of the farmers—thereby enabling them to "cash in" directly from the sums already expended on the state highway system as a whole.

Some Major Activities of the State Highway Department

By J. E. MALONEY,
Assistant Highway Engineer

THE details of our field and office work are set forth in the articles by the Division Engineers, Office Engineer, Chief Draftsman, Bridge Engineer, and Traffic Census Supervisor.

Work was slower than usual in starting on our Federal Aid Projects, and while the amount of work let was as large as in 1924, we will carry over into next season more uncompleted work.

On Federal Aid Projects: 34 were carried over from 1924; 27 of these were completed during 1925; 4 are still in progress; 2 are being advertised, and one (an underpass north of Trinidad) remains to be let.

Of the projects in the 1925 Budget, seven are completed; 17 are in progress of construction; 3 are being advertised, and 8 are being prepared for advertising.

State Projects were fairly well completed during this season. There were 54 carried over from 1924; 90 in the 1925 Budget, with 12 emergency projects. Of these 40 will be carried over uncompleted.

Floods during the summer damaged some bridges and roads, causing delay on a few of the main roads. Repairs were made, or detours provided for, so that the traffic was not greatly inconvenienced.

The elimination of grade crossings of railroads is progressing. Each season showing improvements. During 1925 the under-crossing of two railroads at Wolhurst was in use, and this removed one of the hazards on this road.

During 1926 one under-crossing of the D. & R. G. W. R. R. at Castle Rock and one at Monument will be constructed; also an under-pass under the Santa Fe near Monument and one at Larkspur. With these crossings built, all surface crossings of railroads between Denver city limits and Colorado Springs will have been eliminated.

An overhead crossing of the U. P. R. R. at Nunn is now under construction. This is on the Greeley-Cheyenne road.

On our investigations and tests of subgrade and road material deposits, we have had the co-operation of the Colorado State Agricultural College; also of the Burau of Public Roads. On our steel tests the University of Colorado has co-operated.

The improvements on the state road system are gradually being connected, thus giving us long stretches of surfaced highways.

The short half mile pieces of paved road which were started from each end of the main towns—some eight years ago—have borne fruit and grown satisfactorily into a fine paved road, north and south. The same is true of the graveled sections in the various sections of the State.

The graveled or broken stone road will of necessity always comprise the greater part of our improved roads.

With our 9,000 miles of state highways, we can only hope to pave but a very small mileage, and must depend on the sand-clay, gravel and broken stone for our surfacing for the greater portion of this mileage.

This State has received great assistance from the Bureau of Public Roads, and from the Forestry Department in financing the improvements made to date.

To meet further Federal Aid after 1926, will require that the Highway Department be furnished with the funds necessary, and this should be in mind in considering a program for the future.

Report of Maintenance Division

By Robt. H. Higgins
Supt. of Maintenance, Colorado Highway Department

FROM 1913 (the first year that the State Highway Department had funds enough to start the road building programme) until the year 1921, the maintenance of state highways was not seriously considered. This is substantiated by the fact that during these eight years (1913-1921) the budgets showed no appropriations for maintenance, with the exception of the year 1921; (budget for which was made in November, 1920) which gave $186,000 to the various counties of the state for maintenance and betterment purposes. The counties were authorized to expend whatever their several appropriations called for and bill the State Highway Department for the full amount. There was no county participation for that year, other than what the counties voluntarily contributed in the way of maintenance from county funds.

Beginning with the budget of 1922 and for each succeeding year, appropriations for maintenance have been made by the Advisory Board of the Department, to the various counties, on a 1-to-1 basis, agreements with each county being signed for amounts awarded.

While each succeeding year since 1922 has shown better results, there are some counties that have not, for some unexplained reason, caught step with the new order, and their continued refusal to adequately maintain the main state highways through their counties has brought about a demand that the state take over the maintenance of all state highways. This sentiment has crystallized into a plan presented to and tentatively endorsed by the Advisory Board of the Department, that will be submitted to the voters at the November, 1926, election for their approval or rejection.

While maintenance results for the year 1925 has shown improvement over previous years, there is still room for greater improvement in a number of counties. The greatest drawback to obtaining adequate maintenance in all of the counties is the propensity of some counties to spend a large portion of their maintenance money for betterments, to the detriment of maintaining, in a proper manner, the roads previously improved.

It is the writer's opinion that it is a waste of money to build a road, either with Federal, state or county money, and then let it deteriorate through a lack of proper maintenance.

During the year just closed the Department has placed in service a maintenance truck equipped with necessary machinery and tools for the maintenance and repair of hard-surfaced (concrete) roads—some 201 miles—located in various sections of the state. This truck has demonstrated its economical value and has been in constant service since June.

There was also perfected at the shops of the Department a marking machine for painting a center line on concrete and asphalt roads to divide and incidentally help control traffic. This piece of equipment has marked all paving on roads leading into Denver except the Greeley or Brighton road, weather conditions preventing any further continuance of the marking until next spring, when the entire 201 miles of concrete paving will have the "traffic line."

The Maintenance Division has also had charge of the operations of the three steam shovels of the Department, and the details of work done by these shovels can be found in the reports from the different Assistant Superintendents appended below.

As the road building program progresses from year to year, the need of more and better maintenance becomes one of the major problems of the Department.

Bridge Construction in Colorado Year 1925

By Paul S. Bailey, Bridge Engineer

THE function of this Department primarily is to prepare designs and make detailed working drawings for all bridges including overhead railroad grade separations, and all smaller structures built with State and Federal Aid Funds; to check over all bridges over twenty-foot span built by counties; to investigate the strength and condition of existing bridges when required; to check designs for all underpass railroad grade separations, which designs the railroads themselves prepare. Also, to inspect the fabrication of all steel structures built in Denver shops.

During the present year new standards have been prepared for steel trusses of seventy-foot, one hundred-foot and one hundred twenty-five-foot spans, also for concrete pile trestles and reinforced concrete box culverts, large and small. Designs and plans for one hundred and twenty major structures, including six grade separations have been prepared, totaling 11,350 linear feet, 2,000 feet of this total being concrete pile trestles, 1,600 feet of timber trestle with concrete floors and 1,300 linear feet being steel trusses. The standard box culverts include 6,850 linear feet of barrel and the reinforced concrete siphon standard includes 4,600 linear feet ranging from 15 inches to 30 inches in diameter.

The total amount of money represented in the structure plans above based on contract prices and estimates was $1,030,000.00 of which $137,000.00 was for standard culverts and siphons. The cost of doing the work above outlined amounted to nearly 1.25% of the total amount represented.

All new structures on State and Federal Aid roads must comply with certain fixed conditions as to loading, floor surface and clear waterway, also definite limits as to abutment pressures on the soil or piles. In the matter of stream flow we frequently make use of the valuable data prepared in the State Engineer's Office on important streams thruout the state. All structures on which Federal Aid is used are carefully checked by the Bureau of Public Roads, Bridge Department, before advertising for bids is allowed.

Inspection was made by members of the Department for two steel trusses fabricated in Denver shops.

As time permits, the Department gathers information on all bridges thruout the state and is preparing an index for all major structures. This shows location and type of bridge, also stream and sounding data when available. To date 1,250 structures have been located and it is estimated there are from 1,800 to 2,000 bridges in use over the state of twenty-foot span or greater. At first glance, this seems a high number but when you remember that the State, known as the "Mother of Western Rivers," has probably the largest number of tributary streams of any state in the union, it does not seem so high.

The Department on December 1st had all structure plans completed as outlined in the 1925 Highway Budget except in two instances and in these cases preliminary plans had been worked out.

Traffic Count Shows Big Gain

By J. E. Furlong, Census Supervisor

UPON the approval of the 1923 Budget there became available a fund making possible a study of the traffic using our highways thruout the State, known as the Traffic Census.

This was deemed necessary, as it could be seen even by the casual observer that the volume, speed and weight of vehicles using the highways were increasing, by leaps and bounds, and as yet there was no data showing what was expected of the various routes, structures and pavements.

The value of such a study may be seen when the following reasons for it are considered:

1. To classify the various highways in regard to density of traffic thereon.

2. To determine the hourly, daily, weekly, monthly and yearly density and variation of traffic.

The methods employed consist of the actual counting and classification of vehicles passing such points as are chosen for observation. Usually these are junctions of important roads, the entrance into cities, towns, etc.

These observations are taken for a period of seven days each month, and during this time a check on the traffic for the entire 24-hour day is also obtained.

On the main highways more detailed observations are made, including such items as the products being handled by trucks, the number of passengers per car, etc.

These observations were started in July, 1923, continuing until September, east of the continental divide, while during the winter of 1923-1924 some observations were made around the larger cities. In 1924 the western slope was included, and the 1923 program repeated in eastern Colorado. During the winter of 1924 and 1925 observations were taken each month at controlling points thruout the State to make possible the development of yearly comparisons, as well as the usual summer observations.

Many interesting variations are noticeable, the following will be of interest to many, I believe:

An average of 45 points of observation during 1923 showed the eight hour daily traffic to be 52.64% of the entire 24-hour daily traffic, while during 1924 an average of 68 points of observation showed the eight hour traffic to be 47.67% of the 24-hour daily traffic. This shows a general average for the two years to be 50.16%, or in other words 50% of the traffic using the State Highway does so during the eight hour business day, or between 8 o'clock a. m. and 4 o'clock p. m.

In the outlying communities, the eight hour daily travel runs as much as 70% of the 24 hours, while around the larger cities where paved roads make evening driving more of a pleasure, we find percentages as low as 38% for the 8 hour period, which indicates heavy night traffic. This may be accounted for by the city life being more or less confining during business hours, and by the arrival of farm produce for the morning market.

The number of horse-drawn vehicles varies from 0.5 to 13.0% of the total travel—the larger percentages showing around the large outlying towns, and in some mining districts where ore and coal are hauled.

Passenger cars are listed as Colorado, or Foreign; light, or heavy. The Colorado cars vary from 30 to 85% of the total traffic, while Foreign cars vary from 1.0 to 75%, depending upon the location of the observation, and the season during which the observation is made. For instance, where tourist routes enter the state the percentage may be found to run as high as 75% of the total traffic, while in the interior, except at tourist centers, or on routes leading into National Forests or play grounds it varies from 1 to 40%, depending upon such items as scenic and outing possibilities.

During 1923, an analysis developed the fact that light weight cars composed 53.95% of the automobile traffic, and that this class accounts for 48.32% of the total traffic; while light and heavy weight cars together composed 89.57% of the total traffic.

A truck classification during the winter, to analyze the products being hauled during the above years around Denver, brought forth the following information:

That from 40 to 50% of the trucks passing observation points were empty. Merchandise showed a variation from 25 to 45%—farm products from 2 to 10%—machinery from 0.6 to 8.0%, this latter wide variation being due to the oil boom at Ft. Collins.

The Office Engineer's Corner

By ROY J. RANDALL

WE have now arrived at the time of the year when a large part of the construction work on Colorado State Highways has closed down for the winter. This is the lull that follows after many anxious motorists have stopped calling on our office phone to find out if "Berthoud Pass is closed yet" and before we are called on to answer these same peoples' questions as to whether "Berthoud Pass is open yet."

It is at this period of the year we are called upon for an accounting for the accomplishments of the past and for many data to assist the Advisory Board and others in making their prognostications for the future. And it is during these hot stove times that we are called upon to fill out questionnaires from a seemingly vast horde of "laid end to end" statisticians.

We have formed the habit of preparing for this seasonal flood by getting together certain data which may be used in various ways to assist us in answering the questions asked and it seems timely to include here a portion of the results of these endeavors.

Federal Aid Projects completed during the fiscal year which closed November 30, 1925, have totaled as follows: Ten concrete paved projects have added 28 miles to this type of construction within the State at a total cost of $1,145,954.79, and include 13 major structures. One asphalt paved project 2 miles long, cost $84,332.71. Eighteen surfaced projects (gravel or crushed stone) have added 93 miles to this type of road and the total cost was $1,137,826.71, including all major structures. Three graded projects, total length 3 miles, cost $139,045.39, including 4 major structures. Two projects consisting principally of bridges, cost $117,431.35.

The Federal Aid Projects under construction but not yet completed at the end of the year are as follows:

Three concrete paved projects, total length 16½ miles and include 9 major structures. Twelve gravel surfaced projects, total length 54½ miles and include 8 major structures. Six graded projects, total length 68 miles and include 12 major structures. In addition to the above, there are 4 bridge projects under construction.

During the past year bids were opened in Denver on 20 different dates on 41 Federal Aid and State Projects. That the bidding was keen is probably best shown by the fact that there was an average of eight bidders on each project as compared with an average of about 5½ during 1924 and 1923.

The total estimated cost of the work involved as shown by the Engineer's estimates was $2,915,453.80, as compared with $2,876,564.30 in 1924 and $2,316,853.52 in 1923. The total of the low bids is $2,482,204.14, or 85.14% of the Engineer's estimates as compared with 92.5% in 1924 and 91.18% in 1923. The total of the average of all bids received was $2,729,435.74 or 93.62% of the Engineer's estimates, as compared with 99.56% in 1924 and 101.03% in 1923.

The above figures indicate the very keen bidding had during the past year. About the middle of the year we discontinued showing contractors the Engineers' estimate and with the somewhat paradoxical result that the bids were decidedly closer to the Engineer's estimate when the bidders did not see it.

How Road Plans are Drafted

By J. S. MARSHALL,
Chief Draftsman

IN the drafting room of the State Highway Department there are carried on several activities helping to co-ordinate the work of the Department in its program for better highways. The principal volume of the drafting room duties consists in preparing plans and estimates for highway projects, keeping these plans up to-date as construction progresses, blue-printing and filing of field notebooks, plans and blue-prints.

Field data for proposed highway improvements are received by this office, the information being in the form of field books only, or including field plans in various stages of completion. These notes or plans are checked over and the final plans then are prepared.

All sheets comprising plans for a project are 22" x 36" in size. The plan and profile, usually drawn to scale of one inch representing one hundred feet, are worked up on tracing cloth. Cross-sections of the roadway are plotted on light ruled paper sheets. Alignment, grades, drainage and other features are verified, after which the quantities involved in the various items of the work are determined and summarized. Detailed estimates are then prepared.

Finally having defined the extent of the project, the sheets covering the work are assembled and indexed in the following general order.

1. Title page upon which is shown a small scale map covering the vicinity of the project.

2. Summary sheet containing tabulation of structures as called for on plan sheets, summary of estimated quantities, typical cross section of improvement, and any notes or small detailed drawings necessary to explain the work more fully.

3. Bridge plans or any special structure plans required for project.

4. Standard sheets for culverts, siphons, guard fence or other structures.

5. Plan and profile sheets showing detailed alignment, describing beginning and end of project, specifying all structures or special work needed along the project, and giving details of grade line to which the project is to be constructed.

6. Cross-sections upon which the details of earthwork are shown.

A set of specifications covering all items involved on the project, and proposal blanks, accompanying the plans. The plans, arranged according to this general outline are now ready for official approval, after which the project may be advertised for bids.

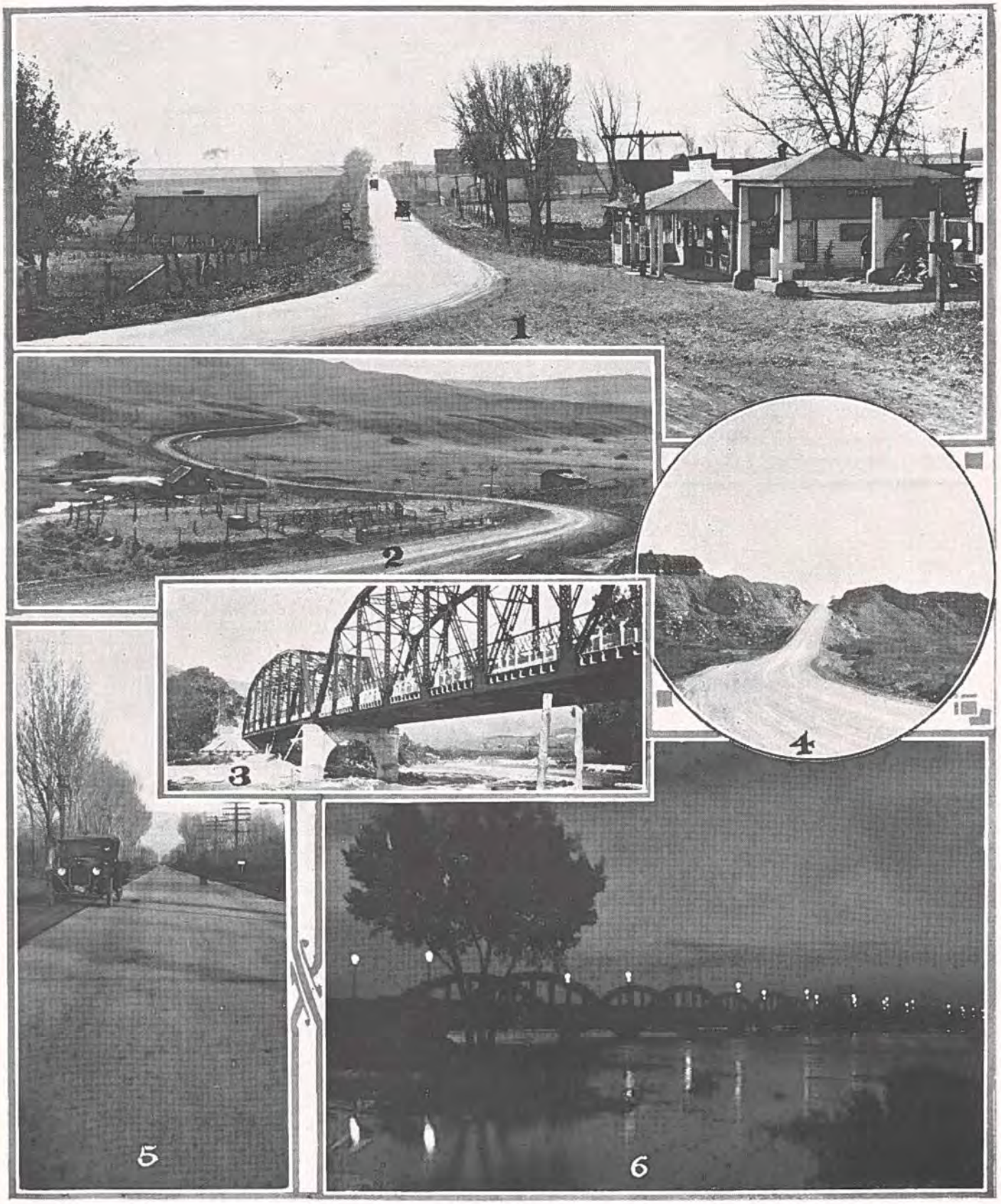
In order that blue-print copies of the plans can be quickly available to prospective bidders and others interested in construction of the project, the Department is equipped to do its own blue-printing. The prints are produced at a speed of about 300 lin. ft. per hour on a modern "continuous type" machine, which, electrically driven, automatically exposes, washes and dries the prints.

The drafting room is furnished with fire-proof filing equipment. Field notebooks are cross indexed and filed in the vault. Tracings and original copies of maps on highway surveys are placed in horizontal steel filing cases. Blue-prints of our projects are hung in numerical order in steel cabinets. The system is so arranged that any desired plans or notes are easily accessible.

In order that the plans can serve as a record of the project, any changes which become necessary during construction are shown. Final contractors' estimates are checked against the data on file and all variations between the two are corrected. In this manner not only are the final quantities checked, but also the plans on file are made to show the project as constructed.

In addition to the above activities, there are prepared in the Dratfing Room various maps, charts and reports incidental to the project plans. Tabulations of bids received for each project are computed. Construction progress charts showing record of progress on each project are kept up to date with information obtained from field reports.

A set of maps showing highways, towns, railroads, rivers, county boundaries, section lines, etc., drawn to a scale approximately one inch equals one mile, has been prepared in the Drafting Room. As changes occur, or more accurate information becomes available, the maps are revised to show the latest development. The State is divided into fifteen minute squares, numbered one to twenty-eight from west to east, and A to P from north to south. This results in four hundred and forty-eight separate sheets, which, if fitted together would cover seven hundred and forty-seven [illegible]



WHAT FEDERAL AID IS MAKING POSSIBLE IN COLORADO. SHALL THIS WORK STOP? 1—Cement highway near Morrison in Jefferson county. 2—Gravel surfaced highway west of Kremmling on the Victory highway. 3—Steel and concrete bridge over Fountain creek, south of Colorado Springs. 4—Newly completed Federal Aid project located near Portland. 5—Paved road north of Denver on State Road No. 1. 6—Fort Morgan concrete bridge over the Platte river.

OFFICERS OF THE COLORADO ASSOCIATION OF COUNTY COMMISSIONERS—Left to right: Dan C. Straight, Greeley, vice-pres.; T. W. Monell, Montrose, secretary-treasurer; James E. Beckley, Delta, president; John W. Green, Georgetown, vice-pres.

County Road Officials To Hold Annual Convention

The most important meeting ever held by the Association of County Commissioners of Colorado will convene in the hall of the House of Representatives in the State Capitol building, Denver, Monday morning, January 18th. The association will be in convention two days.

James E. Beckley, Delta, president of the association, will preside.

The association will hold morning and afternoon sessions, with several entertainment features interspersed.

As usual the high light among the entertainment features will be the Rudd Hardesty banquet which will be given on Tuesday night. Invitations have been mailed to all of the members of the association.

Probably the most important subject which will be discussed before the meeting will be the re-financing of the State Highway Department. The "Pay as We Go Plan" probably will come in for the greater part of the discussion.

Among the prominent road officials to address the commissioners are: Maj. L. D. Blauvelt, state highway engineer; J. W. Johnson, district engineer, U. S. Bureau of Public Roads; Col. A. S. Peck, U. S. Forest Service, and Robt. H. Higgins, state superintendent of maintenance.

Representatives of the Colorado Motor Club, who have sponsored the "Pay as We Go Plan" for financing the Highway Department after 1926, also are scheduled to explain in detail the amendment which will be submitted to a vote of the people at the next general election.

Harold W. Moore of the Moore Equipment company will entertain the members of the association at a luncheon in their new quarters at Sixth and Acoma streets, Tuesday noon, January 19th. Mr. Moore will furnish transportation to his headquarters.

T. W. Monnell announces that the secretarial headquarters of the convention will be in the old room he has always had, No. 171, at the Albany Hotel.

The Colorado association of county commissioners was launched in 1907 by a few commissioners and county clerks who were trying to remedy the graft of the water commissioners.

Judge A. T. Stewart of Pueblo and Ira H. Monell of Montrose, both county commissioners, signed the call and in January, 1908, in the Denver courthouse, the organization was perfected. Judge Stewart was president and T. W. Monell was made secretary. Mr. Monell served as secretary until 1910, when ill health took him to California for the winter. He was again elected secretary and has served continuously since.

Only twelve counties were represented at the first meeting. For two years expenses were paid by voluntary contributions. The Denver commisisoners were before the Grand Jury for illegally spending something like $80.00 to entertain the second meeting. Today every county is a member and pays from $10.00 to $15.00 per annum, according to the judgment of the executive committee, to defray the expenses of the association.

The public examiners always took a slap at the county commissioners for paying themselves for attending this meeting. In those days commissioners received $5.00 per day for time actually served, not to exceed $350.00 for some counties, $500.00 for others and larger counties, not to exceed $100.00 per month. Traveling expenses at first were unknown. Then 10 cents per mile was paid, but total of salary and expenses could not exceed $500.00 per year in third and fourth class counties.

To the credit of the association was the change from the old "pork barrel" to the present state highway administration. The association also has been responsible for the appointment of public examiners, stopping a graft of thousands of dollars per year by private examiners.

The association launched the good roads movement in Colorado, pushed to completion by the Colorado Good Roads Association.

Aims of Crushed Stone Engineering Bureau

Some of the functions of the newly established Engineering Bureau of the National Crushed Stone Association, as set forth by that organization, are as follows:

To review the facts which have been established with respect to crushed stone through service and laboratory tests in order that such facts might be made available and plainly set forth for the benefit of both producer and consumer.

To determine what characteristics of crushed stone are still in need of investigation and to devise and suggest means whereby these characteristics might be determined and finally written into specifications.

To stimulate thorough testing of aggregates in various laboratories and in the field and to render such assistance as may be desired in carrying out such investigations.

To interpret the results of researches on aggregates in an unbiased, straightforward manner to the end that there will be no misunderstanding of the limitations and meaning of research results in the minds of users or producers.

To disseminate such facts as may become available from time to time as researches are brought to conclusion or as progress reports are issued.

MOVES

Captain: "If anything moves, shoot!"

Sentry: "Yessah; an' if anything shoots, Ah move."

PROGRAM
EIGHTEENTH ANNUAL CONVENTION
Colorado State Association of County Commissioners

to be held in the Hall of the House of Representatives, Capitol Building, Denver, Colo.

Monday and Tuesday, January 18 and 19, 1926

WHY WORRY

about your road taxes when you spent last year these enormous amounts without any complaint.

ESTIMATED EXPENDITURES FOR NON-ESSENTIALS
1924

(From statement of U. S. Treasury Dept.)

TOBACCO	$1,847,000,000
BEVERAGES (NON-ALCOHOLIC)	820,000,000
THEATERS, MOVIES, ETC.	934,000,000
CANDY	689,000,000
JEWELRY	453,000,000
FIREARMS	67,000,000
MUSICAL INSTRUMENTS	440,000,000
SPORTING GOODS	431,000,000
PERFUMES AND COSMETICS	261,000,000
CHEWING GUM	87,000,000
TOILET SOAPS (SINCE SOME ARE ESSENTIALS)	76,000,000
FURS (SINCE SOME ARE ESSENTIALS)	176,000,000
RADIO (a)	150,000,000
AMERICAN TOURIST ABROAD (b)	600,000,000
AMERICAN TOURISTS AT HOME (c)	1,000,000,000
Total	$8,031,000,000

(a) Radio Corporation; (b) Department of Commerce; (c) American Outdoor Life Exposition.

Just six months' allowance of the above fund would improve the entire Federal Aid Highway system of the United States and thus enable you to drive from the county seat of any county in any state to the county seat of any county in any other state in the Union, and keep on paved road.

OFFICERS

Colorado State Association of County Commissioners

J. E. BECKLEY, Delta	President
DAN C. STRAIGHT, Greeley	1st Vice-President
J. C. VAUGHN, La Junta	2nd Vice-President
JOHN W. GREEN, Georgetown	3rd Vice-President
T. W. MONELL, Montrose	Secretary-Treasurer

LEGISLATIVE COMMITTEE

J. E. Beckley, Delta
T. W. Monell, Montrose
Dan C. Straight, Greeley
J. C. Vaughn, La Junta
John W. Green, Georgetown
V. H. Johnson, Cheyenne Wells
W. L. Rees, Pueblo
Gus J. Johnson, Grand Junction
Chas. A. Sommerville, Canon City
G. M. Graft, Graft
Chas. T. Vaile, Denver

OFFICERS, COLORADO STATE HIGHWAY DEPARTMENT

GOVERNOR CLARENCE J. MORLEY	Chief Executive
L. D. BLAUVELT	State Highway Engineer
OLIVER T. REEDY	Senior Assistant Engineer
JAMES E. MALONEY	Assistant Engineer

MEMBERS OF STATE HIGHWAY ADVISORY BOARD

PETER SEERIE, Denver	First District
MILTON R. WELCH, Delta	Second District
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GEO. L. L. GANN, Pueblo	Fourth District
CHAS. B. LANSING, Colorado Springs	Fifth District
W. G. DUVALL (Chairman), Golden	Sixth District
FRANK H. BLAIR (Vice Chairman), Sterling	Seventh District

MONDAY A. M.

9:30 Call to Order.
Appoint Sergeant-of-arms.
9:45 Address of Welcome—Mayor Stapleton of Denver.
10:00 Response: O. G. Smith, Pueblo.
10:15 Introduction of new commissioners.
10:45 Roll Call of Counties.
11:00 Reading and approval records of last session.
11:05 Approval and Adoption of Program.
11:10 Appointment of Committees.
Auditing.
Necrology.
Resolutions.
11:20 Addresses: Gov. C. J. Morley.
11:40 Report of Legislative Committee.
11:55 Remarks.
12:00 Lunch.

AUDITING COMMITTEE

W. H. Bartell, El Paso
C. A. Sommerville, Fremont
John Lamberson, Kiowa
Harris Aiken, Larimer
A. H. Poppen, Routt

NECROLOGY

Geo. H. Curnow, Clear Creek
Thos. Azpell, Denver
Jack Wood, Elbert
J. J. Abercombie, Las Animas
C. M. Morris, Logan
H. P. Steel, Montrose
W. L. Rees, Pueblo

RESOLUTIONS

Gus J. Johnson, Mesa
Raymond A. Miller, Arapahoe
Fred Catchpole, Archuleta
C. D. Vaile, Denver
Frank Comstock, Gunnison
Frank C. Raines, Moffat
Ray McGrath, Prowers
Judge V. H. Johnson, Cheyenne

MONDAY P. M.

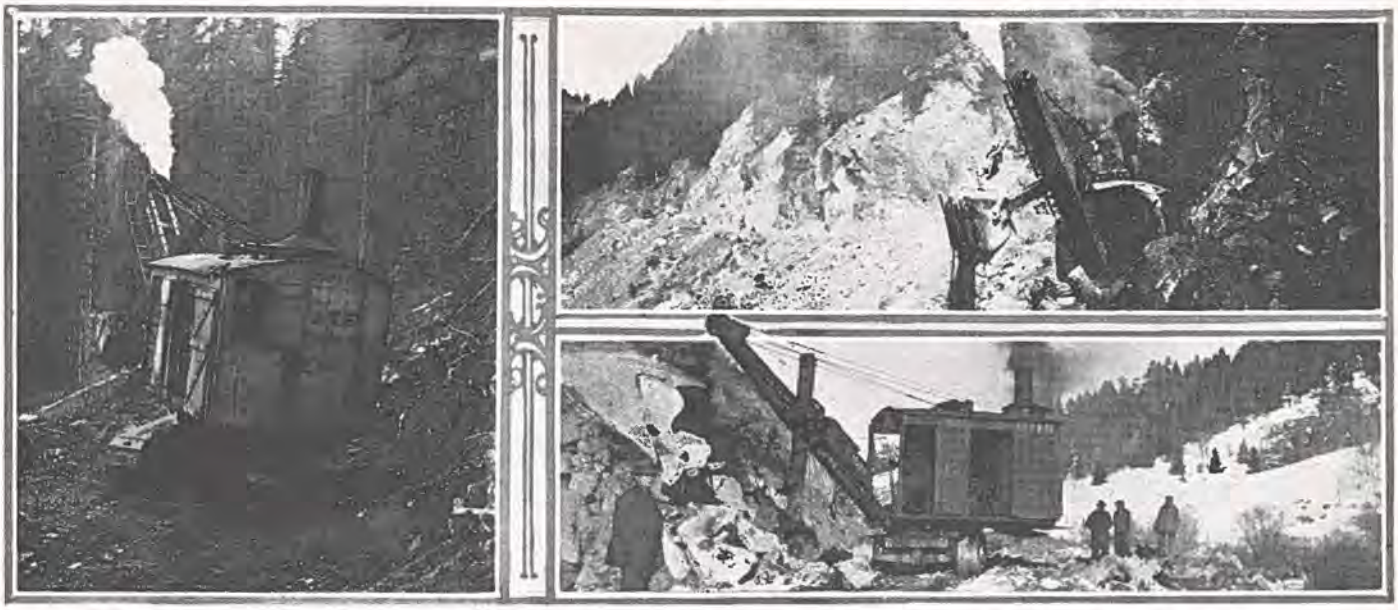
1:30 Call to Order.
1:45 Address: Major L. D. Blauvelt, State Highway Engineer.
2:15 Address: June W. Johnson, District Engineer, U. S. Bureau of Public Roads.
2:30 Remarks.
3:00 Address: M. R. Welch, County Attorney, Delta.
Topics for Discussion by all:
Bonding of county officers.
Collection of personal tax.
Primary elections.
Civil Service.
State auditing.
Maintenance, Federal Aid.
County agents.
County Club leader.
Address: Senator Elmer Abby.
4:00 Address: V. H. Johnson, "Results of Legislative Committee Work."
4:30 Address: Dan C. Straight, "Should We Continue Our Legislative Efforts?"
4:50 Remarks and General Discussion.

TUESDAY A. M.

9:30 Call to Order.
9:45 Roll Call of Counties Not Present on Monday.
10:00 Address: W. G. Duvall, Chairman, State Highway Advisory Board.
10:30 Remarks: Those suggested.
10:45 Address: J. C. Vaughn, Rocky Ford.
11:10 Questions: General discussion.
11:45 Address: G. W. Huntley, "County and State Fairs."
Appoint committee to draft resolution: to regulate and provide fair license auto and trucks, committee of three; one county commissioner, one from state highway, and one from motor club.

TUESDAY P. M.

1:30 Call to Order.
1:45 "Who will you choose to address us at this time?"
2:15 Address: Bob Higgins, Maintenance Department.
2:35 Address: Col. Allen S. Peck, U. S. Forest Service.
2:40 Address: Carl S. Milliken, Secretary of State.
New Business.
Good of the Association.
Elections.
Remarks.
Next Meeting Place and Time.



STEAM SHOVELS IN ACTION ON COLORADO ROADS—(Left) State-owned shovel on Wolf Creek pass. Upper right—Shovel in heavy excavation on Byers canon, Pioneer Construction Co., contractors. Lower left—Working in heavy rock on La Veta pass, Central Construction Co., contractors.

Federal Aid Road Progress

An Interview with J. W. Johnson, District Engineer, U. S. Bureau of Public Roads, by Gerald Doyle

THE year 1925 was an exceedingly busy one for the United States Bureau of Public Roads in Colorado. On Federal Aid projects, in co-operation with the state and on development of highways within the confines of the national forests, and in connection with the existing Federal Aid system, there was over $3,000,000 expended by the bureau, though some of the money has not been drawn on by the state, but is in the treasury available.

The expenditure and obligations of the Federal Bureau of roads since the inception of its work in Colorado now total $17,784,641.19 on Federal Aid projects alone. Many millions more have been spent on forest highway improvements.

J. W. Keller, statistical chief of the Denver office of the bureau, has prepared a resume of the operations this year which shows very clearly what has been done by the Federal Government toward the extension of the good roads system in this state, and the betterment of the existing highways.

This shows the construction by type of road, the total cost, the money which Uncle Sam has or will put up, the construction up to this year, and the amount which is now under way. These figures concern only development of the federal aid system.

For instance, to take concrete. This year, under State-Federal auspices, 32 miles were built, at a total cost of $1,529,591.24, of which the government furnished $788,513.47. The mileage of this type of road under construction now is 16½, total cost being $821,963.18, with the United States furnishing $335,802.

When the entire 1925 program will have been completed there will have been built since the beginning of Federal Aid, a total of 199½ miles, just a few hundred feet less than 200 miles of gleaming rapid transit concrete.

With the unfinished 1925 concrete work, $8,155,888.86 has been spent or requisitioned, Uncle Sam's share being $4,161,758.43. With a glance at the figures as to total cost since the start of the system it will be seen that concrete roads have cost nearly half the total expenditure.

Much of the money has been spent one the North and South Highway from Colorado Springs to Fort Collins.

Bituminous roadway is still much in the early stage, and this year there have been built only 1.922 miles of such roadway. This was at a cost of $80,251.93, the government's share being $27,212.00 During the life of the Federal Aid system, only 5.923 miles of bituminous roads have been built, total cost being $233,722.52, the United States paying $100,014.91.

Crushed rock roads were built to a total of 10.091 miles, with 16.045 miles under construction now. The cost of that built was $121,279.29, of which $68,050 was Uncle Sam's share. That under construction will cost $161,209.84.

At the close of 1925 there will be 37.115 miles of crushed rock road built on State-Federal money, total cost being $376,695.33, with Uncle's part at $209,368.97.

There were 59.659 miles of gravel roads constructed this year, at a total expenditure of $851,572.01, the Federal Government's share of this cost being $458,163.

Under construction of this type of road there are 44.081 miles, costing Uncle Sam $307,515 out of a total cost of $565,991.14. With work under way, there has been built of this road-type 401.623 miles costing $4,786,651.02, with the bureau footing been built under Federal Aid, 35.579 miles of road, costing altogether $268,062.63, the government's share of which was $139,450.28.

There has been completed or are in process of doing so, 79.072 miles of graded road at a cost totalling $905,238.53. Of this amount, the government is responsible for $442,727.59. Of this class of roadway, in the years of the bureau's existence, there have been constructed 243.732 miles, total cost being $2,747,963.22, Federal aid amounting to $1,268,392.22.

There was no shale road built this year. Previously there had been 4.497 miles, at a total cost of $39,094.41, with the government expense kept to $19,918.00.

Of Bridges and underpasses, there were built and completed this year .172 miles, costing $82,841.99; Uncle Sam providing $46,457.00 of this cost. Under construction mostly on the Colorado Springs-Denver road are 1.488 of bridges and underpasses, totalling in cost $225,539.98, Federal share amounting to $125,944. To date, the Federal Aid system has been responsible for the building of 7.083 miles of grade separations, costing altogether $1,176,563.20; Uncle Sam furnishing $640,407.95.

From the inception of Federal Aid, 665.531 of all types of road have been built in Colorado. These cost $12,386,755.96, the government supplying $6,315,795.14.

Completed this year were 115.735 of all types, with an expenditure of $2,874,949.43 by state and government, the latter's share amounting to $1,483,538.73. Under construction at the present time are 153.783 miles, of which completion is expected shortly. This will cost the state and government a total of $2,522,935, Uncle Sam paying $1,236,661.06.

Turning to forest highway improve the bill for $2,496,683.91.

(Continued on page 42)

National Forest Roads

By Allen S. Peck, District Forester

A GREAT part of our mountain region here in Colorado is public property dedicated to the growing of timber crops to help meet our future needs. Incidental to this fundamental purpose, the National Forests are, of course, useful and, in fact, exceedingly valuable for watershed purposes, grazing, game and fish, human health and recreation, with no impairment of their value as tree farms. The protection of these National Forests from fire together with the various uses to which they are put, demands that they be made accessible through the building of roads and trails. One of the first activities undertaken by the early rangers twenty years ago or more, was the construction of needed trails. This work was done usuallly by the rangers themselves and on a very limited scale, since practically no funds were available for the hiring of special labor.

The conception of the responsibility of the Government as a non-taxpaying land owner not only to develop the property but to pay a fair share of the expense of constructing public roads through this property, was not long in taking form. Its first manifestation was the authorization by Congress given in 1906, shortly after the Forest Service was created, to return to each state a percentage of the receipts earned by the National Forests in that state. This fund was to be spent by the county authorities for the support of schools and in road building. This income tax or "25% fund" now amounts to something over $100,000 per year for Colorado, and about $1,400,000 has been returned to the state to date.

As time went on the need for roads and trails became more acutely realized and in 1912 Congress authorized the return of an additional 10% of the National Forest earnings to the Forest Service to be expended in the construction of roads and trails through the Forests. Under this fund, $470,000 has been devoted to this purpose in Colorado to date. For several years this was the only special fund available and it was soon seen that it was not adequate to anywhere near take care of very obvious needs.

Nine years ago when Congress began considering a highway policy with aid from the Government in building a system of post roads across the country, consideration was also given to the special obligations of the Government in road building on the National Forests, and by Section 8 of the Federal Road Act of 1916 the first effective recognition was given to Uncle Sam's responsibility as a land owner and good neighbor in respect to the road building game. To date appropriations amounting to $736,000 have been made available for Colorado under this act. An emergency appropriation for Forest road construction which netted Colorado $760,000 was passed by Congress in 1919.

Finally we come to the Federal Highway Act of November 9, 1921, under the terms of which Colorado has received to date $1,923,277 for forest roads. This makes a total of $3,900,000 of special Federal funds for forest roads in Colorado.

In the early days the road work attempted was of minor character and low standards and the work was done by the Forest Service. As the volume of funds increased and it became possible to undertake some roads of higher standard, the need was apparent for the expert supervision of a special corps of engineers. The work on Forest roads of a major character was turned over, therefore, to the Bureau of Public Roads which had been organized in the Department of Agriculture. The Forest Service thereafter handled the actual construction of minor roads and trails only.

By the time the Federal Highway Act of 1921 was passed, the Department of Agriculture was ready to take on a good-sized program of forest road building. This act not only appropriated money but lined out a very definite policy for road building and maintenance which bids fair to stand for some time. As in previous legislation, forest roads were recognized as a thing apart from the Federal Aid System of important connecting interstate highways. These forest roads were divided into two classes by this act and the Secretary's regulations based on the act. The two classes are Forest Highways and Forest Development roads. The Forest Highways are those which constitute sections of the Federal Aid System and its extensions and which serve the National Forests; also other existing or proposed roads of primary importance to counties and communities. The Forest Development roads, as the name implies, are such roads designated by the Forest Service as being of prime importance in the protection of the Forests or the development and use of Forest resources.

In order that the available funds might be spent in an orderly and systematic manner, a Forest Highway System was immediately prepared for the state. This was worked up co-operatively by the State Highway Department, the Bureau of Public Roads, and the Forest Service. It resulted in a system of 1,776 miles of road in the mountain regions of Colorado, of which, roughly, 385 miles are considered to be in satisfactory condition for present needs, 1,311 miles unsatisfactory and in need of reconstruction or improvement, and 80 miles not existing. The estimated total cost of constructing this Forest Highway System is $19,389,000. Since $2,272,259 of Federal funds and $524,466 of co-operative funds have already been spent, the amount necessary to complete the system is $16,592,275. This indicates the size of the job ahead, particularly since we shall consider ourselves very fortunate if we can progress at a rate as fast as a half million a year.

In the preparation of a program for construction each year, projects are recommended by the State Highway Department after receiving the suggestions of counties and communities. The program is then agreed upon between the State Highway Department, Bureau of Public Roads, and the Forest Service, the projects being selected after fully considering construction correlation with adjacent federal and state road programs, the interests of communities within, adjoining, or adjacent to the National Forests, service to the National Forests by increasing their value and usefulness, the economy of continuity of operations, benefit to forest development, protection, and administration, and amount of available co-operative funds.

The projects selected are not confined to the 7% System of Federal Aid roads, for while these roads are obviously of greatest importance from the standpoint of through travel, there are other feeder roads of relatively equal importance from the standpoint of the National Forest property and the public which uses them, and it is the policy to give the fullest consideration to this latter class of roads. This policy is based on the proposition that the Forest Highway funds are not intended specifically to supplement the Federal Aid funds but, as stated previously, to make good the Government's abligation as a property owner. In the allocation of funds, it is coming to be realized that the contribution from adjoining property to the construction of a road should be based upon the value of that road to the property. For that reason, it would obviously be unfair to devote all Forest Highway funds to the construction of limited sections of high standard roads on the Federal Aid System, particularly since the Federal Aid appropriation itself is available for use within the National Forest boundaries as well as outside. As a matter of fact, the special importance of the Federal Aid roads or 7% System has been fully recognized in the designation of a Forest Highway System and also in the selection of projects for construction, as is shown by the fact that of the 1,776 miles on the Forest Highway System, 1,600 miles are on the 7% System or extensions thereof, and 215 miles of this class of road have been constructed as against 40 miles of roads of primary importance to counties and communities.

Forest Development roads for the purpose of facilitating administration and protection of National Forests are being constructed by the Forest Service here and there in the state as rapidly as available funds and men make it possible. Nearly one hundred miles of such road, having a width of 9 to 12 feet, were constructed during the fiscal year ended June 30, 1925, with an expenditure of about $148,000 of Federal funds and $13,000 of co-operative. The total constructed to date is 547 miles at a cost of $647,715 Federal funds plus $86,253 co-operative money furnished usually by county authorities.

The necessity of maintaining Forest roads when constructed is given great weight. During the last fiscal year the funds used in maintaining Development roads alone amounted to $24,000 and the burden will naturally increase as additional mileage is constructed.

"Pay As We Go"

As Suggested by the Motor Club of Colorado

BY unanimous vote the State Highway Advisory Board, at its annual budget meeting in November, went on record in favor of a plan of financing State highway construction and maintenance out of current revenues rather than additional bond issues. The members of the Board gave their endorsement of the "Pay As We Go" plan for financing the Department, and this plan will be submitted to a vote of the people of the State at the general election in November, 1926, in the form of an initiated constitutional amendment.

Following is the plan as approved by the Advisory Board:

Repeal of the one-half mill state road tax.

Increase the gasoline tax from 2 to 3 cents a gallon.

Increase of the motor vehicle license fees with special provisions for the licensing of automobile busses and trucks—the receipts from the motor vehicle fees and the gas tax to be disbursed through the State Highway Department. The counties to be relieved of all State highway work.

As will be seen, the underlying idea of the plan is to place upon user of the road the cost of road construction and maintenance. The man who does not use the roads does not pay for their construction and upkeep. It is true that the roads are used by horse drawn vehicles, but in most cases the owners of wagons and teams also own automobiles and the damage done to highways by horse-drawn wagons does not compare with that done by heavy automobiles, especially busses and trucks.

Before entering upon an explanation of the plan in detail, Colorado Highways wishes to say a few words regarding the reason for the plan at this particular time. In 1926 the last of the $6,000,000 bonds secured by the State Highway Department's one-half of the motor vehicle license fees will be sold and unless something is done to furnish the Department with funds, highway construction activity in this State will practically cease.

After November 30, 1926, the income of the Highway Department will, from all present sources of revenue, amount to about $1,600,000. This does not include Federal Aid, which, it is well known, must be earned. There will be just three sources of revenue left after November 30: The State's one-half of the gasoline tax, the proceeds of the one half mill levy on all taxable property, and the receipts from the internal improvement fund. The State's one-half of the motor vehicle license fees is pledged for the payment of interest on and redemption of the $6,000,000 bond issue voted four years ago.

Unless some plan is adopted to raise additional funds, the State will have only about $740,000 available for construction, for maintenance will require at least $800,000 a year. Federal Aid voted Colorado by Congress amounts to $1,350,000 annually. With only $740,000 available for construction after 1926, the State could avail itself only to the extent of this amount of the congressional appropriation, and $610,000 would go back into the Federal state treasury, to be disbursed among the other states accepting Federal Aid. Not one cent's worth of work on State projects could be done.

The 1926 budget contains appropriations for $2,850,000 for Federal Aid Projects and $550,000 for State Projects.

The members of the Highway Advisory Board felt that it was their duty to approve some plan by which future activities of the Department could be financed. They were and are convinced that the people of the State are not willing to practically cease the improvements of the state highways at this time, when less than one-half of the state highway system has been improved.

It has been figured out that the abolition of the one-half mill road tax and the abolition of the property tax on automobiles, as provided for by Senate Joint Resolution No. 7, will offset to a large extent the increases to be made in motor vehicle fees and gas tax. The principal increase to the individual will be occasioned by an increase of the gasoline tax from 2 to 3 cents and this increase will be felt chiefly by those individuals and corporations who operate heavy cars and operate them constantly.

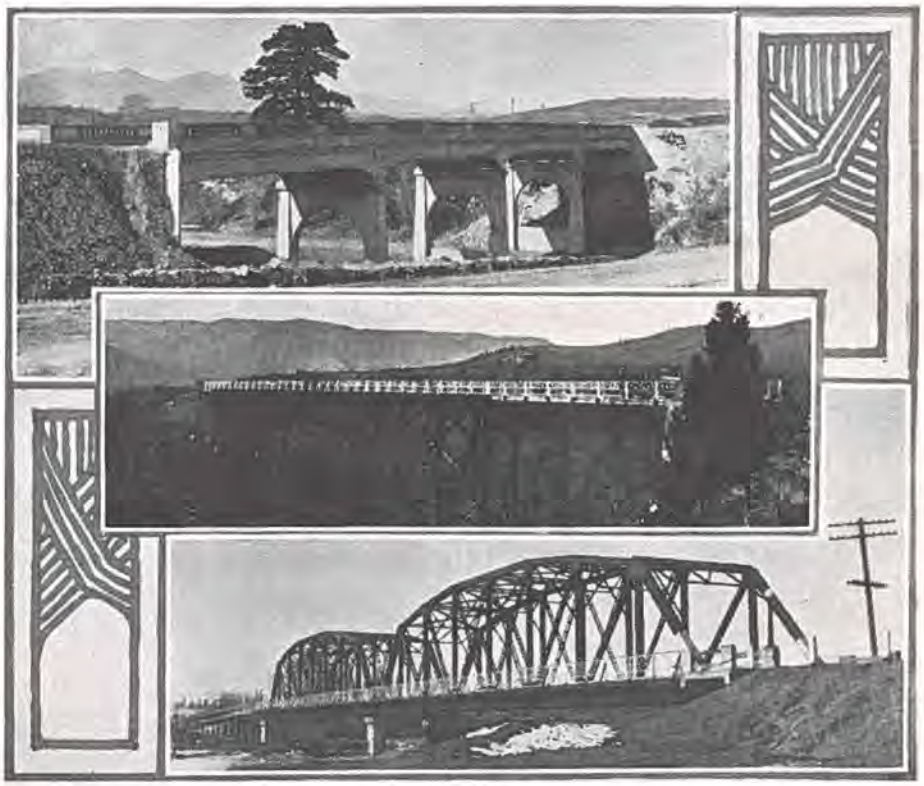
Estimates place the income of the state highway department under the "Pay as we go" plan, approved by the Advisory Board, at $7,400,000 annually which the Department would disburse in about the following manner:

Federal Aid Projects	$2,850,000
State Projects	2,690,000
Maintenance	1,200,000
Engineering	250,000
Administration	260,000
Contingencies	150,000

It will be seen that the amount provided for Federal Aid projects is the same as in 1926, but that the sum available for State Projects, for which next year only $550,000 is available, has been increased almost fivefold.

A budget, such as outlined above, can be made beginning with 1929. During 1927 and 1928 not quite so much money will be available for state projects because the outstanding bonds, secured by the motor vehicle license fees, must be retired.

Competent attorneys are now engaged upon the task of drawing the necessary measures required to put the "Pay as we go" plan before the voters. As soon as they have completed their work, petitions will be circulated thruout the State for the requisite number of signatures of qualified voters to place the measures on the ballot.



TYPES OF BRIDGES CONSTRUCTED BY STATE HIGHWAY DEPARTMENT—Upper—Artistic concrete structure north of Colorado Springs. Center—Sapinero arch, highest highway bridge in state. Lower—Alamosa steel and concrete bridge.

Prosperity Insurance

By Carl Litzenberger
President, Denver Tourist Bureau

COLORADO is one of the youngest states of the Union, but despite its apparent handicap in national wisdom, is advancing some ideas that are eagerly grasped by other states when it comes to "cashing in" on natural assets.

Auto and rail travel in 1925 has been in a close race, the 37 per cent increase in motor travel to Rocky Mountain National Park, for instance, being matched in an equally isolated case of rail travel to the Colorado Rockies from Texas. The general increase for the year, perhaps, is about 10 per cent in rail business, and 15 per cent in automobile travel, over 1924.

Now I know that when I say natural assets, most persons will at once think of mining, agriculture, grazing lands and clays of commerce. They have an important place in the development of Colorado. But Chambers of Commerce gradually are entertaining the idea of a so-called prosperity insurance, which, in our state, for example, may be described as the anticipated results from tourists based upon a very nominal investment through advertising and publicity channels.

More than likely $250,000 represents the total "premium" paid by Colorado communities within the year for attracting and holding vacationists; this sum, of course, being exclusive of the activities of rialroads and independent concerns directly or indirectly interested in travel. The unusual part about this kind of insurance is that communities realize upon the "premium" almost immediately, and instead of being labeled: "Deceased," are really more alive than ever for the following season's work.

And that's just where climate and scenery today are a source of real help in community enterprise. Chambers of Commerce, in other words, no longer devote their entire efforts and funds solely to industrial development, as it is known —factories and pay-rolls. They see how travel is inseparably linked with commercial advancement, and how the $250,000 invested has brought returns of $52,500,000 in 1925.

Rocky Mountain National Park reports a total attendance of 233,912 people against 224,211 for 1924, while Mesa Verde National Park had a total of 9,034 visitors compared with 7,109 for the previous year. National monuments showed a corresponding gain.

If you believe destiny has had something to do with this, then it is proper to say that some of the glamour of gold of early days has been shifted from the mines to the sunsets. Sun worship of the modern age, however, has not progressed to the utter disregard of the mining industry, which is again making great strides in the recovery of precious metals after years of enforced inactivity.

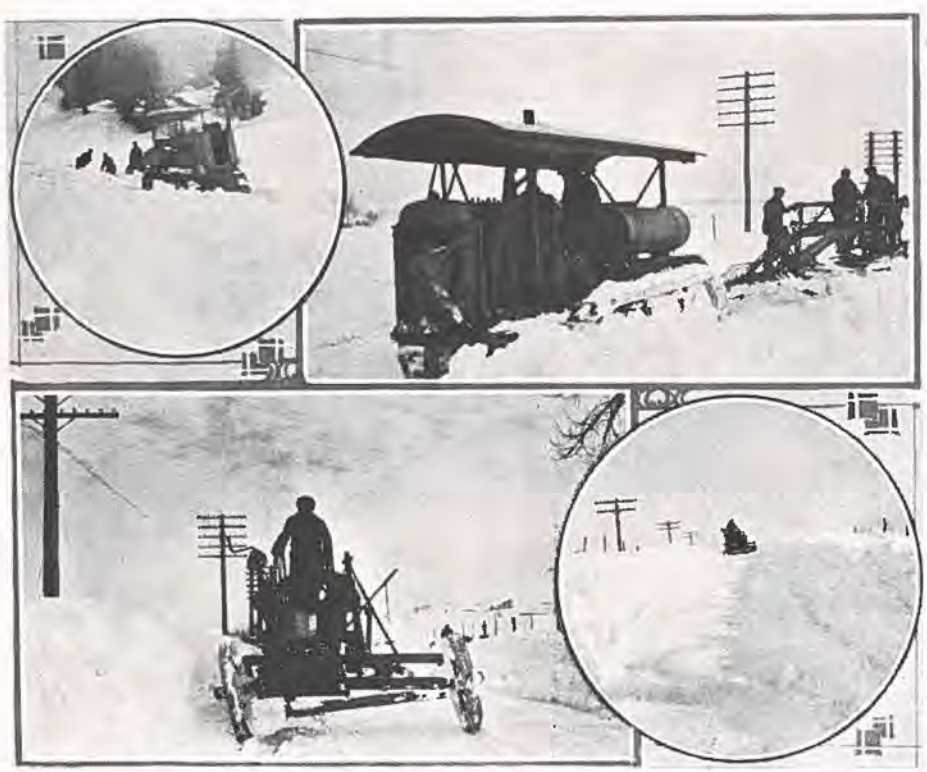
The fifteen national forests of the state, for example, were set aside primarily for grazing purposes, watershed protection and agricultural pursuits, yet 1,651,700 people visited them within the year, most of them for recreational reasons. This desire has been stimulated, of course, because of the laudable strides made by the Colorado Highway Department in building wide, safe roads of easy grade to the boundaries of these forests, thus impressing the government with the necessity for considering the vacation features of these regions.

Mining communities, in other words, are pushing the gold and silver outputs as eagerly as ever, yet seldom is the question of adequate roads brought up that the worth of tourist travel is not embodied as a major argument for their construction. Then again, the instance of the county that got a state highway on the contention that it was necessary in hauling produce to the county seat, a railroad point, but also realized that motor tourists traveling over the highway would help eat the foodstuffs, is typical of the situation today.

These assets and resources are convincingly illustrated in the free displays of Colorado counties at Overland Park Municipal Camp Ground in Denver. Fully two-thirds of the counties were represented, and it is estimated that the 79,433 motorists who camped there last summer averaged two visits to the Exposition Hall where the displays were arranged. The 1924 registration in the camp ground, by the way, was 57,085 persons from every where. The free illustrated lectures attracted 40,915 campers this year and impressed them with the scenic places over the state as well as the opportunities for settlers.

Counties that have not yet taken advantage of this opportunity to attract tourists no doubt will do so after reading what George W. Dyer, personal representative of the Delta County exhibit, said at the close of the season: "Business houses, garages and hotels of Delta County enjoyed a heavier travel season, and many prospective settlers were inspired through our display at Overland Park. The Denver Tourist Bureau is unifying the interests of Eastern and Western Colorado."

Mining and agriculture have played their part in Colorado's development. Precious metals have brought about $25,000,000 in the year just ended, and farmers received approximately as much for sugar beets. Yet it is interesting to note, by comparison, that it takes a combined total of these two activities to equal the financial returns from tourists for the year.



MAKING COLORADO'S ROADS USABLE THROUGHOUT THE YEAR—Upper circle—Removing snow from Monarch Pass. Upper right—Tractor-grader outfit in Adams county.. Lower—Snow removal operations on paved road near Broomfield.

Better Roads for Mesa Verde

By Jesse L. Nusbaum

IF I WERE called upon to state the greatest drawback in the development of Mesa Verde National Park, I would immediately say "lack of roads," and then qualify this statement by adding that it was not "lack of mileage," as we are attempting to heal the hill-side scars of over fifteen miles of abandoned road—but lack of engineering in their construction. Although grade lines were run, the eye evidently was considered the better judge of gradient, and a course of least resistance was followed. Difficulties were developed which were intensified when the horse-drawn vehicle was superseded by the automobile.

Congress appropriated $20,000 for road construction here as early as 1907, and additional amounts thereafter and construction was started. On July 13, 1913, six years later, an entry in the Park Register reads, "Four-horse team over Trail—first wagon ever at Spruce Tree Camp." On May 28, 1914, the first auto entered, being recorded as "Trial Trip," and on September 17, 1915, a visitor took great pride in announcing, "First lady to ever drive a car into Park." Three years later, a letter in the Park files tells what disposition is to be made of the new three-ton four-wheel drive truck recently purchased, which experienced drivers have utterly failed to drive over the first switchback just inside the Park Boundary, nearly twenty-five miles from where the truck was to be used. The extremes of grade when I assumed charge of the Park in 1921 varied from twenty per cent adverse in an ascending grade, to a maximum of 26%. These comments indicate the problems that were to be solved.

The Chief Civil Engineer of the Park Service was summoned at once, locations were agreed upon, a Locating Engineer and crew followed up, and the Knife Edge Section was completed as soon as funds were available. Our plan, boiled down, was—"one road, short, direct, spectacular, scenic, economic as to construction and maintenance, double travel width, good visibility, not less than 100-foot radius on curves if possible, and not a grade over ten per cent." The Landscape Engineering Division of the Service approved the locations. Where possible, the old grade was to be reconstructed. Hard surfacing was to follow the completion of the dirt and rock work.

Mesa Verde received $49,000 for road work under the first year's allotment from the Road Budget Funds for the improvement of roads and trails in National Parks. 10.1 miles of the old grade was reconstructed as to grades, curves, alignment, etc., and widened to a minimum of 21 feet this season. With the exception of some widening on the Knife Edge, this included the entire entrance road insofar as the old grade could be utilized as a basis for the new road. Projects A, B, C and D, new construction, approximating four miles in all, were necessary to meet the new standard of construction adopted, it being impossible to reconstruct the old road to meet these requirements.

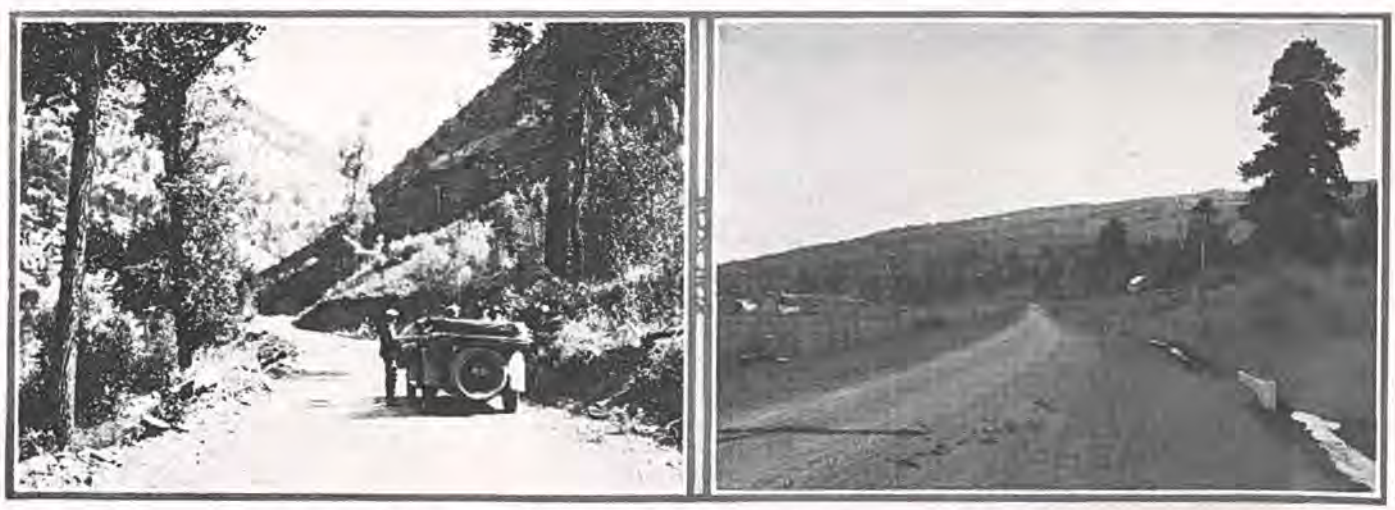
At this time, Project B and Project C have been completed. These two form a continuous line from the west end of the Knife Edge section to the head of Big Soda canyon. Project B forms the finest scenic portion of the Park Roads, cutting directly across the very abrupt north face of the Mesa, over two thousand feet above the Montezuma Valley, eliminating the old School Section grade where many cars have had much grief. The new line is 1.3 miles shorter than the old road. Project C follows around the south slope of Park Point, highest elevation in the Park, well below the old road with its gradients up to 20% and above.

Project A, from Windy Point at the foot of Point Lookout, to the Park Boundary, approximately one mile, was necessary to avoid excessive grade on the old line, which attained a maximum of 26%. It is a strong 6% line. The upper thirty-two stations have been completed to a connection with the old road below, and the balance will be finished in the spring.

Project D is at the west end of the North Rim road, and is to be completed in the Spring. This forms another short, spectacular bit of road directly across the north face of the Mesa, and again makes a saving of 1.3 miles over the old line or road.

For the coming year, the Director and Chief Civil Engineer of the Park Service are concentrating their efforts to have the whole entrance road hard-surfaced. This was deemed imperative during the time of the National Park Conference here in October, when members of the conference tried to leave the Park following a soaking rain. Surfacing will cost about $9,000 per average mile because of the great overhaul and long grades. The cost would have been prohibitive at this end but for a recent discovery of a gravel bar on the Mesa top just south of camp.

All the work this season has been handled by Park forces under Force Account, as the only bid received on projects selected for contract was approximately 40% above what like work was costing the Park by force account. 85,000 cubic yards of Class 1, 2 and 3 excavation, largely 2, with about 10% Class 3, has been handled at an averaged unit price for the three classes of slightly over 49 cents per yard. With the exception of the foreman, track and tractor drivers, grader men, powder men, blacksmith and owners driving their own teams, our working force is composed of Navajo Indians from the reservation to the south in New Mexico and Arizona, who are paid at the rate of $2.50 per day of eight hours. They walk or ride to the job, sleep under one blanket under the sky except in very bad or cold weather when they construct hastily built hogans or shelters. Their subsistence supplies are purchased through a commissary which we operate at cost. Some have walked in from over 160 miles distant to obtain work here. Few speak English and I might add, that as a general rule, the less they speak the better they work. Labor troubles are practically unknown among them. They accomplish in a creditable and economical way all work assigned them.



(Left) Picturesque scene on State Highway west of Telluride in San Miguel County. (Right) Newly Constructed Federal Aid road east of Durango in La Plata County.

Some Economic Benefits of Colorado Good Roads

By Chauncey H. Vivian

THE composite public mind visualizes improved roads primarily as instruments of more enoyable motoring. The average automobile is purchased and used principally for pleasure. Sunday sees its owner and his family flitting over the broad highways, passing or being passed by hundreds of other gasoline Arabs, bent, like himself, on crowding into their sabbatical holiday as many miles and as many new scenes as the available time will permit.

To them good roads are little more than media of personal comfort, outlets for the ever-present urge to go and to see. A stretch of paving often is viewed as nothing more nor less than an inviting race course, placed there by a bounteous commonwealth to add to the zest of a day in the open. This is the purely Epicurean concept of the value of good roads.

While there is no denying that improved roads have added much to the health, pleasure and general physical welfare of the nation, and while this aspect must be catalogued as one of their worthwhile features, the expenditure of millions of dollars annually for the construction and maintenance of transportation arteries must be based upon more utilitarian lines.

In other words, the time is fast approaching, even in the sparsely settled West, when road projects will be approved or disapproved according to whether or not they justify themselves economically. With the financial burden of the upkeep of existing roads growing increasingly heavy and the popular hue and cry one of retrenchment in public expenditures, the time is not far distant when the first step in the consideration of a proposed road improvement program will be an interrogation along exceedingly practical lines. On one side of the sheet will be set down the cost of the proposed highway. On the other side will be enumerated the economic advantages, in terms of dollars, that may be reasonably expected to accrue from such expenditure. Unless this second column balances, or nearly balances, the first, the disposition will be to delay the programming of the project.

In the congested eastern states road building has been on such a basis for several years. In the Rocky Mountain area, where a certain amount of road construction was essential in order that people might quickly and comfortably get from one place to another, vast mileages have been built merely to establish lines of communication. In other words, they were part of the pioneering job our forefathers started in settling up the country.

Little attempt has been made in Colorado to justify good roads from the standpoint of their earning capacity. It is a phase of highway construction that has been given little thought by the public at large. Twenty years from now there will be volumes of statistics available on this very subject; today there is scarcely a line.

It is the purpose of this article to set down at random a few of the economic benefits that good roads have brought to Colorado and to attempt to show that they are worth the money they cost, even to the man who hasn't a car in which to go joyriding. With the meager data available this cannot be done with mathematical precision. However, a few pertinent facts that are direct evidence in point can be cited.

HIGHWAY TUNNEL IN ELEVEN-MILE CANON—Newly constructed road located on old Midland right-of-way in Teller County.

The Weld County Credit Men's Association, which has kept careful records on the trend of retail trade over a period of several years, classes good roads as one of the chief influences in the betterment of the merchant, not only in Greeley, but also in the lesser cities of the county. In fact, the association finds that there has been a revolution in merchandising tendencies quietly going on since the automobile came into general use.

"The old-fashioned general or community store is a thing of the past largely because of good roads," states Frank Field, secretary and manager of the association. "A decade ago it was not unusual for such a store in a small post-office trading center to carry a $40,000 stock of goods. Its turnover was sufficient to warrant this investment. Today such stores have eliminated many of their departments and carry principally groceries and notions. Their stock totals but a fraction of its former value, but they make as much or more money through greater turnover.

"Dry goods, clothing, hardware and other lines once handled by these stores now are sold by specialty retailers. In towns of 2,000 or more almost as many lines are represented as in Greeley, a city of 12,000.

"However, though rural residents buy largely in their own communities, Greeley merchants have reaped immense gains in trade volume. Our records show that the average farmer deals with more stores than the average Greeley resident. The farmer's trade is desirable for the reason that his family is larger than that of his city cousin and his purchases are correspondingly greater all the way down the line."

One dry goods firm in Greeley did a business in 1924 of $350,000, of which between 75 and 80 per cent was from outside the limits of the city. While some of it came from residents of the smaller towns, most of it was from farmers. Practically all this outside patronage came because good roads enabled the customers to make quick and comfortable trips to the city.

A single bank in Greeley reports an increase of 500 depositors during the last two years. Most of them were farmers, drawn from a radius of 25 miles by the network of well-maintained roads.

Naturally the farmer's standard of living has been greatly affected. The rural family wears the same sort of clothes as the city family. They eat the same sort of food, listen to the same kind of music and live in houses equipped with the same sort of furnishings.

Denver merchants and business bureau officials interviewed on the matter declare unhesitatingly that the city's volume of retail trade has been greatly increased by good roads leading into Denver, though in no instance have any statistics been kept on the subject.

George Flannigan, secretary of the Retail Merchants Bureau of the Denver Chamber of Commerce, stated that sales to outside residents have risen by leaps and bounds and that improved highways and the prevalence of the automobile have been important factors in that growth.

R. H. Fish, credit manager of the May Company, which has more charge accounts than any other Colorado firm, likewise attested to the influence of good roads on extension of trade territory, as shown by the company's records of customers living at outside points.

"Our customers come from an ever-increasing range of territory," said Mr. Fish, "and there is no doubt but that

(Continued on page 48)

Road Work in Rocky Mountain National Park

Roger W. Toll, Superintendent

ABOUT two years ago Congress authorized an appropriation of $7,500,000 as a three-year program for the construction and improvement of roads and trails in all of the national parks. This is the first time that the road requirements of the various parks have been grouped into one program. Previously, each park submitted its estimates for road construction along with the other items of administration, protection and maintenance, and the results obtained from this method were somewhat uncertain. Under the present program, an allotment of $445,000 has been made to Rocky Mountain National Park in a three-year program. The funds that have been appropriated, and are now available for this year's work, are $140,500.

During the past season some work has been done on the upper end of the Moraine Park road, about six miles from Estes Park, and surveys have been in progress on all of the other projects which are to be included in this year's work. A steam shovel has also been purchased for use on road construction and for the spring snow removal from the Fall River road.

It is the plan of the Department of the Interior that most of the work under the road program shall be done by contract rather than by force account. For that reason the past season has been spent in making the necesary surveys. Quantities are now being computed. Specifications will soon be prepared, and the work will be advertised for bids within a month or two.

The projects to be let by contract are as follows:

1. Fall River road. About $40,000 is available for this work. It will be used in widening the road on the west side of Milner Pass. Work will be begun at Milner Pass and carried as far toward the valley of the Colorado River as the funds will permit. It is planned to make this road 20 feet in width, so that it will be adequate for passing travel at all points. The present road contains a good deal of 8% grade, but there will not be any extensive relocation of this road, since it would not be practicable to effect any very considerable reduction of grade without discarding the present road. Work on this project can be started about May 15, and will be completed next summer. The road will be kept open for travel.

2. The northern portion of the Highdrive will be reconstructed. About two miles of new road will be built from Deer Ridge to Horeshoe Park in order to supersede the present road which is too narrow for passing travel and which has such excessive grades that the road in its present location could never be made satisfactory. About $20,000 is available for this project. The work can be begun about May 1, and completed next summer. The new location lies above the present road, so that construction work can proceed without interfering with travel.

3. The lower portion of the Glacier Basin road leading toward Bear Lake will be reconstructed. About $25,000 is available for this work. At present there is a long and step hill on this road about five miles from Estes Park. The maximum grade is 14%. In order to eliminate this excessive grade, a new location has been made. The new road will leave the present road at the upper end of Tuxedo Park about four miles from Estes Park Village. The new location follows up Mill Creek to the lower end of Hollowell Park, crosses the creek and turns eastward, rejoining the present road at the upper end of the present hill. Work on this road can be begun by May 1, and completed next summer. The work can be done without interference from travel.

4. About $20,000 is available for the construction of masonry or concrete bridges. The first bridges to be reconstructed will probably be those between Grand Lake and Milner Pass.

The survey work last summer was done under the direction of Mr. George A. Gregory, Assistant Engineer, National Park Service.

In several of the national parks, road construction work is now being done under the supervision of the U. S. Bureau of Public Roads, and it is quite possible that the Bureau will supervise future work in Rocky Mountain National Park.

Any contractors who wish to figure on the work referred to above should put their names on file with the Superintendent, Rocky Mountain National Park, Estes Park, Colorado. The proposed work on the Highdrive and the Bear Lake road can probably be inspected more readily at the present time than they can later in the winter.

It is the hope of the National Park Service that annual appropriations for the improvement of roads and trails will be continued until all roads in the park are in a condition equal to the high standard of construction that is being obtained by the State of Colorado on roads leading to the park.

Unappropriated Public Lands

The interior department announces vacant and unappropriated public lands in the United States exclusive of national forests and other reserved areas total 184,716,846 acres, of which 129,606,234 have been surveyed.

The largest areas are in Nevada, with 52,456,837 acres, and the smallest areas are in Louisiana with 10,701.

Arizona has 13,578,760; California, 18,946,582; Colorado, 7,464,208; Idaho, 9,887,139; Montana, 6,081,750; Nebraska, 29,797; New Mexico, 16,222,744; North Dakota, 131,455; Oregon, 13,251,000; South Dakota, 264,861; Utah, 28,583,778; Washington, 823,716, and Wyoming, 16,447,935.

HOW SWEDEN WILL SPEND AUTO TAXES

Sweden spends 72 per cent of the income from automobile taxes for the reconstruction, widening or repaving of roads, 10 per cent for new road building machinery, 4 per cent for new bridges, 2 per cent on new surface materials, and 2 per cent on research work.

SCENE ON STATE ROAD NO. 66—Located between Longmont and Lyons in Boulder County, one of several roads leading to the Rocky Mountain National Park.

Summary of Past Year's Work as Reported by Division Engineers

Division No. 1

By J. P. Donovan, Division Engineer

THE following is a resume of important construction work completed during 1925 in Engineering Division No. 1, of the Colorado State Highway Department, which includes the Counties of Adams, Arapahoe, Boulder, Clear Creek and Jefferson, and is crossed by important roads. Including both plains and mountain areas, these roads serve not only commercial, mining, tourist and agricultural traffic, but also connect Denver with the great mountain areas to the west where its people are building summer homes in ever increasing numbers. The completion of the Morrison-Denver paving eliminating many curves and shortening the distance, has resulted in greatly facilitating travel between Denver and the mountains. Continuing along this route from Morrison, five miles of new road south of Conifer has been completed, eliminating excess curvature and heavy grades, especially around Conifer and Clifton House.

Of great interest to Denver from its value as a scenic attraction is the completion of the Warren Harding Memorial Highway to an elevation of 13,190 feet. From this elevation a wonderful view of South Park and the mountains to the west is obtained, and a two-mile hike over a good trail will take the thrill seeker to the crest of Mt. Evans, where he will be sobered by a view that defies description. From Echo Lake on this same road the Department is co-operating with the United States in building a highway to Idaho Springs, which, when completed, will give Denver another circle trip of surpassing beauty.

On the Denver, Lafayette, Longmont, Fort Collins road, paving was completed between Denver and Lafayette eliminating the steep grades and heavy curves of Goodhue Hill and three miles more of paving was constructed south of Longmont.

On Loveland Pass, final surveys were completed to the crest of the divide, and plans completed to proceed with construction by convict labor next summer.

In Gilpin County, the masonry lined flood water ditch in Black Hawk has been completed. This ditch has already been tested practically to capacity by "cloud bursts." Old timers state that this ditch has been the salvation of Black Hawk, as many buildings along the state highway, which is also the main street of the town, would have been either undermined by water, or buried under debris, had it not been for this ditch. In this same county, a small appropriation enabled this Department to make substantial repairs on the road between Rollinsville, Tolland and the East Portal of the Moffat Tunnel with the result that there is now a fair, single track mountain graded road between these points.

One of the oldest state roads is the Guy Hill Road between Golden and Dory Hill via Golden Gate Canon. The lower mile and a quarter of this road has been realigned, eliminating steep grades and a bridge that has been repeatedly carried away by "cloud bursts." Construction has been completed and that dangerous section of road is now "high, wide and handsome."

To the east, the most notable improvement has been the construction of a wooden pile trestle bridge on State Highway No. 8, across Bijou Creek west of Byers. The bridge is a modern creosoted timber structure, and replaces a narrow, dilapidated and dangerously weak structure of prehistoric vintage.

Division No. 2

By JOHN J. VANDEMOER, Division Engineer

DURING the construction seasons of 1924 and 1925 seven very important Federal Aid Projects were completed, and turned over to the traveling public for highway use in this Division.

These seven Federal Aid Projects represent a total cost of $626,081.50.

F. A. P. NO. 102

Taking up each Federal Aid Project in the order of its number, we first come to F. A. P. No. 102, which is located in Ouray county between Ouray and Bear Creek Falls, and was completed in 1924.

The construction of this project represents some of the most rugged rock work in the state.

F. A. P. NO. 125

This project is located from Sapinero west, in Gunnison county, and includes the construction of the Sapinero Arch across the Lake Fork of the Gunnison river. This bridge has the distinction of being the highest highway bridge in the State, and was erected in the dead of winter, under considerable difficulties, and I am here to say that it took real "he men" to work out on that steel with the thermometer 22 degrees below zero. This structure consists of a steel arch span of 250 feet and the floor of the bridge is 130 feet above the river. It was erected entirely from cable-ways stretching across the canon.

F. A. P. NO. 174

This project consists of three miles of heavy mountain grading work from Red Mountain Pass (elevation 11,100) north towards Ouray.

There is nothing very spectacular in connection with this project except that it affords the traveling public an excellent highway, whereas before its construction, only a narrow, crooked and dangerous trail existed. No serious construction difficulties were encountered on this project.

The completion of this project connected Grand Junction and Durango with a good highway, and forms a part of the Million Dollar Highway.

F. A. P. NO. 241

This project consisted of the construction of the Delta Bridge, across the Gunnison river in Delta county.

This bridge is 600 feet long and consists of four 150 foot steel truss spans, founded on concrete abutments carried 10 feet below the river bed, resting on piling which go to solid shale.

This bridge, which is one of the longest in this part of the state, connects north and south Delta and furnishes a safe and secure highway crossing, together with a safe and secure pipe line crossing for the domestic water supply of Delta.

F. A. P. NO. 208-C

This project,located in Mesa county, included grading and surfacing between Grand Junction and Palisade, which two towns are now connected. The surfacing is standing the heavy traffic in remarkably good shape and does not seem to be wearing excessively.

F. A. P. NO. 242-A

This project consisted of grading and graveling 7.7 miles between Grand Junction and Fruita, and serves to connect the two towns.

F. A. P. NO. 258-A

This project consists of the grading and surfacing of three miles of highway from Gunnison west, in Gunnison county. This stretch of road passes thru very low ground, which is inundated by water from the hay fields during the summer season. This has caused this new project to be built up well out of the water.

This completes the federal aid projects that have been completed in this division during the 1924-25 seasons.

Perhaps the most spectacular State Project we have in this division is the Grand Junction-Rangely road. This project is 80 miles long and was put thru for $81,000.00. More than half the appropriation was spent on the Douglas Pass construction, and 40 bridges were built on the entire project. Heavy commercial traffic has operated over this road ever since its completion, and it is serving to develop the territory thru which it passes.

Division No. 3

By J. R. Cheney, Division Engineer

WITH a proper regard for verity in the matter of construction activities in Division 3 during the past season, I rise to remark that the greatest single line of activity in this Division during the past season was that shown by contractors' crews in scurrying for shelter due to the persistent and apparently tireless efforts of one Jupiter Pluvius. He made a sincere and almost successful attempt to better a record made many thousand years ago, and which seriously disrupted the home life of old man Noah and his family.

Such time, however, as was not consumed by contracting forces sidestepping storms, was used to reasonable advantage in completing five federal aid projects from the 1924 Budget and two from the 1925 Budget. This resulted in a total length of finished gravel surfaced roadway of 22.8 miles and one excellent bridge of 471 foot length over the Rio Grande at Alamosa.

In addition to this, two gravel surfacing projects are well along under construction which will add 4.9 miles. Two others will be ready for letting before spring which will cover about 5.5 miles more. This will give a total of projects completed or under contract of approximately 33.2 miles of gravel surfaced road in addition to the bridge over the Rio Grande.

There were also completed eight 1925 State Projects, most of which did not involve any considerable mileage but which eliminated many bad sections on main highways which greatly needed improvement to bring them to the standard of adjacent sections.

The two state projects of greatest importance were the one in Cochetopa Canyon built by convict labor and county forces, and the one on Wolf Creek Pass. The project in Cochetopa Canyon, of which we have seven miles complete and a mile to go, will replace eight miles of very poor road between the Flying "M" Ranch and Parlin. The new road will have a water grade with good alignment, as it follows Cochetopa Creek through the canyon.

The Project on Wolf Creek Pass completed the widening of the West Side of the pass. This was a very marked improvement, as the old road was narrow to the point of being dangerous. This work was under the supervision of the Maintenance Department.

Taken as a whole, construction work for the season made a fair showing in the face of the worst weather conditions which have existed for many years.

The original objective in this Division with regard to road improvement was to cover the sections having the worst conditions with respect to grade, alignment, width and mud trouble. These have been fairly well taken care of, and the policy the past year or two has been to connect up the improved sections with each other and to connect them up with centers of population, so that the improved roads can develop their greatest economic importance by making the towns accessible to the farming districts in all kinds of weather, and also to make possible the handling of greater loads per unit of power than has been possible in the past.

There can be no doubt in the mind of anyone that an improved road is an economic asset of great importance. Any well planned improvement will save its full cost to the travelers who use it and in addition be of great benefit to the community as a whole. In fact it is of almost vital importance to the progress of any particular section of the state that advantage of all practical road building agencies be taken.

Division No. 4

By James D. Bell, Division Engineer

DURING the past year the State Highway Department has completed in Division No. 4, 7.23 miles of hard surfaced pavement, 20.77 miles of gravel surfacing, and 1 large bridge project.

In addition to the above, which was constructed with Federal Aid, there were completed 20.7 miles of grading, 11.7 miles of sand surfacing, and 9 bridges by State Funds.

Of the hard surfaced pavement completed, 1.95 miles are in Pueblo County east of Vineland, 2.33 miles in Otero County between Rocky Ford and La Junta, 1.02 miles in Bent County east of Las Animas, and 1.92 miles in Las Animas County north of Trinidad.

These projects have been constructed where a lower type of road cannot be successfully maintained without excessive costs.

Of the gravel surfaced road completed, 3.07 miles are in Fremont County between Portland and Beaver Creek, 12.92 miles in Pueblo County between Otero County line, and the Huerfano River, 2.2 miles in Huerfano County between Walsenburg and La Veta, and 2.6 miles in Las Animas County between Trinidad and La Junta.

The surfacing project in Fremont County is constructed on a new location, which will shorten the distance between Pueblo and Florence 3 miles. With the heavy traffic between these two cities the 3 miles shorter distance will mean a big saving to the public in transportation.

In locating the new surfacing project in Huerfano County the maximum grade was reduced from a 10% to 3.5% with an increased length of less than 500 feet.

A saving of a half mile in distance was made by relocating a portion of the surfacing project in Pueblo County.

A new bridge spanning the Apishapa River in Otero County between Manzanola and Fowler was completed in November. This project consists of a 150-foot steel span augmented by 4-40-foot concrete girder approach spans over the river and a 30-foot concrete girder span over the Otero canal which is adjacent to the river bridge. The new bridges are on an improved alignment and replaced old bridges which have become inadequate due to their narrow width and light construction.

Of the State Projects completed a 12-mile grading project is in Baca County between Springfield and Las Animas, 8.65 miles of grading is in Kiowa County between Haswell and Galatea, 5 miles of surfacing in Kiowa County on Road No. 59 from the Prowers County line north, 6.6 miles of grading and surfacing were in Crowley County. Six timber bridges and four large concrete box culverts were constructed on the Kansas-Colorado Boulevard just east of Pueblo to replace ten old narrow bridges. Two timber bridges were constructed on Road No. 1 in Huerfano County and two on Road No. 1 in Pueblo County which replaced bridges washed out by floods during the summer. A small project west of Pueblo on Road No. 96 included a 60-foot timber bridge and the elimination of a narrow and dangerous piece of road which was costly to maintain.

By a relocation of the road between Springfield and Las Animas the distance has been shortened 7 miles and many heavy grades eliminated, and a new location between Galatea and Eads has shortened this distance 2.4 miles.

There is now being constructed in Division No. 4, by Federal Aid, 3.53 miles of gravel surfacing in Huerfano County between Walsenburg and La Veta, 2.22 miles of gravel surfacing in Las Animas County between Trinidad and La Junta and 5.42 miles of gravel surfacing in Pueblo County between Avondale and the Huerfano River. In Pueblo County a 108-foot concrete girder bridge over Muddy Creek and a 108-foot concrete girder bridge over Dry Creek in Pueblo County are being constructed.

State Projects being constructed are a grading project in Baca County east of Springfield, a grading project between Arlington and the Crowley County line and a large concrete culvert in Crowley County at Lake Meredith Outlet Canal between Ordway and Rocky Ford.

The surfacing with State funds was in nearly all cases hauled by farm teams and trucks. The hauling was paid for on a yard mile basis. A fair rate per cubic yard mile hauled was established. By doing this work during the slack season on the farm it gave the farmers an occasion to use their idle teams. Many farmers took advantage of this opportunity and the work was completed in a much shorter time than it would otherwise have been. This not only helped the landowners in a direct way but saved the State considerable in overhead costs.

Due to the high class of contractors who have constructed these projects and the intelligent and hearty co-operation the State Highway Department has received from the Commissioners in the several counties, the projects have bene completed with greater dispatch than ever before.

"Hello!" said the Chestnut to the Robin. "What are you?"

"I'm a little bird," said the Robin. "What are you?"

"I'm a little burred, too," said the Chestnut.

Division No. 5

By Ernest Montgomery, Division Engineer

DIVISION No. 5 consists of ten counties, centers at Colorado Springs, and in 1925 saw as in previous seasons, much improvement on the State Highways but more particularly on the trunk lines.

State Highway No. 1. — Denver north and south, but in Division No. 5, it is Colorado Springs, north and south.

From Acequia south, the location was settled and contracts let for a concrete paved road to just south of Castle Rock, with the exception of the railroad grade separation immediately north of Castle Rock. Work is now under way on this section and should be finished by June of 1925.

From Colorado Springs north, the concrete paved road is completed to Husted with exception of a short stretch involving an overhead railroad bridge crossing just north of the city limits.

There was provided in the 1925 budget funds to extend this paving about four miles north; this would leave approximately twenty-three miles to be provided for between Colorado Springs and Denver.

From Colorado Springs south, F. A. P. No. 277-A, a concrete paved road 3.8 miles long, with two 150-foot thru truss steel, span bridge over Fountain Creek, was completed which eliminates two very dangerous railroad grade crossings, as well as the menace and hazard of Sand Creek. It is worth noting that the location of this stretch is almost identical with that of a preliminary survey made nearly six years ago.

State Highway No. 4. — Colorado Springs, east and west, "The Pikes Peak Ocean to Ocean."

Colorado Springs, east, very little work was done in El Paso County, some surfacing and snow fences; in Elbert County, the season saw completed that stretch between Simla, east, to the Lincoln County line of an elevating grader raised road, making it practically snow proof and all surfaced, same being nineteen miles long, it has been favorably commented upon as being some accomplishment, work done by State forces and State Aid money.

In Lincoln County, the stretch between the west county line toward Limon for four miles, was similarly treated, raised and surfaced with County forces and County money. East of Genoa two miles were raised and surfaced which completes Road No. 4, thru Lincoln county as a raised grade and surfaced highway.

In Kit Carson County much work was done east of Flagler to Seibert and west of Stratton for five miles, eliminating dangerous hills, widening the roadbed; work done by County forces with State Aid money.

Colorado Springs, west; betterment work done in Ute Pass widening roadway and reduction of grades.

In Park County connection between west end of Eleven Mile Canon at Howbert and the old road at east end of Spinney Lane made: In Chaffee County, betterment work on Trout Creek involving the use of a portion of the old Midland Railroad grade near Newitt. In Lake County general betterment work of widening curves, roadbed, and surfacing with County forces and State Aid money.

Lake County saw opened up the new highway directly west of Leadville with the very unique feature of the two-mile long Carlton tunnel on the old Midland grade which makes a short cut to Glenwood Springs and it is freely predicted that in time with gradual betterment work done that it will be the most used road from the Eastern to Western slope and is worthy of extensive development.

In Chaffee County, Road No. 15, F. A. P. No. 248-A, a twelve mile gravel surfaced stretch north toward Buena Vista was completed; it involved building a 140-foot deck truss steel bridge with two 35-foot approach spans. Much favorable comment has been made of the project.

In Park County, Road No. 8 received a great deal of general betterment work from Baileys west to Antero, involving the building of two bridges, change of location, widening of curves and much surfacing; work done by County forces with State and County money.

In Cheyenne County, on Road No. 8, which is sixty-five miles east and west thru the county, saw the last stretch of a raised road bed finished viz.; between Cheyenne Wells and Kit Carson, twenty-five miles work done by County forces and State Aid money and is a very commendable job. This practically completes all important work in the County on State roads, all having been raised and much of them surfaced, which will show a marked difference in maintenance cost as well as having roads nearly snow proof.

In the matter of bridge construction, the writer would like to say that where conditions are favorable in his judgment, the most economical and satisfactory bridge is a creosote treated timber with concrete deck. Not one of the eighteen built in the Division have shown signs of failure. The concrete deck has given satisfaction.

Division No. 6

By H. L. Jenness, Division Engineer

THE season of 1925 has seen the largest amount of construction work in this Division since 1922, the Division being composed of the counties of Eagle, Garfield, Grand, Jackson, Moffat, Pitkin, Rio Blanco, Routt and Summit.

Four major Federal Aid projects have been finished and nine state projects completed during the year.

Owing to the early spring this year the contractors were able to start construction work one month earlier than usual and very good progress was made.

Two important Federal Aid projects were completed on each of the main east and west highways extending through this division; namely, State Highway No. 2, or the Victory Highway, and State Highway No. 4, or the Pikes Peak Ocean-to-Ocean Highway.

On State Highway No. 2, or the Victory Highway, one of the projects completed was Federal Aid Project No. 254-A, this project being the first section of the change in route which is being made to eliminate Parshall Hill. This hill is located in Grand County between the towns of Hot Sulphur Springs and Parshall. This hill road is steep, narrow and crooked, and the scene of many fatal accidents during the last few years.

The change in route will, besides effecting a saving of human lives, enable the residents of the western part of Grand County to reach the County Seat at Hot Sulphur Springs from four to six weeks earlier in the spring and later in the fall, and the through travel will be benefited by being able to travel a highway with a water grade instead of having to climb Parshall Hill, thereby saving gas, time, and avoiding the chance of a serious accident.

The other project on State Highway No. 2, or the Victory Highway, completed this season, is Federal Aid Project No. 253-A; this project begins at a point one mile west of Steamboat Springs in Routt County and extends 6½ miles west to Brookston. This is a grading and gravel-surfaced project and is also a change of route, which shortens the distance between Steamboat Springs and Brookston, eliminating several steep hills and straightening the alignment.

This improvement will make it possible to travel between these two points in all kinds of weather.

Federal Aid Project No. 240 is located on State Highway No. 4, or the Pikes Peak Ocean-to-Ocean Highway, in Eagle County and extends from the Dotsero bridge across the Colorado River, eastward for a distance of 5 miles toward Gypsum. This project was completed in May, 1925, and with its completion the disposition of the traveling public was improved to a very large extent. This section was known as the roughest section of highway on the Western Slope during the summer months, caused by the material of which the highway was composed turning to powder during the dry summer months, allowing the cars to bounce and bump over the rocks which formed the foundation of the road. Many springs were broken and both cars and occupants received a very large amount of wear and tear while traveling over this section of highway.

This condition was eliminated by constructing a new highway for a distance of five miles, having good alignment, easy grades and crushed rock surfacing.

This project eliminates the worst section of highway leading to Glenwood Springs from the east.

Another very badly needed highway improvement was completed in the finishing of Federal Aid Project No. 210-B on State Highway No. 4, or the Pikes Peak Ocean-to-Ocean Highway. The project begins at DeBeque in Mesa County and extends east for a distance of seven and one-half miles toward Grand Valley.

This improvement will shorten the traveling time between Glenwood Springs

and Grand Junction and will make the oil shale areas in the vicinity of DeBeque readily accessible.

Other Federal Aid projects in this Division under construction this season but not yet completed are: Federal Aid Project No. 261-A, consisting of grading and gravel surfacing a section between Rifle and Grand Valley, 16 miles in length; Federal Aid Project No. 253-B, a grading and gravel surfacing project three miles in length between Brookston and Milner in Routt County; Federal Aid Project No. 282-B, a grading and gravel surfacing project 2.9 miles in length in Rio Blanco County, extending through the town of Meeker; Federal Aid Project No. 282-C, located on the Rifle-Meeker Highway in Garfield County and covering a section 4 miles in length extending north from a point two miles from Rifle and is a grading and gravel surfacing project; Federal Aid Project No. 254-B, being the second section of the relocation of the Hot Sulphur Springs-Parshall Highway being constructed through Byers Canon.

Other construction work completed during the season of 1925 in this Division consisted of nine state projects, being improvements of a minor nature located at places in the various counties considered most in the need of improvement.

This gives an account of the construction work in this Division during the season of 1925 and includes the improvement of sections of highway which eliminates what were some of the worst sections of highway on the Western Slope, affording quicker, more comfortable and safer highways to the traveling public through this section of the state.

Division No. 7

By A. B. Collins, Division Engineer

COLORADO State Highway Engineering Division No. 7, situated in the northeast portion of the State, is comprised of Larimer, Logan, Morgan, Phillips, Sedgwick, Washington, Weld and Yuma counties. From an agricultural standpoint, this territory is one of the most productive in the State. At seasons, the duty imposed upon the roads through the delivery of farm produce is extremely heavy. To maintain roads in passable condition at these times taxes the facilities of the Maintenance Department to the utmost. Satisfactory results are achieved only through the eternal vigilance of the Assistant Superintendent of Maintenance and the hearty co-operation of the County Road Supervisors and County Commissioners of the Division. Fortunately, the periods of heavy interstate and county traffic do not occur simultaneously with the heavy local traffic, a condition which makes possible the use of a type of road which would otherwise be wholly inadequate to meet the demands.

The Division contains 1,480 miles of designated State Highways, about 17% of the State mileage. Of these highways 350 miles, or approximately 25% of the Division mileage, are included in the Federal Aid system. These Federal Aid roads provide the principal north and south highways through Larimer and Weld Counties, and the principal highway traversing the rich agricultural Platte Valley east through Weld, Morgan, Logan, and Sedgwick Counties to the Colorado-Nebraska State line. This mileage also includes the principal highway east from Sterling thru Logan and Phillips Counties to the State line.

Since the Highway Law creating the present organization became effective in 1921, there has been available for construction purposes in the Division, a total of $2,110,000 for Federal Aid, $749,000 in State funds, and $383,000 in bond funds applied to State roads. All Federad Aid work in the Division has been contracted; the greater part of the appropriation being applied to the continuation of the paving north from Denver to Greeley, from Sterling to Merino, from Fort Collins to Berthoud and from Fort Morgan to Brush, a total of 64.8 miles of paving. In the expenditure of the State and Bond money in this Division, the only contracts entered into has been for bridge construction, all grading and surfacing projects being conducted with State and County equipment, and with local farm teams operating on a yard mile basis. The rate of pay for the hauling and distribution of surfacing material has been uniformly 25 cents per yard mile haul and 15 cents per yard for loading. A very appreciable economy has been effected in the construction of State Projects in this manner. Engineering and supervision charges have been minimized. It permits a certain latitude in construction, and in addition provides seasonable and very frequently much needed employment for the farmer. The hundreds of farmers who have been employed in this manner entertain a proprietary interest in their roads, which has resulted in closer co-operation of both citizens and officials in the furtherance of the road program. In excess of 1,200 miles of roads have been graded and gravel surfaced, using farm teams exclusively, since the advent of the present Division organization.

In the primary roads receiving Federal Aid, relocations have been made between Greeley and the Colorado-Wyoming State line, Greeley and Fort Morgan, Brush and Merino and Ione and LaSalle. The relocation of these primary highways has been the outstanding feature of the road improvements in the Division. A saving in excess of 5,000 degrees of curvature and 22 miles of distance has been effected. Two Platte River crossings and a total of 15 railroad grade crossings have been eliminated by relocation. In accomplishing these results the County Commissioners of the Division have rendered invaluable aid and co-operation.

Federal Aid Projects 275-A and B

By E. E. Montgomery

IN EXTENDING the concrete pavement southerly from Denver toward Colorado Springs, that portion of the North and South Highway in Douglas County as far as Castle Rock has been a scene of great activity during the past season.

Federal Aid Project 275-A—Gann-Sedalia

This long-delayed but welcome concrete paving project, 7 miles in length, was let June 29, 1925, to the Strange-Maguire Paving Company of Pueblo, Colorado, to be completed in 300 working days.

Work was started July 13th under the direction of Wm. M. Fuller, Superintendent for the paving company, and M. F. Egan, resident engineer for the State Highway Department.

The grading was sub-let to the well known company, Platt Rogers, Inc., of Pueblo, Colorado.

Two railway crossings were eliminated by the relocation of the highway between Gann and Sedalia, resulting in some heavy grading work as shown by the estimate of 170,000 cubic yards of material to be moved. Steam shovels, tractors and elevating graders are being used on the grading.

A central proportioning plant, located at Sedalia two miles from the end of the project, was used for the paving. Crushed rock from Cripple Creek and local sand was used in the concrete aggregate. A storage bin with elevators for sand and rock, a Multi-Foote Paver, 6-sack capacity, and a Barnes pumping plant completed the equipment.

Two and seven-tenths miles of paving was laid from September 5th to November 6th in 37 working days, which covered all the grade that had been prepared for this season's work. All culverts have been completed, and the Pueblo Bridge Company is now building the three concrete pile trestle bridges, which will be completed this winter, so as not to delay the paving in the spring.

Federal Aid Project 257-B

Five and three-tenths miles in length—Extending from the end of Federal Aid project 275-A, to the Southern limits of the town of Castle Rock, with the exception of 9/10 of a mile left out in order to make a separate project of the elimination of the railway crossing near Castle Rock.

This project was let to the J. Fred Roberts and Sons Construction Company of Denver, Colorado July 30, 1925, to be completed in 250 working days.

Work started July 27th under the direction of the sons, Henry and Fred Roberts.

The grading required 47,000 cubic yards of common excavation to be moved, which was done with elevating grader and tractor.

Two mixing plants were used for the paving, one located at Plateau near the center of the job, and the other at Castle Rock.

The plant at Plateau consisted of a 5-sack Smith mixer, and bin with elevators for sand, rock and cement. Crushed rock from Cripple Creek, and local sand from Plum Creek was used in the concrete aggregate. A 2-sack mixer was located near side track in Castle Rock and used on the 7/10 of a mile of paving thru town on the southern part of the project which is now completed. Three and one-tenth miles of paving was laid from September 18th to November 13th in 46 paving days.

The dream of Douglas county will soon be realized in the paving of this highway to the county seat; and another link added to the nation's system of interstate roads.

State Highway Maintenance as Reported by District Supervisors

Division No. 1

Charles T. Brock
Assistant Superintendent

ANOTHER year has rolled around and gives cause for retrospection in order that the past maintenance activities may reveal what has been accomplished by the maintenance forces for the year 1925—and in looking forward find that the year 1926 gives promise of greater activity in the way of maintenance in Division One.

The highways leading in and out of Denver carry heavy traffic, which requires a constant maintenance on both the hard surfaced and gravel-surfaced roads. Our patrol system of maintenance has improved each year.

There has been a great deal accomplished in the way of betterments in widening concrete shoulders and improving the drainage. In most instances the shoulders have been widened from 4 feet to 6 and 8 feet, and surfaced, which gives ample room in cases of emergency for parking cars. This improvement is very much appreciated by the traveling public. Also, the maintenance truck, which is equipped for patching and tarring, and to do other necessary maintenance work on concrete pavement, has been at work the past two months on concrete roads in Division One. The equipment of the maintenance truck has a practical and successful adaptation to economical work. This method of tarring and patching is a great improvement over tarring and patching by hand, as formerly done.

Many of the creek channels have been improved by rock retaining walls and log cribbing, giving the roads greater width, and preventing the roadbed washing out in time of floods.

Practically all main highways in Division One are surfaced with sand and gravel, several miles have been surfaced during the year 1925. For the year 1926, provision has been made for keeping the graveled roads in first-class condition by adding gravel where needed and keeping patrol crews constantly at work on same. During the year 1925 we had disastrous floods, which washed out a great many bridges and approaches to bridges, which the Maintenance Division replaced.

Division No. 2

By George F. Toupain,
Assistant Superintendent of Maintenance

DIVISION No. 2 consists of 1,507 miles of State Highways, of which 498 miles are on the 7% system, and 185 miles of this has been improved and surfaced, which leaves 1,009 miles of State Highway of which there has been considerable improvement with county bond money, state project money and maintenance money as follows:

In San Miguel County, state steam shovel No. 2 improved 14 miles on State Highway No. 145, and 3 miles on State Highway No. 62. The Maintenance Department and county forces reconstructed 12 miles of road on State Highway No. 80, and also surfaced 7 miles on State Highway No. 145, and erected a 70-foot span steel bridge, with concrete floor, across the San Miguel River.

Ouray County on State Highway No. 62 has widened their road for a distance of 12 miles, also built one mile of snow fence, and the condition of this road is materially improved over last year. On State Highway No. 19 they have built about one-quarter mile of new road on Stough Hill, besides numerous improvements north to Montrose county line, which has improved this road materially in the past year.

In Montrose County on State Highway No. 6, from Delta-Montrose county line, running south to Montrose, a distance of 16 miles has been resurfaced this past year; also widening Cerro Summit with State steam shovel No. 2 for a distance of 7 miles. On State Highway No. 90, west of Coke Ovens, there has been 6 miles of road graded, and one 70-foot span steel bridge erected across the San Miguel River, 12 miles east of Naturita.

Gunnison County, on State Highway No. 6, have built 2 miles beginning at Montrose county line and extending east, with State steam shovel No. 2, on improved alignment and grades and placed all drainage structures. On State Highway No. 135, State steam shovel No. 2 improved about 1½ miles of road, which consisted of widening, draining and bettering alignment, also building two 26-foot span bridges. The maintenance has been good throughout the season considering rains.

Hinsdale County has made considerable general improvements on State Highway No. 149, during the past season, from Lake City south to Mineral county line.

In Delta County on State Highway No. 135, State steam shovel No. 2 reconstructed one mile. The Maintenance Department and county forces built one mile, just west of Bowie, to state specifications. Also improved 10 miles on State Highway No. 65 with State steam shovel No. 3, leading from Cedaredge to the Grand Mesa Lakes Resort, and also resurfaced 3 miles on State Highway No. 92. The maintenance has been good throughout the season.

Mesa County, on State Highway No. 6, graded and surfaced 3 miles south of Whitewater. State Highway No. 141 has been generally improved from Whitewater to Gateway, and from Gateway south for distance of 12 miles, the Chamber of Commerce of Grand Junction have expended $26,000.00 constructing a new road, giving the people of Western Colorado a southern outlet to California the year round. On State Highway No. 139 constructed 11 miles from Loma north to Mesa-Garfield county line. On State Highway No. 65 they have rebuilt one mile of road and surfaced 3 miles. The maintenance has been of exceedingly high grade throughout the season.

Garfield County did not do any improvements under maintenance the past year on account of finances being low, but they have done the maintenance in good shape, also maintained a detour of 20 miles in length. They have bought some additional equipment, so next year the traveling public can expect better service.

Pitkin County resurfaced 4½ miles on State Highway No. 82, also constructed a fill containing approximately 5,280 cubic yards. They also made considerable improvement on the Carlton Highway, and are to be congratulated upon their co-operation with the department generally in the maintenance program.

Eagle County has generally improved State Highway No. 4, between Wolcott and Minturn. Commissioner "Joker" Roberts is to be congratulated upon the condition of Battle Mountain for the past year. They have also made some good improvements on State Highway No. 104, known as the Carlton Highway, and Mr. Alvin Sloss is to be congratulated upon the interest he has taken in regard to this road. State Highway No. 11 has been in good condition throughout the season and the commissioners are to be commended upon their efficient work.

There has been a number of improvements over this district, such as line changes of a minor nature and drainage structures that I have not mentioned.

Division No. 3

By R. B. Dunham, Maintenance Superintendent

THRU the constant watch by maintenance crews throughout the division all bridges are still intact, although several of them have been in danger at various times, and in spite of heavy daily rains thruout most of the division, the roads were kept in good condition, although at times the crews in Division No. 3 were put to it to cover their respective territory effectively.

In addition to being very busily engaged in keeping bridges intact and holding the roads to their original location, most of the counties found time to do grading jobs and some surfacing. There was a total of approximately 52 miles of grading, which is mostly improvement of alignment and approximately 24 miles of surfacing, most of which is gravel. The counties that did the most notable work are Costilla, Dolores and LaPlata Counties. As to the work done—

COSTILLA—In this county there was a sandy stretch of road extending for 3 miles from the Alamosa county line east that was a disagreeable piece of road for motorists to negotiate. This year the county decided to take the matter

in their hands and with the aid of maintenance funds graded up the road and mixed some good binder which was hauled to the location from a distance of a mile, with the result that a good piece of firm road was made.

DOLORES—Above Rico, a mining camp that has begun to show much life, were two dangerous railroad crossings that always caused the motorist much apprehension in crossing them. The county with the aid of maintenance funds put a force of men to work with the result that anyone having occasion to drive over these crossings now may do so with a feeling of perfect safety and freedom.

LAPLATA—When Federal Aid Project No. 214, a beautiful piece of road, was finished last year, south of Durango, there remained at the south end of it a stretch of road about three-quarters of a mile in length which was very crooked and narrow.

A month's work by LaPlata County forces, financed by county, state and maintenance funds, improved this road by relocating, grading and widening same to conform to the other part of the road. Drainage pipes were installed on this piece of work, and early in 1926 gravel surfacing will be placed on this section.

MINERAL COUNTY—Steam shovel No. 1 completed the widening of the west side of Wolf Creek Pass (Road No. 10). The distance widened was four miles and consisted of heavy rock work. One and one-half miles, on what is known as Fourth of July Cliff, was classified as 100% rock.

Division No. 4

By Lewis Swink,
Assistant Superintendent of Maintenance

IN THE Fourth District most of the improvement work on the highways which have been made by the Maintenance Division have been along the line of regrading and resurfacing and in the betterment of bridges and their approaches. Most of the real improvement work in this division has been done under projects and a greater share of the maintenance money has been expended in dragging and other methods of keeping the highways in repair. The following table will show the amount of bridge work, regrading and resurfacing done in the respective counties and the two latter items also include a very small mileage of surfacing.

County	Regrading Miles	Resurfacing Miles	Bridge Work Amount
Baca	97	1½	$ 4,645.92
Bent	5	19	1,563.34
Crowley	½ (new shale)		1,417.15
Custer	5	----	3,814.26
Fremont	6½	15	2,923.50
Huerfano	----	½	3,385.61
Kiowa	6½	4½	3,872.59
Las Animas	21½	3¾	3,613.23
Otero	5	13	1,683.85
Prowers	115½	24½	3,522.60
Pueblo	¼	22	11,138.22

Snow fences for the better protection of the highways in winter time were erected in Huerfano and Prowers counties, there being about a half mile in Huerfano County and a half mile in Prowers County.

Division No. 5

By D. N. Stewart,
Assistant Superintendent of Maintenance

IN THE fifth Maintenance Division there are 1,427 miles of State Highways of which 870 miles were regularly patrolled during the past year, the remaining 557 miles, all secondary highways, were maintained as weather and traffic conditions required. The total cost of maintenance for all the State Highways in this division averaged $148.00 per mile, the maintenance budget being $211,500.00.

Flood conditions during the past season have been probably that of an average year, having been considerably greater than 1924, which of course was abnormally dry, but less than 1921 or 1923.

The greatest damage from floods in this division being in El Paso County on Road No. 1, near Husted, where a section of paving was washed out and shoulders and fills badly damaged.

The paving replacement and enlargement of one concrete box culvert together with additional protection work were taken care of by the Engineering Division out of contingency construction funds.

The damage to shoulders and fills, taken care of by the Maintenance Department, cost approximately $1,500.00.

The Trout Creek section of Road No. 4 in Chaffee County was flooded a number of times but the resultant damage was of a minor nature and taken care of temporarily by the regular maintenance crews. After the flood season was over this section was all rebladed and ditched with a heavy tractor and blade and put in very good condition.

In Lincoln County three bridges on Road No. 71, damaged by floods, were taken care of by the Engineering Division.

On Road No. 8, east of Hugo, a section of unsurfaced road was badly washed and cut by floods. Considerable team work was necessary to repair this section and a number of additional culverts were installed to take care of the drainage.

The flood damage in the other counties of the division while adding considerable to the cost of maintenance in a number of instances was not of a serious nature.

During the past season in Chaffee County a bad curve and snow trap on Road No. 4, near Riverside, has been eliminated. No. 15 from No. 4 to the recently completed F. A. P. No. 248-A, has been regarded and improved. Also on No. 15 between Poncha Springs and the Saguache County line a culvert extension and fill has materially improved the alignment of a section of this road.

On road No. 6 from Salida to Monarch Pass considerable new surfacing has been placed on sections where surface rock was exposed.

In Cheyenne County, on road No. 8, about 20 miles of the road between Sorrento and Cheyenne Wells have been surfaced the past summer. On road No. 51, north of Cheyenne Wells, four miles of low road is being raised and widened with a tractor and elevating grader.

On Road No. 4 in Elbert County near Simla, about four miles of new surfacing has been placed, which practically completes the surfacing of No. 4 across Elbert County.

Division No. 6

By Chas. E. Baker,
Assistant Superintendent of Maintenance

IN THE past season we have had a great deal of rain to contend with. On account of our roads being so much adobe and surfacing very scare, it made the roads very bad for quite awhile for traveling, but the maintenance has been a great improvement over previous years. The County Commissioners and road men are taking more interest each year in the maintenance of the roads. They have found the State Highway Department trying to help them and seem to appreciate the efforts of the department and are more willing to co-operate than they were when the department was first created.

Outside of dragging roads, cleaning ditches, and keeping chuck holes filled, we have had a great deal of new work done in all counties such as cutting out dangerous curves, reconstructing and surfacing bad places. The Federal Aid projects go into the winter in better shape than they ever have in the past. I would like to compliment each one of the counties in their co-operation with the State Highway Department.

Division No. 7

By John Stamm, Ass't Superintendent of Maintenance

SINCE the present Highway organization became effective in May, 1921, the following yearly appropriations for maintenance and betterments have been awarded this Division:

MAINTENANCE AND BETTERMENTS

Year	Amounts
1921	$ 25,000.00
1922	156,675.00
1923	270,900.00
1924	249,000.00
1925	249,000.00
	$950,575.00

State Proportion ---- $475,287.50
County Proportion ---- $475,287.50

This $950,575.00 has been used in the following manner, dragging, scarifying, removing snow, flood damages and:

General Maintenance	$609,612.14
Bridges and Culverts	59,516.98
Grading 751 miles @ $81.52 per mile	61,222.84
Surfacing 521 miles @ $380.19 per mile	198,082.34
Maintenance of concrete paving and shoulders	22,140.70
	$950,575.00

In 1921 the majority of the roads in the Division were roads by designation only, a large percentage of the mileage being prairie trails or inadequately graded roads. Maintenance at this time was confined to taking care of the bad spots and was more or less a "hit and miss" performance.

Since the beginning of construction work by the Highway Department in 1921, maintenance has grown proportionately. We have been maintaining about nine hundred miles of highway in this Division with fifty patrols. In 1926 there will be 64 patrols to take care of the entire Division, which consists of 1,459 miles at an approximate cost of $250,000.

Aims and Purposes of A. G. C.

By W. R. RICHARDS,
Executive Secretary

THE construction business is probably the oldest known vocation. History relates to examples of construction which still exist and which have been found to be the work of 4,000 B. C.

Take construction as a vocation—the early architect or engineer was as much dependent on the inventor as is the architect or engineer of today—and probably more so, for the early architect or engineer knew little of strength of material as we know it—knew little about stresses, and we often wonder, when studying his structures, how many slaves, artisans and by-standers were killed by collapes before he learned to make his structures substantial enough.

One of the oldest known trade associations in America is the Writing Paper Manufacturers' Association, founded in Pittsfield, Massachusetts, on February 13, 1861.

It is interesting and amusing to read over the original by-laws and records of the early meetings of this pioneer association. From the records, no wonder that the Sherman Law was passed in 1890; primarily to protect the public, although it also kept the Associations from killing themselves or their industries by their uneconomic procedure.

It is against all natural laws of commerce; against the law of supply and demand, against the best dictates of human nature itself, to fix prices, limit production, limit competition and divide territory—and yet, this is exactly what the early trade associations tried to do.

The day of price-fixing organizations has passed, and in their place has arisen the modern trade associations whose ideals are SERVICE and the elimination of waste, rather than the elimination of competition.

This is particularly true of the Associated General Contractors of America. It is the means of helping the general contractors do a better job by co-operation.

Shortly after the armistice in the fall of 1918, eleven of the leading contractors of the United States met—a great many of them for the first time—at Atlantic City, and formed what is now known as the Associated General Contractors of America.

The Association began to function in the spring of 1919, and through its high ideals of construction, it has been steadily growing.

It has grown from these few far-sighted men who formed the Association to its present strength where now it has 3,500 members, 70 Branches and Chapters and is represented in 500 cities of the United States. This is the largest Association of its kind in the United States, and the largest fraternity of contractors in the world.

The construction industry represents the second largest industry in the country—agriculture comes first and railroads third.

Twenty-two per cent of all skilled and unskilled labor of the country is engaged in the building branch alone. Eleven million people of the United States are dependent for a living upon the construction industry. Construction is the chief barometer of the business of the country. When construction gains, prosperity is with us.

The National Headquarters of the Associated General Contractors of America is located at Washington, D. C., with a staff of specially trained men in the construction field, consisting of engineers, architects and statisticians.

The Chapters and Branches work in their various local fields through the National Headquarters, carrying out the same principles and by-laws laid down by the parent body.

The purpose of the Association is to promote better relations between private owners, public officials, architects and engineers on one hand, and the contractors on the other; to maintain high professional standards in the conduct of

Modern Concrete Mixer working on one of Colorado's Paved Roads

work; to combat unfair practices; to encourage efficiency among contractors; to support contractors and contractors' associations in their efforts to rectify conditions of an unsatisfactory character; to encourage those methods of contracting for work which relieve the contractor of improper risks, and to encourage sound business methods tending to raise the standing of contractors generally in the business world.

This Association will undertake no defense of the contractor whether a member of the Association or not who will not fulfill his just obligations. The Association is ready at all times to champion the claim of the man threatened with penalty for failure to fulfill his contract in any part where his failure resulted from circumstances beyond his control, and which could not have been foreseen.

What we consider the greatest menace to the construction business is the contractor with little or no experience who bids a job 20 per cent or more below the actual cost, and then depends upon the Almighty and a long-handled spoon to pick him up out of the wreck, or drops down on his knees at night and prays to Heaven that he might be given a half-blind inspector and a nice kind-hearted engineer who will let him get away with murder.

He is a menace to the state, municipality or owner; he is a menace to himself. He is a poor gambler because he doesn't give the public an even break. He has kept the responsible contractor from getting a job at a fair price. He is a constant worry to those in charge of his contract. How long will we have him with us? Just as long as Surety Agents give him a bond and designing and unprincipled politicians direct trumped-up criticism for political ends against those in charge when his bid is thrown out.

Nine-tenths of the failures of those in the construction business can be attributed to one fault—they bid too low—they fail to figure their cost high enough—they take a slash at the other fellow's throat and cut their own—they do not file a business bid—they file a gambler's bid. Contracting should not be a gamble. There is no more reason why a contractor should be expected to take a chance than the engineer or architect who figured the job should donate his salary to the state, municipality or owner.

This Association stands for the legitimate contractor—one who goes through with his job in a workmanlike manner and is proud of his work because it is good. He is the backbone of the industry, and has helped the construction industry gain the high position it now holds; that is, the second largest industry in the United States.

The responsible and experienced contractors are trying to get away from the gamble in construction work, and the cases where even the most highly prized contracts will produce as high profit as ten per cent are exceptional. It is common knowledge that losses predominate over profits at an alarming rate. The fact is borne out by the percentage of contractors who survive over a period of 15 years—less than four per cent.

The system that gives itself credit for always estimating low prices is not an asset either to the city, state, owner or the contractor. If the state wants its work done cheaply, it will get cheap work. The sooner the officials and engineers learn that it pays to play fair with the contractor, the quicker will the unfortunate happenings of years past be avoided.

This association stands four-square for a decent standard of construction, as well as a decent type of specification.

Good Schools and Good Roads Necessary in the Creation of a Great State

By Mary C. C. Bradford
State Superintendent of Public Instruction

IT WOULD be difficult to find two civic projects more closely related than the Good Roads movement and the Good Schools movement. The development of "the little red schoolhouse" into present day school buildings—planned scientifically from the standpoint of architecture, pedagogy and sanitation—can be paralleled only by the development from the ox and pony trail era to that of the paved highway of today, over which roll countless motors employed either in pursuit of pleasure or the achievement of business results.

Sometimes the question of whether good roads are the primary necessity for good schools, or good schools the primary incentive for good roads, seems as impossible of solution as the old one—"Does the acorn come from the oak, or the oak from the acorn?" Whatever the correct solution may be, this much is certain: good schools and good roads both exist in large numbers in the same area.

To make a living, of course, is the fundamental necessity of the farmer. Like all men engaged in a business, that business must be made to pay. To make a farm pay, farm products must have certain and easy access to markets, and without good roads, the marketing of farm products is well nigh impossible. Hence, for his business sake, the farmer must be for good roads.

This same enlightened farmer knows that the future prosperity of his holdings and the general welfare of his state depend upon a citizenry with the capacity to think straight, the power to work hard and skillfully, the ability to play fair on the business and all other fields, and the capacity to love much. For the attainment of these vitally important ends, schools are necessary — schools that measure up as well to the ideals of modern progress, with professionally trained teachers, and buildings, grounds, text books, playground and all other equipment, as do the farms successfully managed by the scientific methods of the products of the Agricultural Colleges, and the magnificent modern highways produced by skilled and experienced engineering genius. Therefore, good roads and good schools combine to promote prosperous agriculture and a forward looking citizenry.

That good schools and general prosperity are all terms in the successful solution of one problem, is proved by such famous consolidated schools as exist in the San Luis Valley, El Paso, Weld, and many other counties of Colorado. There is easy access to all these schools by motor, and such transportation has lessened tardiness and absence, and improved the health as well as the attendance records of the children who attend these notable schools.

Colorado has just cause for pride in many of her civic undertakings, while her scenic environment, of course, is unparalleled in majestic loveliness. Her Chambers of Commerce are centers of creative activity, her churches of spiritual illumination, while her quickening response to all the arts, and her progressive business methods, point to an inevitably great future. But her roads and her schools can be made to mean more in the development of this mountain citizenry than any of its other achievements. Free access to every part of this wonderland of beauty and treasure land of prosperity, and free access to the store houses of the knowledge that is power, and the purpose that is life, are imperative. If the crest of the continent is to witness in full measure the building of a Commonwealth whose people know how to think, to work, to play, to pray, to create, to enjoy, to prosper, to hope and achieve, it must have in abundance the good roads and the good schools, without which, Colorado's dream of a great future can never come true. That such a magnificent beginning has been made is cause for congratulation.

LIKE HIGH GAS TAXES

Many persons who felt that Arkansas was going a little too strong when she fixed the gasoline tax at four cents in 1923, then the highest gas tax in the country, have been surprised and relieved at the subsequent progress of other states. A recent and significant action is that of the Utah legislature which raised the Utah tax from 2½ to 3½ cents a gallon. Everywhere the gas tax is coming to be recognized as the only just and fair method of taxation for the maintenance of highways.—Arkansas Highways.

A Plea for Road Funds

By JAMES E. BECKLEY,
President State Association of
County Commissioners

IN my opinion there is no better way of showing activity in the Highway Road Building Program by the State Association of County Commissioners, than to help secure funds outside of direct taxation with which to carry on such work.

The way to provide these funds has been one of the big obstacles to overcome during many years past and the County Commissioners all over the State have worked hard and earnestly on this line to find a way in which to obtain finances.

We are constantly reminded and know it is true that our taxes are too high. Yet there seems to be little chance for a reduction when nearly everybody is asking for more of this and more of that—such as better roads and bridges, more schools and school busses, bigger ball parks, finer auditoriums, deeper swimming pools, swell tea rooms, cafeterias, etc.

These things cost money and must be paid for, so if we are bound to have them, there must be some provision made to get the funds with which to pay for them.

There is a way to get these funds.

Last December, 1924, at the State Capitol Building in the hall of the House of Representatives, the State Association of County Commissioners of Colorado held one of the best sessions that I have had the pleasure of attending in the past seven years, and many things were done that were really worth while.

A number of constructive resolutions were adopted. Motions were made and carried, and among them was one that provided for the Legislative Committee to appoint a good Lobby Committee with instructions to put in their whole time working with our Legislators.

What was the result?

Bills were framed and presented to the Legislators for action, and the efforts of our Lobby Committee were not in vain.

April 17th, 1925, the Denver Post said: "The more important of the new laws enacted include: Repeal of the direct primary law; Providing for the Licensing and Regulation of Motor Bus Companies by the Public Utilities Commission; Establishing of a State Bonding Fund to Bond all City, County and State Officials."

These bills were sponsored by the State Association of County Commissioners, and this Association is directly responsible for their passage.

Did they become laws? No!—Why? Vetoed.

This was a fine opportunity lost in helping finance our Highway Department, and its effect can well be imagined. You know the old saying—"A dollar saved is a dollar made."

The saving on bonds alone would automatically cut the Ordinary County Revenue levy. The tax on motor busses and trucks which have free use of our public roads, would have added considerable to our State Highway fund. The law was just and reasonable and so recognized by responsible auto men. The saving on Primary Elections would have been many thousands of dollars. Now the idea is to cut off on those things not essential and put on those that are essential—such as schools and roads.

The approval of the above laws would have been the means of saving close to one million dollars each year to the property owner, and a certain part put into the Highway Fund would go a long way toward financing that body.

This will be fully discussed at the Annual Meeting of our Association in January, 1926.

In conclusion, permit me to say there has been plenty of activity among the commissioners of our Association during the present year and much credit is due each and all for their loyal support and co-operation.

"How do you sell this limburger?"
"I often wonder myself, ma'am."

CATERPILLAR
REG. U.S. PAT. OFF.

War Against Winter

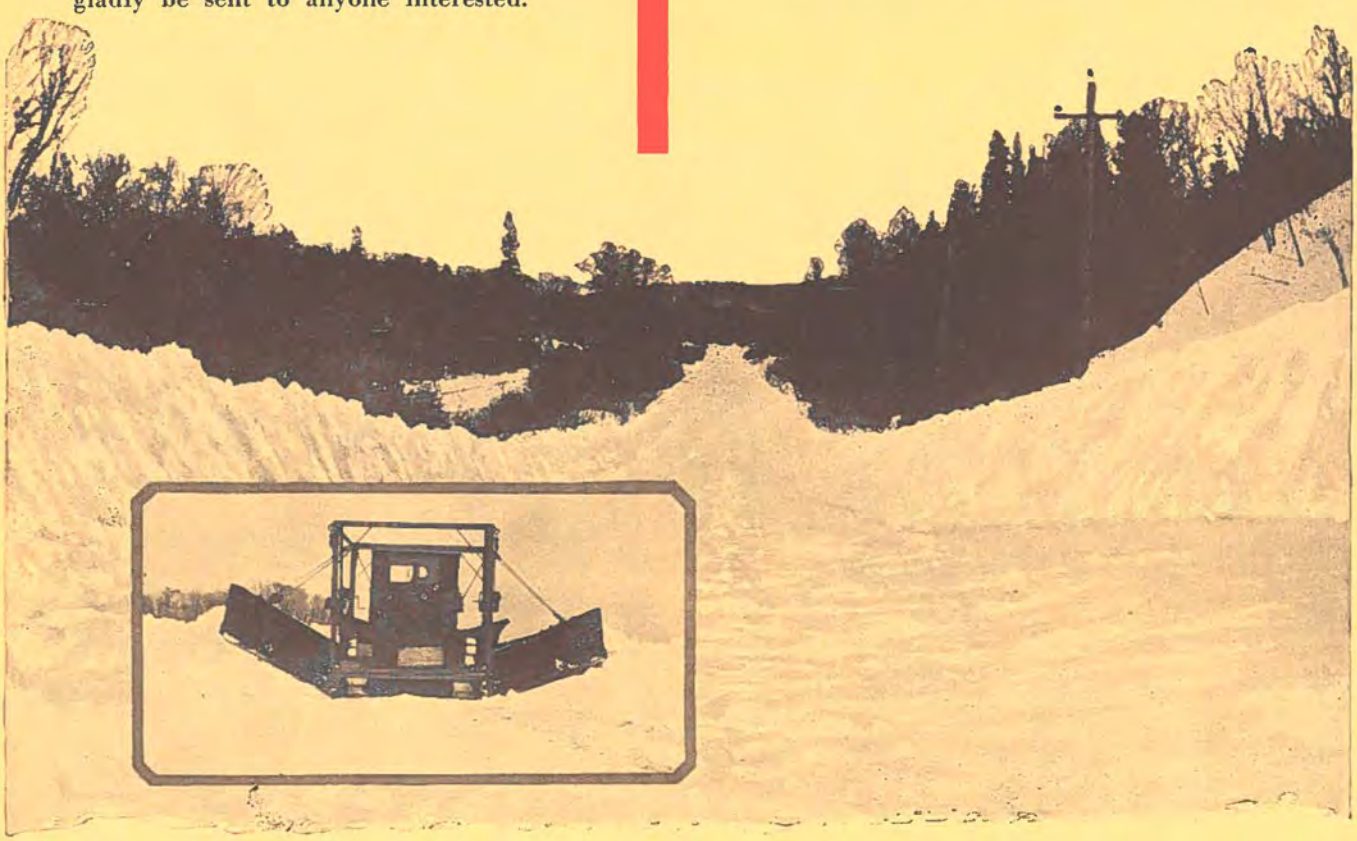
Old-fashioned winters are out of date! Yes, there's just as much snowfall as ever—but men have discovered that they need not suffer disturbed business and delayed transportation.

"Caterpillar" Tractors and improved snow plows have provided the weapons to successfully challenge the rule of the snow. This equipment makes it possible to effectively and economically *keep the winter roads open!*

Literature on Snow Removal and catalogs of "Caterpillar" Tractors will gladly be sent to anyone interested.

Ready Power –

EVERYWHERE, where
for power, "Caterpillar"
job because of their wor
staying on the job because of the
of a "Caterpillar" Tractor has the
and types to meet a broad rang
sizes—the Sixty, the 10-Ton, the 5
offering a range of power at the d



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CATERPILLAR
REG. U.S. PAT. OFF.

Steady Power

farm, forest and highway work call
Tractors are on the job—*put* on the
ld-famous records of achievement;
ir inbuilt stamina. The purchaser
choice from a complete line—sizes
e of requirements. There are five
5-Ton, the Thirty and the 2-Ton—
rawbar from 15 to 50 horsepower.

Clinton & Held Co.

Distributors

Road Building Machinery and Contractors' Equipment

1501-1511 Wazee St. DENVER, COLO.

Time Saved Is Money Earned!

"CATERPILLAR"
TRACTORS

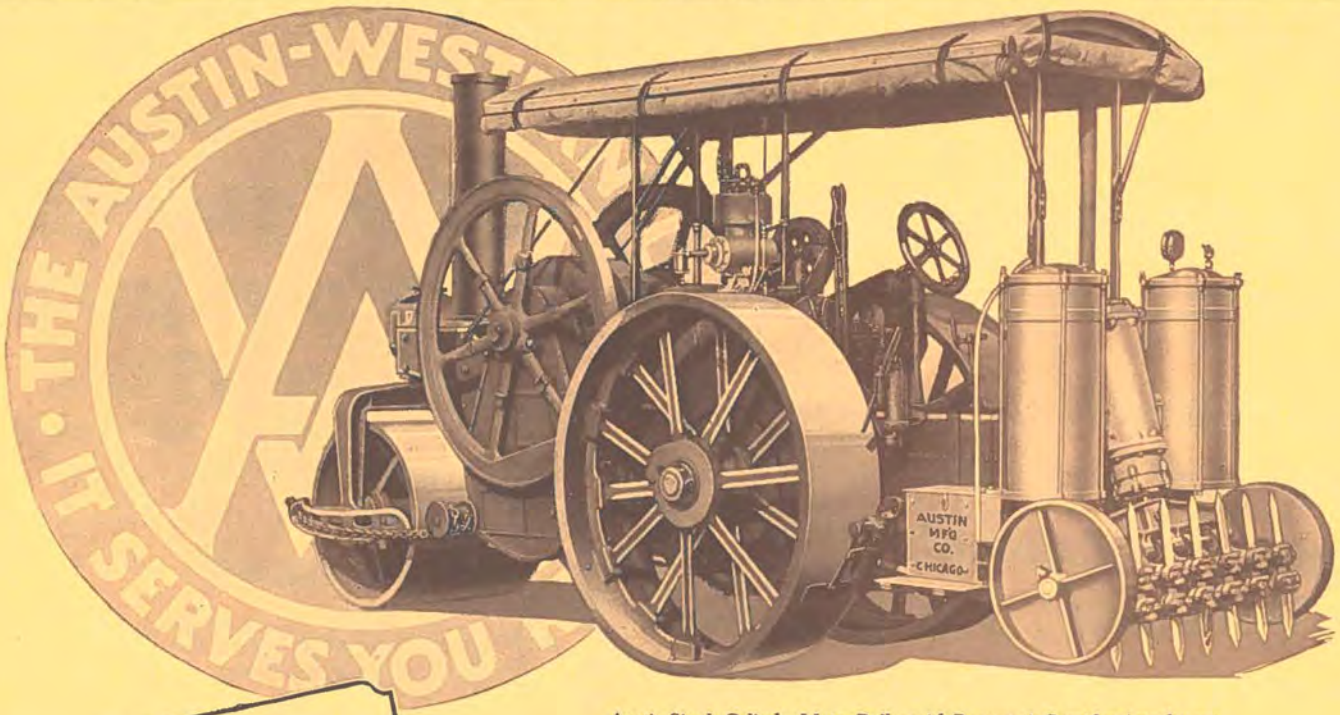
supply *plentiful* power.

In short seasons they can work overtime —at a profit.

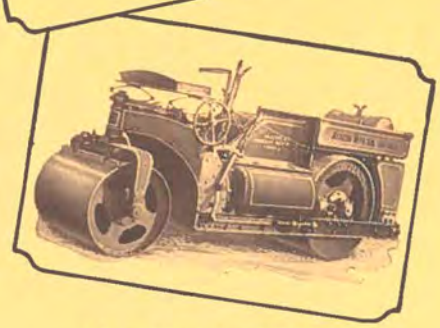
Sure traction conquers rough or soft ground—*dependability* prevents undue time for repair or adjustment.

They pay a bonus of quicker work and better work—these things in turn mean hard cash.

New literature and catalogs will gladly be sent you.



Austin Single Cylinder Motor Roller with Pneumatic Scarifier Attachment



Above: Austin Steam Roller with Scarifier Attachment.

Below: Austin 2-Cylinder Tandem Motor Roller.

When You Think of Rollers— Think of AUSTIN!

THE Austin Roller Line is far more complete than any other, and includes styles and sizes to meet your every need. For instance, where else can you choose from:

Single-Cylinder, 3-wheeled Motor Rollers in 3 sizes.
Twin-Cylinder, " " " "
Four-Cylinder, " " " "
All with or without Pneumatic Scarifier Attachments.

3-wheeled Steam Rollers in 3 sizes.
With or without Steam Pressure Scarifier Attachments.

2-Cylinder Tandem Motor Rollers in 4 sizes.
4-Cylinder " " " "

The Austin Pup (Fordson Power) in 3- to 5-ton sizes.
The original roller, road maintainer and scarifier combined.

It is poor economy to continue using an old roller that has seen its best days, and it is also a waste of time and money to use the wrong kind of roller just because you happen to have it. If the work you now have on hand, or in prospect, will need additional rollers, or if the idea of replacing some old models with up-to-date Austins appeals to you, the coupon will bring you a copy of our special Austin Roller Catalog and a proposition that we know you will find most interesting.

I would like the Catalog

_____

_____

THE AUSTIN-WESTERN ROAD MACHINERY CO.

400 N. MICHIGAN AVE., CHICAGO, ILL., U.S.A.

Road-Making Equipment

Light Weight, Compactness and Sturdiness Combined in New Truck and Trailer Crane

A new truck and trailer crane is now being placed on the market by the Harnischfeger Corporation (formerly Pawling & Harnischfeger) of Milwaukee, Wisconsin. This crane—known as the P&H Model 203-A Truck Crane—is the final result of a long series of tests and developments made by the P&H engineers, and the machine now embodies the valuable combination of speed, compactness, light weight, sturdiness and complete accessibility. The great value of these features are better realized when considered along with the advantages which they give in the operation of this crane.

The speed of this crane can be especially appreciated when moving between jobs. The truck or trailer mounting enables it to move at regular truck speed, thus cutting down the inactive time to a minimum. This is especially advantageous when there are a number of jobs, all at different points. When on the job, it is equally fast in operation—having a line speed of 125 ft. per minute and a swing speed of 5 R. P. M.

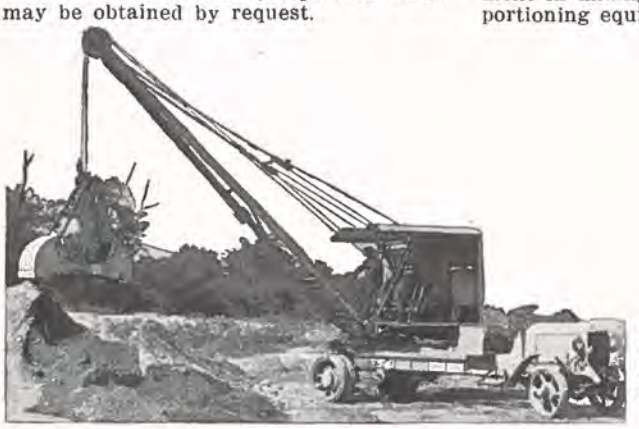
The light weight of this machine is realized at once from the total weight of 13,000 lbs. This weight includes the entire crane equipment with the structural frame which fits on the truck, but does not include the weight of the truck.

This light weight makes it possible for a 5 or 7½ ton truck to handle the crane and also reduces the danger of miring in soft ground.

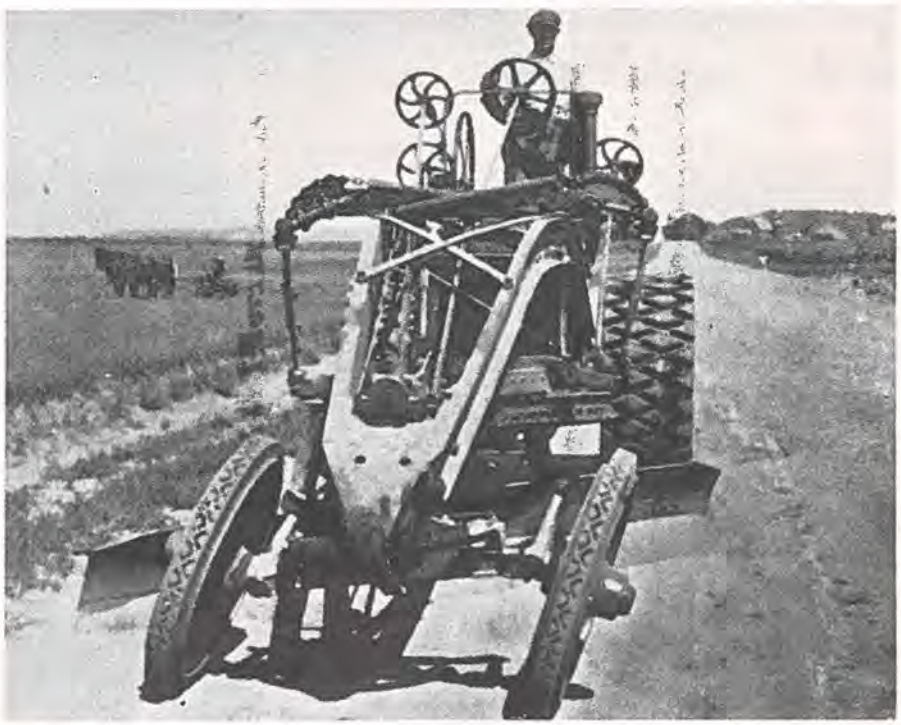
Sturdiness on this Truck Crane is obtained by cast steel revolving frame, cast steel drum bearing frames, heavy swing gear with I-beam spokes and outside teeth. Thus there are no rivets to work loose and the frames are always rigid.

This machine is built to handle a ½-yd. clamshell bucket on a 25 ft. boom, or for lifting 10,000 lbs. at 10 ft. radius.

Paul Fitzgerald, U. S. National Bank building, Denver, has ready for distribution a complete bulletin on this P&H truck and trailer crane, copies of which may be obtained by request.



New Model P & H Truck Crane manufactured by the Harnischfeger Corporation.



Austin-Western motor grader equipped with International 15-20 heavy duty motor.

Smith Exhibit Includes New 27-E Paver and 5-S Tilting Mixer

The T. L. Smith Company, pioneers and the largest exclusive manufacturers of concrete mixers, included in their exhibit at the 1926 Road Show, a new 6-bag 27-E Paver, a one-bag 5-S Tilting Mixer for bridge and culvert work and a small 2½-S trailer type tilting mixer for small repair work.

The manufacturers state that the new 27-E Paver will give more than 25% greater daily output than the standard 21-E with a very small additional investment in mixing, trucking and batch proportioning equipment. This move follows the practice in every field of cutting the unit costs of production.

The 5-S Tilting Mixer is designed for use by road and bridge contractors in construction of culverts and bridges which are usually built of concrete of the same proportions as specified by the highway departments for the road slab. Under these proportions usually not leaner than 1-2-4, the 5-S will hold a one-bag batch, meeting the requirements of the engineers that nothing smaller than a one-bag mixer be used and providing a small, easily handled mixer for the contractor.

The 2½-S mixer is of the trailer type on pneumatic tires, designed for high speed hauling. It is a convenient size for small concrete and cold patch bituminous repair work.

The manufacturer is distributing a new descriptive catalog covering the 27-E Paver.

A new 10-ton tractor is announced by the Monarch Tractor Co., according to W. W. Griswold, 1817 Fifteenth St., Denver.

It is equipped with high altitude pistons for Colorado efficiency. The treads are made from manganese steel.

The general dimensions of this tractor are as follows:

Length, over all, 11 ft.; width over all, 7 ft. 2 in.; height, 6 ft. 3 in.; height with enclosed cab, 8 ft.; length of ground contact, 7 ft. 6 in.; C. to C. tread of track, 5 ft. 5 in.; ground clearance, 18 in.; weight (approximately) 20,000 lbs.

STATE AND COUNTY OFFICIALS

"Greetings"

HARDESTY DENVER

Austin-Western Introduces New Motor Grader

In addition to making their Fordson one-man maintainer, after having proven the merits of this power-unit, the Austin-Western Road Machinery Co. announce a larger and more powerful unit, equipped with an International 15-30 type motor, which is now being marketed in this territory through the Wilson Machinery Co., 1936 Market street.

The Austin-Western concern has incorporated in the International motor unit all of the latest improvements, such as leaning front wheels, in this new maintenance machine, with the idea of giving better roads for less money.

The specifications of this unit are as follows:

Wheel base, 18 ft. 10 in.; length, over all, 22 ft. 8 in.; height, over all, 8 ft. 7 in.; blade, regular, 12 ft. long, 17 in. wide; blade, side shift each way, 12 in.; blade, clearance, 12 in.; frame (re-inforced), 8 in. x 13¾ lb. channel; plain steel wheels furnished if desired; special rear wheels, with rubber tires, weight 2,000 lbs. each; special front wheels, with rubber tires, weight 525 lbs. each; tire size, rear, 50 in. dia. x 22 in.; tire size, front, 34 in. x 4 in.; crawler tread, furnished if desired; governor, I. H. C. built in; air cleaner, Pomona; leading front wheels, furnished if desired; center scarifier, furnished if desired; rear scarifier, furnished if desired; speeds—high, 4.46 M. P. H. Second, 2.93 M. P. H. Low, 2.31 M. P. H. Reverse, 2.80 M. P. H.; weights—without scarifier, with steel wheels, 9,600 lbs.; with rubber tires and leaning front wheels, 13,000 lbs.; with crawler tread, 11,700 lbs.; center scarifier, 425 lbs.; rear scarifier, 875 lbs.

Showing operation of latest model "Snow King" built by the Rotary Snow Plow Co.

Griswold to Handle New Rotary Snow Plow

A new rotary snow plow especially designed for difficult mountain work is being marketed in the Colorado territory by the Rotary Snow Plow Co., through W. W. Griswold, 1817 Fifteenth St., Denver.

This plow is designed to fit any type of tractor. It is constructed for heavy duty. The work done by this plow so far has been a complete success in all parts of the country. The greatest achievement to the credit of the Snow King is the opening of the western side of Snoqualmie Pass in the Cascade mountains, 65 miles east of Seattle, Wash.

The snow on the pass ranged from 2 to 10 feet. Just to speak of the depth, however, is said to give no idea of the condition of the snow that must be moved from this pass. It is either a frozen or wet, soggy mass that does not move or yield in the slightest degree.

The Snow King throws the snow clear of the shoulders, not merely piling it high on the edges of the road.

An elaborate booklet describing the operation of the plow is now being distributed to road officials by Mr. Griswold. If you haven't received yours yet—write for it. It's yours for the asking.

Ehrhart Joins Sales Force of Clinton-Held

Announcement is made by L. L. Clinton, president of the Clinton and Held Company, that ex-State Senator Thomas J. Ehrhart will be identified with the firm, effective January 1. Mr. Ehrhart is one of the best known road builders in Colorado. For several years he was state highway commissioner and also was engaged for a long time in the contracting business.

Mr. Ehrhart will handle the Denver territory, which includes Jefferson and El Paso counties. The Clinton and Held Company are Colorado and Wyoming distributors for "Caterpillar" Tractors; also Stockland graders, Sargent snow plows and a general line of contractors' equipment.

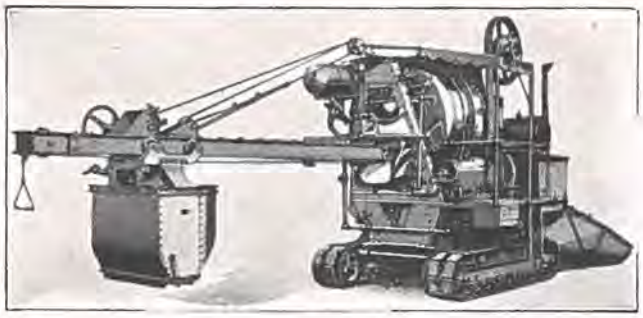
Roy Peppers to Exhibit Highway Surfacer

Space has been retained by Roy C. Peppers Engineering Sales Co. of Hudson, in the lobby of the Albany Hotel, Denver, for an exhibit of the new Havelock maintainer. This space will be retained during the week of the Stock Show.

The Havelock concern now is marketing two machines designed especially for maintenance work. One is called the Surfacer and the other the Maintainer. Both have been produced following years of practical research on the part of road experts.

It is said that the New Havelock Surfacer is the result of years of specializing and striving to do one thing well—that is put the dirt over the road bed three times in one operation, thus filling and smoothing all ruts. This new Havelock is said to shear off the bumps and eliminate the corrugation on gravel roads.

Work of the Havelock maintainer is well-known in this territory. Mr. Peppers will be on hand at the Albany during the County Commissioners' convention to explain all details of the new machines.



Smith 27-E Paver with full-length traction; gasoline drive; boom and bucket.

Chain Belt Markets New 5-S Rex Mixer

A new Rex mixer which can be converted into a paver with the addition of a few accessories is the latest product of the Chain Belt company, according to announcement made by the Herbert N. Steinbarger company, Denver distributors. It is said that these handy appliances enable the contractor to get a greater return out of his mixer investment.

The Rex Distributing Spout, for example, saves time and labor by delivering mixed concrete directly to the forms. The cross-wise axle arrangement makes a paver out of mixer for alley and other work. The skip extension means fewer men on track elevation and bridge work. Then there is the rotary water pump to supply the mixer with plenty of water when there are no pressure mains around. The Rex Hoist attachment eliminates the need for heavy hoisting equipment on the smaller jobs.

These convenient accessories can be attached to the Rex 5-S and 7-S machines in the field.

The new 5-S is a new Rex product. It is a full one-bag mixer on a 1-2-5 mix. It is built on the Rex high-speed idea. This machine has a 7-second skip, big unobstructed drum openings, wide, deep mixing blades and buckets and a wide discharge chute—designed to hustle the stuff into and out of the drum, and turn out big yardages.

The H. N. Steinbarger Co., Denver, will be glad to furnish bulletins on request.

Federal Aid Road Progress

(Continued from page 14)

Sand clay roads accounted for 8.409 of this year's total mileage. This cost $52,405.10, of which burden the United States assumed $29,409. To date, there have ment directed by A. L. Palen, assistant district engineer, we find similar great activity. This was on main highways thru the national forests, connecting with the present Federal Aid and State Highway System.

This year six miles of road were built between the west portal of the Moffat tunnel and the Fraser, costing $68,000. This is in the Pike and Arapahoe National Forests, on the Berthoud Pass project and the Victory Highway. It completes the project and gives a good highway between Empire and Fraser. It makes an easier route to Steamboat Springs and Salt Lake City, and also renders more accessible the west portal of the tunnel.

On the Tennessee Pass projects between the pass and Redcliffe in the Holy Cross National Forest, four miles were built in Homestake Canon at a cost of $61,000. Two contracts for another eleven miles to cost $135,000 have been let. This is on the Pike's Peak Ocean-to-Ocean Highway.

There has been considerable development on the Cumbres Pass project in the Rio Grande National Forest. A contract was recently completed of five miles, costing $41,000, while another agreement has been signed for the construction of a further five miles to cost $55,000.

This will complete the Cumbres Pass road between Antonio, Colorado, and Chama, New Mexico, opening up the San Juan, and connecting the northwestern region of New Mexico with Colorado.

On the Durango-Silverton $1,000,000 highway in the San Juan National Forest, work this year has centered on the widening to a standard 12-foot roadway of 10 miles of road, at a cost of $75,000. This is between Durango and Ouray via Silverton, making a part of a new circle trip to Meso Verde.

In the Holy Cross National Forest, on the Independence Pass project between Aspen and Twin Lakes, making a short cut to Glenwood Springs, two miles costing $72,000 were built, and a start was made on another three miles to cost $42,000. This road crosses the divide at a height of 12,200 feet, one of the highest passes in the state.

On the Cameron Pass project, in the Colorado and Arapahoe National Forests, 6½ miles costing $139,000 were built, tying up with many miles of State and Larimer County road work, up Poudre Canon, and along Michigan Creek between Fort Collins and Walden. Larimer County has been working on this road and the construction completed this year means that next season thru travel will be possible over the route outlined. Construction here has been difficult on account of the heavy excavations necessary, heavy slides and short seasons in which to work.

Another link in the Jarre Canon road in the Pike National Forest between Sedalia and Woodland Park, of six miles, costing $50,000, was built. This will help open up a big fishing territory for Denverites.

A job which will about complete the road between Denver and Leadville via Loveland, Fremont and Tennessee passes is that on the Fremont Pass project of 12 miles costing $130,000. This work will lie partly on the Shrine route.

Then there is work on the Echo Lake-Idaho Springs road in which the state and the City of Denver has co-operated to the extent of $24,000.

This project is in the Pike National forest and will complete a circle trip from Echo Lake to Mount Evans, with return by Idaho Springs and Floyd Hill.

This is difficult mountain road construction, and the grading down Chicago Creek will cost about $360,000. The first unit of four miles, costing $70,000, is about completed.

Work also was begun on a new forest highway project known as the South St. Vrain between Lyons and Estes Park via Allen's Park and Long's Peak. A contract was let for 3½ miles of road costing over $30,000, which job will be very soon completed, between the South St. Vrain and Allen's Park.

The bureau of roads moreover is spending annually about $30,000 for maintenance of forest highway roads for two years before they are turned over to the state, this being in line with the policy of government in being sure its construction work is complete.

Eph: "What am de difference between a' old man, a young man, an' a worm?"
Mose. "Nuffin. Chickens gets 'em all."

H. W. Moore to Entertain County Commissioners

H. W. Moore Equipment company report 1925 as being the most profitable of its existence, this month of December showing the largest volume of business for December ever enjoyed by the company since Mr. Moore's entrance into this field.

While Mr. H. W. Moore is still the active head of the business, the administration has been segregated into three departments. City, County, State and Government, in charge of George L. Meffley. Fordson, Industrial and Agricultural Equipment in charge of T. C. Sanderson, assisted by John Moore, and the Contractors Corporations and Industries under Lou St. James. Mr. Clair Lund has replaced Mr. Meffley in Southeastern Colorado territory. John A. Sprott still holds down the Western Slope. R. E. Schmuck, formerly with the Steinbarger and Western Equipment company, will represent us in Northeastern Colorado and Western Nebraska. C. F. Mullins still holds down his old stand in Wyoming. Herbert Toogood, formerly with the Toogood Machinery company, is now calling on Denver contractors for us. Harry Feis, District Representative of the Marion Steam Shovel company, maintains his regular office with us.

FARM FOLKS FRIENDS

The auto has amalgamated city and country. The farmer living six or eight miles out can get to church or to the grocery as quickly as the Fairmonter living a few blocks out in the Second or Third wards, and Jim Lamperd, way out in Rolling Green, shoots by a Woodland avenuite, on foot, who started at the same time Jim started. Wonderful age, isn't it? * * *—Fairmont Sentinel.

UNIVERSITY AND DEPARTMENT CO-OPERATE

The University of South Carolina is co-operating very closely in the work of the State Highway Department. In addition to co-operation between these organizations in re-writing the complete specifications of the department, and the use by the State of the testing facilities at the University laboratory, the State Highway Department co-operated with the University in training a class of twelve boys and one girl in general highway matters.

Testing Engineers Discuss Problems

The subcommittee on tests and investigations of the Committee on Standards of the American Association of State Highway Officials met recently in Washington, D. C.

A part of the time of the committee was taken up with discussion of revision of U. S. Department of Agriculture Bulletin No. 1216, "Tentative Standard Methods of Sampling and Testing Highway Materials." Several changes relating to methods of procedure were recommended. The new standard screen scale for mechanical analysis of fine aggregate for concrete recently adopted by the American Society for Testing Materials was also adopted by the subcommittee. The former requirement was for screens with square openings, whereas round openings are now optional for the ¼-inch size and larger. The new screen scale permits of a greater variety of sieves than the old scale.

The committee received and discussed several research reports, such as Investigations of the Relation Between the Transverse and Compressive Strength of Concrete, The Value of Stone Screenings in Place of Sand as Fine Aggregate in Concrete, The Use of Rail Steel for Reinforcing in Concrete, Methods of Determining the Proportions of Hardened Concrete, Methods for the Determination of the Asphaltic Content of Road Oils, and Methods for Determining Toughness of Bituminous Mixtures. Specifications for concrete culvert pipe and for paints were also discussed.

The young mother was bathing her baby, when a neighbor's girl came into the room carrying a doll, and stood watching the operation for some time. Dolly was the worse for wear, being minus an arm and a leg. "How long have you had your baby?" she said to the mother.

"Three months," said the proud young mother.

"My, but you have kept her nice," replied the child with an envious sigh.—Woman's World.

MAKING THE GOAL

There are two ways to reach your goal: the first is to put your shoulder to the wheel; the second, not to buy that kind of a car.—College Humor.

Isn't it about time for some one to get out a report on the deleterious effect of pedestrians on the bumpers and radiators?—Little Rock (Arkansas) Gazette.

Some Economic Benefits of Colorado Good Roads

(Continued from page 19)

this is due in some measure to the increased facility with which farmers and residents of small communities can reach Denver as a result of the road-building program of the last few years."

Within the last ten years the population of Jefferson County, abutting Denver on the west, has practically doubled. It is significant to note that the greatest increase has been adjacent to improved highways. From Denver to Golden both sides of the concrete road have been built up perceptibly. Men whose vocations take them to Denver daily have been able to establish homes and rear their children in the desirable atmosphere of the country. Thanks to the hard-surfaced roadway, they are afforded quick communication with the city. Taxes or rents are less and there is a considerable saving on the family budget.

In the Denver Mountain Parks areas the effects of adequate highways on property valuations are most apparent. Take, for instance, the area including the summit of Lookout Mountain and extending back beyond the Mount Vernon Country Club. This comprises school district 13 of Jefferson County. The assessor's books show that in 1917 this district had a valuation for tax purposes of $109,425. The 1924 valuation, on which taxes of 1925 were levied, was $394,260, a gain of approximately 360 per cent in seven years, or an average of over 50 per cent a year.

In the Evergreen section, where summer homes have sprung up like mushrooms, the gain is even greater. The 1917 valuation of school district 30, including Evergreen and vicinity, was $186,340. In 1924 it had mounted to $854,575, a gain of over 450 per cent in seven years.

The very life of some communities can be attributed to good roads. Contrast, for example, the mining camps of Idaho Springs and Central City. They are separated by only six miles of mountains, yet from their outward appearance they might be in different states. A few years ago both were prosperous cities, gaining their lifeblood from the veins of gold and silver in their surrounding hills. Then came the slump in mining. From that day Central City began to dwindle in population and today it is little more than a collection of weather-beaten, decaying homes and business houses. Idaho Springs, on the other hand, retains considerable vestige of its former opulence. The principal reason is that it is on a main-travelled thoroughfare.

Few figures have ever been compiled in Colorado on the increment in farm values resulting from good roads. Dr. Don Sowers, secretary of the bureau of business and governmental research at the University of Colorado, states, however, that farm lands abutting on a paved highway are increased an average of $25 an acre by the construction of such highway. This figure has been proved correct in various sections of the country and is used by the government.

Fifty miles is commonly set as the limit for economical truck haul. Yet the American Furniture Company of Denver advertises deliveries within a radius of 75 miles.

Lest it appear that the large city, in this case Denver, gains the lion's share of the advantage from good roads, it should be set down that this is not true. Scores of business and professional men whose daily work calls them to Denver maintain their homes in suburban towns such as Golden, Brighton, Littleton and Arvada. A few years ago the managing editor of one of the Denver daily papers made his home in Idaho Springs, making the trip from that city to Denver and return by automobile every day. While these men do some trading in Denver, food and most household purchases are made where they live and the mercantile life of these cities has been given considerable impetus as a result.

Golden's general municipal awakening in the last few years can be laid primarily to the fact that the road from Denver its on one side and the Denver Mountain Parks improved road system on the other, the city had to pave to stay on the motor map. Not only did it lay paving, but it took advantage of its strategical position. Instead of allowing motorists to pass it by on their way to the mountains, it constructed signs along the entrance road from Denver announcing: "This way to Lookout Mountain through Golden on paved streets." An arrow then pointed the way. These signs occur every few blocks and a large percentage of the motoring public takes this directed route through Golden and sees the city, despite the fact that the most direct route to Lookout Mountain misses the business section entirely.

One has only to drive out any road from Denver to the agricultural districts from July to December to see one economic result of good roads. Along all of them the farmers have set up temporary produce stores where they ply their trade. Some farmers dispose of the bulk of their garden stuff in this manner and the prices received are better than if the produce were taken to market.

Good roads and the automobile have brought about the consolidated school idea in the rural districts, enabling country children to receive scholastic training on a par with that in the cities. By combining the schools of several districts it has been possible to increase the standards of classroom instruction at an actual saving to the taxpayers.

An example occurring within the last few weeks at Arvada may be cited. The school board there has for years been maintaining two school buildings, although one of them had an enrollment of but six pupils. In addition to the cost of heating and otherwise maintaining the building, a teacher was employed at $1,100 a year. An Arvada automobile dealer signed a contract at $80 a month to run a bus which would convey the children to and from the second and larger school building. Not only will the children receive better instruction there, but the district will be saved a tidy sum each year.

No consideration of the economic value of good roads would be complete without some mention of the tourist trade. Tourists, a large part of them traveling by auto, are a money crop worth around $50,000,000 annually to the state of Colorado. Without good roads, particularly in the mountains, it is safe to say that a good part of this sum would be lost. Hotel and resort keepers reap the greatest portion of this money, though garages, filling stations, grocers, camp goods dealers and a number of other lines of trade benefit in no inconsiderable way.

Throughout Colorado there are approximately 250 public and private camp grounds whose annual registration ranges upward of 650,000 persons. Overland Park, Denver, shows a registration of around 50,000 every summer. Good roads brought these people here and their number will increase each year in direct proportion to the continuation of the road-building program. Careful checking in one city, Fort Collins, showed that the average visitor at the camp grounds during 1925 left $10 in the city.

In the sections of the state devoted primarily to agriculture, the economic value of good roads for moving crops is pronounced. In northern Colorado sugar beets are being transported constantly increasing distances from year to year, loads are increasingly larger and costs per ton mile are less as a result of better roads. If one doubts this, he has but to take a tour in the fall and check up on the size of loads going over poor roads and good ones.

Colorado communities are fast coming to realize the worth of good roads to such extent that celebrations commonly signalize their completion. In 1924 Greeley commemorated the laying of the final block of paving from Denver to that city. In 1925 Platteville followed suit, while Arvada attracted 25,000 persons in a single day with its Harvest Festival, staged to fittingly mark the completion of a bond of concrete with Denver.

Bus transportation is following closely in the wake of road building, giving the public an additional desirable form of travel with greater elasticity of schedules than is afforded by railroads. In many instances, also, there is a direct saving on fares.

In addition to carrying passengers, these motor lines also move considerable small express. Most cities north of Denver are now served by bus with daily papers, ice cream, cut flowers and similar articles where quick delivery is a factor. Afternoon editions of the Denver dailies are delivered in Greeley before 4 o'clock by utilizing motor carriers.

The saving on good roads in auto maintenance and in lengthening the life of cars has been often cited. Another economic item is presented by the great amount of local labor employed in all sections by road construction and maintenance.

For those who see in the intensive road-building programs the stifling of the railroads, it should be recounted that automobiles and the gasoline industry pay more taxes than the rail interests. However, with the restriction of loads to adequately protect highways and with the mechanical limitations of gasoline vehicles, there is small danger that motor carriers will supplant railroads for small freight on long hauls or on heavy freight over either short or long hauls.

Scientific Highway Construction

There is a growing tendency to pay more attention to scientific highway construction. The initial surveying work to secure the best location for a road must be backed up by sound engineering principles applied to the construction of the hard surface itself.

With states, cities and counties spending hundreds of millions of dollars on permanent paving, the taxpayers are learning that they cannot afford cheap and imperfect construction. They find that it is always at their expense that so-called cheap construction by incompetent and inexperienced contractors is carried on.

All over the country, state highways, market roads and city streets that were not built by competent engineers, are breaking up under heavy traffic and in a few years will have to be rebuilt.

Permanent highways can only be built with a proper equipment and after the subgrade has been allowed time enough to settle. The contractor should have a good long record of experience and a reputation at stake. The type of pavement laid should have a time tested service record at a low maintenance cost.—Shakopec Tribune.

Here's a Real Subsidy

The Land Grant of 1864 to aid the construction of the Northern Pacific Railway conveyed approximately 40,000,000 acres of government land to the railway company. From this land great sales aggregating $136,000,000 have been made by the Northern Pacific company up to 1917. The Nation's total gift to the railroads to aid in their development was 158,293,736 acres of land from the public domain. At ten dollars an acre this vast empire had a potential value of over one and one-half billion dollars.

This was a means of encouragement of transportation development, and in view of these conditions the amounts being appropriated by congress in the form of federal aid in highway building seem little enough to encourage the most modern form of transportation which is of vital interest to every citizen and every community.—Nevada Highway News.

WRONG STORE

Customer: "Have you any Lincoln Shock Absorbers for 'Coles'?"

Clerk: "No, sir, it's Bromo Quinine for colds." —H. G.

Combined Statement of the Highway Fund and the Bond Fund for the Fiscal Year Ending November 30th, 1925

BALANCES, DECEMBER 1, 1924

Highway Fund	$1,067,800.68	
Federal Aid Bond Fund	500,281.58	
County Bond Fund.	16,656.43	
Total Balances.		$1,584,738.69

RECEIPTS

Half Mill Levy	$ 783,328.16	
Gasoline Tax	917,492.14	
Internal Improvement	107,100.00	
Federal Aid	1,443,655.20	
County Aid	75,143.77	
Excess War Supplies	52,227.64	
Sale, 1925 Bonds	1,000,000.00	
Total Receipts.		$4,378,946.91
Total Balances and Receipts.		$5,963,685.60

DISBURSEMENTS

Federal Aid Projects	$2,925,446.32	
State Projects	590,198.05	
Maintenance	808,269.58	
Property and Equipment	76,240.53	
Surveys	17,138.33	
Administration, General Office	67,003.06	
Administration, Engineering	67,521.75	
Road Signs and Traffic Census	20,775.41	
County Bond Projects	14,496.54	
Total Disbursements		$4,587,089.57

BALANCES, NOVEMBER 30, 1925

Highway Fund	$1,374,062.55	
Federal Aid Bond Fund	373.59	
County Bond Fund.	2,159.89	
Total Balances.		$1,376,596.03
Total disbursements and balances		$5,963,685.60

Iowa Town Votes Against Trunk Road Traffic

Iowa towns that are fighting and fussing because the main road does not bring its stream of traffic through their main streets will, if the experience of more highly developed and older sections of the country is a safe criterion, someday be glad that they have not had their wish. The home town is supported almost entirely by the home community. Its tourist trade, no matter where located, is but a drop in the bucket compared with the great volume of trade which its own people and those of the surrounding farm community daily pour into its channels of trade. The average Iowa town will thank its lucky stars, in years to come, that the main road is just beyond the edge of town, that it "sits beside the road," not on it. Swea City, in Kossuth County, once waged a successful campaign to have road No. 9 located on the main street of the town. Now an editorial in the Swea City Herald, in an article on page 2 of this issue of the Service Bulletin, suggests the advisability of rerouting the road a mile to the north so that the heavy traffic will be routed around the town instead of through it.—Iowa Road Bulletin.

Roads and Tires

Estimates have been made to show the difference in cost to automobile users between gravel and paved highways. Experts have figured the wear on tires, the damage done by dust settling on clothing, the effect of grit and dust in the car mechanism and so on.

When the balloon tire was placed on the market the only objection raised to it was that it made steering difficult. That has been overcome by practically all manufacturers. Such tires have been standardized and the number of pounds pressure they should carry has been determined. They are evidently here to stay, but nobody is prepared to say how long the gravel roads will last under their attacks. Traffic on the main highways has grown so that a few hours after a hard rain they begin to be dusty. After days of dry weather any sort of car raises the dust. Highway commission maintenance officials have been placing more material on roads that have heavy traffic this year than ever before, largely as a result of the increased use of balloon tires and motor busses.

COMPARISONS OF AVERAGE DAILY 24-HOUR TRAFFIC PER MONTH

ROAD NO. 1

Road No.		1923 July	1923 Aug.	1923 Sept.	1924 June	1924 July	1924 Aug.	1924 Sept.	1925 June	1925 July	1925 Aug.	1925 Sept.
1.	N.E. Ft. Collins	1055	727	....	702	1368	1360	780	836	767	851	620
1.	*So. Ft. Collins	1875	2040	....	1698	2553	2453	1831	1625	2288	2773	1982
1.	*No. Denver	2377	3395	....	3891	4110	4534	....	4006	4227	4753	3350
1.	*So. Denver	3408	2904	....	3582	4516	5172	....	4850	4256	3086	3666
1.	*No. Colorado Springs	1766	1565	....	1609	1945	2149	2186	2618	3076	3289	2578
1.	So. Colorado Springs	1325	1127	....	934	1176	1409	....	1384	1784	1654	1164
1.	*No. Pueblo	965	1131	....	835	1118	1526	....	....	1419	1553	1280
1.	So. Pueblo	616	....	621	1068	911	1037	870	....	1845	1073	914
1.	*No. Trinidad	1612	....	1398	1211	984	1835	1222	....	1859	1381	1424
1.	So. Trinidad	883	....	745		Not Taken				Not Taken		
1.	State Line—Morley	517	....	655	438	403	529	533	....	695	678	551

ROAD NO. 2

2.	S.W. Julesburg	215	331	....	....	433	383	379	369	335	423	423
2.	So. Sterling	827	1014	....	....	1285	1371	1243	....	1142	1389	....
2.	E. Ft. Morgan	788	914	....	1120	910	1179	1100	382	1789	1675	....
2.	*So. Greeley	1849	1594	....	1990	2556	2918	2179	2143	2540	3040	2590
2.	*N.E. Denver	2401	2726	....	3427	4015	3569	....	3911	4816	4717	4959
2.	*W. Denver	....	....	....	5279	7129	7547	5634	5399	6831	7333	5485
2.	Empire-Berthoud Pass	....	300	168	....	.459	742	310	....	....	504	240
2.	W. Steamboat		Not Taken		208	....	263	336	473	330	326	....
2.	E. Craig		Not Taken		421	....	413	260	419	357	372	....
2.	W. Craig		Not Taken		524	....	660	476	265	359	368	....

ROAD NO. 3

3.	No. Greeley	1710	1560	....	2504	2171	2204	1991	2180	2301	2431	1908

* See comparisons of winter data.

COMPARISONS OF AVERAGE DAILY 24-HOUR TRAFFIC PER MONTH

Road No.		1923 July	Aug.	Sept.	June	1924 July	Aug.	Sept.	Oct.	June	1925 July	Aug.	Sept.
4.	N. Burlington	396	494	....	....	277	400	....	28)	462	600	688	....
4.	E. Limon	....	441	....	289	290	361	186	....	316	428	501	....
4.	S.W. Limon	348	479	....	443	384	465	....	....	468	538	520	....
4.	E. Colorado Springs	689	726	....	740	824	733	....	610	826	929	1228	842
4.	W. Colorado Springs	6401	4750	....	1314	....	....	....	....	1018	1358	1896	795
4.	Buena Vista, So.	....	117	62	....	....	....	....	....	92	210	181	206
4.	E. Glenwood	Not Taken			398	298	285	264	....	312	358	357	210
4.	W. Glenwood	Not Taken			546	....	459	432	....	424	534	548	402
4.	*E. Rifle	....	204	....	355	....	348	432	....	286	371	321	292
4.	*W. Rifle	....	211	....	207	....	175	233	....		Not Taken		
4.	*N.E. Grand Junction	Not Taken			1093	1200	....	1855	....	1493	1614	1780	1915
4.	*N.W. Grand Junction	Not Taken			962	960	....	....	951	1136	1165	1222	1662
					ROAD NO. 6								
6.	E. Holly	529	....	680	....	407	674	....	389	422	573	No Man	No Man
6.	E. La Junta	1605	....	1940	....	....	....	....	....	....	....	....	....
6.	*W. La Junta	1162	....	1889	....	1298	1591	....	1223	1410	1542	2079	....
6.	E. Pueblo	1121	....	1130	1612	1510	1641	2490	....	1895	1666	1997	....
6.	W. Pueblo	337	....	336	410	588	583	582	....	634	668	641	....
6.	W. Canon City	....	....	993	1915	1470	1607	1751	....		Not Taken		
6.	Poncha Springs	....	185	180	125	164	173	....	....	176	184	160	....
6.	E. Montrose	Not Taken			....	202	334	....	317	319	360	259	383
6.	*N.W. Montrose	Not Taken			....	586	610	....	510	505	521	669	568
6.	So. Delta	Not Taken			514	623	....	646	....		Not Taken		
6.	No. Delta	Not Taken			541	589	....	840	....		Not Taken		
6.	*So. Grand Junction	Not Taken			911	658	....	927	....	933	1003	904	1100
					ROAD NO. 8								
8.	E. Cheyenne Wells	....	....	....	280	....	368	....	234	148	155	223	....
8.	E. Limon	420	181	....	186	213	283	....	124	223	216	248	....
8.	W. Limon	252	388	....	241	285	322	....	....	349	439	470	....
8.	*E. Denver	Not Comparable			3211	3345	3604	....	....	3809	3711	3617	3546
8.	*W. Denver	Detours			Detour	1363	1876	....	....	3614	3433	3863	....

COMPARISONS OF AVERAGE DAILY 24-HOUR TRAFFIC PER MONTH

Road No.		1923 July	Aug.	Sept.	June	1924 July	Aug.	Sept.	Oct.	June	1925 July	Aug.	Sept.
10.	La Veta Pass	242	....	97	....	....	201	....	....	183	224	259	....
10.	N.E. Alamosa	329	....	264	....	372	....	....	....	383	339	300	....
10.	So. Fork	163	....	167	....	159	174	....	....	137	209	169	....
10.	E. Durango	Not Taken			....	291	285	292	273	305	276	302	....
10.	W. Durango	Not Taken			....	360	338	351	451	424	501	....	....
					ROAD NO. 13								
13.	No. Craig	Not Taken			....	....	170	168	....	162	168	191	....
13.	So. Craig	Not Taken			345	....	420	383	....	217	280	257	....
13.	No. Rifle	Not Taken			248	....	225	....	....		Not Taken		
					ROAD NO. 14								
14.	E. Sterling	508	693	....		Not Taken					Not Taken		
14.	W. Sterling	331	367	....		Not Taken				....	672	552	....
					ROAD NO. 15								
15.	So. Buena Vista	....	148	112		Not Taken				143	227	199	300
15.	Poncha Springs	....	221	173	154	214	222	....	....	316	315	278	....
					ROAD NO. 17								
17.	N.E. Alamosa	264	264	224		Not Taken				321	296	313	....
					ROAD NO. 19								
19.	*So. Montrose	Not Taken			....	851	651	....	450	634	589	398	....
19.	No. Durango	Not Taken			....	832	790	348	280	256	480	331	....
19.	So. Durango	Not Taken			....	147	134	161	140	131	122	177	....

COMPARISONS OF AVERAGE DAILY 24-HOUR TRAFFIC PER MONTH

Road No.		1923 July	Aug.	Sept.	June	1924 July	Aug.	Sept.	Oct.	June	1925 July	Aug.	Sept.
					ROAD NO. 51								
51.	No. Burlington	134	143	....	....	119	172	....	218	190	232	318	....
					ROAD NO. 54								
54.	E. Wray	Not Taken			....	....	....	549	....	....	866	722	....
					ROAD NO. 67								
67.	Sedalia	....	105	....	....	109	130	....	....	1925 figures not comparable—holiday.			
					ROAD NO. 90								
90.	*S.W. Montrose	Not Taken			....	....	656	....	653	618	527	610	681
					ROAD NO. 105								
105.	So. Sedalia	....	126	....	....	238	222	....	....	1925 figures not comparable—holiday.			
					ROAD NO. 149								
149.	South Fork	....	242	102	....	190	235	....	....	200	287	268	....

STATE PROJECTS COMPLETED DURING 1925 FISCAL YEAR

Project No.	Location	County	Completed	Cost
Paving Project:				
904-B (Pav.)	Petersburg-Ft. Logan	Jefferson	Aug. 4	$64,106.73
Surfaced Projects:				
506	South of Grand Junction	Mesa	Mar. 28	4,461.97
510	Busk-Ivanhoe Tunnel—Combined with 842-872-542	Pitkin	Aug. 15	29,999.53
527	Loleta and Olney Spgs. to County Line	Crowley	Sept. 26	5,674.47
530	Canon City-Colorado Springs	Fremont		5,497.38
531	South of Eads	Kiowa		3,857.68
537	East of Simla	Elbert	June 10	14,698.36
541	Northwest of Leadville	Lake	Oct.—	2,428.18
543	E. of Genoa and So. of Limon	Lincoln	May 20	1,358.50
553	Between Rollinsville and East of Portal	Gilpin	Oct. 16	3,660.29
562-B	In Big Thompson Canon	Larimer	Mar. 10	3,995.23
563	Northwest of Ft. Collins	Larimer	Aug. 20	2,230.52
571	Between Logan and Peetz	Logan	Sept. 5	1,096.78
572	Yuma County Line North	Phillips		823.92
573	Between Sedgwick & Phillips County Line	Sedgwick	Aug. 25	1,000.00
574	Between Julesburg & Phillips Co. Line	Sedgwick		1,900.62
575	Otis, East and Akron, West	Washington	June 30	2,000.00
576	Between Akron and Logan County Line	Washington	June 11	1,000.00
579	Between Logan Co. Line and Buckingham	Weld	May 14	12,500.00
580	Between Ft. Lupton & Boulder Co. Line	Weld	Aug. 15	3,000.00
581	Between Wray and Nebraska State Line	Yuma	Sept. 29	1,855.12
582	Idalia W. and Idalia N. E.	Yuma	Sept. 10	5,000.00
583	Between Sedgwick Co. Line and Haxtun	Phillips		550.20
584	S. E. of Crags	El Paso	Feb. 12	3,096.35
780	North of Kremmling	Grand	Jan. 10	5,000.00
848	Between Dallas and Divide	San Miguel	Dec. 1	4,154.45
929	East of Ramah	El Paso	Dec. 1	3,778.71
Graded Projects:				
501 }	Between Bowie and Somerset	Delta	Feb. 1	15,637.82
505 }	Between Bowie and Somerset	Gunnison	Apr. 25	
509	East of Snowmass	Pitkin		5,000.00
513	Between Hoosier Pass & Governor Mine	Summit	June 23	4,866.52
514	South of San Acacio	Costilla		3,080.93
515	Approach to bridge over Rio Grande near La Sauses	Conejos	Aug. 10	1,051.34
516	W. of Ackman and North of Cahone	Dolores	Aug. 1	3,940.65
517	Between Rico and Lizard Head	Dolores		6,875.66
518	Between Lake City and Creede	Hinsdale	Sept. 3	2,132.85
519	Between Durango and Bayfield	La Plata	Aug. 31	4,004.00
520	Wolf Creek Pass	Mineral		24,232.37
523	Between Silverton and Red Mountain	San Juan	Oct. 8	7,037.66
528	Between McKenzie Ranch and Keating	Custer	July 20	2,000.00
529	West of Querida	Custer		4,920.48
544	Between Howbert and Spinney Lane	Park	May 31	3,239.28
545-A	Between Cassels and Grant	Park	April 7	6,000.00
545-B	Between Como & Jefferson County Line	Park		4,927.54
545-C	Between Como and Antero	Park		1,859.18
555	Between Grancy and Willow Creek Pass	Grand	Aug. 23	2,000.00
556	Between Walden and Cameron Pass	Jackson	Aug. 17	4,972.32
557-A	North of Walden	Jackson	June 3	3,500.00
557-B	Willow Creek Pass	Jackson	Sept. 15	3,574.38
558	Guy Hill Road, N. W. of Golden	Jefferson	Aug. 1	17,302.92
562-A	Between Loveland and Estes Park	Larimer	May 7	9,884.94
564	East of Maybell	Moffat	Sept. 15	3,717.60
565	South of Craig	Moffat	June 30	2,000.00
661	Between Tabernash and Coulter	Grand	May 18	1,000.00
831	North of Cedaredge	Delta	Dec. 20	8,717.10
886	Between Summit Lake and Mt. Evans	Clear Creek	Sept. 7	33,131.29
892	West of Walden	Jackson	Dec. 1	1,020.18
893	In Deer Creek Canon	Jefferson	Dec. 23	36,312.18
Structural Projects:				
533-B	West of Pueblo on Siloam Road	Pueblo	Aug. 7	3,651.76
549	Midland Sampler Bridge	Teller		695.91
569	Over Bijou Creek W. of Byers	Arapahoe	Oct. 14	15,965.22
570	3 to 6 Mi. So. of Atwood	Logan	June 20	1,500.00
591	Over Scroggs Arroya	Pueblo		4,422.00
856	Near Aguilar	Las Animas	Mar. 24	5,617.87
930	East of Colorado Springs	El Paso	Dec. 1	15,903.65

STATE PROJECTS UNDER CONSTRUCTION ON NOVEMBER 30, 1925

Proj. No.	Location	County
Surfacing Projects:		
507	Cerro Summit	Montrose
512	Norwood Hill, W. to Norwood	San Miguel
532	S. W. of Arlington; S. W. of Galatea; W. of Kansas State Line	Kiowa
540	W. of Stratton; W. of Burlington; S. W. of Seibert	Kit Carson
554	Midway to Lakewood on Wadsworth Avenue	Jefferson
Graded Projects:		
500	Cedaredge to Grand Mesa Top	Delta
502	East of Carbondale	Garfield
503	Douglas Pass	Garfield and Rio Blanco
504	East of Montrose County Line	Gunnison
508	Between Cologna and Ridgway	Ouray
511	Between Meeker and Rangeley	Rio Blanco
522	Cochetopa Pass North	Saguache
525	Easterly from Springfield	Baca
534	Between Cheyenne Wells and Kit Carson	Cheyenne
535	South of Kit Carson	Cheyenne
538	Near Agate	Elbert
547	Between Boulder and Lyons	Boulder
551-B	Forestry Proj., between Echo Lake and Chicago Creek	Clear Creek
560	Deer Creek Park, Easterly	Jefferson
566	Southeasterly from Steamboat Springs	Routt
567	West of Gore Pass	Routt
Structural Projects:		
526	Lake Meredith Canal Outlet	Crowley
533	Between Pueblo and Boone	Pueblo
536	2 Miles North of Parker	Douglas
546	West of Divide	Teller
552	Between Blackhawk and Central City	Gilpin
568	7 Miles E. of Denver over East Denver Municipal Irrig. Canal	Adams & Arapahoe
590	Near Walsenburg on S. H. No. 1	Huerfano

The Value of Good Roads in Agricultural Development

By TOLBERT R. INGRAM,
Statistician, State Board of Immigration

ADEQUATE transportation facilities for marketing the products of the farms is recognized as essential for the economic success of the farmer. A farm may have rich soil suitable for raising bumper crops, plenty of water for irrigation purposes, and climatic conditions favorable for long growing seasons, and may be operated by an experienced farmer, yet, if there is no available market for the products, economic loss is bound to result.

These facts are so well known that a mere recital of them is a sufficient argument in favor of providing ample means for getting the crops to the markets if the state is to prosper as it should from its agricultural development.

There are two primary ways of getting farm products to the markets. One is by the use of local highways and the other is by the utilization of existing railroad facilities. The railroads of the state are fixed. No changes may be expected, except where branch lines are extended here and there to serve territories that have been previously developed sufficiently to warrant the cost. Even these extensions are few and far between. The farmer, then, must depend upon the local highways for means of moving his products to the markets.

The locations for existing railroads in the state were made with two primary purposes in view. One was to secure transcontinental routes between the east and the west. The serving of local territory was a secondary consideration. The other was to secure the output of mining districts which were in course of development when the branch line railroads were built. The agricultural resources of the state, comparatively, were of minor importance at the time. The mines were, and are, mostly located in mountainous districts least adapted to farming.

That was the situation when the Colorado railroads were located and built. Agricultural development followed the building of the railroads and a study of Colorado farming districts shows that the most prosperous areas are located in the plains districts along the routes of the transcontinental railroads, or in valleys and parks adjacent to the railroads serving the mining districts. In these areas, agriculture now furnishes the bulk of railroad tonnage.

Of the more than 68,000 miles of state and county highways in Colorado, almost 26,000 miles are unimproved. That means that they are not even graded, much less surfaced. Distances to markets are but one factor in the situation. The cost of getting to the markets is equally important. The farmer who has to haul his products over 15, 25, or 50 miles of unimproved roads faces a transportation cost and loss in time as great as the farmer who moves his products 50 to 100 miles over graded and surfaced roads. The solution of that problem lies in the building of more and better roads. The necessity for more railroads for short hauls is not as pressing as the importance of good highways. The automobile and the truck are serving the need of the local community to a constantly increasing degree.

FEDERAL AID PROJECTS COMPLETED DURING FISCAL YEAR 1925

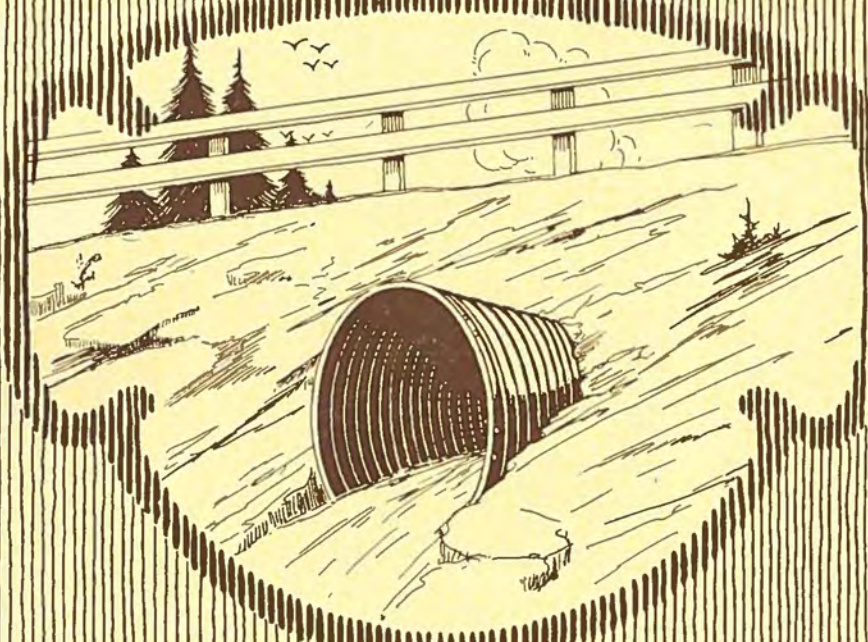
Project No.	Location	County	Length in Miles	Completed	Total Cost of Project (To Oct. 31, 1925)
Concrete Paved:					
116-C	North of Breed	El Paso	3.163	Apr. 8	$ 152,972.63
135	Morrison-Denver	Jefferson	5.065	Nov. 15	208,457.58
226-D	Thru Platteville	Weld	1.155	July 9	43,171.48
230-A	Between Littleton and Sedalia	Douglas	4.847	May 14	175,620.09
246-C	Vineland, West	Pueblo	1.951	Sept. 9	61,475.82
247-B	Between Swink and Rocky Ford	Otero	2.329	Oct. 28	54,590.85
277-A	South of Colorado Springs	El Paso	3.840	Oct. 3	211,180.39
281-A	South of Lafayette	Boulder	1.249	Mar. 6	64,180.79
281-B	Between Longmont and Lafayette	Boulder	3.068	July 24	123,756.44
288-B*	West of Merino	Logan	0.482	Oct. 17	13,244.48
290-A-169-R	Between Las Animas and Lamar	Bent	1.020	Sept. 12	37,304.24
		SUB-TOTAL	28.169		$1,145,954.79
Asphalt Paved:					
2-R Div. 2	North of Trinidad	Las Animas	1.922	Aug. 11	$ 84,332.71
		SUB-TOTAL	1.922		$ 84,332.71
Surfaced Projects: (Broken Stone or Gravel)					
210-B	N. E. from DeBeque	Garfield	7.507	July 20	$ 122,740.54
240	Between Gypsum and Dotsero	Eagle	5.185	May 2	79,907.31
242-A	Between Grand Junction and Fruita	Mesa	7.703	July 3	113,617.85
243-B	East of Piedra	Archuleta	2.973	Oct. 10	45,574.79
248-A	Between Salida and Buena Vista	Chaffee	12.046	Oct. 21	154,459.57
253-A	Between Steamboat Springs and Hayden	Routt	6.508	Aug. 5	142,417.95
258-A	West of Gunnison	Gunnison	3.239	Sept. 29	42,324.66
262-A	West of Walsenburg	Huerfano	2.186	Feb. 6	24,509.82
262-C	Between Russell and Ojo	Costilla	2.899	July 25	28,238.24
265-A	Between Bayfield and Durango	La Plata	3.143	Sept. 10	41,348.91
267-A	East of Hoehne	Las Animas	2.594	May 23	33,579.40
269-A	East of Cortez	Montezuma	2.172	Dec. 26	27,195.18
270-A	East of Monte Vista	Rio Grande	3.429	Dec. 13	21,058.28
270-B	Between Monte Vista and Alamosa	Rio Grande and Alamosa	2.833	July 1	15,635.60
271-A	East of Portland	Fremont	3.064	Nov. 3	80,021.71
272-B	Between Huerfano River and E. Co. Line	Pueblo	12.920	June 6	128,182.72
278-A	Between Cheyenne Wells and Arapahoe	Cheyenne	8.409	May 21	19,881.94
295-A	Between Alamosa and La Jara	Conejos	4.285	Nov. 6	17,132.24
		SUB-TOTAL	93.095		$1,137,826.71
Graded Projects:					
254-A	Between Hot Sulphur Springs and Parshall	Grand	1.057	June 20	$ 91,812.76
288-B*	West of Merino	Logan	2.031	Oct. 17	47,232.63
		SUB-TOTAL	3.088		$ 139,045.39
Structural Projects:					
262-B	Rio Grande-Del Norte at Alamosa	Alamosa	0.1716	Oct. 10	$ 70,125.99
272-A	Apishapa Rio and Otero Canal, E. of Fowler	Otero	0.417	Nov. 12	47,305.36
		SUB-TOTAL	0.588		$ 117,431.35
		TOTAL	126.862		$2,624,590.95

* F. A. P. 288-B also shown under graded projects.

* F. A. P. 288-B also shown under Concrete Paved Projects.

FEDERAL AID PROJECTS UNDER CONSTRUCTION ON NOVEMBER 30, 1925

Project No.	Location	County	Length in Miles	Estimated Cost	Paid Estimates	% Complete	Contract Awarded
Concrete Paved Projects:							
275-A	Louviers-Castle Rock	Douglas	7.008	$ 398,584.78	$ 118,455.78	38	June 26
275-B	Sedalia-Castle Rock	Douglas	5.334	222,333.70	99,984.09	49	July 23
283-B	W. and S. from Berthoud	Larimer	4.194	186,628.60	31,194.76	19	July 25
		SUB-TOTAL	16.536	$ 807,547.08	$ 249,634.63		
Gravel Surfaced Projects:							
213-A	West of Hesperus	La Plata	3.538	$ 46,292.40	$ 36,648.96	90	Oct. 6
246-D	Between Avondale and Huerfano River	Pueblo	5.418	53,656.35	0.00	1	Sept. 16
253-B	Between Steamboat Springs and Hayden	Routt	3.063	74,966.32	53,610.21	81	Oct. 27
258-C	Gunnison-Sapinero	Gunnison	5.587	67,826.88	20,083.18	33	Aug. 17
261-A	Rifle-Grand Valley	Garfield	16.045	161,209.84	104,990.53	81	Jan. 3
262-E	W. of Walsenburg	Huerfano	3.527	29,529.28	11,725.66	47	July 23
262-F	Between La Veta Pass and Russell	Costilla	2.007	25,503.72	12,465.89	55	July 25
266-B	South of Durango	La Plata	3.181	20,641.83	11,748.35	67	May 1
267-B	N. E. of Hoehne	Las Animas	2.216	26,699.64	1,628.71	7	Aug. 26
282-B	W. of Meeker	Rio Blanco	2.932	37,269.49	6,403.87	11	Sept. 8
282-C	Rifle, North	Garfield	4.051	59,920.85	0.00	0	
294-A	West of Mancos	Montezuma	2.898	27,396.32	5,936.62	26	July 15
		SUB-TOTAL	54.463	$ 630,912.92	$ 265,241.98		
Graded Projects:							
254-B	Between Hot Sulphur Springs and Parshall	Grand	1.087	$ 67,178.00	$ 38,903.32	64	June 13
279-B	Between Morrison and Baileys	Jefferson	5.289	85,980.40	81,496.89	96	Dec. 8
286-B	Between Nunn and Wyoming State Line	Weld	19.265	126,096.08	53,517.44	61	June 23
287-A	West of Ft. Morgan	Morgan and Weld	20.620	111,999.47	0.00	1	Oct. 27
288-A	Brush to Beta Bridge	Wash., Logan & Morgan	18.725	112,890.08	70,827.24	69	April 24
297-A	East of Palisades	Mesa	2.848	45,306.80	24,457.23	60	Aug. 17
		SUB-TOTAL	67.834	$ 549,450.83	$ 269,202.12		
Structural Projects:							
271-D	5 Miles W. of Pueblo	Pueblo	0.137	$ 13,678.88	$ 0.00	1	Oct. 26
286-A	1½ Miles North of Nunn	Weld	0.549	39,573.05	4,132.24	12	Oct. 1
293-A	Uncompahgre River W. of Montrose	Montrose	0.104	19,807.64	12,386.20	66	July 15
296-A	Muddy Creek, S. of Pueblo	Pueblo	0.247	19,591.00	10,032.30	59	Aug. 17
		SUB-TOTAL	1.037	$ 92,650.57	$ 26,550.74		
		TOTAL	139.870	$2,080.561.40	$ 810,629.47		



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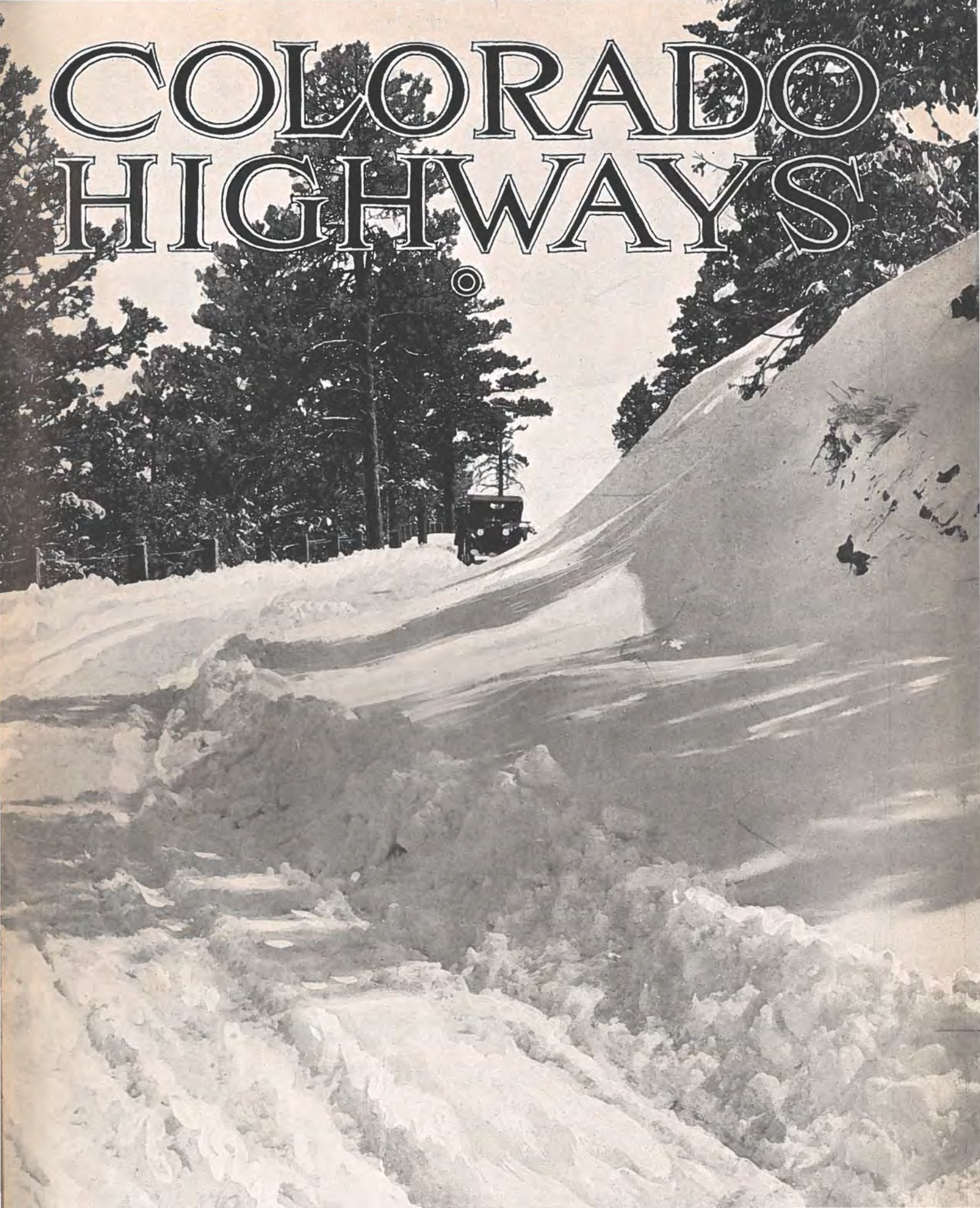
COLORADO HIGHWAYS



Colorado Highways

Official Publication of the
COLORADO STATE HIGHWAY DEPARTMENT
Denver, Colorado

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Colorado Highways
"BETTER ROADS"
VOLUME V. FEBRUARY, 1926. NUMBER 2

Advisory Board Head Favors "Pay-as-We-Go" Plan

By W. G. DUVALL, Chairman State Highway Advisory Board

A NUMBER of years and a large amount of money will be required to complete Colorado's highway system. Our construction season is limited, thus requiring a longer time than would be necessary under all-year work. Colorado contractors and laborers are building our highways, using Colorado material as far as possible. The highway department is not financed after the year 1926. How shall we meet the cost of road building, maintenance, and the numerous other expenses of the highway department? Do the taxpayers of this state want another bond issue, or shall we pay as we go? Mortgaging the future through bond issues may be easy, but it is not economical and is questionable. Bonds bear interest and the interest money goes to bond-holders, not to road-builders. What about our bonds? The old $5,000,000 issue of 1921 cannot be redeemed at present. We have been paying 1-6 mill interest, and in 1926 will pay 1-6 mill to go into a sinking fund which will accumulate until 1931, furnishing $250,000 a year. The period ending in 1931 will produce $1,250,000, to be paid on principal; after 1931 $250,000 will be paid each year. The interest on this issue is $250,000 per year since 1921.

The 1921 bonds were divided equally between the highway department and the counties. After five years there are several thousand dollars of the counties' half unexpended. Of the $6,000,000 bond issue, $1,500,000 has been used each year in 1923, 1924, 1925, 1926. On January 1, 1927, it is estimated that there will be $4,000,000 outstanding. Interest on these bonds amounts to $200,000 yearly, making a total interest charge of $450,000 per year. Would it not be advisable to pay as we go?

The ever-increasing number of automobile and truck owners are insisting on more and better roads. Is it not fair that cost should be borne by those who use and abuse the roads? Such a plan can be evolved without placing a heavy burden on Colorado motor owners or the tourists.

Recently the state highway advisory board, a committee of nine representing the state county commissioners' association, and Mr. Brown, of Colorado Motor Club, met in the state highway office for the purpose of framing measures to finance state road construction and maintenance. Any measure adopted to present to the people at the election next November will undoubtedly include provisions for additional funds for the counties as well as the cities whose population is over 2,500.

At present the state highway department is permitted by law to place funds on state highways or bridges in cities or towns under 2,500 population. The larger cities pay a major portion of the road tax and do not receive any benefit within the city limits. It is apparent that any new plan in justice to all interests, city, county and state, should embody revenue for all.

A number of money-producing schemes have been suggested, some of which have been tentatively adopted. However, a "pay as we go" plan seems to meet with popular approval. Our taxpayers are fed up on bond issues.

If the personal tax on autos is repealed, all of the school districts, counties and cities would have to increase their levies. This is objectionable from their standpoint. This law will probably remain as it is.

The assessed valuation of autos and trucks in 1924 amounted to $43,237,795. The counties received as their share of the personal auto tax paid, $1,069,732.

The half mill levy furnished the state highway department $770,719.00 in 1924. This source of revenue should not be disturbed. In addition to revenue-producing measures already mentioned, the gasoline tax should be increased and the fees for license plates raised. All automobiles and trucks should be placed on a weight basis, with bus lines paying their share.

The final plan when adopted will yield sufficient revenues to enable the highway department to properly maintain our present roads, to meet federal aid for new construction on the 7 per cent highway system and provide a much larger fund for strictly state projects, for which there is urgent need.

As soon as the bills have been drafted they will be submitted to the county commissioners of the entire state for a referendum vote. If the vote is favorable petitions will be circulated asking that the measure be placed on the ballot for the general election in November.

"For Services Rendered"

The New Spirit in Politics Evidenced at the Eighteenth Annual Convention of the Colorado Association of County Commissioners

By KING HAMILTON GRAYSON

"PROGRESS and public welfare are the two paramount keynotes in the duties of county commissioners today if they are to efficiently occupy their offices—if they are to economically construct and maintain proper state and inter-state highways; and if they are to hold the respect of their fellow citizens, for after all, public officers are merely part of the common people!"

The enthusiastic, unanimous applause from two hundred tense listeners which greeted "Tony" Monell's address gave evidence of the spirits of harmony and co-operation which every county commissioner had brought to the Eighteenth Annual Convention of the Colorado Association. And that was not all—"Tony" Monell's term of office as secretary-treasurer of the organization was ended—he is no longer a county clerk, and the by-laws made it necessary to elect a new secretary. By unanimous vote a committee was appointed to amend the by-laws, and "Tony" Monell is to be retained—his efficiency has been proven—and neither party lines nor association rules counted—they wanted the man, and Secretary T. W. Monell from Montrose is that man.

The same common sense ideals of harmony, co-ordination and co-operation which are being heartily approved at every trade convention throughout America were shown at the County Commissioners' meeting. The common sense and wisdom of business men prevailed: they were assembled to solve the great problems of each and every county; for the progress of the great state of Colorado.

The members of the association were warmly welcomed on the morning of January 18th at the State House in the chambers of the House of Representatives by Charles T. Vail, Denver's manager of parks and highways. Mr. Vail, also as a county commissioner, expressed his personal pride as a member of the association which has done such splendid work.

"Your organization has won the entire confidence of the public; the press and the people have not criticized your efforts, but instead, have praised the results accomplished," he continued. "Today, there is a general policy of co-operation and co-ordination between all county commissioners of all states for the common benefit of each and every county."

President "Jim" Beckley wisely told the delegates that their willingness to work together and to co-operate with other officials' organizations had won the respect of every member of their organization and the esteem of every other organization—both business and professional.

The president closed his remarks with a few but sincere words of thanks for having been sent by the association to the Western States Convention in San Francisco. The members were especially delighted to learn that the 1926 convention of the Western States Association would probably be held in Denver.

It was evident from the general report made by President Beckley that the eleven western states have progressed to such a highly commendable state in the construction of highways that the withdrawal of Federal aid would now work a tremendous hardship on the entire west. His suggestion that every county commissioner in the west should get behind a movement to petition congress for further aid, therefore met with a hearty response.

It was the unanimous opinion of the county commissioners that motor trucks and busses should be forced to pay proper and just fees for using public highways, and in addition, that the time has arrived when automobile owners must pay license taxes in proportion to the weight of their cars. That seems to be a fair solution—the heavier the car, the greater their percentage of wear and tear of the roads.

America does not hesitate to spend over eight billions of dollars annually for non-essentials not considering in that sum the amounts covering oil, gasoline and tires. If proper highways are to be constructed and maintained for the pleasure, health and convenience of motorists, funds for that purpose should be provided. "Pay for your use of the roads in proportion to your use of them" must become the watchword of every road official in America; and it must become the "time lock" on the vaults of the county, state and national treasuries.

Colorado's county commissioners were unanimously emphatic in two things: one is that Major L. D. Blauvelt of Colorado is one of the best highway engineers in America; and the second is that Major Blauvelt cannot build or maintain proper highways without the full co-operation of every commissioner and the people; without a new system for raising funds from the sources which should pay for the use of the roads.

It was shown that in Kansas and Nebraska there is perfect harmony and co-operation between the state highway boards and the county commissioners. Colorado must do likewise or the taxes through inefficiency are bound to increase. Major Blauvelt and the county commissioners are of one thought and voice on the subject.

Business efficiency in road building and maintenance is just as important as that being used in industry, banking and and merchandising. Economy, equity, and sanity were the keynotes expressed by Major Blauvelt in his commendable address to the members.

"There must be a uniform standard applied to the highways of America," he said. "Each county and state must do its share through efficient business men in the offices of county commissioners to co-operate with every other state or America faces bankruptcy through positive channels—through the over-sale of automobiles on the installment plan; through tremendous road-building costs; and tremendous maintenance costs. If the public can afford to ride in automobiles; if common carriers are going to compete with the railroads which do not use the highways, and which are destroying them almost as rapidly as they are constructed, then they must pay for the privilege and pay as they ride. Gasoline, oil and tires are the proper items to tax to meet this situation."

The state highway engineer was followed by Mr. Harry Cassidy, whose ability is unquestioned as an expert on financing through taxation. Mr. Cassidy's address, full of statistical figures, told a powerful story to the commissioners. His comparisons relating to educational institutions and highways made everyone "sit up and take notice," as did also his figures on the interest of bonded indebtedness.

Judge M. R. Welch from Delta county added more wisdom to the remarks of his colleagues when he said, "If the people who use the highways cannot pay the taxes necessary to build them, we must stop work now and use the present roads, but it is only too apparent that the people who drive autos want more roads—better roads, all of the time. They must pay for them by a 'pay as they ride taxation'. Colorado's touring visitors spent $52,000,000 in the state last year—they used our highways—interstate busses and trucks are doing their share to destroy them—all must pay a just taxation. There is no charge for our beautiful scenery, and we appreciate the benefits from our tourists to gasoline stations, tire dealers, repair men, restaurants and hotels, but they do not build or maintain our roads. Colorado must maintain highways equal to those of other states or lose her tourist trade. Direct taxation has reached a limit. There is no easier way to collect funds for roads and schools than through auto license fees, gasoline, oil and tire taxes, and it must be done at once!"

The members were intensely interested in the annual report by Mr. J. W. Johnson, district engineer of the U. S. Board of Public Roads. Mr. Johnson confirmed from the Federal point of view the urgent need for adjustment as voiced by the preceding speakers and pointed out that those who have created and are recreating road building debts should be the ones to pay them.

An excellent discussion by members with many suggestions for improvement followed in the vital subjects of bonding of county officers; collection of personal taxes; primary elections; and civil service. Again and again the value of the County Commissioners Association was proven by the enlightenment each one received from a fellow member's remarks. It was pointed out that business would quickly perish if the same methods were employed in the collection of bad

(Continued on page 11)

Committee Prepares Draft of New Highway Finance Law

AT a meeting held in Denver on Feb. 9, attended by a committee of the State Association of County Commissioners, representatives of the Motor Club of Colorado and officials of the State Highway Department, it was decided to present to the voters of the state at the November election, the "Pay as We Go" plan for the future financing of road construction and maintenance in Colorado.

The plan as finally agreed upon follows:

1. Half-mill levy.
2. 3½ cent gasoline tax.
   (a) 2c to go to the State Highway Department.
   (b) 1c to the counties.
   (c) ½c to cities of over 2,500 population after 1927.
3. Motor Vehicle Fees, $12.00 average.
   (a) State Highway Department 75%.
   (b) Counties 25%.

   After 1927—
   (1) State Highway Department 60%.
   (2) Counties 40%.

Under this plan the counties will receive in 1927 from the above sources the following sums: Motor Vehicle fees, $937,500, gasoline tax, $925,000, and personal property tax, $800,000, making a total of $2,662,500. At present the counties are receiving from the same sources a total of $2,300.000.

Senate Joint Resolution No. 7, which was passed by the last general assembly will be rejected or adopted by the voters at the election this fall. If adopted, this constitutional amendment will exempt the motor vehicle from personal property tax. In that event it is planned to give the counties 40% of the motor vehicle fees collected in 1928, which will give them a total of $1,520,000 from this source.

The state highway budget under the "Pay as We Go Plan" in 1927 will be as follows:

½ mill levy	$ 750.000
2½c gas tax	2,312,500
M. V. Fees (75%)	2,812,500
Federal Aid	1,380,000
Internal Impr. Fund	50,000
Total	$7,305,000

The ½-cent gasoline tax goes to the cities after 1927.

From the above sum the State Highway Department will take care of outstanding bonds which fall due and will pay off interest obligations amounting to $2,812,000 in 1927. The state will have $4,000,000 of the 1923 $6,000,000 bond issue outstanding next year. The interest to be paid on these bonds amounts to $200,000. In 1928 the state will take up the balance of $1,387,500 of these bonds and interest.

The total revenue of the state highway department in 1928 for all sources, excluding the ½ cent gasoline tax which will go to cities of over 2,500 population, will be $6,260,000. This is about $75',000 more than the department is now receiving from all sources. The increased sum will enable the department to increase its maintenance appropriation and at the same time permit it to carry out numer out essential state projects, for which there is no Federal Aid funds available.

Under the proposed new motor vehicle law, all automobiles, trucks and busses will be licensed on a weight basis, instead of at present on the cost price at the factory. The minimum fee under the new law will be $10.00 per passenger car. Sixty per cent of the cars registered are in this class.

The anticipated revenue under the new law is as follows:

Ten dollar minimum—	
Ford, Chevrolet, etc.	$1,329,078.00
Twelve dollar class—	
Buick, Dodge, etc.	530.424.00
Fourteen dollar class—	
Cadillac, Packard, etc.	618,628.00
18,584 trucks, average 2 tons each, at $15 per ton	1,115,080.00
Dealers, motorcycles, drivers, re-issues, etc.	75,000.00
Total revenue	$3,678,400.00

The proposed plan provides that the counties do one-half of the maintenance work and the state one-half on state roads, and the counties do all of the maintenance work on roads not declared as state highways.

The amount that goes to the state from the motor vehicles must be used to pay off the bonded indebtedness for state highways until that is all paid, after which it can go into the construction and maintenance of roads.

The plan makes no mention of the amount of money to be raised by direct taxation against automobiles on their value. Should this amendment fail of adoption there will be an additional $800,000 from this source which would go directly to the counties for road purposes.

The amount which the cities will receive from the ½-cent gasoline tax is estimated at $450,000. This sum will be expended by the state in co-operation with the various cities. It can be applied to the construction and maintenance only of those streets which may be designated as state highways, i. e., those streets serving traffic from the state highways entering the various cities.

Under this plan of financing, the users of the roads would bear most of the burden of construction and upkeep.

The passenger cars in the $10 class will be up to 2,000 pounds; $2.50 will be charged for each additional pound up to 3,500; and $5 for each additional 500 pounds on machines above 3,500 pounds.

It was decided by the joint committee not to issue more bonds for road construction.

A committee of attorneys are now drafting the plan into a bill which will be initiated by the Motor Club and the County Commissioners and placed upon the ballot at the November election. When the draft of the bill is completed it will be submitted to a referendum vote of the county commissioners for their approval before the petitions are circulated for the necessary number of names to place it upon the ballot.

The committee of lawyers preparing the bill are: R. G. Strong, Denver; Henry May, Denver city attorney; H. V. Johnson, Cheyenne Wells, W. R. Kelly, county attorney at Greeley, and W. O. Peterson, city attorney of Pueblo.

Activities of Highway Dept. Resumed Under 1926 Budget

State highway construction and maintenance, threatened for several weeks with an indefinite tie-up because of a controversy between Governor Morley, executive head of the Highway Department, and the State Highway advisory board over the 1926 budget, will be carried on without interruption except as to a few points on which there is still disagreement, as a result of action taken by the board on Feb. 8.

It was stated that the few issues on which the governor and the board are still at variance will be settled by litigation. A suit started by Robt. H. Higgins, state superintendent of maintenance, and Thomas R. Elkins, purchasing agent of the department, for the collection of their salaries is pending in the Denver district court.

Governor Morley made no provision in the budget for the payment of the salaries of these two officials. The matter probably will be taken to the supreme court for final settlement.

Under the revised budget the governor makes available the sum of $770,000 for the joint maintenance fund of the state and the counties. This sum will be matched by a like sum by the counties. The work will be carried out by county forces under the supervision of the State Highway Department, as has been the custom since the highway department was organized several years ago.

About $40,000 will be expended on improvements to the Fall River road in the Rocky Mountain National park this summer, if plans of the park service materialize. The service purchased a steam shovel last spring, which will be used in improving the roads in the park. The shovel also will be used for clearing snow from Milner pass the first part of June. It is expected that traffic will start over the pass by June 15th.

The lower part of the Glacier Basin road leading towards Bear Lake will be rebuilt. About five miles above the park on this road there is a long 14 per cent grade. This hill will be eliminated by relocation. The northern part of the High Drive also is to be reconstructed this year.

Road Engineer Explains New Method of Highway Financing

By J. T. DONAGHEY,
State Highway Engineer, Wisconsin

IN most cases the subject of highway financing has been discussed purely from the angle of providing funds by one of the three following methods: (1) By a direct tax upon general property; (2) issuing bonds for a term of years, retiring the bonds when due, and paying the interest annually by a direct tax upon general property; and (3) by issuing bonds and retiring the bonds when due and paying the interest annually with revenues from motor vehicles.

Many states or subdivisions thereof have financed highway improvements by some one of the three plans mentioned above, and in but very few instances can opponents of any of the three plans show where the public has not received reasonably full value for the funds expended and highway service to the extent of several times the total cost of the improvements. Even where bonds have been issued for the construction of highways, the same running for a period of 20 years or more, and the surface of the road constructed has become worn to such an extent that a new surface was required before the bonds were retired, it is not proved that the public, which must finally provide the funds for retiring the bonds, has not received in highway service several times the cost required to meet the bonds and interest. The very fact that the surface has become worn to such an extent that a new surface is required is good evidence that the traffic was extremely heavy. There is still available the basic portion of the road for future use; that is, the right-of-way, roadbed, and drainage structures.

Many writers contend that general property should pay the cost of right-of-way, grading, and drainage structures, and that a just charge against the motor vehicle would be to provide and maintain the wearing surface. This sounds like a reasonable solution of the problem, and would be could it be carried into effect in all instances.

There is, however, one matter that few have taken into consideration when discussing highway financing, and that is the value of the present highways before improvement. Every American State or its subdivisions have a large mileage of public highways. These highways, when originally laid out and opened for travel, were an obligation against the taxable property of the subdivision, and the right-of-way, grading, and drainage structures on this vast mileage that the road builders of today are inheriting was provided by a direct property tax. The taxpayers of the different units of government have from year to year expended large sums for the improvement of the old roads, which are not all a total loss when reconstruction is contemplated. I dare say that the average mile of public highway as we find it in the average unit of government today is worth to us when taken over for improvement not less than $8,000, and this sum must be considered when figuring the fair proportion that general property should pay by a direct tax.

During the past five years public sentiment has gradually drifted toward requiring the motor vehicle to pay a larger share of the cost of improving the highways they use and to provide a method whereby each motor-vehicle owner pays in proportion to the amount of service he receives, as nearly as can be estimated. This sentiment has resulted in practically every state in the Union adopting a gasoline tax, in most cases to supplement a former license fee.

Any plan that provides for using the entire motor-vehicle revenues of a state for the construction of a limited primary highway system is not economically sound and will not result in general satisfaction to the motor-vehicle owners of the state for any length of time.

In the average agricultural state 50 per

Editor's Note:

Progressive states are giving serious consideration to the "Pay As You Go Plan" of highway financing. The plan has been given much serious thought in Colorado, and within the year the voters will be called upon to ratify the plan for this state.

Perhaps one of the most able discussions of the subject is an article by J. T. Donaghey, state highway engineer of Wisconsin. Various groups of states have had this topic under consideration and have boiled down to real essentials, finding that main thought centering about this plan, as pointing more surely the ultimate solution of the highway problem for the average state at this time.

Mr. Donaghey presents a plan based upon an average population of 2,600,000 and a motor vehicle registration of 600,000. Applying these figures to Colorado, it should be remembered that we have 200,000 automobiles and 100,000. Therefore, Colorado is under the average, but the principal plan remains the same in its effective operation, and is generally regarded as entirely practical.

Left—Stretch of Federal Aid gravel roadway north of Rifle, leading to Meeker in Garfield County. Right—Newly graveled roadway near Walden on the Cameron Pass highway in Jackson county.

cent of the motor vehicles are owned in the agricultural communities. Those owners are entitled to and must receive recognition when planning the expenditure of the annual fees they pay for the privilege of operating their motor vehicles.

I propose to discuss the "Pay As You Go Plan" of highway financing by suggesting an adjustment in motor-vehicle revenues to an annual amount sufficient to provide the necessary funds to construct an adequate system of primary and secondary highways as fast as it is practicable to construct the same and to maintain both the primary and secondary systems before they are finally improved as well as after, thus giving the motor-vehicle owners the best possible highway service from the very beginning.

It is not a waste of motor-vehicle revenues to expend the same for the improvement of earth roads by supplying a light gravel surface prior to their final improvement. Neither is it a waste of funds to maintain both the earth and gravel surfaces in an adequate manner at all times.

In discussing this subject we will consider an average mid-western agricultural state. This average state has 80,000 miles of public highways. We will assume that 7 per cent of this mileage, or 5,600 miles, constitutes an adequate primary highway system and will eventually require a high-type surfacing, and that 10 per cent of the total, or 8,000 miles, constitutes an adequate secondary system, which should eventually be surfaced with gravel or some other light type of surfacing that will keep traffic out of the mud. In other words, 17 per cent of the total highway mileage of this average state should eventually be improved with some kind of all-weather surface to properly serve traffic.

This average state has a population of 2,600,000; a true valuation of $5,000,000,000; and a motor-vehicle registration of 600,000. We find these three important factors go hand in hand, and there is very little variation in the proportion of each in the several mid-western agricultural states. There is, of course, a considerable variation in the industrial states of the East and the undeveloped states of the West. Assuming that these three factors do go hand in hand in the average agricultural state, it matters but little in the long run whether highway improvement is financed by direct taxation or by a tax upon the motor vehicles, as practically every family in such states now own one or more motor vehicles. The principal provisions of a highway law should be to compel each user of the highway to pay according to the service he receives.

To own and operate 600,000 motor vehicles in this average state will require the stupendous sum of $273,000,000 annually. This is an average of $455 per motor vehicle. Included in this cost is interest on the investment, depreciation, insurance, housing, plus the general upkeep and operating cost of the vehicle, which is conservatively estimated as follows:

Six hundred thousand motor vehicles at an average cost of $750 represents a total investment of $450,000,000.

When you have applied the above estimates to your own car you will agree that the figures used are thoroughly conservative. Each motor vehicle in this average state is now paying in license fees and gas tax $21 annually, which is but 4.4 per cent of the total annual cost of owning and operating such motor vehicle.

A fine piece of gravel roadway in Mesa county south of Grand Junction—highway leading to Delta.

Annual Fixed Charges

Item 1.	Interest on $450,000,000 at 6 per cent	$27,000,000	
Item 2.	Depreciation at 20 per cent	90,000,000	
Item 3.	Insurance on one-third of vehicles at $30	6,000,000	
Item 4.	Garage rent and storage at $30	18,000,000	
	Total annual fixed charges		$141,000,000

Annual Operating Costs

Item 1.	Tires and tubes, at $75 per car	$45,000,000	
Item 2.	Gasoline, 350 gallons, at 20 cents per gallon	42,000,000	
Item 3.	Oil, grease, waste, etc., at $20 per car	12,000,000	
Item 4.	Supplies and repairs, at $50 per car	30,000,000	
Item 5.	Repainting 10 per cent of cars at $50 per car	3,000,000	
	Total annual operating costs		$132,000,000
	Total cost of owning and operating the 600,000 motor vehicles annually		$273,000,000

It is generally conceded that it costs 2 cents per mile more to operate a car on an average earth surface than on a paved surface, and 1 cent per mile more on an average gravel surface than on concrete or other high-type surfaces. Assuming that these figures are correct and that the average car travels 5,000 miles per year, the difference in the cost of operating a motor vehicle per mile per year on a concrete surface as compared with an earth surface is $100; the difference between a concrete surface and a gravel surface is $50; and the difference between a gravel surface and an earth surface is $50 per year. These figures, which I am sure are conservative, prove conclusively that the motor-vehicle owner can well afford to pay much more annually towards highway improvement providing the funds are expended on the highways he uses, and by so doing will have a net saving annually on the cost of operating his motor vehicle.

No plan of highway financing, where the motor-vehicle owner pays the bill, is complete or fair unless it includes the construction and maintenance of roads other than a primary system.

In order to determine the roads which the motor-vehicle owners use in Wisconsin, the highway department conducted a very interesting traffic survey during the summer of 1924 in several separate units of government, nine of which were agricultural townships located in different sections of the state. A representative of the Commission called upon every farmer living in each of the nine townships and got the following information from them personally:

1. How many miles of annual highway travel, both auto and team.

2. Miles traveled on primary or state trunk highways.

3. Miles traveled on secondary highways, in Wisconsin, called county trunk highways.

4. Miles traveled on ordinary town roads.

A tabulation of the above information shows that 48 per cent of the farmer's total travel was on the state trunk highways or primary system; 29 per cent on the county trunk or secondary system; and the balance, 23 per cent, on the ordinary town roads.

Fifty per cent of the motor vehicles in this average agricultural state are owned in tne cities and villages and not less than 80 per cent of their travel is on the primary system. This would result in 64 per cent of the total travel being on the primary system and the balance of 36 per cent on other roads. This shows plainly that a proper distribution of the motor-vehicle revenue expenditures must be made if we wish the whole people in the average state to be in general satisfied with the plan.

Assuming that 25 per cent of the 5,600-mile primary system now contains a satisfactory surface, to construct the balance, or 4,200 miles, with a high-type surfacing,

at $35,000 per mile, will cost approximately $150,000,000.

Assuming also that 25 per cent of the secondary system contains a satisfactory light surfacing, the remainder to be constructed with such would be 6,000 miles. This 6,000 miles would, in many instances, require only a light surfacing of gravel and would probably average not more than $8,000 per mile, or approximately $50,000,000. This would result in a total construction cost of $200,000,000 to complete the improvement of both the primary and secondary systems, containing 13,700 miles, or 17 per cent of the total mileage, which will adequately serve more than 80 per cent of the population of this average state.

There is a limit in almost every state as to the amount of highway construction that can be performed annually at a reasonable cost. The necessary materials and their delivery, the engineering organization required by the state department, and the contractors' organizations necessary to execute the work must be taken into consideration. I believe, therefore, that in planning the completion of a program as outlined above, the construction should be spread over at least a 10-year period, which would result in constructing 300 miles of high-type surfacing and 600 miles of light-type surfacing annually, which I believe is as large a mileage as this average state can plan and construct at a minimum cost and provide the necessary funds on the "Pay As You Go Plan."

To construct 600 miles of gravel road would require 48,000 cars of gravel.

In addition to the construction program, the mileage of both the primary and secondary systems should be adequately maintained from the beginning. The annual maintenance cost on the primary system would probably average $350 per mile for the 10-year period, or $1,960,000, and on the secondary system $300 per mile, or $2,400,000, resulting in a total annual maintenance cost of $4,360,000. This annual maintenance expenditure would, of course, include many miles of light gravel surfaces, where gravel is available, in order to make roads serviceable until such time as the final surfacing could be financed.

The revenues from the annual increase in motor vehicles owned and operated in this average state for the 10-year period will more than pay the maintenance cost.

This average state's share of Federal Aid funds will approximate $2,000,000 annually. This amount, together with the revenue from the 600,000 motor vehicles at $30 each would produce a total of $20,000,000 annually, which in 10 years would complete the two systems, resulting in a total of 5,700 miles of high-type surfacing and 8,000 miles of light-type surfacing.

If each motor-vehicle owner will analyze his own case thoroughly he can readily see that he would be money ahead at the end of the 10-year period if he pays the difference between what he now pays and the average of $30, due entirely to the saving in the cost of operating his motor vehicle, say nothing about the added convenience and pleasure of having a satisfactory system of highways to use. In fact, he cannot afford to do otherwise.

Should this average state authorize the issuance of bonds for the purpose of financing the same program and spread the payment over a 20-year period, it would be impossible for them to construct the entire system in very much less than a 10-year period, due to the time required to plan and execute the work and the delivery of the materials required.

The annual interest charges would increase the total cost of the system by approximately 50 per cent. While it would ease off the annual payment somewhat by being spread over a longer period of years, nevertheless, at the end of a 10-year period there will probably be just as many highway obligations facing us as there are today. We find that a highway constructed 10 years ago, considered very adequate at that time, is wholly inadequate today, and the highways built 10 years ago are either being widened at a cost equal to, if not greater than, the original cost or are being entirely reconstructed with a pavement two or more times as wide as the former one, with better alignment, better grades, and the elimination of all dangerous features as far as possible. The same conditions may not prevail 10 years from now if an adequate highway system is planned and completed in this average state, but it is a fact that no American state has as yet permitted their highway department to plan and construct a system of highways that is satisfactory from 10 to 20 years after the system's completion.

The motor-vehicle owner must not get the idea that if he is taxed to construct this system of highways that his obligation ceases as soon as the system is constructed. The maintenance cost of the system must be paid annually, and it must be provided from the same sources. Therefore, the maintenance cost, plus the additional obligations that the system will entail from year to year, will necessitate the expenditure of not less than the amount of motor-vehicle revenue required to construct the system as outlined, spread over a 10-year period.

Going back to the cost of owning and operating a motor vehicle in this average state, which is estimated at $455. The cost of providing a track for the motor vehicle to operate on we find is only 6 per cent of the total cost of owning and operating the vehicle. This small sum cannot in any way be considered a determining factor in purchasing a motor vehicle. If you are willing to expend $455 annually to own and operate the vehicle, the additional $30 required to construct the surface to operate on at a minimum cost per mile is surely a good investment.

The fact that the motor vehicle is now about the only user of our highways makes it impossible to finance a highway system by any other method than increasing the motor-vehicle revenues. If the users of the highways desire a satisfactory highway system in this average state within a reasonable period of years, the only sure method is for them to get behind a plan whereby the revenues derived from motor vehicles will be fixed at an amount that will annually produce the necessary funds to bring about the desired results in a 10-year period as outlined above.

Where a steady though moderate revenue is provided for highway improvement which avoids the uncertainty of legislative action, the highway department can place in effect a budget system for a long term of years, determine that a certain road can be maintained with the funds available until a certain year, and provide the funds at that time for its construction. A moderate, steady plan of highway construction on the "Pay As You Go Plan" is far better for the material producers, transportation lines, contractors, engineering department, and, in fact, everyone financially or otherwise interested. It stabilizes the whole operations, permits ample time for properly planning the work, and prevents the state from being flooded with "hay-wire" contractors and "mushroom" material producers.

A large percentage of the backbone of this average state lives on the secondary highways and must be reckoned with in planning a highway system. Any plan that does not take into consideration the interests of the motor-vehicle owners living in the agricultural sections, and especially on the secondary highways, is not fair and cannot be justified. When the vast majority of the small town and agricultural residents are satisfied with a plan of highway financing and improvement, then, and then only, is when this average state can continue to construct and maintain a real highway system with satisfaction to all. This can be accomplished with less friction by adopting the "Pay As You Go Plan."

State Settles with Ranchers For New Paved Road Route

Plans for the paving of the Berthoud-Longmont stretch of the North-South highway are now under way, and this important piece of hard surfacing should be opened to traffic late this summer.

The way is now clear for the paving of the stretch of roadway over a new survey line between Longmont and Lafayette. This was settled during the first part of February when the State Highway Department paid to property owners the sum of $11,000 for the right of way.

An appropriation of $340,000 is contained in the 1926 budget for this work. Fifty per cent of the cost of the work will be paid by the Federal government. The 1926 budget also contains provisions for the grading and surfacing of a new roadway from Castle Rock south to Husted. About the first of May it is expected that the new concrete pavement south from Denver will be completed to Castle Rock. The paving now extends north from Colorado Springs to a point near Husted.

As funds become available it is planned by the Highway Department to pave the entire distance between Denver and Colorado Springs. During the construction of the new road between Castle Rock and Husted, traffic will use the present road, as the new road will be run over an entirely new survey line.

Chaffee county commissioners have secured a new Nash-Quad truck for use in road building work in the county. The truck was allotted the county by the government.

Six miles of new road from Graneros to the Rye road will probably be built soon by Pueblo county. The road will save Graneros farmers twelve miles in their hauls to Pueblo.

Road Materials Survey

By J. S. MARSHALL

IN order that the Department can determine what local materials are suitable for surfacing or concrete material for use on a project, all known practical sources of supply are investigated. This activity, known as the Co-operative Road Materials Survey, is carried on jointly with the Colorado Agricultural College.

The State Highway Department is in charge of all field operations; the college conducts all laboratory tests and supplies the test reports to the Department. The college also furnishes a field assistant for the survey.

In the field, all areas accessible to development of road materials are prospected, and deposits are sampled, these samples being shipped to the laboratory at the Agricultural College. A map of the pit is made; logs of test holes are shown; and a field report indicating position, quantity, owner of material, and other features necessary for a correct estimate of the situation are submitted to the Denver Office for information and filing. Test Reports from the laboratory are made a part of the report later.

Up to the present time, most of the main highways have been covered by the survey. Over seven hundred sources of material have been reported, these deposits representing an estimated total quantity of over twenty-eight and a half million cubic yards.

The records of the survey are used in preparing estimates for highway projects. Contractors and others interested in highway construction have access to these records and prospective bidders have found the reports helpful in their search for local deposits of road materials.

In connection with this survey, a subgrade investigation is being conducted on all paving projects. Realizing that a firm, stable subgrade, unaffected by temperature and moisture changes, lengthens the life of any highway improvement, the soil used in fills or found in cuts is being studied with a view toward remedying unfavorable soil mixtures.

The field party secures a sample of the soil approximately every five hundred feet on the alignment of the proposed project. These samples are taken for a depth of about three feet. A log of the hole is made, the soil is classified, and a field report is prepared.

The samples are sent to the laboratory where they are tested and their suitability is determined. The tests include classification of sample, sieve analysis, percentage of silt and clay, moisture equivalent, linear shrinkage, vertical capillarity, and moisture content. From these test results, together with field observations, the areas requiring said treatment to increase the stability and bearing power of the subgrade, are determined.

On paving projects which have been completed, subgrade tests, similar to the above, are being made. In addition to the soil samples, cores of the concrete pavement are being taken for testing in the laboratory. This study is providing a record of projects which have been carrying traffic and have been exposed to frost action, excessive moisture, and summer heat. From this data it is expected that the most successful features of design and construction can be determined, and that the laws indicated by these findings thereby can be incorporated in all new projects.

The subgrade work is a relatively new phase of highway investigation. It is bringing to the designer of highway projects and to the men in charge of construction a more accurate conception of the raw materials he has to work with; it is helping him to correct dangerous subgrade conditions, and it is resulting in highway improvement which will give long and uninterrupted service to traffic.

The State Highway Department field work is in charge of Mr. J. Sterritt, assisted by a representative of the State Agricultural College. The laboratory work is under charge of Mr. Adams of the State Agricultural College. The Bureau of Public Roads, U. S., is also co-operating with the department in work, Mr. Rose of the U. S. Bureau being assigned to assist us.

U. S. Plans Big Road Program in Rocky Mountain National Park

An appropriation of $76,000 for the construction of roads in the Ward-Copeland Lake district in Boulder county has been recommended to the U. S. Forest Service by Col. A. S. Peck, local forester. To this sum the county commissioners of Boulder county will add $4,000, making a total of $80,000 for road work in the district.

According to the announcement the appropriation comes under two divisions. One will be used for the improvement of four miles of the Peaceful Valley road extending west from Raymonds. This will be known as the Ward-Raymonds project, ten miles in length. One mile of the road already has been completed.

The other division extends four miles from Fern Cliff to Copeland Lake. A similar distance from Raymonds to Fern Cliff already has been completed. This road eventually will be extended to Estes Park village. As funds become available it is planned to make the road from Estes Park to Nederland a double track roadway.

Construction of these projects will be carried out under the supervision of the U. S. Bureau of Public Roads.

These roads connect with forest roads and trails leading to the glacial region of Boulder county, which has been described as one of the finest recreational areas in the country.

WASHBOARDS ARE EXPENSIVE

It is expected that a very determined effort will be made at the coming session of congress to choke off the government aid to the states in building trunk highways. It is likely to be one of the most desperately fought issues ever before congress. Some of the alleged reformers, desiring to make political capital with their voters back home, and lacking any real grounds to complain, have taken this subject up. Certainly no aid should be curtailed until every state has a fair system of trunk highways. The saving in wear and tear on automobiles alone will trebly repay the expense, to say nothing of the convenience and pleasure of driving over a decent road instead of plowing through the mud or over a "washboard."—Carlton Vidette.

CONSTRUCTIVE FINANCING

Experience teaching that better highways increase sales of motor vehicles, American automotive firms are assisting in the financing of two great highway improvement projects, one in Mexico and another for a motor road across Europe. —Exchange.

View on the paved highway east of Boulder, showing splendid condition of graveled shoulders.

Markers As Aid to Motor Tourists

By CLARENCE WERTHAN, Manager
Rocky Mountain Motorists, Inc.

HOW shall we capitalize the restless spirit of America? The population and prosperity of America are increasing, so are the good roads, and the automobiles, so is the travel industry. How shall Colorado develop its travel industry to make it an asset to the state? How shall we obtain for our state its share of the growing wealth and population of America?

The work of the Colorado State Highway Department in the construction and maintenance of roads is the biggest factor in the development of our travel industry. With good roads there must be two other items in developing this industry. They are, first, advertising to bring people here, and second, service to the visitor when he comes.

In climate, scenic attractions, natural resources, and opportunities, we have the material to attract the vacationist, the permanent settler and the investor. When we consider the general increase in travel in this country during the past few years, we will find that Colorado has not received a proportionate increase. We have done well, we have had more visitors each year and gained much in new wealth, and permanent population, but we have not sufficiently met the growing competition of other sections.

In highway construction we lead neighboring states, but we lack in the other two requisites for developing the travel industry. We have, up until recently, lacked team work in the matter of advertising our wonderful region and in giving efficient assistance to the visitor. In the matter of team work and of giving efficient assistance to the visitor a step in the right direction was made by the program of Rocky Mountain Motorists, Inc. It is based upon the principal, that: "The satisfied tourist is an asset to a state, while a dissatisfied tourist is a liability which will in time break down the touring travel in spite of expensive advertising campaigns to increase it." Some three years ago a group of prominent business men in Denver organized a movement which has since spread throughout the entire state and through extensive co-operation with the various commercial clubs now has a membership of over ten thousand. Three major activities are carried on to give service to the visitor: Road marking, mapping, and distribution of proper information. The big undertaking was a comprehensive system of road marking in co-operation with the State Highway Department. This was followed by an extensive system of touring maps. Over fifty different maps have been developed which tend to keep the visitor longer in the district and to show him the various attractions and resources. This was followed by presenting such information as would create a desire to see more of the region. The literature and maps has been distributed all over the country.

The whole structure of Rocky Mountain Motorists, Inc., is built upon a spirit of co-operation with the various agencies and organizations throughout the region. Without the co-operation of the State Highway Department the road marking program could not have been carried out. The entire system was devised by Major Blauvelt, Chief Engineer, and his assistants. Road marking in Colorado today is carried out on a uniform plan. A standardization in all signs has been worked out. The signs themselves are made of baked enamel upon eighteen gage nonrust iron, the back ground is white, the wording and mileage are in plain black letters and the sign is made attractive by a bright orange border. Each sign has the highway number upon it.

These road markers are further made distinct by medallions in black, white and orange of the State Highway Department and of Rocky Mountain Motorists, Inc. They have been declared by many visitors to be the most distinctive as well as attractive road sign used in the country. Approximately five thousand have been erected to date. All are upon steel posts set in concrete. Visitors as well as resident motorists have observed them everywhere, in the various communities, and along the highways.

No plan heretofore adopted has met with such uniform approval as the road marking work and all the communities within the state have co-operated in placing these signs upon the main thoroughfares, thus connecting up the State Highways with the city streets. It is contemplated that approximately ten thousand more signs will be erected in the next three years. These will be made to blend with the standardized Federal marking when put into effect on a portion of the interstate Federal Aid roads. The proposed Federal highway marking and numbering plan is a development of the road marking which has during the past years been adopted in some of the states. It is in accordance with the uniform system put into effect in Colorado.

The commercial organizations in every city in Colorado, the State Highway Department and individual business interests are thus co-operating through Rocky Mountain Motorists, Inc., to meet the competition of other sections to give service to the visitor, to develop travel and capitalize this "restless spirit."

Forest Service to Improve 10 Miles of Dolores Road

About 10 miles of the Rico Dolores highway will be constructed during the summer of 1926, according to plans of the U. S. Forest service. This will give another outlet for Mesa Verde National park travel. The work will begin about 12 miles below Rico and run south toward Dolores in Montezuma county.

Plans also have been made to do considerable gravel surfacing in Mesa Verde Park. During the rainy season the roads in the park are very slippery and dangerous in places. The worst sections of the roadways will be graveled first. It is also planned to continue the construction of new roads in the park, eliminating some of the heavy grades.

During 1925 Arapahoe county built 1,246 feet of new bridges, besides some 14,000 feet of washed-out bridges restored, according to figures compiled by Tom Shearer, county road supervisor. This was the largest bridge-building year in the history of the county by about 100 per cent. Over 300,000 board feet of lumber and 4,395 feet of piling were used, without a boost in the cost to the county.

Arapahoe county operates its own gravel pits, its own snow plows, tractors, pile drivers, loading machinery, and everything else necessary for the proper maintenance of its roads and bridges.

The members of the Arapahoe county board of county commissioners are Messrs. Hoffman, Miller and Race.

When the headlights are out and the driver "lit up," the undertaker smiles.—St. Paul Herald.

A new roadway over Willow pass in Jackson county. This road was constructed with State funds.

State to Rush Work on New Pavement North of Trinidad

A paving project extending the present pavement north of Trinidad approximately seven miles is included in the highway budget for 1926, according to a statement issued by L. D. Blauvelt, state highway engineer.

The sum of $370,000 is available in the budget for this work. During the past two years six miles of asphalt pavement has been laid north of Trinidad, located on State Road No. 1. With the completion of the seven miles provided for in the new budget, there will be fourteen miles of this type of pavement on the state highway system. All other pavement on the system is of the concrete type.

The present pavement north of Trinidad is laid on a concrete base, of the type which made the best showing in government tests in the east several years ago.

The new paving for this year will be in two projects. The plans, specifications and estimates for this work have been submitted to the Bureau of Public Roads. One of the projects covers a grade crossing separation structure. Approval of the plans has been delayed on account of the absence of the bridge engineer of the local Bureau from the state, conferring with executives in Washington.

"The other project is a paving project between six and seven miles long, and there are some questions in connection with this that will probably require adjustment when the report is received back from the bureau," writes Maj. Blauvelt.

"We do not anticipate, however, any material delay and will proceed to advertise the work just as soon as approval is received."

Pres. Coolidge on Federal Aid

For the information of readers of Colorado Highways, we herewith print a complete quotation from President Coolidge's Budget message to Congress in reference to the Federal Government participating with the states in road construction. The newspapers have given but extracts and inasmuch as there has been considerable discussion throughout the country on the subject, we are printing the entire wording. The quotation follows:

"Federal aid to states is annually requiring more than $109,000,000. The estimates for this purpose for 1927 amount to something in excess of $110,000,000. The principal item is for rural post roads, for which an appropriation is requested of $80,000,000. The law authorizing Federal aid to states for the construction of rural post roads does not extend beyond the fiscal year 1927. The amount of $80,000,000 does not discharge our entire obligation under existing law. In addition to this amount, the authorizations for which moneys have not yet been appropriated amount to $116,700,000. Without further legislative action we therefore face an obligation of $116,700,000 over and above the amount carried in this estimate.

"The Federal Government has been generous in its participation in state road construction, having authorized appropriations amounting to $690,000,000. Federal contribution to state highway construction was probably necessary in the beginning. It has expedited and so coordinated construction that all expenditures would be reflected in a definite and approved connecting highway system. On the other hand, there is no question but that Federal contributions have materially added to state expenditures of state funds. I am speaking for what I consider the best interest of the people. While Federal taxes have been reduced, state and other government taxes have been steadily increasing. Federal aid to states has influenced this latter condition. We should keep in mind that the moneys which we have contributed to the states are taken from the people, who in turn also pay the moneys required by the states to finance their own portion of the cost. The entire cost falls upon the people. It is true that the necessity and demand for good roads are constantly increasing, but they should not be constructed faster than the taxpayers can afford to pay for them. The amount that taxpayers can afford to pay can best be determined by the citizens of each state.

"Since the inauguration of the present plan of Federal aid for road construction the states have changed their methods of financing their portion of the expenses. A large majority of the states now exact a gasoline tax, thereby distributing the cost of road construction and maintenance to those who benefit by their use. The construction of roads within a state is purely a state matter and ultimately should be financed by state funds. Without further legislative enactment the states would carry on their construction to an amount which they can afford to spend on it. But the National Government is committed to the policy of assisting in the building of good roads. Commitments have been made both by the states and the Nation in this direction. It is necessary to continue them for the present.

"I do, however, recommend for the consideration of the Congress that future legislation restrict the Government's participation in state road construction to primary or interstate highways, leaving it to the states to finance their secondary or inter-county highways. This would operate to diminish the amount of Federal contribution."—Budget Message, December 9, 1925.

Our Cover Picture

Our frontispiece this month is a scene taken after a snow-storm on Lookout Mountain, near Denver, before the snow-clearing outfit employed by the State Highway Department and the City of Denver arrived on the scene. The Lookout Mountain road is very heavily traveled throughout the year and a very efficient maintenance patrol system is employed to keep the road in smooth condition summer and winter. During the height of the tourist season as high as 6,000 cars per day have been counted on this highway.

The climb up Lookout Mountain is one of the most spectacular drives in the state. It forms a link in Denver's far-famed Mountain Parks highway system.

"For Services Rendered"

(Continued from page 4)

debts which have been used in the collection of delinquent personal taxes. Several remedies were suggested and heartily approved.

Judge V. H. Johnson of Cheyenne Wells, Colorado, voiced an opinion which was also heartily approved when he said, "Primary elections have been proven a needless expense and a superfluous addition of 'red-tape'. It is time to eliminate that waste of public and private funds and use the money for roads—more roads and better roads; for improvements to our educational system. Men are beginning to find themselves and are working harmoniously and co-operatively toward a goal of common good."

Other prominent speakers during the three-day convention were: W. G. Duvall, chairman of the State Highway Advisory Board; Dan C. Straight, vice-president of the association, who reported on the activities of the legislative committee during the last session of the general assembly; J. C. Vaughn, vice-president from the Arkansas valley district; Bob Higgins, state superintendent of maintenance; Col. A. S. Peck, of the U. S. Forest Service, and Carl S. Milliken, secretary of state.

The following officers were elected to serve during the year 1926:

Dan Straight, Greeley, president; W. L. Rees, Pueblo, vice-president; Herman Emperius, Alamosa, second vice-president; G. W. Huntley, Flagler, third vice-president, and Tony Monell, Montrose, secretary-treasurer.

The following committee was named to co-operate with the State Highway Department, and the Motor Club of Colorado in the drafting of a "Pay as we go plan" for financing road construction and maintenance in Colorado after 1926:

Chairman, Dan Straight; Judge V. H. Johnson, Cheyenne Wells; Harris Aiken, Fort Collins; H. Emperius; Charles D. Vail, Denver; A. T. Wood, Plaverville; Mel DeWitt, Buena Vista; W. E. Gardner, Center, and Raymond Miller, Arapahoe county.

Entertainment features of the convention included the Rudd Hardesty banquet, attended by more than 300 delegates and their wives and friends of the Hardesty organization, and a luncheon given to the commissioners by the H. W. Moore Equipment Company, in their plant at Sixth and Acoma streets.

All of the Denver equipment dealers held "open house" during the convention, several of them having special exhibits of road machinery. The Roy C. Peppers Engineering Sales Company, of Hudson, had a special display of Havelock maintainers, Cyclone road guard fence and Alan Wood bridge plates in the lobby of the Albany hotel.

Local machinery dealers reported the largest number of sales during the convention than during any previous meeting of the county commissioners in Denver.

It was the largest attended meeting of the association since it was organized eighteen years ago. Every county in the state was represented at the convention.

It was announced that the convention next year will again be held in Denver during the National Western Stock Show.

Henry G. Shirley of Virginia to Head American Road Builders' Association

At a meeting of the nominating committee held in New York, Henry G. Shirley, chairman of the Virginia State Highway Commission, was unanimously chosen as president for 1926-1927 of the American Road Builders' Association.

Nomination to this important post is equivalent to election, as the recommendations of the nominating committee have been endorsed without exception throughout the twenty-five years of the association's existence. The election of officers will be be by ballot of the membership between now and the Chicago Convention, where the vote will be canvassed and the result announced. The new officers will be installed at the New York meeting of the Association next May.

In addition to Mr. Shirley for president, the nominating committee of which Col. R. Keith Compton, Director of Public Works at Richmond, Va., is chairman, has nominated the following for the four vice-presidencies to be filled at the Chicago meeting: W. R. Smith, President, Lane Construction Corporation, Meriden, Conn.; S. T. Henry, Director, Pan-American Confederation for Highway Improvement, Spruce Pine, N. C.; S. F. Beatty, Austin-Western Road Machinery Co., Chicago, Ill., and Samuel Hill, honorary life president, Washington Good Roads Association, Seattle, Wash.

James H. McDonald, former State Highway Commissioner of Connecticut and a road expert residing at New Haven, will continue as treasurer. Charles M. Upham, State Highway Engineer, Raleigh, N. C., is Business Director and Convention Manager of the Association, and Miss Ethel A. Birchland of New York City is secretary.

Mr. Shirley, who will become president, has long been identified with America's highway program and is widely known for his achievements in the construction field. After graduating in engineering at the Virginia Military Institute he became roads engineer for Baltimore County, Md., and then Highway Commissioner of that state. At one time he was secretary of the American Highway Industries Association and President of the American Association of State Highway Officials. During the World War he was a member of one of the committees assisting the Government with wartime highway matters.

Snow Blocks Eastern Colorado Roads; Plows Break Trails

Highways in eastern Colorado the past few weeks have been covered with a heavier coat of snow than any previous winter, according to reports received from state maintenance superintendents.

Snow plows of various design have been used constantly by the different counties in an effort to keep the roads open for traffic. In some places the snow has melted and later formed a solid sheet of ice of sufficient thickness to permit trucks and tractors to run over the top of it.

But notwithstanding the heavy snows, records of the tourist bureaus show a larger tourist travel this winter than in previous years. The fact that more strenuous efforts have been made to keep the roads clear of snow in the winter is believed to be the chief reason. And it is believed that as soon as the high mountain passes now blocked by snow are opened that the travel will be still heavier.

A large number of the counties have purchased special snow removal equipment and they have kept their road forces busy throughout the winter. It has been found that roads kept clear of snow during the winter months are less expensive to maintain during the summer months, and the county road officials are finding that they are saving the taxpayers money by keeping their road forces busy throughout the year.

One of the most unusual traffic "jams" of years occurred on the Denver-Broomfield highway on January 26, when snow drifts blocked the path of motorists for a half day. A score of motorists were stalled for several hours. They were "rescued" by an Adams county caterpillar tractor, pulling a big Adams grader.

Within three hours after the tractor outfit arrived on the scene the stalled cars were extricated.

Big Southwest Road Show and School to Be Held at Wichita

Lectures and discussions will be presented in connection with the Southwest Road School, which will be held at Wichita, Kansas, March 2, 3, 4, 5, by engineers and road builders throughout the Southwestern States. Various subjects relative to road construction and maintenance will be presented by men actively engaged in highway work who are taking an aggressive part in modern practices.

The U. S. Bureau of Public Roads will display an exhibit which will cover twenty-five or more such subjects as highway economics, safety, expenditures, milk transportation, traffic regulations, soils, concrete, service of roads, etc., in a graphic way. This will be the largest and most extensive exhibit of its kind ever shown in this or any section of the United States at one time, and will be of particular interest to those engaged in the direction of highway expenditures.

American Road Builders' Association has recognized the Southwest Road Show and School and will have their exhibit here, which is instructive, interesting and attractive.

Several of the states of the Southwest to date have signified that they will also have exhibits showing their activities in road building and maintenance. Their highway departments will be represented on the program by engineers and statisticians who will discuss and outline methods and results of investigation and practice along the lines of motor vehicle operation costs, economics, location, construction, financing and maintenance, for various types of modern highways.

In addition to the educational program and exhibits there will be displayed by manufacturers and distributors machinery and equipment used in the construction and maintenance of all types of roads, especially along the lines of motor and tractor and construction equipment. It is only with this modern equipment that present highway traffic can be economically served, and an excellent opportunity presents itself here for study of the most suitable methods by personal observation.

Anyone engaged in the administration of highway affairs, whether it is in direct charge of road building and maintenance or along purely economic and political lines, will have an opportunity to collect valuable ideas and data first-handed by attending the Southwest Road Show and School for the four days indicated.

This Road Show and School is coming at a most opportune time. The territory the Show and School covers is entering an era of great expansion in road building and construction work in the Southwest and those who attend this Show and School with an exhibit or otherwise should derive a great benefit from it.

First Traffic Ordinance Against Speeders in Rhode Island in 1678

Traffic ordinances against the speed demon had their beginning in 1678 in Rhode Island. This traffic ordinance was embodied in a resolution of the assembly of the colony of Rhode Island and was the result of the running down of a child in the streets of the town of Newport. The resolution of the assembly as it appears in a recent article in the "American City" reads as follows:

"Whereas, there was very lately in the town of Newport on Rhode Island very great hurte done to a small childe by reason of exceeding fast and hard ridinge of horses in said town, this Assembly takeing the matter into their searious consideration and being desirous for the future to prevent the like mischief, doe ordain, et cetera—that from and after the publication hereof, if any person or persons shall presume to ride on either horse, mare or gelding, a gallup or to run speed—in the streets of Newport—said person shall for his offence pay—unto the Treasurer of said towne 5 shillings in money on demand; 2 shillings of which shall be paid to any person or persons that shall give information thereof and the other 3 shillings to remain for the use of the said towne."

And the Town Sergeant was immediately empowered by a special act to "take by distraint" the said 5 shillings if they were not immediately forthcoming.

New Type Road Guard Saves Motorists' Lives

The new type of roadway fence which is coming into such wide use the country over was given a tremendous test in Weld county, south of Greeley, Colorado.

The Roy C. Peppers Engineering Sales Co., Hudson, Colo., distributor for Cyclone Road-Guard, received the following letter which was written to the Cyclone Fence Company, Waukegan, Ill., manufacturers of this fencing, by F. L. Powers, Board of County Commissioners, Greeley. The letter states:

"In the spring of 1925 Weld County installed two hundred feet of Cyclone Road Guard Fence south of Greeley, to replace wooden guard rail on a curve between two bridges.

"About a month ago a seven-passenger touring car, traveling at a speed estimated at fifty miles an hour, ran into this guard fence.

"The remarkable thing was that after the car was brought to a stop, it was found that no one was hurt except the rear seat passenger, who had some minor cuts, due to being thrown up against the top bow, and after taking the fence from in front of the car it proceeded on its way, under its own power.

"This road guard fence has proven its efficiency. There is no other form of guard fence which could have possibly held the car on the road, without serious injury to the car and its occupants."

Cyclone Road Guard—the new type roadway fence designed and built sufficiently strong to catch cars that swerve from the road. There is no record of this fence ever having been broken through.

JEVERTRYIT?

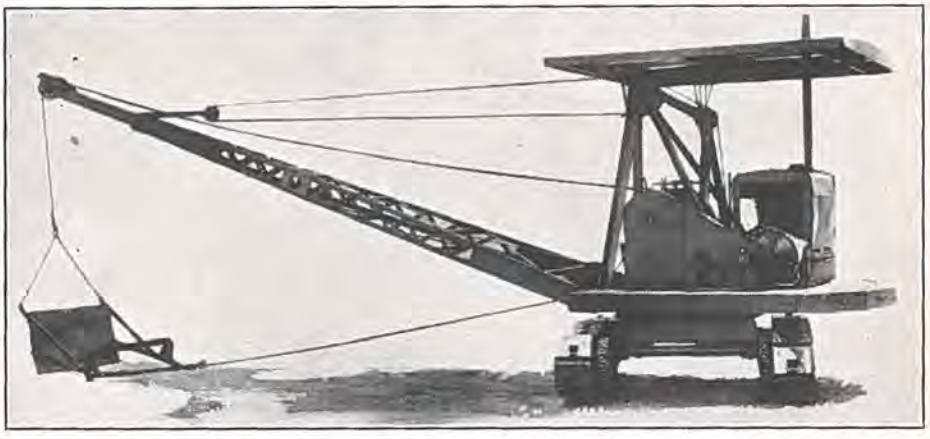
Some day these auto drivers will learn that they cannot uproot more than one or two of these guard rail posts along the highways at one time. They are still trying to take the fences out—with disastrous results every time.—Mahnomen Pioneer.

The Bulletin Board

Road Show Banquet for Distributors Given by The T. L. Smith Company, Milwaukee

One of the most interested and interesting groups in Chicago was that composed of The T. L. Smith Company's distributors, who appeared in a body at practically every session of the show. To put them in the frame of mind commonly designated as "getting off to a good start," the Smith Company held a banquet for them on the opening night of the show in the Red Lacquer Room of the New Palmer House, at which affair, needless to say, generous entertainment and good cheer were disseminated. Note the smiling faces in the illustration—not the least of the happy ones being Mr. Thomas Burnite of Burnite Machinery Co., Denver.

During the week prior to the show the distributors were entertained at the company's home offices in Milwaukee, many of them being in that city in attendance at the annual meeting of the Associated Equipment Distributors. H. E. Smith, president of the company, entertained them at his home on Tuesday, January 5, at a dinner party and evening of cards.



New back-filler placed on market by Buckeye Traction Ditcher Co.

New Buckeye Back-Filler

With Full Circle Swing and Adjustable Boom

A radical departure in back-filler construction is embodied in the new Utility Back-filler just announced by the Buckeye Traction Ditcher Company of Findlay, Ohio. Built over the "full revolving" principle, it has many advantages over equipment of this class heretofore offered and its range of usefulness is extended accordingly.

The full circle swing permits a "reachability" new to this type of equipment. It is readily adaptable to other duties about the job, such as loading or unloading pipe from trucks, lowering them into place or, with a clam shell bucket, for handling materials. At the conclusion of the job, too, it is used for "cleaning up."

The revolving base consists of a heavily ribbed solid electric steel casting. This provides a rigid foundation for the power unit and the main machine assembly. Embodied in the base are steel annealed rollers operating on the machined face of the ring gear. The roller path is 4 inches in diameter and the rotating drive is through cup and-cone reversing clutch controlled by a hand lever at the operator's platform.

The boom is of standard lattice type construction, 10 in. by 12 in. square at the center. The full boom length is 29 ft. with an added 4 ft. adjustable box channel extension, which gives a maximum boom length of 33 ft. A unique feature of this unit is an 8 ft. removable center section which permits a short boom length of 21 ft. The elevation of the boom is controlled by power through a worm-and-gear mechanism.

Full-length Alligator traction is provided. Electric cast steel treads are used, each 13 inches wide. Wheels are 6 ft. 8 in. long center to center of drive sprockets with a bearing area of approximately 15 square feet. Steering is through independent clutches with automatic brakes controlled from the operator's platform. Road gauge is 58 inches between the wheels or 6 feet outside the treads.

The road speed is approximately 1¾ miles per hour. The motor is a 4-cylinder, heavy tractor type unit, rated at 38 H. P. at 1200 r. p. m. Power take off is through Twin Disc enclosed reduction unit and Twin Disc clutch. The vacuum system of fuel feed is employed.

All gears are cast steel with machine-cut teeth, heat-treated. Spur gear drives only are used in reversing operations. Shafting subject to the heavy loads is of 1½ per cent nickel chrome steel. For crane work safe-load capacity is 45,000 foot pounds or 3,000 pounds at 15 ft. radius and 1,500 pounds at 30 ft. radius. Standard equipment includes an all-steel filling and dumping scraper 48 inches wide with cutters and rooters.

The width of the Utility Back-filler is 7 ft. 2 in.; height, 9 ft. 10 in.; length, without boom, 10 ft. It weighs approximately 17,700 pounds.

New Member Joins Force of Culvert Concern at Pueblo

A new member has been added to the force of the Colorado Culvert & Flume Co., of Pueblo—his name is John P. Sanderson, Junior, and he arrived in Pueblo on January 6th. John says the new arrival looks like him. This explains John's liberality with the cigars during the convention of the county commissioners in Denver last month.

Distributors of The T. L. Smith Company of Milwaukee, at that company's annual banquet, held in the Red Lacquer Room, Palmer House, Chicago, Jan. 11, 1926—Road Show Week.

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During the coming summer Boulder county will expend $15,000 for the completion of the Flagstaff highway, which will provide a scenic drive from the city of Boulder. On motion of E. B. Hill, commissioner representing the Boulder district, the county commissioners of Boulder county made provision for the project in their 1926 budget.

Boulderites say this road will provide the finest scenic drive in the entire Rocky Mountain region. The road is being constructed entirely with county funds.

WINTER USE OF MAINTENANCE FORCE

The annual report of the Rhode Island Board of Public roads says:

"As the fiscal year closed, our maintenance forces had been reduced to the minimum man-power which we have found it necessary to carry through the winter as a neucleus to carry out our snow-removal program. These men are kept busy during the winter months between periods of snow removal in placing temporary patches over cuts made in our hard-surfaced roads during the winter by public utilities, the patching of holes in our cheaper roads, the cutting of brush along the roadsides, the painting of guard railing, the repair of equipment and the hauling and storing of materials for future maintenance. The effective use made of these few maintenance men whom it is necessary to keep in our employ throughout the winter if we are to carry out successfully our program of snow removal makes the cost of snow removal comparatively low."

PLANS SUBMITTED TO THE U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj.	Length	Type	Location
213-D	3.877 mi.	Gravel Surfacing	West of Durango
271-B	0.778 mi.	Concrete Bridge & Paving	West of Portland
276	0.133 mi.	Concrete Bridge & Paved Approaches	North of Colo. Springs over C.R.I. R.R.
278-B	6.856 mi.	Grading	East of Hugo
279-C	5.772 mi.	Mountain Grading	Turkey Creek
282-A	0.852 mi.	Steel Bridge & Approaches	South of Craig

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
2R-3	0.55 mi.	R. R. Grade Crossing	North of Trinidad
2R-4	6.5 mi.	Concrete Paving	North of Trinidad
258-B	3.5 mi.	Grading and Bridges	West of Gunnison
271-A	3. mi.	Gravel Surfacing	Between Portland and Beaver
275-C	5. mi.	Concrete Paving	Husted-Monument
281-D	6. mi.	Concrete Paving	Between Lafayette and Longmont
287-B	7. mi.	Grading	East of Greeley
298-A	2. mi.	Grading	North of Pagosa Springs

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1925

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj. No.
213-A	Hesperus-Mancos	3.538 mi.	Gravel Surfacing	Hooker & Hanson	$ 40,422.00	100	213-A
246-D	Avondale, east	5.418 mi.	Gravel Surfacing	Shields & Kyle	43,897.00	32	246-D
247-B	Rocky Ford-Swink	2.329 mi.	Concrete Paving	LaNier, Selander & White	71,001.00	100	247-B
253-B	Brookston-Milner	3.064 mi.	Gravel Surfacing	Hinman Bros.	66,583.00	84	253-B
254-B	Hot Sulphur Springs-Parshall	1,087 mi.	Grading	Pioneer Const. Co.	61,071.00	94	254-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	59	258-C
261-A	Rifle-Grand Valley	16 mi.	Gravel Surfacing	Hinman Bros.	132,556.00	90	261-A
262-E	West of Walsenburg	3.527 mi.	Gravel Surfacing	Pople Bros.	24,979.00	64	262-E
262-F	LaVeta Pass-Russell	2 mi.	Crushed Rock Surf.	Central Const. Co.	22,017.00	61	262-F
266-B	Durango, south	3.131 mi.	Gravel Surf.	B. R. & J. L. Morrison	17,271.00	89	266-B
271-D	West of Pueblo	0.137 mi.	Bridge	C. A. Switzer	11,869.00	15	271-D
272-A	Apishapa River, east of Fowler	0.417 mi.	Bridges and Approaches	Lee F. Williams	56,434.00	100	272-A
275-A	Gann-Sedalia	7 mi.	Concrete Paving	Strange-Maguire Pav. Co.	314,174.00	46	275-A
275-B	Sedalia-Castle Rock	5.334 mi.	Concrete Paving	J. Fred Roberts & Sons	198,771.00	65	275-B
279-B	Morrison-Baileys	5.295 mi.	Grading	Harry H. Brown	85.980.00	100	279-B
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	30	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	00	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	27	283-B
286-A	Nunn-Dover	0.549 mi.	R. R. Grade Crossing	Brown & Smith	35,162.00	43	286-A
286-B	Nunn, north	19 mi.	Grading	James Collier	87,249.00	74	286-B
287-A	Fort Morgan, west	20.62 mi.	Grading	H. C. Lallier Construction Co.	101,817.00	22	287-A
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee	102,627.00	79	288-A
293-A	West of Montrose	114 ft.	steel bridge	Wear Bros.	17,936.00	100	293-A
294-A	Mancos-Cortez	2.9 mi.	Gravel Surfacing	Engler & Teyssier	23,273.00	51	294-A
296-A	South of Pueblo	113 ft.	Concrete Bridge	C. A. Switzer	17,810.00	100	296-A
297-A	Palisades-DeBeque	2.848 mi.	Grading	Ed. H. Honnen	40,188.00	100	297-A

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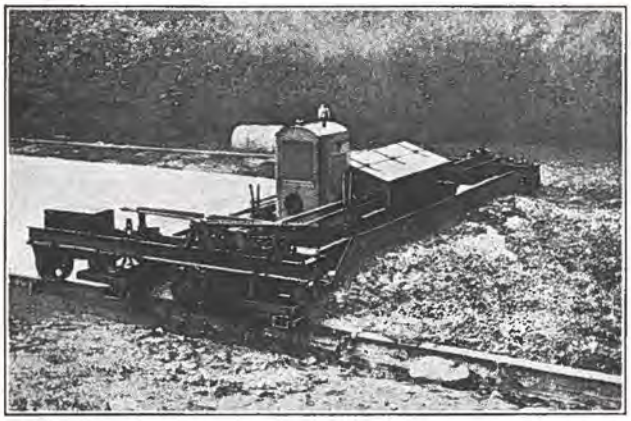

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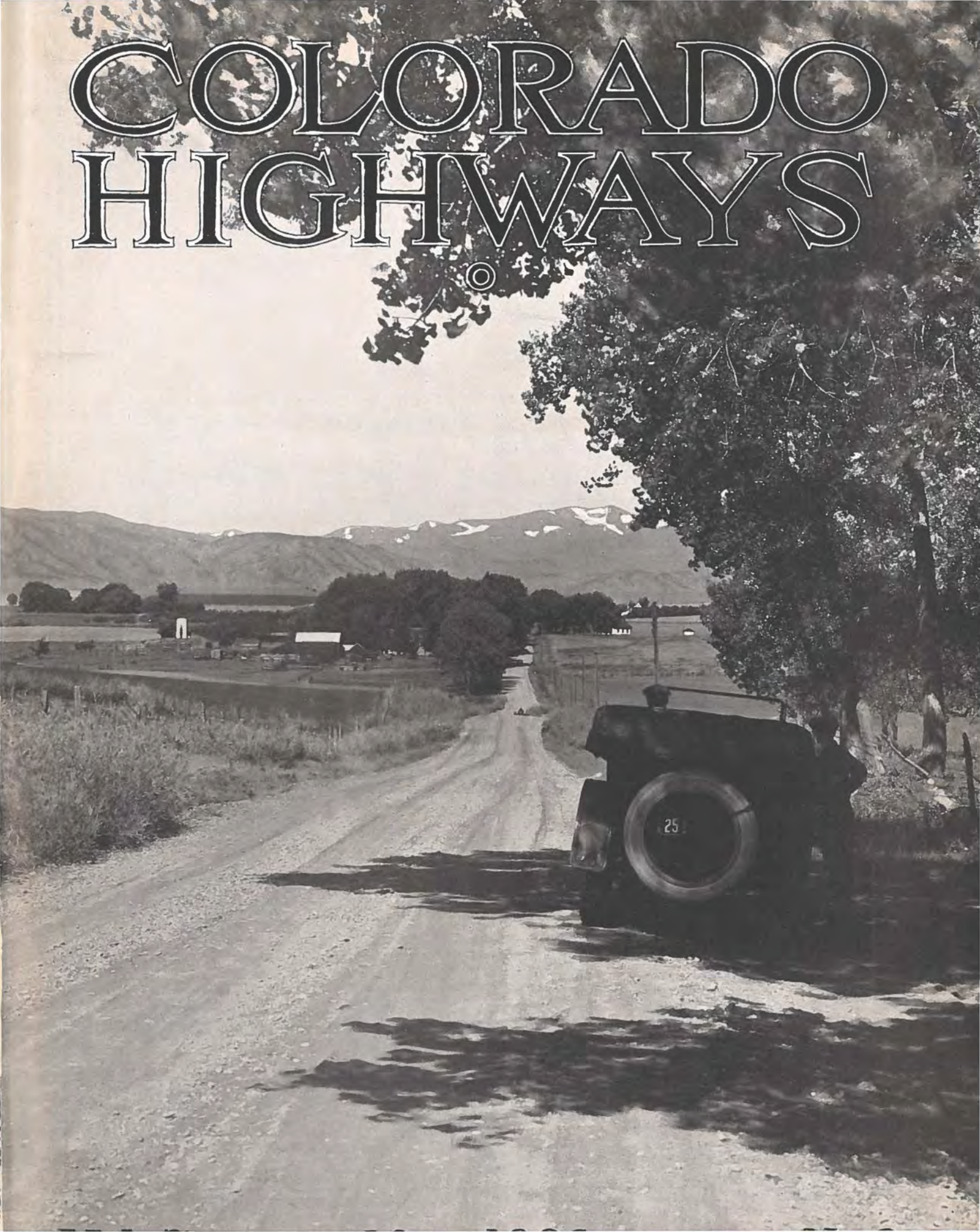

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Our Cover Picture

"On the way to the glacial region of Boulder" might well be the title of the picture on the cover of this month's Colorado Highways. It shows a scene on the Arapahoe baseline highway, leading directly east from the city of Boulder, connecting with the main North-South highway at its eastern terminus. Plans of the State Highway Department call for the paving of this highway as funds become available.

Colorado Highways
"BETTER ROADS"
VOLUME V. MARCH, 1926. NUMBER 3

Editorial

TWO of the big items in public expense are the education of the children and the building of good roads. Does anybody seriously propose to stop in any degree financing school privileges and opportunities or halting the good road program?

The cost of chewing gum, cigarettes, moonshine and cosmetics is greater than the combined cost of the public and private schools, colleges and universities, and lifting the highways of the nation out of the mud. Good roads are big dividend payers, and the education of the children much more necessary and profitable.

In a year from now the funds of the State Highway department will be exhausted. Unless additional money is provided the important work of building and maintaining highways in Colorado will stop. Several plans for the future financing of the state and county road program are now under consideration.

In the February issue of Colorado Highways there appeared an outline of a "Pay as we go" plan, which seems to have met with considerable favor among road users. It was drafted by a special committee composed of representatives of the county commissioners' association, the Motor Club of Colorado and members of the State Highway Advisory Board.

During the past several years the voters of Colorado have approved two bond issues for the construction of state highways. The last of these, a $6,000,000 bond issue passed in 1923, will have been expended at the end of this year. A survey of the situation reveals that the public is against further bond issues. Therefore, the joint committee has drafted a plan whereby the highway work may be continued without increasing the tax burden of property owners.

A feature of the proposed "Pay as we go" plan now under consideration which seems to appeal to all concerned is the provision which requires the motor vehicle owner, the user and sometimes the abuser of the roads, to pay the bulk of the cost of construction and maintenance. This is accomplished through a proposed increase in the gasoline tax and motor registration fees.

For the last fifty years the property owner has been paying road and bridge taxes. A system of roads has been constructed from this revenue. But the motor vehicle owner comes in now and wants these roads improved to a far higher degree than they are at present. The property owner says, "We will turn over these roads to you for further improvement, but you must pay the cost."

Adoption of the "Pay as we go" plan will solve the highway finance problem for years to come. This program will produce approximately $6,000,000 yearly for the construction and maintenance of state highways. This program is sufficiently large for a state the size of Colorado, and if it is carried out road officials declare that Colorado's roads during the next few years will show a very marked improvement, as they have during the past five years, and in the next ten years all of the state highways will have been improved.

This road plan, if put into operation, would save money for the auto owners of Colorado—and they are the people to be considered, as it is from them that the money must come with which to meet the road expenditures.

The History of Road Building in Colorado

By F. L. Bartlett

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 vehicle 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 1, 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 "Smoky 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 Rivers, 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, and the average time each way reduced to 10 or 12 days.

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

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

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

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 Smoky 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 Ruchardson 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 Smoky 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 the 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.

The first toll road in the state was built in 1863 from Bijou Creek near Fort Morgan by the way of Living Springs, Bennett and Watkins to Denver. It was called the "cut off." In 1866, Uncle Dick Wooton built a toll road over Raton Pass and took toll there for several years.

In 1867 the Union Pacific Railroad reached Julesburg, and in June, 1870, the Denver Pacific Railroad was completed from Denver to Cheyenne, connecting with the Union Pacific, thus practically ending Overland Staging. Stage coach roads, however, continued to be built in Colorado for many years. They were built jointly by the stage companies and the settlers.

Before leaving the stage coach period, it is fitting to refer to the famous old "Pony Express." The Pony Express was started April 9, 1860, from St. Joe, Missouri, to run to Sacramento, California. It was the outcome of a fight among the Overland stage lines for mail contracts. It was backed by W. H. Russell, who advertised in advance to make the trip in 9 days and carry letters for 50 cents each. The first trip was made in 8 days and 4 hours. A little later a branch of this pony express ran through Denver to Salt Lake City.

During the territorial period, from 1861 to 1876, there is no evidence that there was any systematic effort made to build roads. Some special appropriations were made but the roads were mainly built by the miners and the stage companies. Old timers do not speak highly of the roads at this period. One could get over them in dry weather if one had a stout wagon and was blessed with good luck and a pair of mules that understood cuss words.

Now comes a period between 1876 and 1886 when many roads had to be built to reach the mining camps and farming sections, which were developing with great rapidity. The railroad building period was also with us so that the state and counties were unable to raise road funds fast enough to keep up with the demand, consequently many toll roads were built, all of which I believe have now become free roads.

In fact, it may be said that the great road building period of the state was during the time between 1876 and 1886. This was the period in which our great path-finder Otto Mears was at his best, indeed it is due to his energy and perseverance that we have many of our present day roads.

Between 1880 and 1902 came what may be called "the permanent bridge-building period," due mainly to the fact that the state was able to supply the counties with a certain yearly road and bridge fund from the Internal Income Fund, which amounted from a few thousands yearly up to $341,000 in 1889. This fund appropriated by the Legislature and divided amongst the counties, creating no little scandal and dissension, was involved in politics and soon became known as the "Pork Barrel Fund."

Meantime, along about 1900 the automobile appeared on the scene, and in the fall of 1902, 42 gentlemen who owned automobiles in Denver got together and formed the Colorado Automobile Club with D. W. Brunton, President, and F. L. Bartlett, Vice-President, the purposes being to start a campaign for better roads; later, clubs were formed at Colorado Springs and other cities and worked together jointly with the Colorado Club and good roads meetings began to be held.

Early in 1905, as President of the Colorado Auto Club, I received a communication from Col. W. H. Moore of St. Louis, under the high sounding title of President of the National Good Roads Association, offering for the sum of $750.00 to come to Colorado and assist us in holding a State Good Roads meeting, bringing speakers, organizers, etc.

I took up the matter with the Denver Chamber of Commerce and with their assistance the money was raised, and Governor Jesse F. McDonald issued the call for a State Convention to be held at Denver July 27-28, 1905. Each city and county was asked to send accredited delegates. Only 65 delegates were present, but there was a goodly attendance of local people and many good speakers, and the convention was a pronounced success.

It was at this meeting that the Colorado Good Roads Association was formed, with J. A. Hayes of Colorado Springs, as President, F. L. Bartlett of Denver, Vice-President, Henry R. Wray, Colorado Springs, Secretary. County vice-presidents were elected and committees were appointed and arrangements made at this convention to call another one shortly, and formulate much needed road legislation.

Accordingly the next convention was set for December 4-5-6, 1906, at the Chamber of Commerce of Denver. The late Thomas F. Walsh took active part in this and contributed $500 toward the expenses, while the Chamber of Commerce shouldered the balance of the expense, amounting to a total of over $1,500.

William R. Rathvon of Boulder was elected Chairman. Many notable, good roads speakers were present, amongst them was the late Sam Houston, Road Commissioner of Ohio. The meeting opened and proceeded with great enthusiasm. Among those who took active parts were Governor Ammons and Highway Commissioner Ehrhart.

The bill for a State Highway Commission was drawn up and adopted by the convention and committees were appointed to get it through the Legislature, headed by S. A. Osborn of Denver. A strong fight was made in the legislature, but the "Pork Barrel" contingent was too strong, and the bill failed even to be considered on the floors of either the House or Senate.

Not discouraged, the Good Roads Association immediately lined up for a campaign of education all over the state. They were ably seconded by the Rocky Mountain Highway Association formed early in the Spring of 1908, incorporated by Charles A. Johnson, Harold Kountze and Gerald Hughes of Denver, with C. A. Johnson as President, F. L. Bartlett, Vice-President and W. H. Emmons, Secretary.

In order to gain strength for the legislative fight, the Colorado Good Roads Association and the Colorado Auto Club, with all its affiliated clubs, were in the fall of 1908 consolidated into the Rocky Mountain Highway Association, and the Highway Bill was finally pushed through and became a law in 1909, but with no adequate appropriation for effective work. C. F. Allen, William M. Wiley and Thomas Tully were appointed State Highway Commissioners. During 1909-1910 State Roads were mapped and laid out and considerable preliminary work was accomplished but no funds were available for anything more than beginning of the work.

In January, 1911, under the auspices of the Rocky Mountain Highway Association and the Denver Chamber of Commerce another good roads conference was called in Denver for the purpose of making another attempt to secure funds for the Highway Commission. Charles A. Johnson was made Chairman (afterwards made President), and W. H. Emmons, Secretary.

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Showing method of building roads in the National Forests—Picture taken on Monarch Pass in Chaffee county.

The Grand Mesa Skyway Drive

THE completion of the Grand Mesa Skyway drive in 1925 marked a new era in the development of Western Colorado. For the first time in history cars reached the summit of Grand Mesa, the highest plateau of its size in the United States. In August a big rodeo was held on the mountain and the new road was dedicated the Grand Mesa Skyway. The name is very appropriate, as the highway leaves the Colorado River valley at an elevation of 4,600 feet and winds up and up until the very skyline is reached at the summit of the Grand Mesa, which stands over 10,000 feet high and more than a mile above the valleys.

The Skyway drive is destined to be a most important link in that chain of Colorado highways that is fast binding together the scenic spots of the state and making it world-famous for the grandeur of its scenery and the quality of its roads. "On to Colorado" will be the slogan of the American tourist when the Florida boom subsides.

The softening touch and sylvan beauty of the Grand Mesa region is needed to supplement the rugged massiveness of Colorado's main ranges. The carving and doming which erosion has performed throughout most of the Rockies is here absent. The thick cap of basalt and the heavy blanket of spruce and aspen has given the Grand Mesa a beauty of another type and preserved a smoother outline.

The Grand Mesa is invested with the sparkle of many waters. The many depressions hollowed out by the forces of erosion have been filled with the purest of mountain waters and over a hundred lakes stocked with rainbow, eastern hook, yellow fin and native trout offer an appeal to red-blooded Americans that is well-nigh irresistible. Land locked salmon were planted in many lakes last year and in 1926 will be ready for the frying pans.

The Grand Mesa was well improved as a summer recreational area before the Skyway road was built. A good auto road had been built in the Alexander Lake group and two hotels and thirty summer homes have been filled each year for the past ten years. On the north side extensive improvements had been made at the Mesa Lake group. This development, however, was on each side of the Mesa just under the rim. It remained for the Skyway drive to connect the two groups and make accessible the vast table land on top of the Mesa. The road also makes a direct connection between the Ocean to Ocean highway at Mesa and the Rainbow Route at Delta.

The Skyway drive was built entirely by the Forest Service as a development project for the Grand Mesa Forest. It was started in 1921 and took five seasons to finish. It is 20.4 miles long and in loose or solid rock all the way. The maximum grade is 7% with a minimum width of twelve feet. Turnouts are frequent and no serious accidents have occurred although by actual count over 30,000 people went over the Skyway drive last season. The total cost was $95,085.31 or at the rate of $4,661.53 per mile.

The Skyway drive renders marketable 30 million feet of Engelmann spruce timber on top of Grand Mesa, makes accessible a vast reservoir system, enables the stockmen to haul his salt to the grazing grounds on a truck instead of packing it eight or ten miles over rocky trails, and last but not least it opens up a recreational area of thousands of summer home lots and unlimited camp ground facilities. A person can get their pick of these lots for the annual rental of $15 per year. The Masonic and Odd Fellows lodges of Western Colorado have picked out suitable area at the Alexander Lake Group and are improving camp grounds, developing water and making recreational areas for their membership the equal of which cannot be found in the United States. Club houses are included in the plans and there is no question but what these areas will become of national importance and Masons and Odd Fellows from all over the union will spend their outings in this locality.

There is plenty of room not only for members of fraternal orders but for anyone who wants to leave their cares behind and enjoy Colorado sunshine where it is always cool, the air fresh and invigorating with plenty of trout and salmon to test the skill of those who like to fish, with rough and rugged country full of wild life for those who revel in a close contact with nature, with horses, boating and dancing for the more socially inclined and with church and Y. M. C. A. institutes for those who want to pursue their religious studies.

Showing the characteristics of the north side of the Grand Mesa.

A drive through the aspen on Grand Mesa.

What the County Commissioners Think of "Colorado Highways"

What the members of the State Association of County Commissioners think of the work being done by COLORADO HIGHWAYS in the interest of better roads in Colorado, is expressed in a resolution passed at the annual convention held in Denver in January. The resolution reads as follows:

WHEREAS, The magazine known as "Colorado Highways," published monthly by the Colorado Highways Publishing Company has been a source of valuable information to the members of the Colorado State Association of County Commissioners for the past four years;

AND WHEREAS, this publication has served to attract attention throughout the United States and in several foreign countries to Colorado's splendid highway system and recreational areas and our matchless mountain scenery, and to the work being carried on by our state and county road officials;

NOW, THEREFORE, BE IT RESOLVED, That this association go on record as approving the work being done by this magazine and pledge our support to its editor in his endeavors, and, further, that one page of said magazine be allowed as an open forum to publish communications from county commissioners.

How Larimer Co. Roads Are Maintained

AMONG the comparatively few counties of Colorado which have divorced highway matters from local politics is Larimer county. There the maintenance of roads is conducted on a strictly business basis. An honest endeavor was first made to work out a plan which would produce the greatest efficiency at the lowest possible cost to the taxpayers. Once that plan was adopted, it was placed in force and adhered to. The result is that the county possesses a centralized organization—a going concern that has behind it years of experience and training and which, as a result, operates as a well-oiled machine. Furthermore, it functions regardless of changes in the personnel of the board of county commissioners.

There are three county commissioners and three commissioners' districts, but all district and political lines are obliterated when it comes to handling the highways. Direct control of all road work is vested in the county engineer, James G. Edwards. He directs the crews in the three commissioners' districts and 12 road districts alike. All of the available funds go into a common pot and are distributed as his judgment dictates. There is no jockeying for money by the respective commissioners, which, it must be regretfully acknowledged, is a condition that obtains in not a few other counties of the state.

Edwards, himself, is authority for the statement that no single member of the board asks for or expects special care of the roads in his district. However, all three do expect that the entire road system will be adequately maintained and that the importance of each highway as a carrier of traffic shall determine the amount of money and work to be expended on it.

It is from this angle of view that Larimer county cares for its roads and it requires only a motor trip in that section to demonstrate to anyone that the system is working out successfully, just as it is proving satisfactory in other counties of the state where it is in competent hands. It would be covering too much territory to state that the Larimer plan is premier. The aim here is merely to cite it as one of the outstanding examples of the county engineer system of road control and to mention some of the positive results that it has brought about.

Larimer is one of the largest counties of the state, both in actual size and in population. Furthermore, its location is such that its roads are subjected to heavy travel. One branch of the main north and south road from Denver to Cheyenne traverses it. The principal artery of travel from Denver to Laramie passes through it. The Poudre canon and other mountainous sections are meccas for thousands of fishermen, campers and picnickers each summer. In addition, a great majority of the legions of anglers travelling to and from North Park fishing grounds each year use its roads. It is one of the principal beet-raising counties of the state, which means that many of its highways are subjected to heavy hauling during the season for harvesting beets and the numerous other crops. Additional heavy traffic has been its inheritance as a result of the important oil production development in its northern portions during the last several years.

The total mileage of roads to be maintained is 1,600. Of this amount, 254 miles are classed as state highways and are given regular patrol maintenance. For this work there are five truck outfits in the valley sections and eight horse crews in the mountains. Extra units are available in case of emergencies caused by storms.

"There is nothing hit or miss about these patrols," states Edwards. "We patrol every mile of the 254 at regular intervals, winter and summer and give them additional care when weather conditions call for it."

Hundreds of motorists had cause to give thanks for this efficient patrol system on November 14, last, when the annual football game between Colorado University and Colorado Aggies at Fort Collins occasioned heavy traffic, particularly from Denver and Boulder. Despite the fact that a heavy snow had fallen during the previous night, drivers found the roads cleared. By evening, when return trips were made they were practically in their normal, dry weather condition.

The Larimer County Garage at Fort Collins is the particular pride of the organization and has occasioned commendatory remarks from all who have inspected it. It is situated close to the business section of Fort Collins and occupies a portion of the block adjacent to the court house. Contrary to expectations, it is an asset rather than a liability so far as appearances are concerned. It is an attractive one-story, pressed brick building, set back from the street and surrounded by a well-kept lawn. There is nothing of the junk-yard appearance about it. Though a considerable area for storage of supplies and machinery is provided in the rear, it is screened from the public view by fences and buildings.

The garage is 60 by 110 feet in dimensions. Except for one end, it is used for storage of trucks, and is capable of housing the entire fleet owned by the county. The end not used for storage is completely fitted out as a mechanical workshop for repairs on all machines. All repairing and reconditioning is done there by a force of expert workmen, consisting of a foreman and two mechanics. Edwards estimates that the county saves at least 50 per cent on repairs through maintaining its own shop.

It also possesses an additional virtue, which is that it insures that all equipment shall be in working order throughout the year. The county owns 22 trucks. All are kept in readiness for use at all times. As soon as something wrong shows up on one of them it is sent to the shop and gone over. That this policy has paid is proved by the fact that 20 of the 22 trucks were obtained from the government as surplus war supplies and are still in excellent condition. In many of the counties of the state, most of the wartime trucks have long since passed into the discard as worn out.

A portion of the shop is divided off as a stock room. A stock man is on duty there throughout the working hours of the day and every bit of material that goes out is recorded.

Beneath the shop is a basement where oil, grease and extra blades for road machines are kept. The county buys a carload of oil a year and effects a great saving through buying in such a quantity.

In the rear of the garage is a yard for storage of bridge timber, corrugated metal pipe and similar supplies. Culvert pipe is bought by the carload to get the lowest price. Bridge timbers are bought locally, but in quantities that make for economy. Edwards does all purchasing.

Daily records are kept on the perform-

(Continued on page 14)

Showing a series of switchbacks on the Fall River highway leading to Milner Pass in the Rocky Mountain National Park.

The Blue Lodge of Colorado Road Builders

IN THE Summer of 1887 Otto Mears set out for Saguache with a load of wheat for the grist mill on Chalk Creek, in Lake County. He made his way to the head of Poncha Pass and there found he could go no farther.

He had no picks or other road tools but he was determined to get thru, so he set up a camp and started out to build a road with axes and shovels.

While he was roughing out a trail from the banks, Governor Gilpin happened along on horseback. Seeing what Mears was doing, he pulled up and listened to Mears make what was probably one of the first criticisms of roads in Colorado or rather lack of them.

When Mears had finished the governor asked him why he didn't take out a charter for toll roads and set about building highways himself. Upon hearing that toll road charters were Greek or its equivalent to the road builder, the executive explained that it would cost $5.00 and that with that charter Mears could set out and build all the roads he wanted to, charging traffic for the use of them.

The proposition sounded good and from that conversation eventually came forth 383 miles of toll road built thruout the mountain country by Mr. Mears and used today in a large measure as the basis for continental highways thru the state.

Probably no other man has played as large a part in the development of Colorado's highways as has Mr. Mears. Born in Courtland, Russia, 85 years ago, he came here in 1865 when there were no highways, just trails, in the state.

The part he has played in road work may be summarized by a list of the highways he has constructed.

Seven miles of road along Poncha Pass toward Salida.

The highway from Saguache to Silverton which runs via Cochetopa Pass to Beaver Pass down to the Hot Springs at White Earth on to Lake Fork and Gunnison, thence to Lake City and to Animas Forks via Burris Park, whence it drops down to Silverton.

The road from Lake Fork to Montrose built in 1877.

The road from Ouray to Red Mountain, thence to Silverton and Animas Forks built in 1883.

The road from Ridgway to Telluride built about the same time.

Bought the toll road owned by Munn out of Ouray down the canon and made a first class highway out of it.

Bought the road from Animas City to Fort Lewis and made it a first class highway.

Constructed railroad over Marshall Pass and sold it to Denver & Rio Grande.

Constructed all of 180 miles of Rio Grande Southern, the Silverton Northern, and the Silverton and Red Mountain railroads.

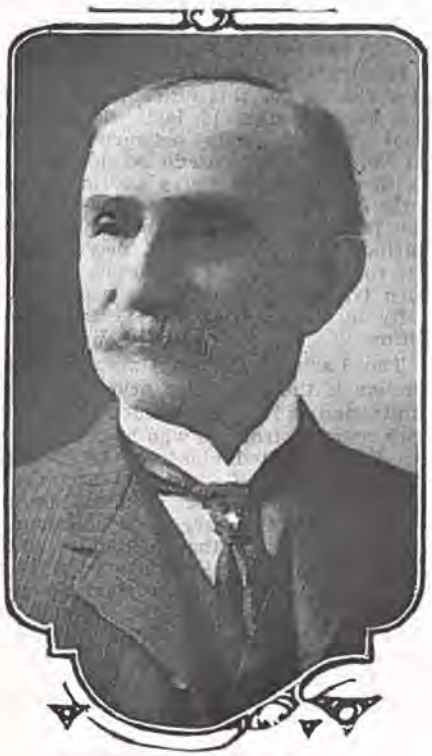
Few men have been more closely identified with the actual building of the state than has Mr. Mears and a full story of his adventures would fill a good sized book.

He carried the first mail into Ouray by sledge and dogs when post office officials said it couldn't be done.

He was peace commissioner in 1878 and after making a treaty with the Ouray Indians concluded one with the Southern Utes which resulted in the removal of both tribes.

He built the first telegraph line used in Colorado, a wire on iron posts from Fort Garland to the old cantonment above Montrose in 1879.

He built the head of the famous San Luis irrigating ditch, later selling it to the present company for $36,000.



OTTO MEARS

He put in the first crop of wheat at Saguache and was the first treasurer when that county was created by Governor Cummins.

He is the sole survivor of the group of men who built the state capitol in Denver.

He served three years with the First California regiment in the Civil War and took part in the famous hike of that regiment from Los Angeles across the desert to El Paso.

Mr. Mears now lives in California. Most of the men he worked with in the early days have passed, but he can recall all of them together with dates and stirring episodes of Colorado history without difficulty.

He is the grand past master of the Blue Lodge of Colorado Road Builders and one of the great pioneers of Colorado. As such his name will go down in the annals of road work in the west.

Hawaiian Youth Wins Richest Scholarship in National Contest

John Texeira, sixteen year old Hawaiian student in "the most western high school in the United States," is announced here today as winner of the H. S. Firestone Four Years' University Scholarship, one of the largest educational awards of fered in this country.

His prize, given for the best 700-word essay on the subject "Economies Resulting from Highway Improvement" was the magnet that drew more than 200,000 high school students from every state and territorial possession into a national contest conducted by state universities and departments of education, co-operating with the Highway Education Board. The scholarship is valued in excess of $4,000 for educational purposes, and Texeira is the sixth high school student to win it.

The circumstances of Texeira's triumph are not lacking in dramatic qualities. From the vantage point of his native cane brakes, this son of a homesteader on the Island of Kauai wrote an economic paper that excelled, in the opinion of a cabinet member, an educator and an editor, the best his more favored competitors could produce. Through their decision he emerges from this outpost Island in the Pacific Ocean to carry the coveted honor beyond the confines of Continental United States for the first time in the history of the contest. Kauai is the northernmost island in the Hawaiian group, and, westward from San Francisco, lies 2,200 miles from the mainland.

Board officials consider it not the least of his honors that his paper should be selected by a committee of which Andrew W. Mellon, Secretary of the Treasury, is chairman. Mr. Mellon's associates are Dr. Walter Dill Scott, president of Northwestern University, Chicago, and Griffith Ogden Ellis, editor of The American Boy, Detroit. The committee was appointed by the chairman of the Board, Dr. J. J. Tigert, U. S. Commissioner of Education, Department of the Interior.

The judges gave honorable mention to four other essays held of special merit, but no pecuniary award goes to the authors. They are Miss Natalie Watson Berle, Reading High School, Reading, Mass.; Miss Ronda Jenkins, Technical High School, Indianapolis, Ind.; Harold G. Smith, Liberty High School, Bethlehem, Pa.; and Miss Patti Cathrine Trim, Marksville High School, Marksville, La.

Funds for Roads

Every motorist, and that means practically every man in the state, wants better roads and now realizes that every dollar spent in good roads is a sound and paying investment. The fairest way to pay for good roads is to raise the money by a tax or license on the car and truck itself and the balance needed by a tax on gasoline.—Carrington (N. D.) Independent.

Prairie Schooner, Texas Dogie, Motor Car

A Kaleidoscope of Eastern Colorado

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

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

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

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

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

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

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

As the settlers increased in number the counties grew in wealth. Roads were called for and the trails were broken through, linking up settlements. Farm production increased steadily and with it there was a perceptible growth in the volume of dairy produce. Denver and the cities close to the range called for food, and Eastern Colorado produced it in variety and in quantity.

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

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

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

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

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

Today there are three chief routes into the eastern section: The Platte Valley road, which cuts through from the northeastern section into Greeley, and the main north and south highway; the Union Pacific, which wends its way from Kansas through the middle section, and the Arkansas Valley route on the south. Each of these roads is today in first-class condition.

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

This is not enough, however. Sooner or later one of these roads must be hard-surfaced, perhaps all of them, and Eastern Colorado will not be content until that day comes.

View of State Road No. 4, near Red Cliff looking toward Tennessee Pass—now undergoing improvement by state and Federal forces.

Highway News and Notes on Work in Field

The State Highway Department has let a contract to John A. Duncan, Colorado Springs contractor, for the gravel surfacing and relocation of approximately two miles of roadway between Pagosa Springs and the foot of Wolf Creek Pass. The bid price for this work was $22,465. The contractor agrees to complete the project by July 21, 1926. During wet weather the stretch of roadway to be improved is hardly passable to automobiles. The new work will connect with the improvements made during the past three years on Wolf Creek Pass.

The Lambie-Bate Construction Co., 2311 Tenth street, Denver, were low bidders with $65,374 for grading, graveling and bridge construction on a 2.727 mile stretch of road southwest of Gunnison in Gunnison county. The contractors agree to finish the project in 120 working days. This is the first highway contract this concern has taken. Formerly the Lambie-Bate concern have confined their efforts to large building contracts.

Plans are now being drafted in the offices of the State Highway Department for the construction of five miles of graded road north of Buena Vista in Chaffee county. The new roadway will connect with improved stretches completed during the past three years. The new improvement will be located on the main road between Leadville and Buena Vista. The department also is preparing plans for six miles of concrete paving located between Lafayette and Longmont on the new line recently purchased from ranchers, after a lengthy legal battle in the courts.

Within the next thirty days the Highway Department plans to award more than a score of construction contracts in various parts of the state. Every effort will be made to complete the projects during the coming summer.

Plans are practically completed for the grading of twenty-three miles of new roadway located between Castle Rock and Monument. This work will be constructed on a new line, and as soon as possible the plans will be submitted to the U. S. Bureau of Public Roads for approval. As funds become available this stretch of roadway will be paved.

With the coming summer the pavement north from Colorado Springs will be extended to a point a few hundred feet of Monument. An underpass crossing will be constructed at Monument. It is planned to spread gravel over the roadway, which will be used until such time as the roadway is paved.

When completed there will be no grade crossing on the road from Denver to Colorado Springs. The sum of $500,000 has been set aside in the 1926 highway budget for the grading of the new road between Castle Rock and Monument, where the new work will connect with concrete paving.

During last month the department awarded a contract to Shields & Kyle, for the construction of four miles of gravel surfacing west of Durango, on the highway leading to the Mesa Verde National Park. The work is located near Hesperus. Its completion will mark the elimination of the last piece of poor road between Durango and Mancos.

Plans are near completion for the construction of five miles of concrete pavement south of Monument, extending to a connection with the completed pavement at Husted.

The J. Fred Roberts Construction Co. are now working on eight-tenths of a mile of concrete pavement and a railroad undergrade crossing located about a mile north of Castle Rock. Officials of the highway department expect to see the completion of the paving now under construction between Gann and Castle Rock completed and under traffic by June 1. The new pavement from Gann to Castle Rock is located on the east side of the Sante Fe railroad tracks. A new connecting road with Sedalia will be constructed under the supervision of the highway department.

The new pavement now under construction is under two contracts. One is being constructed by J. Fred Roberts and the other section is under contract to the Strange-Maguire Construction Co. of Pueblo. The work was started last fall.

There is being constructed on the Conifer-Baileys highway, known as State Road No. 8, six miles of grading and surfacing. This work is being done by W. A. Colt & Son of Las Animas, Colo. The bid price was $114,542. The job requires 58,000 yards of rock excavation, and 12,800 yards of common excavation. This project when completed will eliminate the worst stretch of roadway between Denver and Baileys. It connects with the new work completed west of Conifer last year.

Construction of a new highway bridge over the Yampa river south of Craig has been started by the Northwestern Construction Co. This $85,000 state and federal aid project was delayed for three years because of inability of the interested parties to reach an agreement on the location of the structure. The bridge is located on Road No. 13, leading through the oil fields to Meeker.

Two hundred and fifty convicts from the state penitentiary at Canon City will be working on state highway projects within the next few weeks. One hundred convicts already are established in two camps between Texas Creek and Cotopaxi, on the Salida-Canon City road in Fremont county. Two road gangs are engaged in widening and straightening that highway.

Three other camps of fifty men each will be established. One camp will work on Guy Hill on the new Golden-Rollinsville road. Fifty convicts will work all summer on the Loveland Pass project. A fifth camp will be established between Limon and Byers. The convicts will be kept busy all summer.

The sum of $30,000 will be spent this summer by the state and Weld county on the Greeley-Loveland highway. Plans for the rebuilding of this road include the construction of a roadbed that may be used in the future for laying pavement. The road will be relocated in such a way that the surface will be raised so high that snow blockades will be almost impossible. Several deadly right angle turns will also be eliminated.

Plans are now under way for the improvement of ten miles of the Fort Collins-Laramie road. A survey of the new work is being made by James G. Edwards, Larimer county engineer.

Work of surfacing State Road No. 69, extending northwest from Walsenburg in Huerfano county, is announced by George Neibuhr, chairman of the board. A total of $8,000 has been made available for this work. Half the sum has been appropriated by the state.

The Dan Reid Construction Co. of Denver are engaged in the construction and sand surfacing of seven miles of highway southeast of Hugo on State Road No. 8. The bid price on this work was $17,222. It consists mostly of sand surfacing. In wet weather this road is very slippery and with the work now under way this will be eliminated.

One of the big jobs to be undertaken in El Paso county, is the regraveling of the highway between Colorado Springs and the Pueblo county line, according to W. H. Bartell. A large force of men will be put on the job early next month.

The opening of the Cameron Pass road in the spring will make one of the most scenic sections of North Park much more accessible to residents of Colorado and tourists who are seeking good fishing and accessible camping grounds. More than 12 miles of this mountain highway was completed last year by state, federal and county forces. The opening of this road will eliminate the necessity of motorists going into Wyoming in order to reach the North Park country.

The sum of $60,000 has been set aside for the construction of six miles of new highway, together with gravel surfacing, north of Delta on the Delta-Grand Junction highway. This will connect with a 7-mile federal aid project completed several years ago. This is located on the main north-south highway on the western slope.

A new coating of gravel will be placed on the road between Loveland and the Big Thompson canon this year, according to County Engineer James G. Edwards. The state and county will provide $8,000 to carry on this work. The city of Loveland also will share $1,000 of the expense.

Weld County Plans Big Road Program in Hudson District

Plans have been completed for the improvement of eighty miles of roadway in the southeast section of Weld county this summer, according to county road officials.

At a recent conference of the Weld county commissioners and officials of the Great Western Sugar Company and officials of the Henrylyn Irrigation district, it was agreed the county should spend $25,000 on roads in this district.

The program outlined at this conference includes: three miles of gravel surfacing to the beet dumps at Hudson; three miles of gravel surfacing at Roy; three miles of gravel surfacing at Krauss; three miles of gravel surfacing at Keenesburg; three miles of gravel surfacing at Sheehan; and three miles of gravel surfacing at Sloan.

In the carrying out of this program the officials of the Great Western Sugar company agreed to pay one fourth of the cost. It was also agreed that the county should grade sixty miles of new roadway in the Henrylyn district, which centers about Hudson.

It was announced that the officials of the Henrylyn irrigation district would spend $100,000 improving and widening the Henrylyn irrigation canal and laterals. This canal is eighty miles long on the main line, with 150 miles on the main laterals.

Work of widening the main canal is now under way east of Barr Lake. It was announced by Clarence P. Ireland, president of the district, that the canal will be made 30 feet wide for the entire length of the canal. A few weeks ago Mr. Ireland and Charles F. Tew, a heavy holder of Henrylyn irrigation bonds, purchased a Koehring No. 1 dragline to be used on this work. The operations are under the supervision of Henry Hartz, who was with the Henrylyn district when it was constructed several years ago. W. A. Herman is the operator of the machine.

Several months ago Mr. Tew closed a deal with a firm of French bankers for the purchase of $3,000,000 worth of the Henrylyn bonds. He is said to have paid $1,000,000 for the bonds. Under the original plan there were 90,000 acres in the Henrylyn district. As now financed there are 35,000 acres. This is said by soil experts to be the finest beet and potato district to be found anywhere in the state. The beets grown are said to show a higher sugar content than any other district in eastern Colorado, and some of the land shows an average of 18 to 20 tons of beets to the acre.

Last season there were 2,200 acres in the district planted to beets. The sugar company have announced contracts for 4,700 acres of beets in the district this year. During the past few weeks there has been considerable activity in the buying and selling of the lands in the district.

The desirability of the land for beet growing is said to have prompted the sugar company officials to make their offer of aid in the improvement of the roads in the district.

President Ireland has announced that the canal district plans a two-year improvement program. This includes the widening of the canal for its entire length. The laterals also will be improved. This work will be carried on at the rate of about four miles per month.

The Koehring dragline used on the project was purchased through the Wilson Machinery Co. of Denver. T. A. Boles, of the Koehring factory, came to Denver with the machine and supervised its installation on the job.

The Pledge of Carefulness

Nevada Highway News

Realizing my responsibility as an American citizen to secure the safety of others by careful conduct on the streets and highways; and,

Realizing that the accident and death toll of my Nation, state and city can best be reduced by thoughtfulness and carefulness,

I pledge myself to be considerate of the rights of others while on the streets and highways; to learn and observe traffic rules and regulations to the best of my ability; to co-operate in a campaign of carefulness, either as a pedestrian or as a driver of a vehicle, and I will, by precept and example, endeavor to assist others in making streets and highways safe.

The History of Road Building in Colorado

(Continued from page 5)

At this convention four road bills were drawn and presented to the legislature, the two most important ones being for a ten million bond issue and the turning over the Internal Improvement Fund to the Highway Commission. The ten million bond issue passed and was referred to a vote of the people, and was lost. The Highway appropriation bill was amended and after the Legislature had made 93 special pork barrel appropriations from the Internal Improvement Fund, the remainder of the fund was turned over to the Highway Commission under the well known Bill No. 200. Governor Shafroth vetoed the 93 special road bills, thus turning over the entire Internal Improvements fund to the Highway Commission. Immediately the validity of the bill was assailed and the bill was fought through the courts and finally pronounced invalid by the Supreme Court on a minor technicality. Thus again the State Highway Commission was left without funds and the money then amounting to over $800,000 was left in the banks. Bill No. 200 was then initiated and referred to a vote of the people and lost by only a few votes.

Meantime, the Good Roads Association of Colorado, having become a permanent association, took up and by its various committees succeeded in finally securing in 1913 adequate road legislation, thus ending a fight which was waged for eight years by a mere handful of good road enthusiasts.

This history would not be complete without some reference to the convict labor question, which while it did not originate in this state, was worked out by us to completeness which is now an object lesson and an example for all other states to follow. I don't suppose that it is generally known that T. J. Ehrhart was responsible for the first bill for convict labor on our roads. This bill was passed in 1899 through his exertions, for a convict built state road between Pueblo and Leadville. Considerable work was done on the road by the convicts from the State Penitentiary and from the Reformatory at Buena Vista.

In the same legislature Senator Edward Taylor got a similar bill through for a state road between Denver and Grand Junction. No work, I believe, was done under the Taylor Bill. In 1905 Senator Lewis from Fremont County got another bill through for convict work, and in 1907 Senator Barela got another one through for a convict built state road extending from the New Mexico state line south to the Wyoming state line north.

The Lewis Bill, however, with some amendments is the one under which our convicts are now successfully working. Work began under the Lewis Bill in the summer of 1905 on the famous "Sky Line" drive at Canon City.

Russell Motor Patrols Are Equipped with New Blade

An auxiliary shoulder blade for operation on their new motor patrol is announced by the Russell Grader Mfg. Co. of Minneapolis, Minn. One of these blades is now in operation on Weld county roads, following a demonstration made the latter part of February by the Herbert N. Steinbarger Co., Denver distributors.

The attachment consists of a blade 3 ft. 8 inches long, mechanically raised and lowered by a hand wheel operated from the rear platform. The auxiliary shoul der blade is said to be found only on the Russell motor patrols, and makes the Russell the most complete machine of its kind on the market.

The raising and lowering mechanism is a combination worm and worm gear with rack and pinion making possible any degree of adjustment desired. The outer end of the blade can be moved forward independent of the main blade, giving a good scouring angle. The auxiliary blade also swings with the main blade, thus allowing a wide range of adjustment. The wheels of the machine are well back from the edge of the shoulder and packs shoulder.

A slope of one to one can be made and any variation between that and a straight blade. The forward swing of the auxiliary blade compensates for the deep or shallow ditches. Machine can be used as a straight blade grader giving a total blade length of 11 ft. 8 inches. For maintaining on the crown of the road the machine can be used left handed and with the auxiliary blade swung forward it acts as a spreader, giving a quicker and better finish to the road. For spreading gravel on shoulders of concrete roads, the gravel is dumped by trucks along the shoulder. The Russell with the auxiliary blade is then used reversed to spread the gravel and shape the shoulder.

The machine purchased by Weld county is being used on the concrete road south of Greeley.

APT

He was wandering around aimlessly in a department store when the floor walker approached him.

"Looking for something?" he asked.

"Yes, my wife," replied the man.

"Would you mind describing her, please."

"Well, she's a sort of limousine, with heavy tread, and usually runs in low."—Penn. Punch Bowl.

How Larimer County Roads Are Maintained

(Continued from page 7)

ance and expense of all power machines. For this purpose special blanks are filled out by the drivers each day. This blank lists the following items: District, kind of work, miles covered, hours put in, truck number, tractor number, maintainer, grader, gallons of gasoline used, pints of oil used, pounds of grease used. repairs made, equipment and miscellaneous.

In addition, daily records are kept by the shop mechanics. In this way, accurate costs can be compiled which show exactly what each machine is costing and enabling proper distribution of the costs to the districts where work is being done.

The garage was built four years ago at a cost of $12,000. Prior to that time several smaller frame structures were utilized. Road equipment owned by the county inventories approximately $100,000. Included in it are five tractors of various sizes. All drags and similar equipment are constructed by the county.

The county has a levy of 3.2 mills for road purposes. This raises a little less than $180,000. Other sources of income increase the amount expended on maintenance each year to approximately $320,000.

The presence of two large streams, the Big Thompson and the Poudre rivers, has served to add considerably to maintenance problems, particularly during flood stages. Both these streams have proved rather cantankerous in years past and at times have left their banks and wrought havoc to roads, bridges and farm lands. To eliminate further trouble from this source, the county crews have "rebuilt" 20 miles of river bed during the last two years. This has been done by dredging the channels with two steam shovels.

Another matter which called for extra attention in the last two years was the discovery of oil. The section affected was principally dry land regions. Travel there had been light and there were few roads worthy of the name. Operations of the oil companies subjected the area to heavy traffic which had to be handled. Accordingly, the county has built and gravel surfaced 200 miles of road which now forms a net work throughout the oil district.

In addition to its maintenance work, the county constructed seven miles of the new Cameron pass road into North Park during the summer of 1924. This operation kept 125 men and 40 teams busy. The cost was $60,000. This road will be available to the public as soon as winter snows are removed. Edwards had charge of this construction work in addition to his other duties.

Larimer county has been under the road engineer system for 13 years. During all of that time Edwards has been in charge. He is a graduate of Colorado Agricultural College, holding a C.E. degree.

County commissioners who administer the road work are: Harris Akin, chairman; J. W. McMullen and F. E. Baxter.

Scientific Tests Upset Age-Old Theory that Male Drivers Are Safer than Female Drivers

From the standpoint of safety, the advent of millions of women drivers must be regarded as an encouraging factor for the reason that actual tests conducted under scientific observation have proven that women drivers are every inch as competent, if not more competent than men, according to a statement issued from the National Headquarters of the American Automobile Association today.

The A. A. A. statement, which is a direct challenge to the popular belief that a woman at the wheel of an automobile is less dependable than a man, is based on a series of tests recently carried out here by scientists and psychologists. So far as the tests have gone, the women have scored a higher average as regards those qualities essential in a good driver.

The tests themselves were conducted by Dr. F. A. Moss of the Institute of Government Research, who is one of the leading psychologists of the country. Dr. Moss was assisted by H. H. Allen, another expert, who is attached to the mechanical engineering deparment of the Bureau of Standards.

Check Up Yourself

Boneheadedness is the cause of most of the auto accidents. Are you in that class? —Fairmont Sentinel.

Combined Financial Statement State Highway Department, December 1st, 1925, to February 28th, 1926

BALANCES, DECEMBER 1, 1925		
Highway Fund	$1,374,062.55	
Federal Aid Bond Fund	373.59	
County Bond Fund	2,159.89	
Total Balances		$1,376,596.03

RECEIPTS		
Half Mill Levy	$ 75,383.74	
Gasoline Tax	197,204.04	
Internal Improvement	38,600.00	
Federal Aid	186,517.47	
County Aid	22,378.40	
Excess War Supplies	7,196.98	
Highway Bonds	500,000.00	
Total Receipts		1,027,280.63
Total Balances and Receipts		$2,403,876.66

DISBURSEMENTS		
Federal Aid Projects	$250,941.04	
State Projects	15,212.39	
Maintenance	64,894.09	
Property and Equipment	6,999.10	
Surveys	425.10	
General Office Administration	16,120.93	
Engineering Administration	16,166.10	
Road Signs and Traffic Census	3,200.76	
County Bond Projects	2,021.10	
Total Disbursements		$ 405,980.61

BALANCES, FEBRUARY 28, 1926		
Highway Fund	$1,580,105.12	
Federal Aid Bond Fund	417,652.14	
County Bond Fund	138.79	
Total Balances		1,997,896.05
Total Disbursements and Balances		$2,403,876.66

The Bulletin Board

Weld County Adopts 2-Ton Caterpillar As Standard

After exhaustive tests the Board of County Commissioners of Weld county have adopted the 2-ton Caterpillar tractor as a standard power unit for maintenance work. As a result of the decision of the commissioners, the county has purchased through the Clinton-Held Company, Denver, six 2-ton tractors and three "30" types. All of the machines have been delivered and are now in operation on state and county highways.

The larger sizes will be used in new construction work, which the county has planned for the coming summer. In one district the county plans to grade eighty miles of new road ways. Tractors and heavy graders will be used in this work.

In a hook-up with a Havelock maintainer, the 2-ton tractor made 38 miles on 13 gallons of gasoline and 2 quarts of oil.

From reports given out by the Clinton-Held company, Caterpillar tractors sold like the "well-known hot cakes" during the month of February. Nine were sold to Weld county; one "60" to Cheyenne county, Colo.; one "60" to El Paso county; one 5-ton to the city of Longmont; one "60" to Goshen county, Wyo.; one "60" to Carbon county, Wyo., and one 5-ton to the city of Rock Springs, Wyo.

A 10-ton snow plow was purchased through the Clinton-Held company by the Wyoming State Highway Department. Snow plows also were purchased by Boulder county, Morgan county, and the city of Boulder early in February.

Koehring Dragline No. 1 recently purchased by the Henrylyn Irrigation Co., now being used to widen canal east of Barr Lake.

Adams Leaning Wheel Graders Build Tough Hill Highways

An interesting problem in road construction on rugged hillside property was recently successfully solved by the Boulevard Land Company, on a 2,000-acre subdivision near Los Angeles, with Adams Leaning Wheel graders.

Describing the grading operations, the engineer for the company reported as follows:

"The grading was roughly divided into three general classes: blade work, steel shovel work and team work. Very often a combination of the three types of equipment was used on individual roads. We found the blade and tractor outfits a most economical equipment for hillside roads with a fairly uniform ground line where the dirt would be taken from one side of the road and moved to the other side.

"The first step in the construction of a steep hillside was the brushing out of the line. This was done by hand. A plow team was then put on and a furrow was plowed on the upper side of the road. This was followed by a V pulled by a team which left a trail about 3 feet wide. After this a Best 30 tractor and a small Adams Leaning Wheel grader were put on and the trail was gradually widened out by this method to a 5-foot width, after which a large tractor and blade carried the work to completion.

"We have run into some very interesting conditions where it is necessary to put our road machinery in places that I am sure were never contemplated by the manufacturer. One case in particular was of two roads on an extremely steep hillside; the upper road was completed first and the excess excavation was pushed down the hillside. Then we started construction of the lower road. The two blades were then brought from the upper road and extended beyond the right-of-way of the lower road and was standing on a 74 per cent grade. It was absolutely necessary, of course, to again handle this excavated material before the lower road could be built and to bring the slopes down to such a point that it would safely stand up, a rough rubble wall was first constructed on the upper side of the lower road. The two blades were then brought to the upper road and fastened with a cable to a tractor down below the lower road, the blades were hooked up in tandem so that one blade would act as a brake for the other blade going over the critical point. This experiment worked out beautifully. We estimated that each trip of the blades brought down at least 25 yards of material."

Showing new shoulder blade attachment on Russell Patrol Motor grader working on Weld county paved roads.

ECONOMY IN CONCRETE ROAD FINISHING

The Ord concrete road finisher, described in the literature of A. W. French & Co., 8440 Lowe Ave., Chicago, Ill., is a real saver of men, concrete, money, and worry. When once mounted on substantial steel forms, it performs its duties to the entire satisfaction of all concerned. Wilson Machinery Co., 1936 Market street, Denver distributors.

TRACTORS THAT BUILD TOWNS

The rise of any town or community is caused by good roads leading to it so that markets become available. The literature of the Caterpillar Tractor Co., San Leandro, Calif., tells all about the advantages of Caterpillar tractors in road construction and maintenance, and general contracting. Clinton & Held Co., 1501 Wazee street, Denver distributors.

DRILLS BUILT FOR ROCK JOBS

Drills that are built to handle the toughest rock jobs, and sharpeners, hoists and portable air-compressors which insure a healthy margin of profit on the job are described in the latest booklets of the Denver Rock Drill Mfg. Co., Denver, Colo.

BIDS OPENED

Proj.	Length	Type	Location	Low Bidder	Bid Price
213-D	3.877 mi.	Gravel Surfacing	West of Durango	Shields & Kyle	$47,692.00
258-B	2.727 mi.	Gravel Surfacing	S. W. of Gunnison	Lambie-Bate Constr. Co., Denver	65,374.00
298-A	1.779 mi.	Gravel Surfacing	Betw. Pagosa Springs and Wolf Creek Pass	John A. Duncan, Colorado Springs	22,465.50

PLANS SUBMITTED TO THE U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj.	Length	Type	Location
2-R Div. 3	0.554 mi.	R. R. Underpass & Approaches	Between Trinidad and Pueblo
2-R Div. 4	6.662 mi.	Paving	Between Trinidad and Pueblo
254-C	0.108 mi.	Steel Bridge and Approaches	Betw. Hot Sulphur Spgs. and Parshall
272-C	0.322 mi.	Concrete Paving	Between Pueblo and La Junta
287-B	7.565 mi.	Grading	Between Greeley and Fort Morgan
288-A Div. 1	3.373 mi.	Paving	Between Merino and Brush
288-B Div. 2	2.036 mi.	Paving and Grading	Between Merino and Brush
290-B	0.359 mi.	Concrete Paving	Between Las Animas and Lamar

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
79-A		Bridge	East of Simla
157-A	5. mi.	Graded	North of Buena Vista
242-A		Bridge	West of Grand Junction
258-D	5. mi.	Gravel Surfacing	Iola, west
271-A	3. mi.	Gravel Surfacing	Between Portland and Beaver
275-C	5. mi.	Concrete Paving	Between Husted and Monument
275-F	23. mi.	Graded	Between Castle Rock and Monument
281-D	6. mi.	Concrete Paving	Between Lafayette and Longmont
271-B	0.778 mi.	Gravel Surfacing and Paving	West of Portland

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1925

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj. No.
213-D	Durango, West	3.877 mi.	Gravel Surfacing	Shields & Kyle	$ 47,692.00	0	213-D
246-D	Avondale, east	5.418 mi.	Gravel Surfacing	Shields & Kyle	43,897.00	32	246-D
253-B	Brookston-Milner	3.064 mi.	Gravel Surfacing	Hinman Bros.	66,583.00	84	253-B
254-B	Hot Sulphur Springs-Parshall	1,087 mi.	Grading	Pioneer Const. Co.	61,071.00	94	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	0	258-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	59	258-C
261-A	Rifle-Grand Valley	16 mi.	Gravel Surfacing	Hinman Bros.	132,556.00	90	261-A
262-E	West of Walsenburg	3.527 mi.	Gravel Surfacing	Pople Bros.	24,979.00	64	262-E
262-F	LaVeta Pass-Russell	2 mi.	Crushed Rock Surf.	Central Const. Co.	22,017.00	61	262-F
266-B	Durango, south	3.181 mi.	Gravel Surf.	B. R. & J. L. Morrison	17,271.00	100	266-B
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.	22,857.00	51	267-B
271-D	West of Pueblo	0.137 mi.	Bridge	C. A. Switzer	11,869.00	36	271-D
275-A	Gann-Sedalia	7 mi.	Concrete Paving	Strange-Maguire Pav. Co.	314,174.00	48	275-A
275-B	Sedalia-Castle Rock	5.334 mi.	Concrete Paving	J. Fred Roberts & Sons	198,771.00	70	275-B
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	5	275-D
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	7	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	8	279-C
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	1	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	30	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	1	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	30	283-B
286-A	Nunn-Dover	0.549 mi.	R. R. Grade Crossing	Brown & Smith	35,162.00	70	286-A
286-B	Nunn, north	19 mi.	Grading	James Collier	87,249.00	76	286-B
287-A	Fort Morgan, west	20.62 mi.	Grading	H. C. Lallier Construction Co.	101,817.00	28	287-A
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee	102,627.00	79	288-A
294-A	Mancos-Cortez	2.9 mi.	Gravel Surfacing	Engler & Teyssier	23,273.00	51	294-A
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	0	298-A

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Vol. 5 April 1926 No. 4

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Colorado Highways
"BETTER ROADS"

VOLUME V. APRIL, 1926. NUMBER 4

Safety Conference Starts Accident Prevention Compaign

MEMBERS of the next Colorado general assembly will be asked to enact laws regulating vehicular traffic in this state to conform with a national co-ordinated program for accident prevention which will reduce the appalling accident rate, as a result of the National Conference on Street and Highway Safety, held in Washington the week of March 15.

The bills to be submitted to the next legislature will contain the recommendations of the national joint safety committee. This Conference is headed by Herbert Hoover, Secretary of Commerce. For two years representatives of various organizations have devoted considerable study to the prevention of accidents. Reports of these sub-committees were submitted to the recent Conference in Washington, and with certain modifications were adopted by the general body.

Attending the Conference from Colorado as accredited delegates were: Major L. D. Blauvelt, State Highway Engineer; W. G. Duvall, chairman of the State Highway Advisory, and Chief of Police, H. D. Harper of Colorado Springs.

Secretary Hoover proposed the Conference on Street and Highway Safety two years ago, because he felt that the condition on our streets and highways had brought about a national crisis, which together with the constantly increasing use of the automobile, had created a great national emergency requiring immediate action on a nation-wide scale.

He invited representatives of a score of organizations to meet with him in Washington. They included: the American Automobile Association, American Electric Railway Association, American Engineering Council, American Federation of Labor, American Mutual Alliance, American Railway Association, Chamber of Commerce of the United States, National Association of Taxicab Owners, National Automobile Chamber of Commerce, National Bureau of Casualty and Surety Underwriters and National Safety Council.

The representatives of these organizations were called in because they, by reason of their characteristics, were all vitally interested in the problem. This conference was attended by 550 delegates from all parts of the country.

Committees on Uniformity of Laws and Regulations, Enforcement, Causes of Accidents and Metropolitan Traffic Facilities, Public Relations and Statistics were organized. Probably no national movement has received more attention in the news and editorial columns. Until now the work of the Conference has been one of study more than anything else. But now a concerted movement is being made to secure the adoption conclusions and recommendations of the Conference by the various states and cities throughout the country.

The functions of the various committees which have been at work on the accident prevention problem follow:

Uniformity of Laws and Regulations—To study ways and means of accomplishing uniformity of motor vehicle legislation as between states and between cities of the same states;

Enforcement—To study present methods of law enforcement, their success or failure, and ways and means by which they can be improved;

Chimney Rock as seen from State Road No. 10 in Archuleta County.

Causes of Accidents—To study the fundamental and contributory causes of accidents as a ground work for measures for preventing them.

Metropolitan Traffic Facilities—To aid communities through the development and proper use of the problems of congestion, confusion in the traffic flow, disorder and accidents.

Statistics—To assemble statistics on accidents currently.

The full text of the final report of the Conference can be obtained by addressing the Secretary of the Conference on Street and Highway Safety, Department of Commerce, Washington, D. C.

In 1923, the last year for which official figures have been completed, there were 22,600 fatalities and 678,000 serious personal injury accidents on the streets and highways. Eighty-five per cent of these were incident to automobile traffic. During the past ten years automobile accidents have doubled, and the total rate in 1923 increased about 14 per cent over 1922. The economic loss is estimated to be not less than $600,000,000 annually.

The delegates attending the March Conference in Washington included representatives of railroads, street railways, motorbus and taxicab interests; insurance companies, automobile manufacturers, commercial and trade organizations, organized motorists, safety councils, the public, organized labor, women's clubs, parent-teacher associations, state and city highway commissioners and motor vehicle administrators, police chiefs and other traffic officials, enginers and educators.

Plans are being formulated for the appointment of a committee to co-operate with the National Conference in initiating a state-wide campaign in accident prevention in Colorado. This committee probably will be in charge of the bills which are to be introduced in the next general assembly.

Legislative principals adopted by the Washington Conference follow:

1. Laws should be so drafted as to include only those features which must be authorized by legislation, leaving the

(Continued on page 12)

Tractor Maintenance Patrols

By OLIVER T. REEDY
Senior Assistant Engineer, Colorado Highway Department

IT HAS been stated that the construction of roads is far behind the procession, compared to the manufacture of motor vehicles, for which the former are necessary in order to most economically operate the latter. Analogous to this is one that the practice and standards of highway maintenance have not kept pace with highway construction.

We are more advanced today in the science of highway building than we are in the science of highway maintenance. To a large extent this is probably due to the fact that while it took us considerable time to wake up to the proposition that there was an insistant demand for higher standard roads and more of them, it took a still longer time for us to realize that we could not make the initial expenditure of time, skill, and energy to the end that good roads might result,—and then stop. It has not been very long since we began to appreciate the fact that it takes time and money and eternal vigilance to keep our roads in repair, or rather to appreciate the fact that it was necessary to keep them in repair, and after they are once built that we have to work hard to keep them built, or we lose all that has been expended upon them. It seems strange that such should be the case, for we have the parallel of the railroads before us as an object lesson, and we could not lose sight of the necessity for repairs, maintenance and renewals on the iron highways.

But at last we did come to realize the importance of maintenance and began groping for the best methods. It was soon discovered that the old system of getting a few farmers together to work out their poll-taxes, when the farm work was light and it was convenient, without any regard for time or season, or crying need of the roads themselves, would not do at all. Maintenance must be systematic and continuous. The quicker repairs are made after deterioration begins, the more effectual and economical. Advantage must be taken of weather conditions to do the work at the time when these conditions will help rather than hinder. Maintenance must be a main issue instead of a side line.

And by the same token the fact was brought out that it was not sufficient to have a few crews of even full time maintenance men traveling about over the country, doing the work when they could get to it, covering several times the territory they could possibly keep in repair, but rather that small repair units should be given stretches of road as their special charge and responsibility, and only of such length that there was no question of the gang being able to keep the road in good condition. Of course, this condition cannot always be ideal. Probably none of our states have funds enough to keep all their roads in as good condition as they would like, and the standard of maintenance largely depends on the funds available.

And from these conditions was developen the patrol system,—which in essence is the division of the maintenance forces into small units, and assigning to each unit a definite length to be patrolled as its particular task and responsibility. These units are variously outfitted for their work, according to the equipment at hand, or obtainable, and according to the requirements of those portions of the roads, which, to carry out the metaphor suggested by the word "patrols," are their "beats."

In Colorado we have about 9,000 miles of highways in our State System. Of these some 300 miles are not maintained, being as yet, for the most part, only on paper. They extend across mountain passes where only saddle horses can travel at present. The remaining 8,700 miles are definitely maintained to greater or less extent, and of this mileage about 5,400 are regularly patrolled.

The actual work of maintenance in Colorado is done by the county forces, under the supervision of the Maintenance Division of the State Highway Department. The State is divided into seven districts, in each of which is resident an Assistant Superintendent of Maintenance, who reports to the Superintendent at headquarters, in Denver. Bills for the force account maintenance work by the counties are presented to the Assistant Superintendents, and upon approval, the counties are reimbursed for 50 per cent of the cost from the Highway Fund.

As I have mentioned, some 5,400 miles of our highways are maintenance patrolled. In Colorado about 60 per cent of the patrolled roads are cared for by motors or tractors, and the remaining 40 per cent by team patrols.

Snowmass Lake and Mountain in the Holy Cross National Forest.

Since our work is done by the county organizations, and since we have 62 counties which contain state highways within their borders, you will appreciate the possibility of a great variety in methods and results. The usual patrol gang consists of two men with a heavy truck from the store of surplus war material, and a blading machine, and generally some form of drag or maintainer. At first the gang usually carries a complement of small tools, such as shovels, picks, axes, hammer, saw, nails. There is no single piece of equipment that will do everything, but our superintendent thinks that the 8-foot blade comes nearer being the universal maintaining tool than any other. If a leveler or drag is used it should be on a long base at least 16 or 18 feet in order to properly cut off the humps and fill in the hollows.

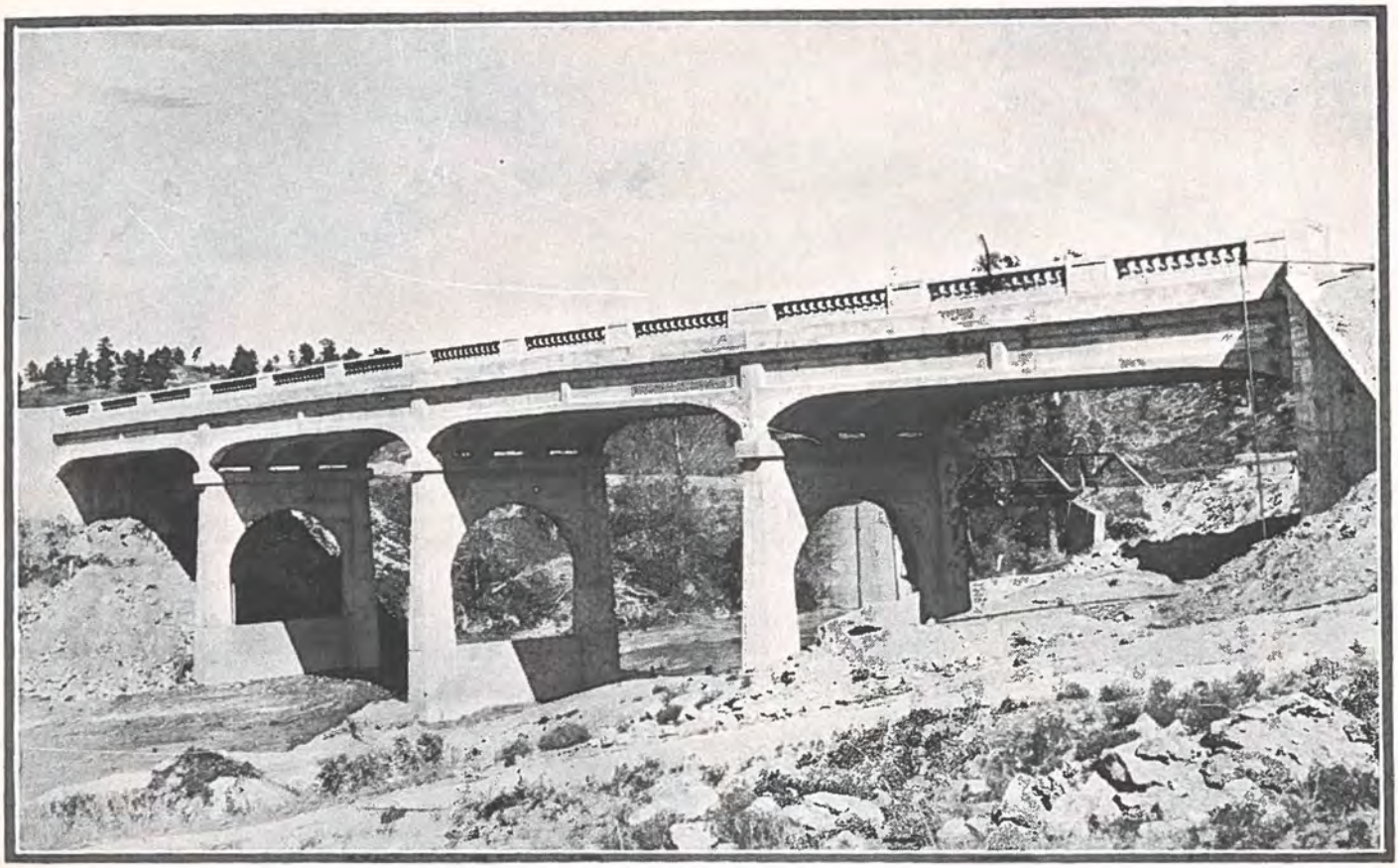
The truck has this advantage over the tractor, in that it can be used for hauling road metal when required in small quantities. If any great amount is needed it is better to bring it to the site by auxiliary equipment. Some counties do not have the tractor or truck on the patrol gang do anything but drag the road machinery, and use other equipment altogether in supplying material for road repair. To facilitate ease in changing motive power on the patrol, to hauling repair material, the tendency is to buy small trucks rather than large ones when new purchases are made.

In case of those counties using tractors for patrol work, the same tendency is noticed,—that is, toward small types. Boulder County has half a dozen Fordson tractor patrols, each with a couple of dump wagons fitted with tractor hitch, for hauling road material. This county has a large mileage of mountain roads and the small type of motor unit lends itself especially to that class of work.

The work of the motor patrol is similar to that of the team patrol,—leveling minor inequalities, sometimes light scarifying, cleaning ditches and cross-drainage structures, mowing weeds, repairing fences and culverts, etc. When a road gets badly corrugated or "wash-boarded," it is usual to have the scarifying and replacing of road metal done by a special gang with a heavier outfit than that supplied to the patrol.

But by far the most important adjunct to the patrol unit is the man. The most adequate and efficient machinery will not secure satisfactory results if the operators are not of the proper type and training, and I emphasize the type more than training. On the other hand, the personal equation of the patrolman will sometimes accomplish unbelievable results with inadequate or make-shift equipment.

Maintenance work at the best has a tendency to be monotonous. It does not have the lure and the attraction of construction. Construction work absorbs because of the creation of something new. Maintenance is drudgery, because, like washing the dishes or milking the cows, it has to be done over and over again. Once in a while there is encountered the



Imposing Concrete Bridge over Cottonwood Creek, north of Colorado Springs, which replaced old structure seen in the background.

housewife who sees poetry in washing the dishes, or the farm hand who gets genuine enjoyment in milking the cows, and that is the type, which, combined with teachability in the technique of road repair, makes a good patrol man.

The lack of qualifications as a road repair man is more often met with in motor patrols than in team patrols. It seems almost without exception that when a man once gets established in a seat with a steering wheel in his hands it absolutely unfits him for anything else in the maintenance work. The team patrol man has a plow and a scraper, a couple of picks and shovels, etc., in his wagon, and he has no difficulty in getting himself to use them when occasion requires. As I mentioned earlier in this talk, the motor patrol man is supplied with small tools *at first*, but all too often you will meet, on our highways, the patrol truck with an empty box. On Colorado highways, at any rate, 90 per cent of good maintenance consists in efficient drainage, and yet many times the blade will cover up the end of the drainage pipe, and the operator not think of getting off his machine to shovel the dirt away. This type may be a splendid motor vehicle or tractor mechanic, but he is not the type that ought to be handling a maintenance patrol.

The supervisor who is blessed with a fair proportion of good men to handle their patrol work is to be congratulated. Elbert Hubbard said that "Art is the expression of joy in one's work." The trouble with so many motor patrol men is that they are artists all right, but only with reference to a part of their work, and get no joy out of the operation as a whole. Not all of them, however. We have some real maintenance artists in Colorado. Men who get their exhilaration in the contemplation of a re-conditioned road, perfect in all its details, accomplished by their efforts, and not merely from a motor unit straightly steered.

The above address of Mr. Reedy was delivered before the First Annual Southwest Road Show and School, held in Wichita, Kansas, March 2, 3, 4, and 5. It was attended by several hundred road officials from the southwestern states. In making this talk on "tractor patrols," Mr. Reedy was "pinch-hitting" for Robt. H. Higgins, state superintendent of maintenance, who was unable to attend the school.

Dan. Straight, president of the Colorado Association of County Commissioners, replaced Maj. L. D. Blauvelt, state highway engineer, on the program. A. J. Held, member of the firm of Clinton & Held, Colorado distributors of "Caterpillar" tractors, also attended the show.

The show and school was staged under the auspices of the Wichita Thresher and Tractor Club, Inc., said to be the oldest and largest organization of its kind in existence, and will celebrate its 25th anniversary next December. The show was staged in Wichita's $2,000,000 Municipal Coliseum, which has over three acres of available space for exhibit purposes under one roof.

The Good Road School was held under the direct supervision of the Kansas State Highway Commissioner, the engineering department of the Kansas State Agricultural College at Manhattan, Kansas, with the co-operation of adjacent state and federal highway engineers.

The address of welcome was delivered by Hon. Henry J. Allen. Other speakers included: A. R. Losh, Bureau of Public Roads on "Economics of Highway Location"; Dave Coyler, Missouri Highway Dept., on "Operation Costs of Motor Vehicles"; W. T. Hole, Kansas Highway Dept., on "Team Patrols"; H. B. Lamson, automotive engineer, on "Correct Lubrication"; W. H. Rhodes, Oklahoma, "Maintenance Cost Keeping"; Dan C. Straight, Colorado, "Sand and Gravel Roads"; George Martin, the Barret Company, "Bituminous Macadam"; Fred Tarrant, Illinois, "Hard Surfaced Roads"; R. L. Cochran, Nebraska, "Light Surfacing"; J. M. Page, Oklahoma, on "Hard Surfaced Roads"; G. W. Mayo, Bureau of Public Roads, "Bridge and Culvert Construction"; A. A. Anderson, Portland Cement Association, and E. E. Duff, of the Brick Association.

Moving pictures illustrating various methods of heavy and light grading were shown by employes of the Bureau of Public Roads. The Bureau also had a large exhibit. Various tractor manufacturers and road building machinery concerns had exhibits which attracted considerable attention from the delegates, representing eleven states.

Announcement was made that the school and show would be held again at Wichita next year, date to be set later.

Motor Lariating Scenic Colorado

By WARREN E. BOYER

GOLDEN sunsets, in a manner, have replaced the hidden wealth of gleaming nuggets, the rush of prospectors in the overland schooner giving way to the seeker after scenic charm invitingly blended with historic romance over trails since fashioned into transcontinental motor highways. So that scenery and climate, today, are vital forces which keep the West headed toward prosperity, through newcomers who, having first visited western United States on a holiday jaunt, often times return and are numbered among its progressive citizens.

The lure of the open road to Colorado and across the gabled Rockies is the fascinating vista of open spaces holding limitless rolling prairie that once was the undisputed domain of buffalo and plains Indian. From the time the motorist crosses the eastern boundary of the state until he reaches the granite peaks of the Rockies, some 200 miles westward, he enjoys the novelty of also traveling skyward. The great plainsland stretching before him has been transformed into great tracts where agriculture, livestock-raising and fruit-growing thrive, and he realizes for the first time, perhaps, that Colorado is not all mountainous country.

The ascent to the snow-veiled peaks, balsam-scented vales and gold mines is gradual without apparent realization, after the first impression has come and gone. The rise is from about 3,500 feet elevation until Denver, Colorado Springs, Pueblo, Walsenburg, Trinidad, Boulder, Greeley, Loveland and Fort Collins—depending upon which auto route has been selected—have been put behind. Then easy grades of the lariat-flung trails of the Continental Divide beckon onward and upward, over passes that range in altitude all the way from 8,000 feet to nearly 12,000 feet above sea level.

These cities, lying in the shadow of the engaging barrier that bisects the state in an irregular peak line running north and south, are the sentineled communities of the vacation realm. Their outposts, scattered along the eastern state boundary, include Julesburg, Holyoke, Wray, Burlington, Cheyenne Wells, Eads, Lamar, and Springfield, in which the tented cities of the rubber-bound gas wagons and their transcontinental travelers, circling the camp fire's flickering glow, give reminder of the tepees of vanquished redskins!

Of the tented cities there was an array numbering 289 in 1925, affording temporary residence to a total of 709,127 motorists in camp grounds dotting the network of splendid highways that criss-cross the state. Cottage cities, hotels and scenic resorts radiate a welcome enticing the gasoline wayfarer to forsake the star-studded canopy and the sleeping bag for a night's rest indoors.

From everywhere come the nomads of the romance trails to the Colorado Rockies—over the Albert Pike, Colorado-to-Gulf, Dallas-Canadian-Denver, Denver-Joplin, Detroit-Lincoln-Denver, Glacier-to-Gulf, Golden Rod, Lincoln Cut-off, National Old Trails, Roosevelt-Midland Trail, National Park-to-Park, Old Santa Fe Trail, Peak-to-Peak, Pikes Peak Ocean-to-Ocean, Puget Sound-to-Gulf, Rainbow Route, Rocky Mountain, Union Pacific, Victory and Yellowstone motor ways. More than a dozen of these highways touch Denver, including the Victory Highway and Roosevelt-Midland Trail, transcontinental in length and wending their way from Denver through the system of Denver's mountain parks, Berthoud Pass, elevation 11,306 feet, and westward to Salt Lake City, by way of Steamboat Springs.

Denver's skyline of more than 150 miles of commanding peaks in the Rocky Mountains is probably unequalled in any other city. This magnificent view, including Pikes Peak, Mount Evans and Longs Peak, is possible from Cheesman Park, a point visited on the scheduled fifteen-mile city trip. It is at this spot that one experiences the delightful innovation of coining a golden sunset. But realism takes queer form in the twilight hour, shunning the golden coin of the realm.

Lingering rays of the sinking sun colorfire the gold-encrusted dome of the State Capitol off to the right, before night enfolds it in purple shadow. This cupola of glistening gold is in tribute to Russell, Jackson and other prospectors for the gleaming metal, who in pioneer days made of Denver the treasure chest of the nation. It's a moment of rapt wonder, watching reds, yellows and purples against the blue of azure skies, cloud-flecked, etching the sunset's gold, reflected in the precious ore which these same prospectors took from the bosom of the hills.

Rocky Mountain National Park, seventy-five miles north of Denver, is regarded by National Park Service officials as having the most spectacular scenic drive in any of the park areas covered in the 240-mile journey from Denver to Estes Park, twice crossing the Continental Divide and returning through the system of Denver Mountain Parks.

This circle trip skirts the Rockies north of Denver through farming country,

Scene on the Independence Highway near Twin Lakes, west of Leadville, on State Road No. 82.

strikes westward into the foothills at Loveland for Estes Park, the noon stop at eighty-five miles. Within an hour after resuming the trip the traveler has gone from summerland to near-Arctic climes on the hottest day. Perpetual snow banks, twenty feet deep in June, are encountered on Fall River Pass, elevation 11,797 feet, where wraps and overcoats are welcomed on the warmest day. The traveler has been whisked, almost before he realizes it, from the Atlantic to the Pacific watersheds, and the setting sun marks a memorable forty-mile afternoon ride from Estes Park to Grand Lake, making the day's total journey 125 miles.

The night is spent on the edge of the highest-in-the-world yachting waters, at an elevation of 8,369 feet. There is a spirited contest annually in August, on Grand Lake, for a Sir Thomas Lipton trophy. One is in the land of unusual things, being reminded that the automobile road just traversed contains the highest continuous scenic stretch in the world, two miles above sea level.

When the morning sun floods the hillsides the journey continues into mountain valley and across the Continental Divide; this time over Berthoud Pass, downward through Clear Creek Valley of romantic gold-mining days, through the group of mountain parks maintained by Denver, and back to the city of a thousand wonders, a giant loop drive of two days, but one that can be prolonged into a camping trip of a week, if desired. There is a choice of adequate hotel or camp accommodations.

Tales of Spanish conquest, Indian traditions and romances of pioneer tales cast their spell, pleasingly and alluringly, over the motor rambler. Bent on playing hide-and-seek with the cloud-brushed peaks, he rolls up a thousand miles without half trying, after having reached, say, Denver, before leaving the state, in part over paved roads.

The first lariated noose of this scenic roundup of the Rockies is the four-day drive over the Peak-to-Peak Highway, an unusual journey of about 300 miles experienced in the foothills before returning to Denver. It is difficult because during half of the trip one remains in the Rockies without emerging, enjoying the beauties of the higher altitudes, yet ever near enough to the centers of civilization to bring into even greater contrast the wild haunts of nature.

One traverses much the same route that prospectors did for gold in the early days, particularly that part of the trip from Estes Park southward to Manitou, at the foot of Pikes Peak, except that the pack mule and the camp fire have been replaced by good motor roads and inviting resort hotels. Ward, Nederland, Black Hawk, Central City and Idaho Springs, mining towns dormant for years, rise again in revivified energy out of the dust of a glorious past, weaving a romantic picture that is touched with such scenic highlights as great glaciers of the Boulder-Ward region, towering peaks and green-carpeted mountain vales.

The journey continues from Idaho Springs, where gold was first discovered in marketable quantities in Colorado, through Bergen Park in the Denver Mountain Park System to Evergreen, along Cub Creek to Conifer, Decker's, Ute Pass, Manitou, Colorado Springs, and back to Denver. Night hotel stops may be made at Estes Park, Idaho Springs and Manitou or Colorado Springs, while campers' tents may be pitched in a hundred inviting spots, in municipal areas or in the national forests.

From Denver there is the North and South State Highway to Cheyenne, a continuation of which leads to the eastern entrance of Yellowstone National Park, or from Cheyenne westward over the Lincoln Highway, although another way of reaching the land of geysers in Yellowstone is by turning off at Fort Collins, thereby reaching the southern entrance to the park.

The Royal Gorge—Colorado's most famous chasm, reached by a modern highway, 2,600 feet above the D. & R. G. W. railroad tracks and the Arkansas River.

When the overland motorist starts from the shores of the Atlantic for the blue waters of the Pacific he may not appreciate the fact that about one-sixth of the mileage, or more than 500 miles, is marked off in Colorado, should he choose the Pikes Peak Ocean-to-Ocean Highway. This transcontinental motor way, like many other roads in Colorado, has a surface grading of disintegrated granite for much of its distance, and the spin of 175 miles from the eastern Colorado line to Colorado Springs is an incentive to negotiate the commanding Rockies by way of Ute Pass.

Grand Junction, 330 miles away, near the western state boundary, is the goal for the time being, and may be reached by a diverse route, the southern course crossing the Continental Divide over Monarch Pass, 11,650 feet elevation, and the northern route by way of Tennessee Pass, elevation 10,276 feet, and Glenwood Springs.

Pikes Peak, with its many attractions, enthralls the visitor with its wide vistas, leaping waterfalls and windy caves. Here, as in other sections, are hundreds of miles of scenic drives reaching resort places of the Pike National Forest, where fishing, hiking, camping and motoring are inviting and enjoyable because of exceptional facilities.

Pursuing the 1,000-mile motor ramble, there is the lure of the gold mines at Cripple Creek, Florissant fossil regions and petrified forests, and Phantom Canyon connecting with the National Park-to-Park Highway that leads to Mesa Verde National Park, or the jaunt southward from Colorado Springs to Pueblo, principal entrance to the wild, rugged, cloud-kissed Sangre de Cristos embraced in the San Isabel National Forest. From Pueblo the Rainbow Route, following the Arkansas River and offering a glimpse of the titanic Royal Gorge, wends its way across the Rockies to Grand Junction, center of the fruit belt in western Colorado.

The San Isabel region has a number of the highest peaks in the state, marvelous sand dunes, deep lakes, unexplored caves and hundreds of miles of driveways and fishing streams. Squirrel Creek Canyon makes a delightful one-day trip for the camper, while the alpine journey to Mount Blanca, elevation 14,363 feet, and other circle drives out of Pueblo, Trinidad and Walsenburg, require from two to four days.

From Texas and the Southland come the endless lines of motor campers seeking the cool heights of the Colorado Rockies, pausing at Trinidad, and mayhap, leaving the main road northward at Walsenburg to cross La Veta Pass, 9,378 feet elevation, into the San Luis Valley. In Trinidad, too, is the National Old Trail route that leads the traveler toward the Pacific Coast, through New Mexico, Arizona and California.

Memories of Zebulon Montgomery Pike, for whom the historic peak is named, are recalled by the motorist as he sails down the slopes of La Veta Pass through a country that the intrepid soldier visited

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Good Roads Delegates Selected

One hundred and forty-six delegates have been named by Gov. Clarence J. Morley to attend the annual convention of the United States Good Roads Association to be held at Santa Monica, California, June 7 to 12.

This year's convention of the U. S. G. R. A. will be held in conjunction with the Bankhead Highway association. It is the fourteenth annual meeting of the former association. J. A. Rountree, of Birmingham, Ala., is president of the organization.

Delegates from every state in the Union will attend the meeting. Several foreign countries will be represented. A good roads show will be held in connection with the convention. Various exhibits of modern road building machinery are being arranged.

Those delegated by Gov. Morley to represent Colorado at the convention are:

Dr. J. Nicoll Vroom, Pres., Colorado Motor Club, Mack Bldg., Denver, Colo.
E. E. Sommers, Pres., Sommers Oil Co., 15th and Cleveland Place, Denver, Colo.
Gus Holmes, Pres., Park to Park Highway Association, 202 Chamber of Commerce Bldg., Denver, Colo.
Dean Gillespie, Pres., Rocky Mt. Motorists, E. 18th Ave. and Pearl St., Denver.
Wm. Dunning, Mgr., Metropole Hotel, Denver.
Frank H. Hoart, Mgr., Brown Palace Hotel, Denver.
Frank Dutton, Mgr., Albany Hotel, Denver.
James B. Smith, Pres., Shirley-Savoy Hotel Co., Denver.
Dr. Geo. P. Schumacker, Chairman Good Roads Com., Denver Rotary Club, Denver.
Allen S. Peck, U. S. District Forester, Denver.
Dr. F. L. Bartlett, Chairman Chamber of Commerce Com. on Highways, Denver.
L. D. Blauvelt, State Highway Engineer, State Office Building, Denver.
Tom Botterill, 1278 Broadway, Denver.
J. Fred Roberts, Tramway Bldg., Denver.
Louis E. Uland, 1822 E. 28th Ave., Denver.
J. E. Zahn, 305 Ideal Bldg., Denver.
W. K. Brown, Brown Mercantile Co., Denver.
Thos. H. Smith, 1520 Cleveland Place, Denver.
W. G. Schweigert, 300 E. Colfax Ave., Denver.
W. A. Viner, 324 South Broadway, Denver.
C. N. Stannard, Public Service Co., Denver.
B. W. Kelly, 1616 Blake St., Denver.
M. R. Welch, Member State Highway Advisory Board, Grand Junction, Colo.
B. B. Allen, Member State Highway Advisory Board, Silverton, Colo.
George L. L. Gann, Member State Highway Advisory Board, Pueblo, Colo.
W. G. Duval, Member State Highway Advisory Board, Golden, Colo.
Frank H. Blair, Member State Highway Advisory Board, Sterling, Colo.
S. R. Figgs, Chairman, Board of County Commissioners, Westminster, Colo.
E. Emperius, Chairman, Board of County Commissioners, Alamosa, Colo.
O. C. Hoffman, Chairman, Board of County Commissioners, Littleton, Colo.
Thos. A. Reavis, Chairman, Board of County Commissioners, Pagosa Springs, Colo.
Albert Peterson, Chairman, Board of County Commissioners, Stonington, Colo.
Stanley Lee, Chairman, Board of County Commissioners, Las Animas, Colo.
S. D. Buster, Chairman, Board of County Commissioners, Hygiene, Colo.
J. H. Habenicht, Chairman, Board of County Commissioners, Salida, Colo.
W. E. Williams, Chairman, Board of County Commissioners, Arapahoe, Colo.

Clear Creek Falls in Hinsdale County, as seen from State Road No. 149—near Lake City.

Geo. H. Curnow, Chairman, Board of County Commissioners, Idaho Springs, Colo.
A. Gonzales, Chairman, Board of County Commissioners, La Jara, Colo.
S. N. Smith, Chairman, Board of County Commissioners, San Luis, Colo.
Edd. Whitney, Chairman, Board of County Commissioners, Ordway, Colo.
E. W. Vickerman, Chairman, Board of County Commissioners, Westcliffe, Colo.
J. E. Beckley, Chairman, Board of County Commissioners, Delta, Colo.
Edw. Baer, Chairman, Board of County Commissioners, Rico, Colo.
J. T. Berry, Chairman, Board of County Commissioners, Castle Rock, Colo.
W. P. Mayer, Chairman, Board of County Commissioners, Eagle, Colo.
Al. Carnahan, Chairman, Board of County Commissioners, Elbert, Colo.
J. B. Fowler, Chairman, Board of County Commissioners, Colorado Springs, Colo.
S. G. Kelso, Chairman, Board of County Commissioners, Florence, Colo.
John T. Heuschkel, Chairman, Board of County Commissioners, Carbondale, Colo.
Neil McKay, Chairman, Board of County Commissioners, Central City, Colo.
W. A. Hurd, Chairman, Board of County Commissioners, Tabernash, Colo.
R. A. Little, Chairman, Board of County Commissioners, Parlin, Colo.
J. H. Hammond, Chairman, Board of County Commissioners, Lake City, Colo.
Geo. S. Neibuhr, Chairman, Board of County Commissioners, Walsenburg, Colo.
Frank R. Frazer, Chairman, Board of County Commissioners, Lindland, Colo.
F. D. Blackmer, Chairman, Board of County Commissioners, Evergreen, Colo.
J. O. Walker, Chairman, Board of County Commissioners, Eads, Colo.
G. W. Huntley, Chairman, Board of County Commissioners, Flagler, Colo.
Dan Colahan, Chairman, Board of County Commissioners, Leadville, Colo.
J. A. Bell, Chairman, Board of County Commissioners, Kline, Colo.
Harris Atkin, Chairman, Board of County Commissioners, Fort Collins, Colo.
J. J. J. Abercrombie, Chairman, Board of County Commissioners, Trinidad, Colo.
E. J. Kidder, Chairman, Board of County Commissioners, Limon, Colo.
S. A. Richardson, Chairman, Board of County Commissioners, Padroni, Colo.
Gus J. Johnson, Chairman, Board of County Commissioners, Grand Junction, Colo.
Wm. C. Sloan, Chairman, Board of County Commissioners, Creede, Colo.
Frank C. Barnes, Chairman, Board of County Commissioners, Lily, Colo.
Henry L. Crawford, Chairman, Board of County Commissioners, Cortez, Colo.
H. P. Steele, Chairman, Board of County Commissioners, Montrose, Colo.
O. B. Schooley, Chairman, Board of County Commissioners, Brush, Colo.
J. C. Vaughn, Chairman, Board of County Commissioners, Rocky Ford, Colo.
James H. Doran, Chairman, Board of County Commissioners, Ouray, Colo.
J. T. Witcher, Chairman, Board of County Commissioners, Howbert, Colo.
Roy E. Owens, Chairman, Board of County Commissioners, Holyoke, Colo.
J. R. Williams, Chairman, Board of County Commissioners, Aspen, Colo.
Ray McGrath, Chairman, Board of County Commissioners, Lamar, Colo.
W. L. Rees, Chairman, Board of County Commissioners, Pueblo, Colo.
Fred A. Nichols, Chairman, Board of County Commissioners, Rangley, Colo.
W. W. Wright, Chairman, Board of County Commissioners, Monte Vista, Colo.
A. H. Poppen, Chairman, Board of County Commissioners, Steamboat Springs, Colo.
W. E. Gardner, Chairman, Board of County Commissioners, Center, Colo.
Edw. Mayer, Chairman, Board of County Commissioners, Silverton, Colo.
A. T. Woods, Chairman, Board of County Commissioners, Placerville, Colo.
J. C. Wagner, Chairman Board of County Commissioners, Julesburg, Colo.
Andrew J. Lindstrom, Chairman, Board of County Commissioners, Dillon, Colo.

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Highway Research Developments

By CHARLES M. UPHAM
Director, Highway Research Board of the National Research Council

IN THE development of every science there are certain periods which stand out as epochs in the progress of that science. Just as the Bates road, the Pittsburg, Cal., and the Arlington tests were distinct developments in the science of highway construction, so the investigations financed by industrial concerns and conducted under the auspices of the Highway Research Board of the National Research Council mark a new era in highway research. There are now several of these studies under way, and in every case they are concerned with a moot problem in highway work which no state highway department or industrial organization would ordinarily conduct alone. The studies undertaken are national in scope and the Highway Research Board offers auspices under which such work may be carried on that is scientific in character and impartial in its findings. It is gratifying to note that the Board has secured the fullest co-operation from the state highway departments and other organizations engaged in highway research in the prosecution of the studies it now has under way.

The first such study to be undertaken by the Board was the "Economic Value of Steel Reinforcement in Concrete Roads." In connection with this work, careful field inspections have been made in every section of the country and information is now available which covers all conditions of service and is representative of every state in the Union. The final report on this investigation, which will be presented at the Fifth Annual Meeting of the Highway Research Board in December, will be the most complete study of reinforced concrete roads ever undertaken. It is expected that as a result of this investigation the matter of reinforcement in concrete roads will no longer be a moot question.

Another investigation being conducted under the auspices of the Highway Research Board, and one which will be of utmost importance to the public for many years to come, is "The Development of Earth Roads." Although the title of this investigation appears to limit its scope, the object is to determine some type of road surface that will be low in first cost and maintenance and suitable for light traffic. Thus far, only the preliminary stages of this investigation have been made, but these show what has been done and what is now under way in attempts to solve this problem. Field inspections will soon be undertaken which will indicate further research needed in order that methods may be evolved which will, at comparatively small expense, put our secondary roads in proper condition to serve as feeders to our main highways.

Much interest has been shown by engineers in the "Culvert Pipe Investigation." By means of correlation of existing studies and by field inspections, it is hoped to determine the proper basis of comparison for evaluating the life, usefulness and economic value of different types of culverts and small drainage structures in use. Engineers will then have scientific data on which to base their decisions, thus replacing the uncertainty which now exists in the design of this important part of the highway.

The state highway departments have responded splendidly to the study of the "Urban Highway Finance" problem also being conducted under the auspices of the Highway Research Board. This investigation is of great interest and importance to the general public as well as to engineers, as it treats of the relation of the city dweller to rural highway finance and of the financial aspects of widening of city streets and of city traffic control. In addition to the studies enumerated, the board has been requested to undertake similar researches looking toward the solution of certain problems in highway engineering.

The activities of the Highway Research Board have not been confined solely to the solution of technical problems. In addition, considerable work has been done in acquainting the public at large with the economic value of highway research and the desirability and need for giving support to this type of work—both from the local, as well as the national standpoint. This has been carried on through radio addresses and by newspaper and technical articles. Plans are under way for developing this work to an even greater extent, as it is felt that the promotion of highway research can only continue as it has public support which is based upon knowledge of the sound economic value of this work.

In addition to its contact men from the state highway departments, the Highway Research Board recently enlarged its sphere of activities by securing representatives from the universities and colleges

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View of south side of Douglas Pass, west of Grand Junction, showing switchbacks on new highway constructed by the State into the Uintah Basin.

Highway News and Notes on Work in Field

Six contracts were awarded by the State Highway Department on April 5, totaling over $500,000. These were the first contracts let under the 1926 budget. The projects include 6½ miles of asphalt pavement, north of Trinidad, connecting with the pavement laid last year; a half mile of concrete pavement east of Pueblo, the two contracts going to the Strange-Maguire Paving company, low bidders; 7½ miles of grading and drainage structures, east of Greeley, leading to Kersey, awarded to A. R. Mackey of Sterling; and a third of a mile of concrete pavement near Las Animas, awarded to F. C. Dreher, Denver contractor; a quarter of a mile concrete pavement, leading to the entrance to Fort Logan, bid in by J. L. Busselle, Colorado Springs, contractor, and a 324-ft. timber bridge, located five miles west of Deer Trail, on the Denver-Limon highway, awarded to A. R. Mackey.

With the completion of the new contract let to the Strange-Maguire company, there will be thirteen miles of asphalt pavement laid north of Trinidad. This is the longest stretch of asphalt pavement in the state. This pavement is laid with a concrete base on specifications approved after various tests made by the bureau of roads. The pavement is standard 18 ft. in width.

In constructing the ¼ mile of concrete pavement to the entrance at Fort Logan, the state will fulfill its obligation to the war department to construct a hard surfaced roadway from the intersection of the main North-South highway at Petersburg to the Fort, a pledge made by the state several years ago, at a time when the war department planned to abandon the Denver army post.

Plans have been submitted to the U. S. Bureau of Public roads for approval on six and a quarter miles of concrete pavement to be laid between Lafayette and Longmont. This pavement will fill the gap in the pavement between these two points, located on the North-South highway. The pavement will be laid on a new survey, which will eliminate the present turns in the road between these two points. Contracts for the projects will be awarded within a few weeks.

The bureau also has plans for a railroad underpass and approaches to be constructed about thirteen miles north of Trinidad, eliminating a dangerous grade crossing.

The state highway department is awaiting approval of plans by the U. S. Bureau of roads for the paving and grading of five miles of new roadway between Merino and Brush. This new road will eliminate the numerous right angle turns on the old road.

Engineers are rushing plans for twenty-three miles of grading between Castle Rock and Monument. This road will be located on a new right-of-way. It is planned to do this work this season. It will be one of the largest projects handled by the department. Over $500,000 is available in the 1926 budget for the completion of this work. As funds become available the road will be paved. However, it is planned to open the new road to traffic for a year before laying the concrete pavement.

A maintenance patrol has been placed on the Grand Mesa roadway by the Mesa county commissioners. Chris Jacques and Gregg Smith, two experienced road men, have been appointed to the work. They have established a camp at Upper Cottonwood crossing. The Grand Mesa is one of the chief tourist attractions of the western slope.

Archie Miller, foreman of the Wolf Creek Pass maintenance work, reports that the steam shovel is now cleaning out rock and dirt that caved into the road during the winter. When this work is finished the steam shovel will be moved to Laughlin hill, where $4,000 will be expended in eliminating the short, steep, sharp curves. Still later the shovel will be moved down to the Birch hill, where the road will be graded down to a lower level. The sum of $9,000 has been set aside in the 1926 budget for this work.

Rebuilding of eight miles of roadway west from Loveland into the Big Thompson canon has been started by Larimer county, under the direction of James G. Edwards, county engineer. The sum of $16,000 has been appropriated for the work.

John A. Duncan, Colorado Springs contractor, has started work on two miles of heavy grading east of Pagosa Springs. The new work will eliminate one of the worst grades on the highway between Alamosa and Durango. The contractors' bid for the work was $22,000.

The Arkansas Valley Association of County Commissioners held their regular quarterly meeting in the courthouse at Pueblo on March 15. J. C. Vaughn, Otero county commissioner, was chairman of the meeting attended by the following:

John C. Pepper, Bent county; S. S. Spillars, W. F. Tarlox, Ed Whitney and County Clerk B. D. Bradley, Crowley county; E. N. Vickerman, R. F. Billington, Custer county; S. G. Kelso, C. A. Sommerville, Frank Stienmier and County Clerk R. M. Booth, Fremont county; George S. Neibuhr, Huerfano county; J. O. Walker, John Lamberson, P. O. Meyer and County Clerk Ithal Jenkins, Kiowa county; J. J. Abercrombie and W. H. Green, Las Animas county; J. C. Vaughn, D. P. McClaren, County Clerk Carlos M. Wilson and County Attorney A. B. Wallis, Otero county; W. L. Rees, O. G. Smith, H. H. Wilson, County Attorney E. E. Weitzel, and County Clerk William Barber, Pueblo county.

Included in the representatives of implement dealers were: D. T. McKelvey, J. O. Clayton, E. G. Lund, George Mefley, H. W. Moore, Herbert S. Riley, John P. Sanderson, F. B. Eagan, John Fink, and A. Janes.

Commissioner Frank E. Baxter of Larimer county has announced that the Cameron Pass road will probably not be open to traffic before the latter part of August. Plans had been made for a big celebration to be held on July 4th, to mark the opening of the highway.

Highway construction and maintenance in 1926 will equal and possibly exceed the progress made in any other year, according to estimates from the various states compiled by the bureau of public roads of the United States Department of Agriculture. A total of $1,030,286,948 is available for the construction and maintenance of all rural roads. Fifty-eight per cent or $598,590,948 is to be available to the state highway departments, of which $461,515,400 is for construction, and $137,075,548 for maintenance. These funds will provide for the construction of 6,751 miles of asphalt, concrete and brick paving, 14,320 miles of sand-clay, gravel and macadam, and 8,145 miles of improved earth road. The states also plan to maintain 234,582 miles of road. The total available funds for Colorado is $3,285,370.65.

One million, three hundred eighty thousand, three hundred forty-eight dollars will be given Colorado for federal aid road work for the fiscal year of 1927, which begins July 1, 1926. This amount will be met with an equal amount from the state, the whole to be expended on public highways. The roads affected are the most important ones, communicating with the principal cities in the state.

During the past year, Colorado expended $2,925,446,32 on federal aid roads within her borders. The program resulted in improving the scenic routes for automobile travel to a notable extent. The sum of $590,198.05 was spent on the construction and maintenance of state roads in addition to the government aid system.

About 151 miles of federal aid highway was constructed, paved, graded or otherwise impoved in Colorado last year. Of this, approximately 5.4 miles was surfaced with sand clay; 89.9 miles graveled with crushed rock; 24.2 miles paved with concrete; 1.9 miles paved with asphalt, and 32.6 miles graded and drained.

Eighty miles of road were re-surfaced, and 150 miles graded. Twenty-seven bridges were placed during the year.

State Motor Vehicle Fees As Reported for Last Year

A total of $1,430,299.47 was collected by the state of Colorado in motor vehicle fees through the Secretary of State's office, according to a report issued by Richard L. Shaw, motor vehicle supervisor. This sum was collected from 221,513 passenger car owners, 18,584 truck owners and 3,156 automobile dealers.

In addition there were registered during the past year 82 trailers in various parts of the state; 50 truck dealers' tags; 1,862 motor cycles; 7,776 drivers' licenses; 29,126 re-issues, and 4,601 replacements of tags. The office also issued 20,079 permits.

The following is a list of the collections made in the various counties from passenger car and truck tags; together with the total amount collected in each county from motor vehicles:

Counties	Owners	Trucks	Fees Collected
Adams	5,202	713	$ 31,894.23
Alamosa	1,437	100	8,608.85
Arapahoe	5,081	415	31,257.97
Archuleta	341	27	1,742.48
Baca	1,350	238	8,963.04
Bent	1,743	106	9,997.79
Boulder	8,891	629	57,156.68
Chaffee	1,391	81	8,396.76
Cheyenne	955	119	6,092.01
Clear Creek	451	35	2,871.04
Conejos	1,041	95	5,935.70
Costilla	473	29	2,698.94
Crowley	1,298	116	7,832.83
Custer	418	61	2,651.70
Delta	2,864	295	18,562.51
Denver	65,214	4,714	451,172.17
Dolores	95	2	430.97
Douglas	1,015	81	6,234.16
Eagle	573	63	3,157.13
Elbert	1,520	107	8,973.43
El Paso	12,261	718	82,464.22
Fremont	4,645	374	28,932.66
Garfield	1,500	132	9,165.11
Gilpin	188	7	973.77
Grand	557	50	2,984.05
Gunnison	889	32	4,772.71
Hinsdale	63	7	363.54
Huerfano	2,976	183	17,600.82
Jackson	364	30	2,062.89
Jefferson	5,220	503	33,523.36
Kiowa	990	106	6,014.13
Kit Carson	2,432	401	16,850.90
Lake	613	8	3,383.15
La Plata	1,689	99	9,740.38
Larimer	9,414	630	59,423.60
Las Animas	5,738	370	35,745.21
Lincoln	1,824	224	11,396.63
Logan	4,467	455	28,298.13
Mesa	5,145	463	31,772.39
Mineral	122	18	752.74
Moffat	848	69	5,179.51
Montezuma	1,061	98	6,326.11
Montrose	2,032	228	12,584.28
Morgan	4,435	392	26,727.87
Otero	5,300	325	31,377.02
Ouray	287	9	1,552.83
Park	491	46	3,115.16
Phillips	1,943	309	13,087.99
Pitkin	248	1	1,160.47
Prowers	2,946	224	17,798.83
Pueblo	11,717	819	73,925.01
Rio Blanco	437	27	2,332.54
Rio Grande	1,895	299	12,668.26
Routt	1,526	68	7,641.85
Saguache	956	134	6,185.22
San Juan	105	8	612.03
San Miguel	457	37	2,765.64
Sedgwick	1,206	141	7,540.72
Summit	246	2	1,190.92
Teller	942	71	5,530.07
Washington	2,326	494	16,922.26
Weld	14,156	1,283	88,110.29
Yuma	3,495	664	25,113.81
Total	221,513	18,584	$1,430,299.47

Three Billions for Fun

Collier's Weekly

Begin now to save money for next summer's vacation. A line-up of government figures leads to a reasonable conclusion that the American people spend about $3,000,000,000 a year for vacations. That's perhaps five per cent of our national income—a nickel wind-up for a 95-cent run.

The country has liberated itself from the conviction that the secret of success is ten hours a day, six days a week, fifty-two weeks a year. The nation was chopped out of the woods and shoved over the mountains under that formula, but that was another day and another way.

The average vacation is two weeks, time enough to find out how a man three states away plants his corn, regulates motor traffic and catches fish; time enough to find out that there's a national mind, a national ambition and a national struggle. It is the best safeguard the country has against sectionalism and provincial content. It's cheap at $3,000,000,000.

When silenced is the singer,
And broken is the Lute;
Say not the song was nothing,
And vain the far pursuit.

When Love's brief rose has failed,
Say never: "It was naught,"
Just say that every moment
Was worth the joy it brought.

—Anon.

Safety Conference Starts Accident Prevention Campaign

(Continued from page 3)

great mass of detailed regulations to be prescribed by the responsible officials whose orders should, within the limits fixed by statute, have the effect of law.

2. Regulatory legislation should be for adoption by states and not by cities. The formulation of regulations covering local conditions, however, should be left to the municipal authorities.

3. There should be a separate state department or bureau to administer the state laws applying to motor vehicles. This department should examine drivers, grant and revoke licenses, regulate traffic on the highways, investigate accidents and enforce regulations regarding design, construction, inspection and maintenance of motor vehicles.

4. Each municipality should have an adequately manned traffic division in the police department with traffic safety a major function of such bureau. The city police should enforce the state law within the city limits, as well as all local traffic ordinances, rules and regulations.

5. States and municipalities should provide for adequate planning for traffic facilities and control.

6. Grade crossing elimination should be carried on under a proper program having due regard to costs and other methods of grade-crossing protection.

7. Special traffic courts, both city and rural, should be established.

8. No unlicensed person should be permitted to drive a motor vehicle and no person who is mentally, physically or morally unfit, who cannot read English or who is under sixteen years of age should be licensed.

9. Reckless driving and any other flagrant disregard of the rights of others should be vigorously and unceasingly prosecuted. The motor vehicle administrator should be authorized to refuse, suspend or revoke a license for cause, and there should be drastic and mandatory penalties for such offenses as driving while intoxicated or under the influence of drugs.

10. Regulation of speed should be directed primarily at reckless driving.

11. All states should adopt the principal of certification and registration of automobile titles.

12. It should be made obligatory by law for those concerned to report traffic accidents.

13. Education in safety and accident prevention should be incorporated in the curricula of all schools.

14. Adequate playgrounds should be provided in every community.

15. A well-ordered program for the improvement and maintenance of traffic facilities should be adopted.

Administrative and Regulatory principles adopted by the Conference include:

1. Street and highway construction must be considered in anticipation of a much greater volume and density of traffic than now exists, of larger and heavier units, and possibly of higher allowable speeds.

2. Improved highways should be wide enough for at least two lines of vehicles; should have safe grades and curves, with clear view ahead of at least 300 feet at all points on highways of primary importance; and should be provided with simple and uniform warning and direction signs.

3. Railroad grade crossings should be safeguarded in every reasonable way.

4. A uniform code of regulations should be established for braking ability, steering gear, lights, driver's vision, signals, width, loading, inspection and maintenance of the motor vehicle itself.

5. Uniform rules should be established for the conduct of drivers and pedestrians, including rules of the road, passing, parking and stopping, hand signals and the crossing of grade crossings.

6. Standardized plans should be developed for the selection and training of traffic control officers.

Monarch tractor officials announce the completion of their plans for removing the business from Watertown, Wis., to Springfield, Ill. Under these plans a new Illinois corporation has been organized with a capital stock of $600,000. The new concern will be known as Monarch Tractors Corporation. Officers are as follows: R. W. Gotshall, president; H. B. Baker, vice-president; R. C. Lanphier, vice-president, and Owsley Brown, secretary-treasurer. Production at the Springfield factory will start the first of May.

No. 2 of a Series

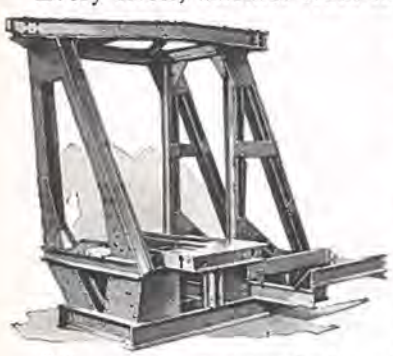
Paving Alameda Boulevard, connecting Los Angeles with the harbor at San Pedro, with Smith Paver—Ford Contracting Co., Los Angeles, contractors.

Not a Bolt in the Smith Frame—

A Non-Collapsible, Hot Riveted Single Unit

Made of heavy steel channels and plates, hot riveted throughout, there is not a bolt in the construction of the frame of the Smith 27-E. Paver. It is built entirely in one unit.

It has no superstructure or top frame with the weakness and danger of collapsing because of loosened bolts inherent to such members. Every stress, whether from loaded boom, skip, hoist, drum or traction, is taken by the entire single-unit frame.



The Smith frame is the lowest and narrowest of any paver, which allows the paver to be shipped or driven under extremely low clearances and operated in narrow alleys without delays for dismantling.

The rigid "single-unit" frame of the Smith Paver is but one of the reasons for its dependable operation and low maintenance. Other outstanding features are fully described in our new Catalog 409-F. Write for your copy today.

THE T. L. SMITH COMPANY
1052 32nd St., Milwaukee, Wis.

Distributor:
BURNITE MACHINERY CO.
518 Boston Bldg., Denver, Colo.

Smith Tilting Mixers are built in the following sizes: 2½, 3½, 5, 7, 10, 14, 21, 28, 40, 56 and 112 cu. ft. per batch; Smith Non-Tilting Mixers: 7, 14, 21 and 28 cu. ft. per batch; Smith Paving Mixers: 27-E.

SMITH 27-E SIX BAG PAVER

A Full Revolving Back-Filler

Buckeye NEW in big performance and general utility

Buckeye saw the need for a Back-Filler with greater performance ability than ever before conceived—and filled it with this new Utility Back-Filler.

The entire platform turns in a full circle. No "jockeying" to get in position. *Swing* into line in a fraction of a second.

The boom has a quick adjustment from 29 to 33-ft. lengths—a short range adjustment from 21 to 25 ft. Such variation in reach meets every possible condition.

The travel is on full-length Alligator Traction. Over soft mud without slipping; over paved streets without damage to their surface.

The power plant is the kind that has plenty of *capacity*—a heavy-duty gasoline unit of the finest design and manufacture.

Machine-cut gears and precise assembly that guarantees long service.

From this bare description you can easily appreciate that the new Utility Back-Filler will outperform the ordinary back-filler any day and every day.

Add the usefulness of this machine as a dragline or light crane, and you will see why contractors who have viewed the Utility Back-Filler say it's the greatest development of the year. As a crane, it may be equipped with a clamshell for handling and digging.

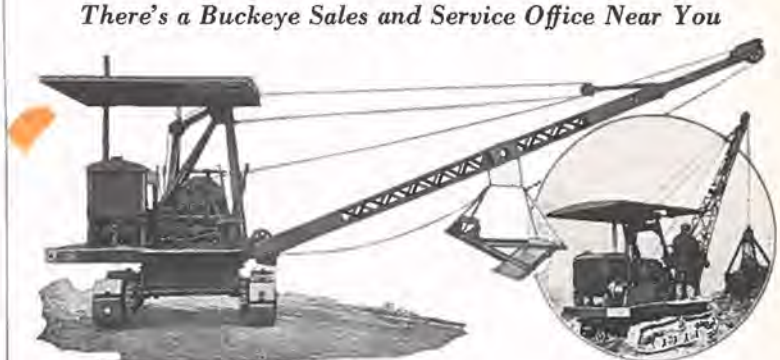
Ask for illustrative and descriptive bulletin.

The Buckeye Traction Ditcher Company

FINDLAY, OHIO

Manufacturers of Trench Excavators (both Wheel and Chain-and-Bucket Types), Pipe-Line Trench Excavators, Tile and Open Ditchers, Back-Fillers, Pipe-Screwing Machines, Curb Diggers and Clay Diggers.

There's a Buckeye Sales and Service Office Near You



BUILDERS OF TRENCH EXCAVATORS FOR OVER 30 YEARS

Highway Research Developments

(Continued from page 9)

throughout the United States. This makes possible not only a closer co-operation between the Board and the universities conducting highway research, but also serves as a means of bringing to educational authorities and to engineering students information concerning the work being carried on throughout the country on highway research. Since these representatives have been named, there has been much evidence of a desire on the part of the universities to assist in the development of the highway research program and many requests have been received for information and guidance as to how they may co-operate in this important work.

Another significant development has been the extension of contacts with the Latin American countries which are now developing programs of highway construction. The Highway Research Board has felt that by giving to these organizations the benefits of accumulated highway research not only would this be of advantage to the cause of research in the United States, but it would serve to develop more fully our international relationships.

A recent development, which has been getting a splendid reception from highway research workers, is the issuance by the Board of a bulletin twice a month known as *Highway Research News*. The object of this publication has been to weld together highway research personnel throughout the country; acquaint research workers with what is going on in their particular field of work; encourage them to avail themselves of the services of the Highway Research Board in connection with their studies; and incidentally to acquaint the public at large of the economic value and significance of highway research.

A policy which the Highway Research Board hopes to put into full effect during the coming year is the employment of technical assistants to give full time to the work of research committees. It is well realized that committee members are very busy men and cannot devote the time necessary for the detail committee work.

A very enthusiastic reception has been accorded the Summary Bulletin which was issued by the Highway Research Board, giving in concise form the principal facts of highway research which may be practically applied as presented at the last two annual meetings of the board. It has been found necessary to reprint the first issue of this bulletin, a total of 8,000 copies having been distributed. This would indicate that the Summary Bulletin is an outstanding contribution in the presentation of the findings of highway research to all persons engaged in this field.

During the past year, considerable increase has been noted in the number of requests for information received by the Board concerning many matters of highway research, thus indicating that the information service conducted as a part of the work of the Board is really establishing this organization as a national clearing house for all matters pertaining to highway work.

Another important development during the past year has been the summarization of highway research progress that is being made by the United States Bureau of Public Roads, and which is appearing in *Public Roads*, the research journal issued by that organization. These studies bring together the results of highway research in particular fields, thus giving the highway research worker a perspective of what has been done in that field and serving as an incentive for the continuation of further studies. Mention should also be made of the research done by the bureau in connection with highway construction operations, a subject of vital importance, and one which has long been neglected. These studies have revealed the reasons why production in highway building so commonly fails to reach levels theoretically possible.

The contacts of the Highway Research Board with the state highway departments show that they recognize that the results of highway research are of national rather than of local importance. The departments have evidenced a desire to avoid duplication of effort and a willingness to place into immediate practice research results from other states that may be adapted to their local conditions. The investigations by the Highway Research Board have brought to light considerable material which would not otherwise have received the wide currency that will be given to it as a result of being included in one of these national studies.

Motor Lariating Scenic Colorado

(Continued from page 7)

more than a century ago. After circling back and forth over the shoulders of the mountains crested in Wolf Creek Pass, elevation 10,850 feet, one comes into the mystic land of forgotten peoples, as Pagosa Springs invites a stopover in the journey through picturesque Colorado.

Pagosa Springs is 350 miles from Denver by way of Salida and Poncha Pass, elevation 8,945 feet, over the National Park-to-Park Highway. It is in a land where excavations are being made to trace the ancestry of mankind back to the pithouse dwellers of 2,500 years ago. The San Juan Valley slopes gradually from Pagosa Springs to Durango, 460 miles from Denver, the drive being through a scenic region of enchantment, situated as it is, for the most part, in the San Juan National Forest.

Prehistoric home of Cliff Dwellers is Mesa Verde National Park, in the southwestern corner of the state, sixty-five miles beyond Durango and approximately 525 miles from Denver, bringing to an end the 1,000-mile major drive through the heart of the Colorado Rockies. Tennessee, Monarch, La Veta, Poncha and Wolf Creek passes, it will be remembered, are the skyland lookouts in crossing the Great Divide, while the Ouray-Silverton entrance to the national park from Grand Junction southward through Durango, is famous for its thrills over the 250 miles of inspiring driveway.

Traces of the ruins of Cliff Dwellers in the Mesa Verde were discovered as early as 1874, and it has been 700 years since the sandstone cave Indians dwelt there. There is a camp ground on the rim of Spruce Canyon, near the park headquarters, and at night camp fire talks on the past inhabitants and their life are given by the Park Superintendent and the Park Rangers.

Here, today, the curling smoke from camp fire rises to the blue, linking, in a sense, humanity's chain of romance, after many centuries. Campers include some who possibly ten days before pitched their tents in Overland Park Municipal Camp Ground, in Denver, as a part of the season's total of more than 75,000 motorists, and who, attracted to the threshold of a forgotten Yesterday, are happy in the knowledge of visualizing where America's early inhabitants held sway against beasts and warring foes.

In retrospect, too, as the motor camper dreams of wondrous scenic delights that have crowded his vision for days, come phantom shapes from the camp fire's flickering glow, of the fading cowboy with his woolly chaps, the Indian chanting his weird incantations to the sun, and the prospector of the covered wagon, all of whom have left the imprint of civilization's advance on the horizon of the West. But phantom shapes gradually give way to the throngs of modern vacationists, who, unlike the pioneers that came to take wealth out of the Rockies, have brought returns to Colorado aggregating $52,500,000 in a year, according to reports compiled by the Denver Tourist Bureau, and of which an appreciable proportion is credited to the motorists whose ranks he is swelling!

Our Cover Picture

A scene showing the highway along the White River, near Meeker, is pictured on the front cover of the April issue of Colorado Highways. This is one of the most beautiful sections of the state, and is sometimes referred to as the "sportsman's paradise," because of the many beautiful trout streams to be found in the region. This view was taken from State Road No. 13, running from Craig to Meeker. The latter town is one of the oldest in the state.

Where Cement Goes

Estimates published by the U. S. Geological Survey indicate that 24 per cent of the consumption of cement—last year it was 146,000,000 bbls.—is used in paving and highways, and about 7 per cent in sidewalks and private driveways; while another 25 per cent is used in public and commercial buildings, and nearly 21 per cent goes for miscellaneous farm purposes.

The remaining portion is employed in small individual percentages for dwellings; concrete pipe for sewers, irrigation, etc.; by railways, for bridges, dams, and for miscellaneous purposes. In all, concrete of which portland cement is the vital ingredient, has hundreds of recognized uses.

The Bulletin Board

Announcements

The Clinton & Held Co. announce that they have been appointed intermountain distributors for Wiard's "2 in 1" Road and Contractor's plow. The advent of high-powered engines, road rollers, trucks, tractors, etc., made it necessary for the contractor and road builder to have a "super plow." Wiard's is said to be such a plow. It is manufactured by the Wiard Plow Co. of Batavia, N. Y.

Announcement is made by T. B. Burnite, president of the Burnite Machinery Co., Boston Building, Denver, that his concern is now representing the Smith Engineering Works, manufacturers of crushers, screens and gravel machinery.

The Symons line of column clamps and adjustable shores for building contractors is now distributed in the Rocky Mountain territory by the Herbert N. Steinbarger Co., 1640 Wazee street.

Two new selling agencies have been appointed by the T. L. Smith Company, manufacturers of concrete mixers. They are: I. E. Schilling Co., of Miami, Fla., to handle the entire Smith line, from the 2½-S Tilter to the Smith 112-S, the world's largest mixer (4 cu. yd. batch capacity); and the O. B. Avery Company, of St. Louis, as exclusive distributors of the Smith 27-E Paver in the St. Louis territory.

A new catalog on the Boss concrete mixer line is ready for distribution according to word given out by the Hendrie & Bolthoff Mfg. & Supply Co., Denver distributors. The Boss mixer is manufactured by the American Cement Machine Co., of Keokuk, Iowa. It includes every size from the smaller trailer Jit mixer to heavy duty pavers. This concern also makes a special designed alley and street paver, as well as contractors hoists.

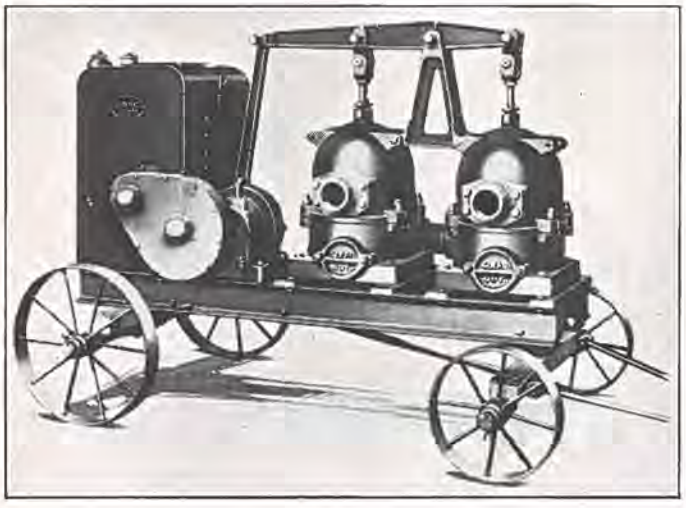
P. A. Koehring, general manager and secretary-treasurer of the Koehring Company, manufacturers of Koehring cranes and excavators and concrete mixers, was recently unanimously elected president of the Milwaukee Association of Commerce. The Koehring Company is one of the largest concerns manufacturing excavators and high-grade concrete mixers in the world.

A new excavating and loading machine designed for use in narrow streets and alleys is announced by the Western Wheeled Scraper Co., of Aurora, Ill. Literature on the machine is now available through the Wilson Machinery Co., 1936 Market street, Denver distributors. This machine created considerable interest among contractors at the Chicago road show.

The Republic Truck Mfg. Co. are marketing a new truck designed for contracting work, which was shown for the first time at the Chicago Road Show. This truck is of short wheelbase and is equipped with various size dump bodies. The Republic Truck Sales Co., 2020 Lawrence St., are Denver agents.

The Spears-Wells Machinery Company of Oakland announce the sale of fifty "Big 8" Graders to the California Highway Department, to be used for maintenance. The graders are powered by the International Tractor. The outfits, requiring but one man for their operation, are being employed in the maintenance of several hundred miles of dirt and gravel-surfaced roads taken over by the state from the counties, according to Noel Graves, sales manager.

J. B. Stark has been appointed assistant general manager of the R. Hardesty Mfg. Co., Denver culvert manufacturers. Formerly, Mr. Stark was sales manager of the firm. C. V. Beales succeeds Mr. Stark as general sales manager. R. Hardesty is president and general manager of the concern, which is the world's largest manufacturer of irrigation supplies.



A new type Novo diaphragm pumping outfit, trailer mounted, that has just been announced by the Novo Engine Company

Useful Catalogs

A NEW TRUCK AND TRAILER CRANE

The Harnischfeger Corp., formerly Pawling & Harnischfeger Co., Milwaukee, Wis., has announced a new Model-203A crane for either truck or trailer mounting. A complete bulletin covering this unit may be secured from Paul Fitzgerald, U. S. National Bank Building, Denver distributor.

A NEW ROAD MAINTAINER BY ADAMS

Bulletins are now available on a new road maintainer shown for the first time at the Chicago Road Show by J. D. Adams & Co., Indianapolis, Ind. This maintainer is constructed for use with either crawler type tractors or with Fordsons. Elton T. Fair Company, 1611 Wazee street, Denver distributor. Bulletins on the new Adams Leaning Wheel Graders also may be had for the asking.

10,000 FINISHED CUTTING EDGES FOR GRADERS

The Shunk Mfg. Co., Bucyrus, Ohio, furnish cutting edges, moldboards, drag blades or scarifier teeth for any grader or drag on the market today, and have a supply of 10,000 finished blades in stock so that shipments can be made promptly no matter what type of equipment the customer has. Shunk blades are made of carbon plow steel, with cutting edges heat treated.

"TRAFFIC LINE" MARKING MACHINE

A rapid "traffic line" marking machine is described in literature of the Tennessee Tool Works, Knoxville, Tenn. The machine operates with a pressure spray and is designed for painting of safety, traffic and zone lines; also athletic fields, industrial plants, etc. Burnite Machinery Co., 518 Boston Building, Denver distributor.

GENERAL ROAD BUILDERS CATALOG

General Catalog No. 60, issued by the Western Wheeled Scraper Co., Aurora, Ill., is devoted to earth and stone-handling machinery and is particularly well illustrated. Wilson Machinery Co., 1936 Market street, Denver distributor.

NEW AUSTIN-WESTERN CATALOG

A beautifully illustrated catalog of the entire line of road construction and maintenance equipment manufactured by the Austin-Western Road Machinery Co., 400 North Michigan Ave., Chicago, is now available to contractors and road officials. The catalog is well illustrated and replete with valuable facts on this sturdy line of equipment, which it is claimed will outwork and outwear competing equipment. Wilson Machinery Co., 1936 Market street, Denver distributor.

RUSSELL EQUIPMENT CATALOG

A new catalog describing the large line of road construction equipment manufactured by the Russell Grader Mfg. Co., Minneapolis, Minn., is now being distributed by the Herbert N. Steinbarger Co., 1647 Wazee street, Denver distributors. The Russell line is one of the most complete on the market. It bears a good name among road builders the world over.

Good Roads Delegates Selected

(Continued from page 8)

J. B. Wild, Chairman, Board of County Commissioners, Cripple Creek, Colo.
J. R. Shirley, Chairman, Board of County Commissioners, Harrisburg, Colo.
Dan Straight, Chairman, Board of County Commissioners, Greeley, Colo.
H. H. Brand, Chairman, Board of County Commissioners, Yuma, Colo.
Spencer Penrose, Colorado Springs, Colo.
Charles A. Schlotter, Mgr. Antlers Hotel, Colorado Springs, Colo.
H. E. Green, Greeley, Colo.
W. S. Hill, Fort Collins, Colo.
D. B. Wright, Grand Junction, Colo.
Henry Catlin, Montrose, Colo.
L. Wirt Markham, Lamar, Colo.
Dr. C. P. Rex, Alamosa, Colo.
John F. Mays, Colorado Springs, Colo.
Edward Clary, Trinidad, Colo.
Harry N. Burhans, Executive Secretary, Denver Tourist Bureau, Denver, Colo.
Peter Seerie, Member, State Highway Advisory Board, Denver, Colo.
Charles B. Lansing, Member, State Highway Advisory Board, Colorado Springs, Colo.
E. C. Van Diest, Colorado Springs, Colo.
M. A. Ege, Colorado Springs, Colo.
William I. Howbert, Colorado Springs, Colo.
L. A. Whitelaw, Eads, Colorado.
Ab H. Romans, District Attorney, Loveland, Colo.
J. Arthur Phelps, District Attorney, Pueblo, Colo.
John A. Crook, Member, U. S. Good Roads Association, Denver.
William Williams, Golden, Colo.
Alva A. Swain, E. & C. Bldg., Denver.
Ollie E. Bannister, Grand Junction, Colo.
Thos. C. Coltman, La Junta, Colo.
Richard C. Callen, Rifle, Colo.
Alfred Durfee, Canon City, Colo.
William R. Eaton, First National Bank Bldg., Denver.
Golding Fairfield, 1546 Glenarm St., Denver.
Matthew McCaslin, Longmont, Colo.
J. E. Moore, Delta, Colo.
Grant Sanders, Durango, Colo.
N. C. Warren, Fort Collins, Colo.
Alex. R. Young, 1951 Lincoln St., Denver.
Charles A. Austin, Crook, Colo.
Davis S. Boyd, Ouray, Colo.
J. C. Browder, La Junta, Colo.
F. A. Bullock, Brighton, Colo.
H. S. Bushnell, Georgetown, Colo.
Sterling Cawlfield, North Avondale, Pueblo County, Colo.
Charles H. Cowan, Gunnison, Colo.
E. M. Ellis, Wray, Colo.
Richard Evans, Coal Creek, Colo.
Fred W. Flebbe, Kremmling, Colo.
Wm. T. Lambert, Jr., Sedalia, Colo.
H. M. Minor, Rocky Ford, Colo.
Frank M. Mobley, Colorado Springs, Colo.
Henry C. Nelson, Cheyenne Wells, Colo.
Mrs. Louise M. Patterson, Pueblo, Colo.
Henry J. Price, Grand Junction, Colo.
Holt S. Smith, Minturn, Colo.
F. A. Temple, Wiley, Colo.
H. D. Tobey, Boulder, Colo.
W. B. Van Atta, Telluride, Colo.
Josiah Watson, Silverton, Colo.
Ralph Wienbroeer, Trinidad, Colo.
Robert Young, Walsenburg, Colo.
Allan F. Wright, 1268 Acoma St., Denver.

Making Stronger Concrete

Water is an important ingredient in concrete. Experiments just completed at the Bureau of Standards, Department of Commerce, show that this is just as true with the new quick-hardening high-alumina cements as with portland cement.

The bureau finds it important to select sand and gravel in proper size gradation since less water is required to make the concrete workable and a greater strength results. The old rule, to use the least amount of water which will make the concrete workable, is found to hold with the new high-alumina cement. In one experiment a decrease of 1 per cent of water was found to increase the strength as much as 26 per cent.

The research is part of the program of the materials laboratories of the bureau upon the useful properties of materials.

A gravel concrete made with the new quick-hardening high-alumina cement generally develops as high a strength in 24 hours as a similarly proportioned portland cement concrete would develop in 28 days. This quick-hardening feature is notably valuable where ground rentals are high, equipment elaborate, or construction difficult, or wherever delays in waiting for the concrete to attain its strength would be costly.

Many of Arizona's most scenic highways were made by Apache Indian labor. The Apache is not a government charge, having left the reservation nearly 20 years ago.

PROJECTS BEING ADVERTISED FOR BIDS

Proj. No.	Length	Type	Location	Low Bidder	Bid Price
2-R_4	6.66 mi.	Bituminous Conc. Pav't	North of Trinidad	Strange-Maguire Pav. Co.	$331,632.00
272-C	0.322 mi.	Cem. Conc. Pavement	Pueblo	Strange-Maguire Pav. Co.	11,266.00
287-B	7.565 mi.	Grading	East of Greeley	A. R. Mackey	127,303.00
290-B } 169-R }	0.35 mi.	Cem. Conc. Pav't	Las Animas	F. C. Dreher	25,336.00
569	324-ft.	Bridge Timber Br. & App's	5 Miles West of Deer Trail	A. R. Mackey	14,522.00
904-B	0.26 mi.	Cem. Conc. Pav't	North of Fort Logan	J. L. Busselle	8,109.00

PLANS SUBMITTED TO THE U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj. No.	Length	Type	Location
2-R_3	0.554 mi.	R. R. Underpass and Approach	Between Trinidad and Pueblo
251-B	0.180 mi.	Concrete Pavement	Between Denver and Boulder
254-C	0.108 mi.	Steel Bridge and Approaches	Between Hot Sulphur Spgs. and Parshall
258-B	2.727 mi.	Grading and Gravel Surfacing	Between Gunnison and Sapinero
275-C	4.795 mi.	Concrete Pavement	Between Husted and Monument
281-D	5.587 mi.	Concrete Pavement	Between Lafayette and Longmont
281-E	0.812 mi.	Concrete Pavement	Between Lafayette and Longmont
288-A_1 (Div. 1)	3.373 mi.	Paving	Between Merino and Brush
288-B, (Div. 2)	2.036 mi.	Paving and Grading	Between Merino and Brush

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
79-A		Bridge	East of Simla
157-A	5 mi.	Graded	North of Buena Vista
242-A		Bridge	West of Grand Junction
258-D	5 mi.	Gravel Surfacing	Iola, West
271-A	3 mi.	Gravel Surfacing	Between Portland and Beaver
271-F	0.778 mi.	Gravel Surfacing and Paving	West of Portland
275-F	23 mi.	Graded	Between Castle Rock and Monument
531-B		Timber Bridge	Between Eads and Prowers Co. Line

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1925

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj. No.
213-D	Durango, west	3.877 mi.	Gravel Surfacing	Shields & Kyle	$ 47,692.00	1	213-D
246-D	Avondale, east	5.418 mi.	Gravel Surfacing	Shields & Kyle	43,897.00	65	246-D
253-B	Brookston-Milner	3.064 mi.	Gravel Surfacing	Hinman Bros.	66,583.00	84	253-B
254-B	Hot Sulphur Springs-Parshall	1.087 mi.	Grading	Pioneer Const. Co.	61,071.00	94	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	0	258-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	59	258-C
261-A	Rifle-Grand Valley	16 mi.	Gravel Surfacing	Hinman Bros.	132,556.00	90	261-A
262-E	West of Walsenburg	3.527 mi.	Gravel Surfacing	Pople Bros.	24,979.00	83	262-E
262-F	LaVeta Pass-Russell	2 mi.	Crushed Rock Surf.	Central Const. Co.	22,017.00	61	262-F
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.	22,857.00	56	267-B
271-D	West of Pueblo	0.137 mi.	Bridge	C. A. Switzer	11,869.00	56	271-D
275-A	Gann-Sedalia	7 mi.	Concrete Paving	Strange-Maguire Pav. Co.	314,174.00	52	275-A
275-B	Sedalia-Castle Rock	5.334 mi.	Concrete Paving	J. Fred Roberts & Sons	198,771.00	70	275-B
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	17	275-D
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	8	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	8	279-C
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	1	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	31	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	30	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	30	283-B
286-A	Nunn-Dover	0.549 mi.	R. R. Grade Crossing	Brown & Smith	35,162.00	75	286-A
286-B	Nunn, north	19 mi.	Grading	James Collier	87,249.00	76	286-B
287-A	Fort Morgan, west	20.62 mi.	Grading	H. C. Lallier Construction Co.	101,817.00	35	287-A
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee	102,627.00	84	288-A
294-A	Mancos-Cortez	2.9 mi.	Gravel Surfacing	Engler & Teyssier	23,273.00	51	294-A
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	1	298-A

You Won't Growl at Our Service

Misrepresented?

MANY TIMES OILS ARE REPRESENTED TO BE PENNSYLVANIA OILS WHEN THEY ARE NOT

Do not be deceived. Insist on

Quaker State

OR

Oilzum

Pure Pennsylvania Motor Oils

We are Colorado and Wyoming distributors for these lubricants and will be glad to answer inquiries for detailed information regarding quality, prices, source of supply, etc.

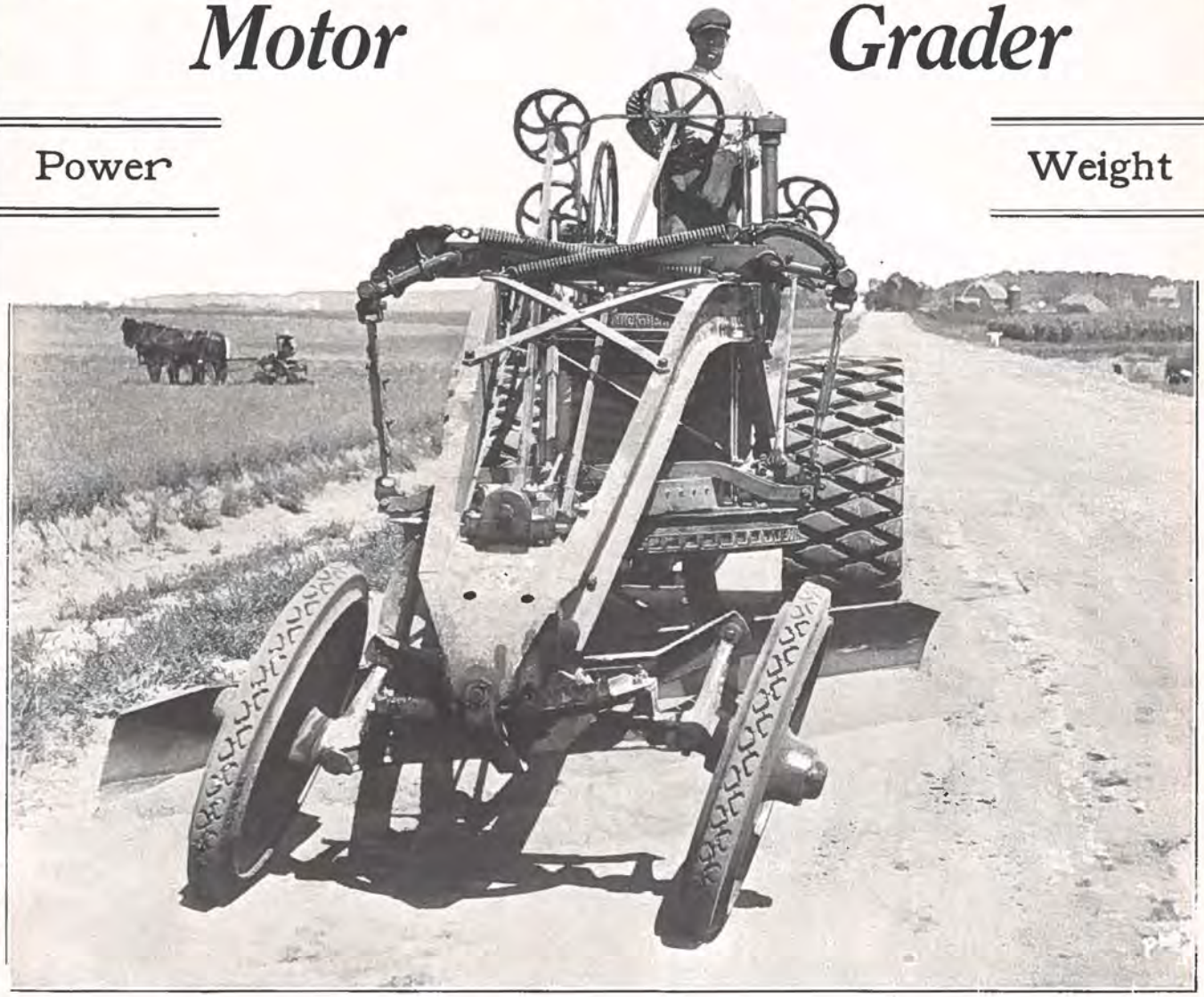
Sommers Oil Company

DENVER, COLORADO

It's an Austin-International (15-30) Motor Grader

Power

Weight



The chief feature of the 15-30 Austin International Motor Grader is that it has weight and power enough to cut right down to the bottom of the corrugations of a badly rutted gravel road, for which reason it can rightly be called a reconstruction as well as a maintenance machine.

Coupled with its ability to do more difficult work than other maintenance machines, it has sufficient speed and blade length (12 ft.) to keep the cost of maintenance per mile remarkably low.

Where there is not sufficient work for a machine of this size, but something more powerful than the Fordson is desired, you will find the Austin International 10-20 exactly suited to your needs.

This machine is built along the same lines as the larger (15-30) model with operator stationed at the rear and with leaning front wheels. This latter feature, which is exclusively Austin, cannot be over-emphasized, as it adds greatly to the efficiency of the grader, enabling it to do better work, more difficult work, and more of it.

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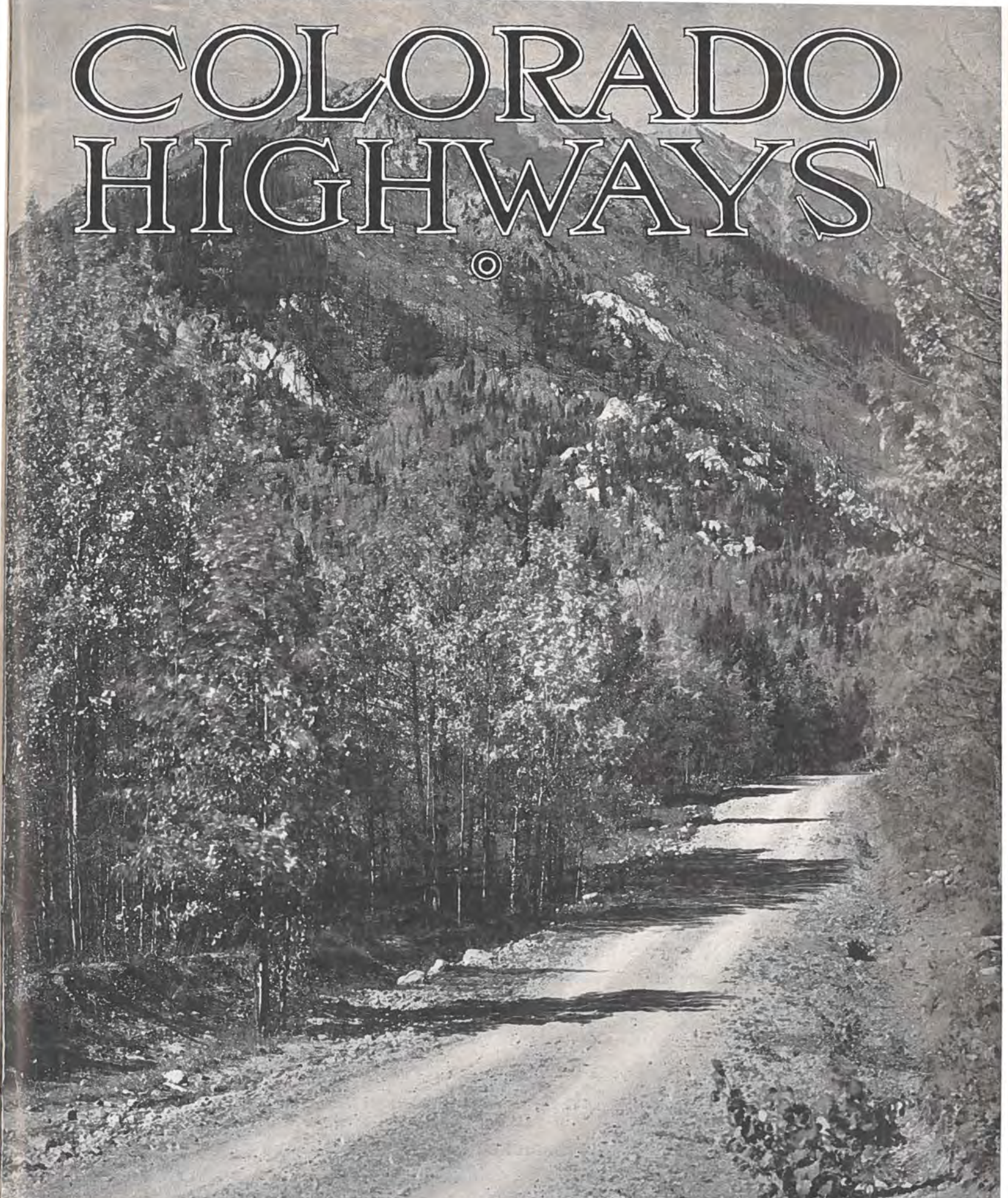
COLORADO HIGHWAYS



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Colorado Highways

"BETTER ROADS"

Official Publication of the
COLORADO STATE HIGHWAY DEPARTMENT
Denver, Colorado

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"Pay As We Go"-- An Editorial

Shall the good roads program in Colorado be continued?

This question will be put squarely up to the people of Colorado at the election to be held next November.

At that time the voters will be asked to decide on the "Pay As We Go" plan for financing state road construction and maintenance after 1926.

Petitions are being circulated to obtain the necessary number of signatures to place the measure on the ballot.

The proposed measure is initiated by the State Association of County Commissioners. Under their direction the petitions are being circulated.

The motorists will bear the greater burden of the cost of constructing and maintaining the roads of the state under the terms of the proposed measure. Motor car owners of Colorado are now paying an average of $14.11 in license fees and gasoline tax per year. The average for the entire United States is $22.50. In only two other states—Illinois and North Dakota—do motorists pay less.

The average motor license fee in Colorado is $5.95 per vehicle. In this respect Colorado ranks 27th among the states. The average for the entire country is $13.06. Under the terms of the proposed "Pay As We Go" plan, as sponsored by the county commissioners, Colorado's total motor vehicle and gasoline tax will be less than the average for the entire country.

The motor vehicle fees will be increased. The weight basis will be used for computing the tax. This means that trucks and motor passenger busses will pay in proportion to their use of the roads.

The gasoline tax will be increased from 2 cents to 3½ cents per gallon. Property owners will continue to pay the half mill levy for road purposes which has been in effect for several years.

Of the gasoline tax revenue, the cities and counties will receive over one-third of the total receipts. The funds accruing from the gasoline tax will be used for improvements on streets connecting with state roads. It has been found that these streets, because of the heavy traffic, are usually in very bad condition.

The counties will receive one cent on each gallon of gasoline sold, for the improvement of local roads. The cities will receive a half-cent on each gallon of gasoline. Any financing plan which fails to take into account these "local feeder" roads to the main highways would be a discrimination against the farmer.

If voted favorably, the "Pay As We Go" plan will permanently solve the problem of highway financing in Colorado. It will enable the State Highway Department, the counties and the cities to plan their road and street improvements far in advance, thus reducing engineering costs. And the road program of the entire state can proceed without interruption for lack of funds.

The state's share of the revenue under the plan will total about $4,250,000. From this sum the state will retire the bonds now outstanding for road improvements made during the last four years.

Adoption of the "Pay As We Go" plan also will eliminate heavy interest charges on road bonds, which can be used for the actual construction of much-needed highways.

There is no longer a closed season on automobiles in Colorado—thanks to the present efficient state highway administration.

And there is no longer the question of whether we can afford good roads—but can we afford to be without them?

The annual operating saving to the 200,000 cars in the state, represented by the driving over improved roads, as compared with the old dirt roads, with prohibitive curves, lack of drainage, and grades, that could not be negotiated is estimated at 2 cents per mile, with an average annual mileage of 5,000 per car would be approximately $2,000,000.

Automobile owners appreciate Colorado's splendid system of highways. They know that these roads save in wear and tear on cars and tires the entire cost of their license fees.

To vote "yes" on the good road amendment in November means that Colorado will continue to have the best roads in the entire West, and that Colorado motorists will continue to save thousands of dollars yearly in reduced operating costs.

Petitions to Finance Road Development

PETITIONS to obtain a sufficient number of signatures to place the proposed plan of the State Association of County Commissioners for financing road development in Colorado on the ballot at the November general election, are now being circulated in every county of the state.

The initiated measure was presented by Dan C. Straight, commissioner of Weld county and president of the state association, to the attorney general's office for approval several weeks ago. The proposed plan, which has the support of the county commissioners of the state, provides for the "pay as we go" plan of financing the state road improvements, doing away with frequent bond issues.

To assure the measure a place on the general election ballot, it will be necessary that the petitions bear a minimum of 26,241 signatures. The petitions must be filed with the secretary of state before July 2.

The principal provisions of the initiated amendment, according to Mr. Straight, are:

Increase of the present two-cent-a-gallon tax on gasoline to 3½ cents on each gallon sold; one cent of the tax to go to the counties; a half cent to the cities of the state, and two cents to the state highway department.

Increase of the present license fees on automobiles to an average of $12 annually. The revenue thus raised will be divided 40 per cent to the counties and 60 per cent to the state highway department.

The estimated revenue under the financing plan in 1927 would be as follows: Counties, $1,862,500; cities, $462,000, and the state $1,850,000 for expenditure on road improvements.

In addition the amendment will provide that the remaining portion of the $6,000,000 bond issue voted in 1922 and repayable over a period of 20 years, would be paid off at once, the last payment to be made in 1928.

The petition is entitled "An act in relation to the public highways." It provides that the law shall take effect January 1, 1927.

The annual license fees are to be charged according to the weight of the passenger carrying cars as follows:

2000 pounds or less	$10.00
2001 to 2500	12.50
2501 to 3000	15.00
3001 to 3500	17.50
3501 to 4000	22.50
4001 to 4500	27.50
4501 to 5000	32.50
5001 to 5500	40.00
5501 to 6000	47.50
6001 to 6500	55.00

On passenger cars converted into light trucks or carrying capacity or rated factory carrying capacity less than one ton, $15.00. Motorcycles with or without sidecars, $5.00.

Motor trucks of over one ton shall be charged 50 cents per hundred pounds of factory rated carrying capacity plus factory shipping weight. Tractors for drawing five ton loads or less shall be charged $25.00 and tractors for drawing over five tons shall be charged $50.00. Trailers shall be charged 50 cents per hundred pounds for actual factory weight plus actual or factory rated carrying capacity, including its own weight.

The secretary of state is authorized to administer the law, but he cannot expend more than 2 per cent of the gross receipts from the law in its administration.

At present there is no fee charged on tractors or trailers. It is said that the new weight basis for computing the license fees is more equitable than the present factory price rating.

Distribution of the gasoline tax shall be in proportion to the mileage of state roads in the several counties compared to the total, and must be expended under the direction of the county commissioners on construction and maintenance of improved highways. The motor vehicle receipts will be distributed according to the number of vehicles registered from them respectively in the preceding calendar year.

The funds allotted to the cities must be used in the construction and improvement of connecting links or highways built by the state to the corporate limits of towns and cities.

The initiated measures will provide for all necessary changes in statutes to make the "pay as we go" plan operative.

It is estimated that the increased gas tax would bring in $3,150,000 a year, and the increased license fees 2½ millions annually.

For the past four years state highway activities have been largely carried on by proceeds from bond issues. However, the last of these authorized by the people will be issued this year and some other means of financing this work must be found. Adoption of the plan sponsored by the county commissioners, who have devoted considerable study to the problem, will eliminate the heavy interest charges paid by the state each year on bonds, making this money available for the actual construction of new roads.

The distribution of the gasoline tax among the cities and towns is to be according to population, but is to be "weighted" as follows: Cities and towns up to 1000 in population will be increased 100 per cent for the purpose of prorating the tax; up to 5000 the boost will be 50 per cent; from 5000 to 100,000 the raise would be 25 per cent and for cities over 100,000 (Denver) no increase will be made.

How the new plan would effect receipts of all the counties from motor vehicles is shown by comparative estimates for a period of four years:

1926	1927	1928	1929
Motor Vehicle Fees			
$600,000	$937,500	$1,520,000	$1,560,000
Gasoline Tax			
$900,000	$925,000	$ 950,000	$ 975,000

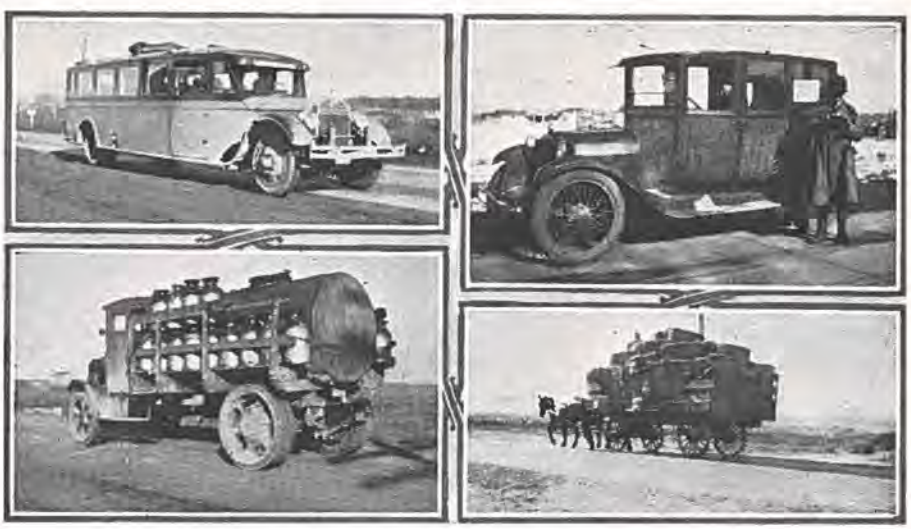
"As the above table indicates, the plan contemplates that the personal property tax on cars will be abolished after 1926," said Mr. Straight.

"The table is formed from estimates based on past experiences as to what the several taxes will produce. One benefit from the plan will be the end of the continual jangling over the responsibility for the property tax on automobiles. The bill also provides for the compensation of the county clerk's office of the smaller counties for labor of selling auto licenses. Only the large counties now receive this compensation from the state.

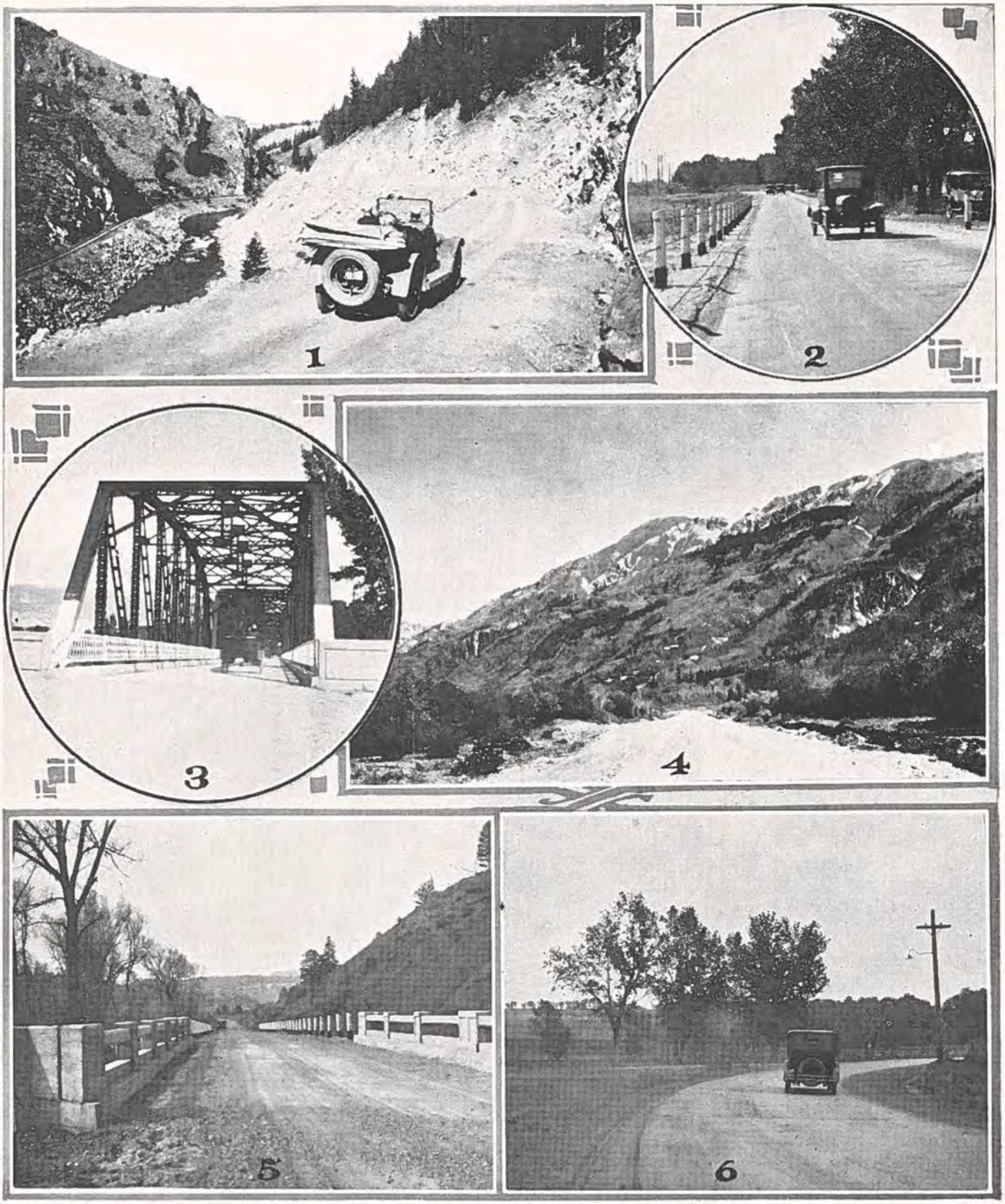
"Abolition of the personal property tax on autos is proposed by senate joint resolution No. 7, which was passed by the last legislature and which will be adopted or rejected by the voters this fall, as it appears as a referendum measure on the general election ballot.

"The estimated revenue from the pro-

(Continued on page 12)



Types of heavy vehicles which find improved Colorado roads reduce transportation costs over old muddy dirt roads.



TYPES OF ROADS THE COLORADO HIGHWAY DEPARTMENT IS BUILDING. SHALL THIS WORK CONTINUE? YOUR FAVORABLE VOTE ON THE GOOD ROADS AMENDMENT IN NOVEMBER WILL MAKE IT POSSIBLE? (1) New Highway being constructed through Byers Canon, near Hot Sulphur Springs. (2) Concrete pavement near Brighton, in Adams county. (3) New steel and concrete bridge at Delta. (4) Scene in Ironton Park on the Million Dollar Ouray-Silverton highway. (5) Federal Aid highway near Florence in Fremont county. (6) Concrete pavement leading to Fort Logan military post.

Economic Value of Highways

By FRANK H. BLAIR
Chairman State Highway Advisory Board

THE past half century has been marked by many radical changes in American life. It stands out in marked contrast to all past history, in the number and diversity of remarkable mechanical inventions, affecting the habits and lives of our people. Most of these devices, at first considered as impractical and interestingly curious, rather than useful, have since woven themselves so closely into the fabric of our existence, that life as we know it today, would be impossible without them. So dependent has the present generation grown to be on these mechanical helps, that were we to be suddenly deprived of them, no doubt great suffering, and possibly destructive famine, would visit much of our population.

Imagine if possible the effect of the sudden destruction of all electrical devices, modern tillage and harvesting equipment, trucks and automobiles. In other words an enforced return to the life of a century ago; the life our grandfathers knew, with none of these recent inventions. It would mean a deadly paralysis of most of those activities on which our very existence today depends.

Among all of these wonderful necessities of life, as we know it today, none has proven of greater importance, than the gasoline propelled vehicle; none has made a more amazing growth, nor attained a more astounding development.

The Changing World

Twenty-five years ago it was a freak which we read about in the newspaper but considered of no practical importance. Twenty years ago, we drove our team out to the side of the road to let this strange, puffing, rattling, mechanical nuisance pass. Fifteen years ago we began to take them seriously, rather than as a source of amusement for the wealthy. Ten years ago, convinced of their useful possibilities, we were spending over two hundred million dollars per annum to construct and maintain highways to accommodate them. Last year we spent four times that amount, or over one billion dollars for this purpose, and the signs are all too numerous, that in spite of our efforts, we are not keeping up with the requirements of present day traffic. While we are spending one billion dollars per year for upkeep and construction of roads, we are at the same time, according to the best available figures spending nine billion dollars per year for the cost of operation and upkeep of the twenty million of motor vehicles now traversing the roads of our country.

That we are not approaching a solution of our difficulties is evidenced by the fact that to this twenty million autos and trucks, this year will add at least another four million.

Transportation Changes

We are beginning to realize more clearly, that the transportation system of our country, one of the most vital elements in our national life, is undergoing a tremendously revolutionary change. The sooner we come to understand not only the magnitude of the change, but the overwhelming certainty and permanence of it, the sooner we will be able adequately to meet our transportation problems. This transformation in our system of transportation is now a settled fact. We can no more do away with these millions of speeding marvels, than we can do away with the telephone or the electric light. They are here to stay, and a permanent part of our civilization. The expense of this motor upkeep is to a great extent dependent on the kind and condition of highways, over which we travel. The upkeep of the vehicle, and the upkeep of the road on which it runs, are closely related. We may skimp the maintenance

Windy Gap on the Victory highway located near Granby in Grand county—a modern state road.

of our highways, and find ourselves paying a much larger bill for tires, gas, and repairs. We may save one dollar by efforts of false economy in neglecting to construct better highways, and lose two dollars as a consequence on our rolling stock. It would seem then the part of wisdom to study this question of highway maintenance and construction carefully and with a mind open to conviction.

We must build not only for the present but for the future, and to meet new conditions now developing. Little wonder that we should be puzzled by the many new problems now confronting us. The questions of type of road, materials, construction and maintenance methods, safety provisions and taxes, are all calling for solution. So many new developments in highway transportation have been crowded into the past few years; so short has been the time for observation of the results of work already performed, that experience can at most be only a partial guide to future expenditures.

Next Two Years

In my opinion the next two years may determine largely the progress to be made on Colorado roads for a long time to come. Many important questions are awaiting a decision. The satisfactory solution of these problems mean much to the welfare of our state. Consider the fact that, while during the past five years, notable improvements on our highways have been made, we have really only made a good beginning. Of the nine thousand miles of the state highway system, only about a third has been improved and much of that inadequately—250 paved, 700 graveled, balance graded. The partial breakdown in the functioning of the highway law during the past few months, shows the necessity of a wise revision to obtain the best results. The exhaustion of funds for construction purposes calls attention to the necessity of the creation of some permanent and satisfactory method of highway finance. The successful solution of these problems will depend on the intelligence of the vote of our citizens, but the responsibility for the wise direction of that vote, probably rests more upon you—the county commissioners of Colorado, than upon any other one body of men. The co operation of other associations, clubs, organizations, and newspapers must be had, and the public informed of the facts and importance of the issues confronting us, but upon your shoulders will rest to a considerable extent, the cultivation of an intelligent public opinion to be expressed at the polls next fall.

Vehicles Heavy and Fast

It is timely to inquire what public service will require of the future highway, and how we may best meet those demands. The type of road depends of course upon the volume and character of the traffic the road is to carry, and the importance of its terminals. Present traffic developments on our primary highways are interesting and somewhat disturbing. Speed and weight of motor vehicles have of late increased rapidly, and are factors that must be reckoned with. While a few years ago, speeds of twenty to twenty-five miles per hour were considered normal, we must now provide roads of surface and curvature to accommodate speeds of thirty-five to fifty-five. While our motor vehicle law limits speed to thirty-five miles per hour, we know that the modern high type car makes much higher speeds not only safe but comfortable, where roads are good and traffic not too congested. The universal tendency seems to be to remove arbitrary restrictions which are not observed and leave the matter of speed to the reasonableness and good judgment of the individual driver. Such speeds demand the elimination of curves of short

radius, and the maintenance of a reasonably smooth surface.

If such roads were to carry only the lighter vehicles of not to exceed perhaps two tons in weight, our problem of maintenance and construction would be comparatively simple. However of late we have not only the heavy freight truck, but also the heavy passenger bus to consider. With practically no legal restraint at present, we find our best constructed and costliest roads, rapidly deteriorating, under the destructive pounding of unregulated trucks and busses. Physics teaches us that the striking force of a moving object, increases as the square of the velocity with which it moves. Increase the speed twice, you increase the destructive force four times. The horse drawn load, moved three and one-half miles per hour. The motor truck, with a heavier load, moves ten times as fast. The theoretical effect on the pavement is easy to calculate. The practical effect is becoming evident as you well know. Busses and trucks are taking over the short haul passenger and freight business. If the public demands the continuation and expansion of this service, it is going to be up to our road builders to make plans accordingly and certain restrictions of weight and speed for heavy vehicles must be provided, if we are to save our roads already built for a reasonable term of usefulness. The need of a law of this nature is now so evident, that it is unthinkable that your legislative committee will again be defeated in the passage of such a bill, if they continue their efforts.

Changes Are Rapid

Perhaps no where in the state, has the development of the modern highway, and the change from the old, been better exemplified than on State Highway Number 2. Portions of the old road, gave one a horrible example of almost everything that a modern road should not be. This road, the main artery of travel from northeastern Colorado and adjacent states to Denver and the west, gathers into one stream a varied and steadily increasing traffic and is considered by engineers our third most important highway as regards number of moving vehicles, and probably the second in importance industrially. Among the undesirable features of the old Number 2, were dozens of sharp, right angle turns, hazardous to strangers; high abrupt culverts the cause of many a bruised head brought in sudden and violent contact with the auto top; many miles of useless travel, due to indirect routing; obsolete and dangerous bridges, and low grades easily blocked by winter's drifting snow. While this road is yet far from completion, enough has been accomplished, so that the public is beginning to realize something of the value of the improvements on the new road, and of their usefulness in saving of time and upkeep expense, both of road and of vehicle. You are to be congratulated on being instrumental in bringing to pass this and other splendid accomplishments in highway district No. 7. Great achievements are inevitably secured in the face of bitter opposition. In the building of better and more direct highways, the procurement of rights-of-way is always the hardest and most hotly contested part of the struggle. Of this part of the work, you have in a great measure born the brunt, and the public, which will benefit from what will eventually be one of the finest highways of the state and of the West, should understand where a large part of the credit belongs.

View on concrete pavement located near Sterling in Logan county—built with Federal Aid. Motor car owners save thousands of dollars yearly operating their cars over roads of this type.

I am convinced that as a result of the successful carrying out of this important project, that the difficulties attendant upon the improvement of other highways will be greatly lessened. One concrete example of this kind will do more for the cause of good roads, and the instruction of the voter, than a thousand essays and lectures.

Safety Is Paramount

In considering the future development of our highways, no details of construction should receive more earnest study than those contributing to the factor of safety. During the year of 1923, automobile accidents caused 22,600 deaths, and 678,000 serious personal injuries. The record for the two succeeding years, shows a constantly increasing list of fatalities and injuries. Not all of these accidents are due to faulty road construction, but many are, and it is our duty as road builders, to study the causes of these accidents and so far as possible, correct them in future work.

One railroad crossing, on highway No. 2, three miles east of Sterling, has been the cause of five fatalities, and you are all familiar with similar danger points on roads near your homes. We may ascribe these deaths to carelessness, but as long as human nature is what it is, would it not be better to eliminate the risk with an overhead crossing at the earliest opportunity, and avoid these terrible accidents, which we know of a certainty will continue as long as present conditions exist. Another abrupt curve on the same road fifteen miles further east, has caused numerous serious accidents, and one fatality. Would it not be money well spent to eliminate if possible this sharp curve, for we know well that careless people will continue to drive autos, and that the innocent often suffer with the guilty.

These danger points are scattered everywhere, and while much has been done to safeguard the public during the past few years much remains to be done, and each board of county commissioners should study carefully conditions within their respective counties and as rapidly as possible take measures to remedy the defects. A badly rutted road, a bridge set diagonally across the line of traffic, a stretch of deep loose gravel, a blind corner, a defective culvert, an abrupt turn at a railroad crossing, are all sources of possible death or injury, and should have the attention of those having our roads in charge.

Local District Moves

Time will not permit me to more than briefly mention many important and interesting things in connection with the development of our highways. The matter of maintenance alone might serve as the subject for a much longer talk than this. Suffice it to say that we are much better equipped for this important task than we were five years ago. Not only have we learned much from experience, but many of our counties now own splendid maintenance equipment and have it in charge of skilled operators who are obtaining splendid results upon our gravelled roads. I am sure that no district in the state, from what I have been able to observe, deserves more credit in this respect, than district No. 7.

I am also of the opinion that other counties of the state that have been lagging behind in this regard, are benefiting from your example. I am not able to say as much regarding the maintenance of our pavements. The tarring of joints and cracks, is not receiving the attention it should, and these beautiful and costly roads are suffering in places from deterioration which might and should be prevented.

In closing I wish to present this thought. We have inherited from the recent past a system of highways, built to serve a certain kind of traffic. It did this after a fashion. Suddenly a new element has been introduced. Within a brief space of time, the slow horse-drawn vehicle has been replaced by the power-

(Continued on page 14)

Gov. Morley Names Two New Members to Highway Board

At the next meeting of the State Highway advisory board two new members will take their seats. They are: Ernest M. Nourse, prominent Gunnison attorney, and M. A. Ege of Colorado Springs, who succeeds Charles B. Lansing.

Mr. Nourse was named by Governor Morley to succeed Judge Milton R. Welch of Delta, resigned. A resident of Gunnison county thirty years, Mr. Nourse has occupied numerous official positions and has taken a leading part in the political as well as the business and social life of the community. For twenty years he has been United States Commissioner. For four years he has been county attorney. Recently he was elected president of the Gunnison Rotary club. "Judge" Nourse, as he is familiarly known, served two terms as mayor of Gunnison, was city attorney for numerous administrations, and was president of the Gunnison chamber of commerce four years.

"Judge" Nourse was graduated from Amherst college in 1893 and took a law course at the Atlanta, Ga., law school. He is a member of the Delta Kappa Epsilon fraternity, of the American Bar Association, of the Knights Templar and of the Shriners.

Mr. Ege is a former Colorado Springs newspaper publisher. He was the first white child born in the Fountain colony near Colorado Springs and was named after the Manitou Springs. He was the publisher of the Gazette before it was consolidated with the Colorado Springs Telegraph in 1923.

Mr. Nourse will represent the second district and Mr. Ege the fifth.

Governor Morley reappointed W. G. Duvall to a position on the highway board on May 1. Mr. Duvall is chairman of the board and represents the sixth district.

County Road Officials of 7th District Endorse "Pay As We Go" Finance Plan

O. B. Schooley, commissioner of Morgan county, was elected president of the Seventh District County Commissioners association, at the meeting held in Sterling on April 15. He succeeds R. A. Miller of Littleton. Commissioner S. R. Riggs of Adams county, was elected vice president. The next meeting of the association will be held at Brighton in the fall, at the invitation of Commissioner Riggs.

State and county road finances was the chief topic of discussion at the Sterling meeting. It was decided to endorse the "Pay As We Go" plan, which will be submitted to the voters at the general election in November.

Dan C. Straight, president of the state association, was the principal speaker. Other speakers included Maj. L. D. Blauvelt, state highway engineer; Robt. H. Higgins, state maintenance superintendent; Frank H. Blair, member of the highway advisory board, and R. A. Miller of Littleton.

The nine counties represented at the meeting were Logan, Phillips, Sedgwick, Yuma, Washington, Morgan, Weld, Adams and Arapahoe.

Our Cover Picture

Sheep Mountain as seen from the western slope of the Independence Pass highway, is the picture on the cover of this month's issue of Colorado Highways. The road over Independence Pass is the highest pass highway in the state. During the past few years the state and federal government have spent thousands of dollars on the construction of this roadway. It leads to the mining town of Aspen. During the summer months it is heavily traveled by tourists.

Road School and Conference, December, 1926

A Road School and Conference will be held in Boulder, Colorado, in December, 1926, under the auspices of the University Extension Division and the College of Engineering of the University of Colorado, with the active co-operation of the United States Bureau of Public Roads, State Highway Department, State Association of County Commissioners, and Colorado Municipal League. The large number of organizations co-operating will assure an interesting and worth-while program.

The purpose of the school will be to study all types of roads and road building from the standpoint of financing, testing of material, traffic control, construction and maintenance, and road improvements. Experts in each line will address the conference.

This school will be of interest to taxpayers, county commissioners, engineers, street superintendents, contractors, material men, and all others interested in road improvements.

Announcement of the exact date and tentative program will be made later. For further information, write to the University of Colorado, Extension Division, Boulder, Colorado.

GEORGE NORLIN, President,
University of Colorado.

State Road Department Spent $4,587,089 in 1925

The State Highway department spent a total of $4,587,089.57 during the fiscal year ending Nov. 30, 1925, according to the annual audit and report completed Saturday by J. M. Wood, public examiner.

The department's receipts and disbursements were handled thru two funds—the state highway fund and the bond fund. In the first fund there was a balance of $1,067,800.68 on hand at the beginning of the fiscal year, Dec. 1, 1924. Receipts in this fund for the twelve months amounted to $3,378,946.91. Disbursements totaled $3,072,685.04, leaving a balance on hand Dec. 1 of $1,374,062.55. In addition, there was on that date $280,206.74 due the department, principally from the federal government, as its share of federal aid road expenses.

Receipts were as follows:

Tax collections	$ 783,328.16
Gas tax	917,492.14
Federal aid	1,443,655.20
Merchandise sales	31,021.94
County participation in projects	75,143.77
Miscellaneous sales, refunds, etc.	21,205.70
Internal improvement fund	107,100.00
Balance on hand Dec. 1, 1924	1,067,800.68
Total	$4,446,747.59

Disbursements were as follows:

General office administration	$ 67,002.06
Engineering	67,521.75
Federal aid projects	1,425,538.33
State projects	590,198.05
Maintenance of state highways	808,269.58
Property and equipment	76,240.53
Road signs and traffic census	20,775.41
Preliminary surveys	17,138.33
Balance on hand Dec. 1, 1925	1,374,062.55
Total	$4,446,747.59

Receipts from the bond fund amounted to $1,516,938.01 during the year. Of that amount, $1,514,404.53 was disbursed, $1,499,907.99 going into federal aid projects and the remainder on state projects.

A winter view near Georgetown in Clear Creek county—ice formation resulting from a break in old water flume.

Highway News and Notes on Work in Field

A. R. Mackey of Sterling was the successful bidder on 7½ miles of grading and drainage work located east of Greeley, on State Road No. 2. Bids were opened on April 5th. Twelve contractors entered bids. Mackey's price for the work was $115,730. The job includes 9,900 yards of common excavation, on which Mackey bid 21½c; 159,000 yards of barrow at 22½c; and 550,000 yards of overhaul at 2c.

Engineers Construction Corp. of Greeley were the second low bidders, with $117,077. Other bidders included F. L. Hoffman, Denver; E. H. Honnen, Colorado Springs; Levy Const. Co., Denver; H. C. Lallier, Denver; Geo. W. Condon, Omaha, Neb.; J. Fred Roberts & Sons, Denver; Platt Rogers, Inc; Wickham Bros. & Schweiger, Billings, Mont.; F. H. Knollman, Denver; and Monaghan & Cunningham, Denver.

The State Highway department has let a contract to J. L. Busselle & Co., Colorado Springs contractors, for the construction of a quarter mile of concrete pavement, leading to the entrance of Fort Logan military post. Completion of this project will give a continuous ribbon of concrete from Petersburg to the Fort. Busselle bid $2.03 for the concrete pavement, of which there will be 2,800 square yards. There were three other bidders, namely, F. C. Dreher, C. L. Wilbur and Ed. Payne, all of Denver.

Fred C. Dreher, Denver contractor, has been awarded a contract for the construction of eight-tenths of a mile of concrete pavement north and east of Las Animas, in Bent county. His bid was $23,000 for the project. His bid price on the concrete pavement was $2.30 per square yard. W. A. Colt & Sons, Las Animas, were the only other bidders.

A contract has been let by the State Highway department to the Strange-Maguire Paving Co. of Pueblo for the construction of 6½ miles of asphalt pavement, located north of Trinidad on State Road No. 1. Their bid was $301,483 for the completed job, which was $40,000 below the second low bidder. Other bidders were Pople Bros., Trinidad; J. Fred Roberts & Sons, Denver; and Stamey-Mackey Const. Co. of Hutchinson, Kansas.

A state project for which the State Highway department has let a contract calls for a 324-foot timber bridge and approaches over the Middle Bijou creek, located five miles west of Deertrail on State Road No. 4. A. R. Mackey was given the contract for this worfk on his bid of $13,202. There were six other bidders, including C. A. Sweitzer, Basalt, Colo.; D. S. Reid Const. Co., Denver; H. H. McDowell, Colorado Springs; F. H. Knollman, Levy Const. Co., and W. O. Morrison, all of Denver.

Strange-Maguire have been awarded a contract for one-third of a mile of concrete pavement, located on State Road No. 6, leading to the city limits of Pueblo. Their total bid was $10,242, with the concrete pavement at $2.15 per square yard.

Four miles of gravel surfacing will be constructed, starting at the foot of Nine Mile hill in Rio Blanco county, near Meeker, according to H. L. Jennes, engineer in charge of Division No. 6. This project will connect with a similar project constructed two years ago, starting at the top of the hill. This piece of roadway is very treacherous during rainy weather. Plans for the project are now being drafted.

The Boulder county commissioners have made a contract with Thomas Murphy, Penrose, Colo., contractor, for the completion of a roadway to the summit of Flagstaff mountain, just outside of the city of Boulder. This highway compares with the Lookout mountain highway at Golden.

William R. Kreutzer, supervisor of the Colorado National Forest, announces that the forestry department will spend $48,000 in building a road from Chambers Lake north eighteen miles along the Big Laramie river. Work on the road will start at Chambers Lake in Larimer county.

The Lambie-Bate Const. Co. of Denver have installed a P. & H. dragline on their three-mile gravel surfacing project, located southwest of Gunnison. Plans for a $50,000 grading and gravel project, located between Iola and Sapinero, have been completed, according to Dist. Engineer H. T. Reno. The State Highway department has a steam shovel at work on a section of roadway near the Half Way house on the Blue Mesa.

Road work in Pueblo county is under way in full force, according to O. G. Smith, commissioner of highways. All roads are being improved with new bridges and gravel. The moisture from April showers made perfect conditions for road maintenance; reports indicate that all roads in Pueblo county are in splendid condition. Eight maintainers are at work on the main highways leading out of Pueblo. As in past years, they will be kept in operation constantly to keep the roadbed smooth. The work is under the supervision of Charles Stepp, superintendent of county highways.

Gov. C. J. Morley and Maj. L. D. Blauvelt, state highway engineer, made an inspection tour of the highways in the Arkansas Valley, the week of April 17th. As a result of the trip, the stretch of highway between Holly and Granada will be graded and gravel surfaced by the state with federal aid.

Edward Selander, a Fort Morgan contractor, has been awarded a contract for the construction of 5½ miles of concrete pavement southwest of Marino, connecting with the strip of pavement already laid from Merino to Sterling. Selander's total bid for the work was $137,695. He has agreed to complete the project in 150 working days. His bid for the concrete was $2.24 per square yard.

On May 5th the Highway department accepted the bid of Orley LaNier, of Fort Morgan, for the improvement of 20 miles of roadway located westerly from Fort Morgan. The work includes clay surfacing and sand subgrade treatment. His bid for the work was $93,051. The job includes 325,000 yards of blading work. The work is to be completed in 160 working days.

Snow is flying on Pikes Peak motor highway. Work of removing snow from the world-famous mountain road started on May 1st. In charge of the work is Supt. J. J. Cogan. At the same time work of removing snow from the Cog road also was started. Equipment used in this work includes a Best "sixty" snow special tractor, equipped with electric heaters and a La Plant Choate snow plow. Some of the snow drifts are said to be 20 feet deep. About 70 men are employed. The plow will start in at Mile 10.

Two paving projects, located between Gann and Castle Rock, are expected to be opened for traffic by the middle of July, according to resident engineers on the work. This will give a continuous ribbon of concrete pavement of about 35 miles from Denver south. The department expects the pavement extending north from Husted to Monument will be completed this summer. When both of these projects are finished, there will remain only about 23 miles of unpaved roadway between Denver and Colorado Springs. Plans are now being drafted for the construction of a new roadway between Monument and Castle Rock. Traffic will be turned over this for a year before it is paved. However, the surface will be covered with a thick coating of gravel.

J. L. Busselle of Colorado Springs was the low bidder for 4.8 miles of concrete paving between Husted and Monument. His bid was $185,585 for the work. Grading of the project has started.

The Weld county commissioners have started work on the widening of the highway between Milliken and Johnstown. The present road is only 14 feet in width. It is proposed to make the road 20 feet wide.

Grant Shields has been given a contract for the widening of the La Manga section of the Cumbres Pass highway. P. C. Carson, of the U. S. Bureau of Roads, is the resident engineer.

National Park-to-Park Highway

By R. G. PARKER

THERE is something wrong when American citizens, who have never been west of the Middle States, can be induced to go to foreign countries year after year in search of scenic attractions and recreation. The only answer is: That the West is solely to blame. We have the attractions; we have the hotels; and now we have the highways and the railroads; but we have not the co operative spirit in our publicity.

Frankly, we are so intensely absorbed in local competition that the big idea is completely eclipsed by selfishness and greed. It is no longer possible for any locality to dominate the field, and so long as present methods are adhered to, the booking agencies will continue to reap a vast harvest of American dollars that should stay in America.

It is estimated that 155,000 Americans toured Europe in 1925 and left approximately $217,000,000 of American dollars on the other side—the same authority states that 67,000 of those Americans left about $100,000,000 in France alone.

Every local enterprise in the West is so busy trying to convince its supporters of its particular superiority, as a tourist-getter, and meeting with greater difficulty each year in raising sufficient funds to keep itself alive, that it has not time to give any thought to those bigger things which are slowly and surely coming to the front.

Organization is the solution and will ultimately prevail.

The National Park-to-Park Highway Association is working in close harmony and co-operation with the National Park Service, and the Department of Interior, as well as with all other legitimate agencies in a combined effort to draw these European vacationists into the great playgrounds of our own West. Results are more pronounced each year, and will continue to increase as fast as highways can be developed and hotel accommodations augmented to care for that increase.

This is the only organization in America that is intensely active along the two lines so essential to the success of this movement; namely: First, preparing the way into this great array of major scenic and educational wonders, so that they may all be reached economically and in comfort; second, grouping them all into a sensibly arranged publicity scheme and presented in such a way as to appeal to that particular class of tourists who seek more than the minor attractions advertised, by purely local agencies.

The greatest natural wonders of the world will remain obscure and of no value as an asset until made easy to reach—a paradise on a poor highway can never become popular—hence, the first essential, without which all the publicity in the world would avail but little.

Having accomplished the first step, and provided the means to reach and enjoy a variety of natural wonders of the first magnitude in one continuous trip where transportation and hotel accommodations are equal to any on earth and far superior to most, then, and not before, are we prepared to take the second step—publicity.

The extremely high-class publicity attracted by this organization is not the result of pull or inside manipulations. This may be clearly and briefly explained, if the reasons are not already obvious to the most casual observer.

This organization has no mercenary aims—it has nothing to sell and seeks no profits. It groups all the attractions into one program and devotes its publicity to an educational campaign, concerning the West as a whole. It does not lend its support to any commercialized or selfish schemes for gain, and it has always adhered strictly to a policy of fairness to all. When the tourist bureaus and railroads come to realize that a new day has dawned, and adapt themselves to the new travel conditions, then a great co-operative publicity program, featuring a trip of greater value and importance than can be had anywhere on earth—even including foreign tourist. Then Dallas will reap her share—Minnesota will get in on the deal—Denver will not have an empty room in her hotels—better still: All the towns and cities clear to the Pacific coast, will prosper amazingly.

Showing stretch of the Grottos section of Independence highway—note masonry guard wall. Photo by D. R. C. Brown.

"You sing America—not see it?" This slogan is the challenge of the National Park-to-Park Highway Association; it is sweeping the nation from end to end and is gaining in popularity by leaps and bounds.

This organization is featuring Colorado as the official gateway to all of Western America.

The Spring Drive

The spring drive of construction is now ahead. How are you organized to handle your work? Have you taken from the columns of this paper the helpful things to be found here and applied them to your own problems? If so, the 1926 construction period will be the most profitable one you have ever had.

It might be presumed that all road builders recognized the fact that road building is essentially a task of moving materials, and that machinery was the logical means to employ towards doing this at low cost. On the contrary, there are still too many contractors who feel they do not need to employ machinery to cut their costs. These men do not actually know what their costs are; if they did, they would speedily see how machinery can reduce their handling costs and show profits for them. Still others hold the opinion they cannot afford to purchase modern material handling equipment, such as trucks, loaders, shovels, etc. Here again their false impression stands in their way, for the lack of adequate mechanical aid in road building of today means losses instead of profits. Remember—you pay for road building machinery whether you use it or not, and when you use it you make money.

Of course, just to buy a machine to do a certain kind of work in road construction and then use it in any fashion will not spell success. Every machine, no matter what its use, must be operated intelligently, and this means a clear understanding of the task it is designed to perform. So plan your work, keep time and cost figures so that you can see from day to day just where you are making a profit and where you are losing.

These two aids to road building—machinery and method—must be employed by every contractor who expects to succeed. There has been, and rightly so, a growing feeling against the highway contractor who does not know how to do his work. He is being eliminated, and the time is not far distant when irresponsible and incompetent contractors will not be allowed to work upon our highways. In this elimination, this survival of the fitest, the contractor who knows *how* by having adopted modern methods, and who further knows the *means* to employ to carry out these methods, that is, what mechanical aid and machinery to use, is the contractor who will find himself at the end of the season with profit.

The spring construction drive of 1926 is now on, and there is no better time to put into practice those principles which have just been so briefly touched upon. To do so is to meet with success; not to employ them will mean failure.—Good Roads.

Novo Hoist Broadside Issued

The Novo Engine Co., Lansing, Mich., have issued an attractive broadside describing and illustrating the entire line of Novo Single and Double Drum Hoists. Complete information and specifications of each of the units is given in the broadside, copies of which can be obtained from the company or any of its representatives.

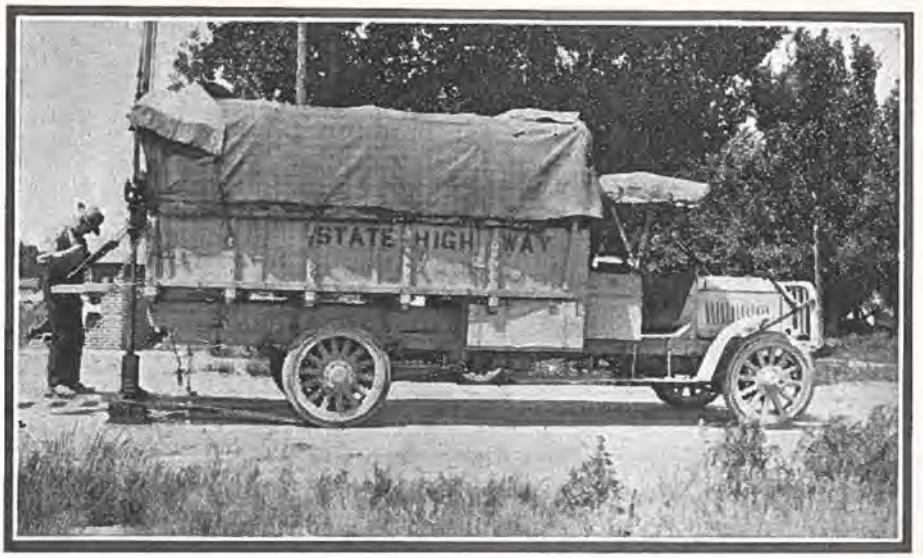
Portland Cement Association

The general offices of the Portland Cement Association, which for the past ten years have been in the Conway Building, 111 West Washington street, Chicago, have been moved to the association's new building, Grand avenue and Dearborn street, otherwise known as 33 West Grand avenue. The entire building is occupied by the Portland Cement Association and its research laboratory.

The architects, Holabird & Roche, have produced a handsome five-story and two-basement building, resting on thirty concrete caissons carried down to firm bearing. This structure is regarded by engineers, architects and builders as representing the highest type of fire resistive construction.

The sub-basement contains the heating, mechanical and electrical equipment servicing the building. The heavier laboratory testing machines are installed in the basement proper, which also contains moist rooms and other facilities for storing the thousands of concrete cylinders which month by month and year by year as they are submitted to test, disclose the results of the many carefully planned researches constantly being conducted.

Other laboratory equipment, a laboratory machine shop, shipping and receiving rooms for the building, reception room, information desk and telephone switchboard are on the first floor. The lobby is a revelation to those unfamiliar with the possibilities of precast concrete stone. Lighting in the reception room is from flood lights, mounted on precast concrete standards.



The State highway department new core drill machine, which is used to detect faulty concrete pavement—Foreman Skerret is shown operating machine.

The precast stone stairway leading to the second floor contributes to other architectural attractions of the lobby. On the second floor is the chemical laboratory and the offices of the director of research and his assistants. The general storage facilities for bulletins, records, etc., are also on this floor. In addition there is a small auditorium and stage.

The third floor is devoted to offices of the structural, railways and cement products bureaus and to the association's reference library. The library probably contains the most comprehensive collection of literature devoted to the uses of cement and concrete in existence. It is a public library in charge of trained librarians.

Stenographic and mailing departments are on the fourth floor.

The offices of the general manager, assistant general manager and several of the general office bureaus such as advertising, publications, general educational, highways, accident prevention, auditing, purchasing, are on the fifth floor.

Cameron Pass Highway Is Asset to All Colorado

The new Poudre Canon-Cameron Pass highway, now nearing completion, will add another scenic attraction for tourists visiting the state, as well as provide a much shorter and easier route to the fine trout fishing districts in the vicinity of Walden.

This highway is considered a great asset to Colorado, and in addition to connecting the county seats of Larimer and Jackson counties, it will be a short cut to the Bear River country and also a feeder for the Yellowstone Park highway by way of Lander, Wyo., and the south entrance.

With the completion of the concrete road between Denver and Fort Collins, which in all probability will be accomplished this year, it will add another scenic and pleasure drive out of Denver, and furnish a new and longer trip by way of North and Middle parks, Grand Lake and Berthoud pass.

The Poudre Canon highway extends from Fort Collins west to the top of Cameron pass, the summit of which, 10,200 feet above sea level, is the county line between Larimer county and Jackson county, thence down the Michigan river to Walden.

The highway follows thru its entire length along mountain streams and thru timbered country, passing about sixty miles west of Fort Collins, Chambers lake, a beautiful body of snow water of about 1,000 acres in extent. Some of the finest fishing in Colorado is found in these streams.

The roadway is double track all the way and the surface is of natural gravel, which furnishes a fine road in all sorts of weather. This new highway shortens the distance about thirty miles, in addition to the numerous steep and dangerous hills which are found on the old road. The maximum grade on the new highway is 6 per cent, the average grade from Fort Collins to Cameron pass being 1½ per cent, and about 3 per cent from there to Walden.

This highway in Larimer county has cost in round figures a half million dollars, the state of Colorado paying $150,000 and Larimer county the balance. That portion in Jackson county was built partly by the United States department of public roads and partly by the state of Colorado. The work was started in Larimer county in 1912 and late in the fall of 1925 was practically completed to the top of the Cameron pass.

By the middle of July everything pertaining to the construction will have been completed and a celebration attended by the various state and county officials, with the most of Fort Collins and Walden citizens, will be held at the summit of Cameron pass. The proposed date for the celebration is August 1, 1926.

THOSE IMPETUOUS LOVERS

Wife (with newspaper)—"Just think of it! A couple got married a few days ago after a courtship which lasted fifty years."

Hub—"I suppose the poor old man was too feeble to hold out any longer."
—Epworth Herald.

Petitions to Finance Road Development

(Continued from page 4)

posed plan for construction and maintenance of highways follows:

Year	Counties	Cities	State
1927.....	$1,862,500	$462,000	$1,850,000
1928.....	2,459,200	469,000	2,701,700
1929.....	2,535,000	487,500	4,290,000

"The outstanding portion of the $6,000,000 bond issue will be retired in 1927 and 1928.

"Some of the important things to remember in considering the new highway finance plan are: This method of financing will not entail a new bond issue and the last of outstanding $6,000,000 bonds are to be paid off. The plan not only solves the demand on the state to meet federal aid, but also provides for all state highway expenditures for years to come and renders very substantial assistance to counties, cities and towns.

"The county commissioners' association has worked on the "pay as we go" plan for months and has based it on the experience of years. It believes that the plan is as equitable a system of financing the state road program as can be devised. They are earnestly soliciting the co-operation of chambers of commerce, good road associations and individuals in putting the plan into effect."

The petition as filed with Secretary of State Milliken was signed by the following committee: James E. Beckley, Delta; William Rees, Pueblo; Tony Monell, Montrose; Daniel S. Straight, Greeley, and William K. Brown, Denver.

Economic Value of Highways

(Continued from page 7)

ful, swift-moving automobile and rapid, heavily loaded truck. An entirely new kind of road is required to meet changed conditions thrust suddenly upon us. As a result we find our traffic laws, our finances, our old methods of maintenance and construction, inadequate, and little in our past exprience to guide us. However we are making progress, and I see no cause for discouragement.

The mutual desire for co-operation between your association and the highway department, is I believe stronger than ever before. I feel that this is the one element most essential to progress and successful attainment. With that unity of purpose I feel that nothing is impossible to which we set our hands, and that from now on we are going to get more roads and better roads for the citizen's dollar than ever before.

While we have had some confusion and misunderstanding, recently, I am sure that by all pulling together, we may still make 1926 a year to be proud of in the development of Colorado highways.

"Best" Sixty Used to Open Pikes Peak Auto Highway

A "Best" sixty tractor equipped with modern electrically heated cab and a LaPlant Choate pusher plow is part of the equipment used in the opening of the Pikes Peak auto highway. Plans of the owner of the highway include use of the tractor in the construction of several new private roadways, including the widening of the Crystal Park road and the new Cheyenne Mountain highway. Ben Wreath is the foreman in charge of the tractor outfit, which was sold by T. J. Ehrhardt, of the Clinton-Held Company, "Caterpillar" distributors.

Two-ton tractors for maintenance purposes were sold during the month of April to Grand, Routt and Jefferson counties. Also a two-ton outfit was sold to the Union Oil Co. of California for use in constructing roads and sumps in the Wellington oil field, near Fort Collins.

Ray Corson Now Sales Manager of Burnite Machinery Company

R. E. (Ray) Corson, formerly sales manager of the H. W. Moore Co., H. P. Wilson Co., and the Western Equipment Co., of Denver, has become associated with the Burnite Machinery Company, Inc., as sales manager. Mr. Corson has had extensive and practical experience in the design, manufacture and sale of construction equipment. He is well known among the contractors and county road officials of the state.

Tom Burnite, president, announces that the concern now handles the following well-known lines of equipment:

T. L. Smith Co., Concrete Mixers and Pavers. Smith Engineering Works, Crushers and Screening Plants. Parsons Co., Trench Excavators and Backfillers. Union Iron Works, Pile Drivers and Grout Mixers. Mead-Morrison Co., Hoists and Tractors. Orton Crane & Shovel Co., Locomotive Cranes, Truck Cranes and Buckets. Geo. Haiss Mfg. Co., Truck Loaders and Conveyors. Arch Iron Works, Concrete Chuting Equipment. Barnes Mfg. Co., Portable Pumps and Compressors. Northwest Engr. Co., Crawler Cranes, Shovels and Draglines. Elgin Sales Corporation, Elgin Pickup Street Sweepers. Leach Company, Portable Saw Rigs. Erie City Iron Works, Boilers, Engines, Coal Pulverizers. Wheeler Condenser & Engr. Co., Condensers and Cooling Towers. The Permutit Co., Water Softeners and Filters. The Roto Co., Turbine Boiler Tube Cleaners. Spencer Turbine Co., Turbo Blowers and Central Cleaning Plants. Kimball Bros. Co., Passenger and Freight Elevators.

SMOOTH AND BEAUTIFUL HIGHWAYS SELL SCENERY

Colorado is spending millions of dollars hard-surfacing its main highways, among other, that between Colorado Springs and Denver.

The expenditures are increased and the work hastened because the state is a gigantic summer playground for motorists. The purpose is to serve Coloradoans with better facilities for travel, but also to appeal to tourists to come in larger numbers. Permanent highways help to sell scenery by making it more accessible and more enjoyable. Bettering highways involves more than putting the surface in first class shape and so maintaining it. The need also is to insure the largest measure of beauty. That is one reason for planting trees along highways.

The Bulletin Board

New Model Truck

The Four Wheel Drive Auto Company are announcing their new FWD truck, which is their standard Model B three-ton with many improvements in construction and design. In spite of the many improvements made the company has not changed its original policy of interchangeability of parts. Any parts of the FWD truck built today will fit any FWD built since the company began manufacturing in 1910.

Undoubtedly one of the greatest changes made was in the conversion of the seat frame into a two-piece assembly, lowering the seat 5 inches and moving it back 4 inches to give more leg room for the driver. With the two-piece frame the section over the engine can be easily removed without disturbing the control and acceleration units, steering post or radiator. This gives better accessibility to the engine and more comfortable position for the driver. The seat plate is made with a part removable which permits greater accessibility to the engine from above.

Many other valuable improvements have been made on other parts of the truck, in the designing of which the engineers have not wavered from the FWD policy of interchangeability. Any of the improvements will fit the oldest FWD. Interchangeability not only provides greater operating efficiency throughout the truck's life but helps the fleet owner in adding to his fleet without breaking its unity. It also insures a dependable service, for one stock of parts will supply the needs of any FWD ever built.

The Liberty Trucks & Parts Co., 1532 Sixteenth St., Denver, are the Denver distributors for the FWD truck.

New One-Man Road Maintainer Introduced by Adams

A new development in one-man road maintenance machines is embodied in the new Adams One-Man Road Maintainer No. 6, recently introduced by J. D. Adams & Company, of Indianapolis. It is so designed that it can be easily hitched to any light tractor by means of a simple draw bar and clevis. The tractor is readily available for other work and the maintainer need not be held up for any possible tractor repairs.

The new maintainer has 40 feet of blades which work the road surface four times, thus doing four times the work of a motor grader or any other single-blade machine. The blades are rigidly fastened to the main structure and cut in the same plane. The machine itself raises and lowers with the blades. Maintainer controls are conveniently placed so that one man, in his normal position on the tractor, can at all times control both machines without the slightest difficulty.

The Adams One Man Maintainer cuts 9 feet wide. The accompanying illustration shows the manner in which the loose material cut by the blades is worked back and forth across this 9 feet four times in one passage. This result cannot be duplicated by single blade machines and assures an unusually complete working of the road surface.

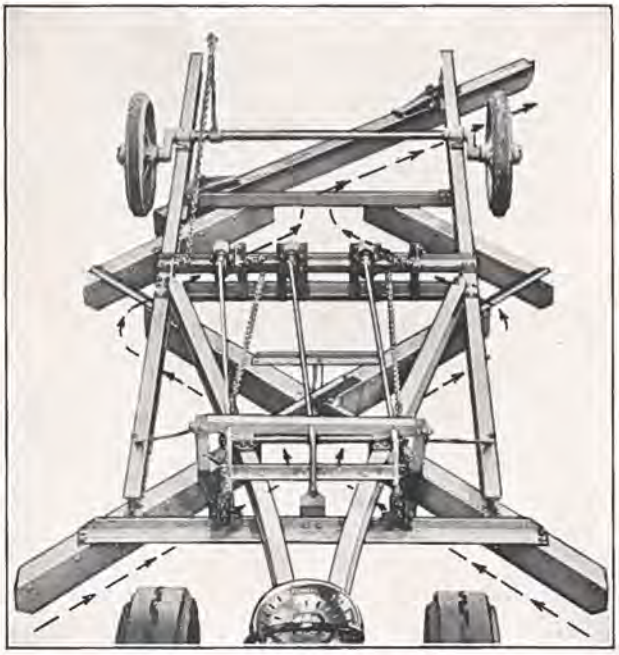
New Type Highway Fence Built to Meet Modern Conditions

The development of a new highway fence that acts as a net, catching and holding cars that leave the road, is recognized by road engineers as the perfect solution of this great problem of reducing the great toll that has resulted in accidents where cars swerve from the road. Leading highway commissions everywhere are turning to this new type of fence.

The old type wooden guard has proved inadequate for present-day need. Cars break through a wooden fence. And it is not uncommon to hear of planks or splinters piercing cars and causing serious injury. The new type guard eliminates all this and provides real safety.

This product is known as Cyclone Road Guard. Fabric is made of No. 6 gauge copper-bearing steel wire, hot-dip galvanized. Thus it is practically rust proof. This heavy wire is woven into a 2-in. chain link mesh, 24 in. high and is erected on 6-in. to 8-in. yellow pine or cedar posts which extend 36 in. above grade level. Posts are spaced not more than 10 ft. or less than 6 ft. apart.

The fabric when stretched tight forms a giant elastic net, and although there are instances where cars traveling at the rate of 50 miles an hour have smashed into this guard, there is no record of any Road Guard ever having been broken through.



Showing arrangement of blades on new maintenance machine recently placed on the market by the J. D. Adams Company. — Elton T. Fair Company, Denver, are distributors in this territory.

PROJECTS BEING ADVERTISED FOR BIDS

Proj. No.	Length	Type	Location	Low Bidder	Bid Price
287-A-2	20.62 mi.	Clay and Sand Subgrade treatm't	Westerly from Ft. Morgan	Orley LaNier	$ 93,051
288-A-1 } 288-B-2 }	5.409 mi.	Paving	Southwest of Merino	Edw. Selander	137,695

PLANS SUBMITTED TO THE U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj. No.	Length	Type	Location
2-R-3	0.554 mi.	R. R. Underpass and Approaches	Between Trinidad and Pueblo
242-AR		Hunter Bridge	Between Grand Junction and Fruita
254-C	0.108 mi.	Steel Bridge and Approaches	Between Hot Sulphur Spgs. and Parshall
258-D	4.426 mi.	Gravel Surfaced	Between Gunnison and Sapinero
271-B	0.778 mi.	Gravel Surfaced and Conc. Paving	Between Pueblo and Canon City
276		Concrete Bridge and Approaches	North of Colorado Springs
271-E	0.416 mi.	Gravel Surfaced	Between Pueblo and Canon City
281-E	0.812 mi.	Concrete Pavement	Between Lafayette and Longmont

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
79-A		Bridge	East of Simla
157-A	5 mi.	Graded	North of Buena Vista
231-R & 246-E	1.5 mi.	Paving	West of Avondale
262-G	3 mi.	Gravel Surfacing	North of Russell
275-F	23 mi.	Graded	Between Castle Rock and Monument
279-D	.5 mi.	Paving	Morrison
283-C	5.9 mi.	Paving	North of Longmont
531-B		Timber Bridge	Between Eads and Prowers Co. Line
548		I Beam Bridge	Near Lyons

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1925

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj. No.
2-R	North of Trinidad	6.66 mi.	Asphalt Paving	Strange-Maguire Pav. Co.	$ 331,632	0	2-R
169-R	Las Animas	0.35 mi.	Concrete Paving	F. C. Dreher	25,336	0	169-R
213-D	Durango, west	3.877 mi.	Gravel Surfacing	Shields & Kyle	47,692.00	10	213-D
246-D	Avondale, east	5.418 mi.	Gravel Surfacing	Shields & Kyle	43,897.00	65	246-D
253-B	Brookston-Milner	3.064 mi.	Gravel Surfacing	Hinman Bros.	66,583.00	84	253-B
254-B	Hot Sulphur Springs-Parshall	1,087 mi.	Grading	Pioneer Const. Co.	61,071.00	94	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	1	258-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	59	258-C
261-A	Rifle-Grand Valley	16 mi.	Gravel Surfacing	Hinman Bros.	132,556.00	95	261-A
262-E	West of Walsenburg	3.527 mi.	Gravel Surfacing	Pople Bros.	24,979.00	83	262-E
262-F	LaVeta Pass-Russell	2 mi.	Crushed Rock Surf.	Central Const. Co.	22,017.00	61	262-F
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.	22,857.00	56	267-B
271-D	West of Pueblo	0.137 mi.	Bridge	C. A. Switzer	11,869.00	56	271-D
272-C	East of Pueblo	0.322 mi.	Concrete Paving	Strange-Maguire Pav. Co.	11,266	0	272-C
275-A	Gann-Sedalia	7 mi.	Concrete Paving	Strange-Maguire Pav. Co.	314,174.00	52	275-A
275-B	Sedalia-Castle Rock	5.334 mi.	Concrete Paving	J. Fred Roberts & Sons	198,771.00	70	275-B
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	35	275-D
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	25	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	25	279-C
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	10	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	31	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	30	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	30	283-B
286-A	Nunn-Dover	0.549 mi.	R. R. Grade Crossing	Brown & Smith	35,162.00	75	286-A
286-B	Nunn, north	19 mi.	Grading	James Collier	87,249.00	76	286-B
287-A	Fort Morgan, west	20.62 mi.	Grading	H. C. Lallier Construction Co.	101,817.00	50	287-A
287-B	Greeley, east	7.565 mi.	Grading	A. R. Mackey	127,303	0	287-B
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee	102,627.00	84	288-A
294-A	Mancos-Cortez	2.9 mi.	Gravel Surfacing	Engler & Teyssier	23,273.00	80	294-A
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	1	298-A

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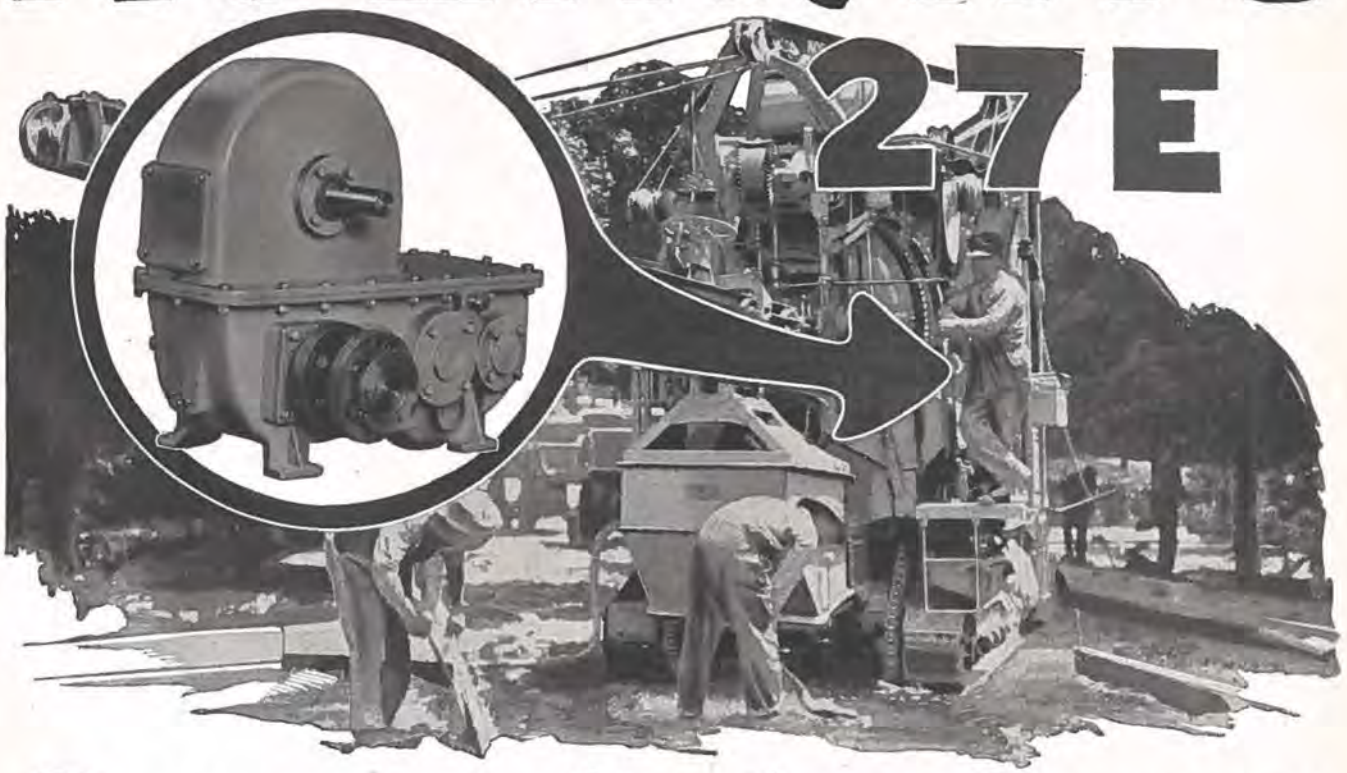

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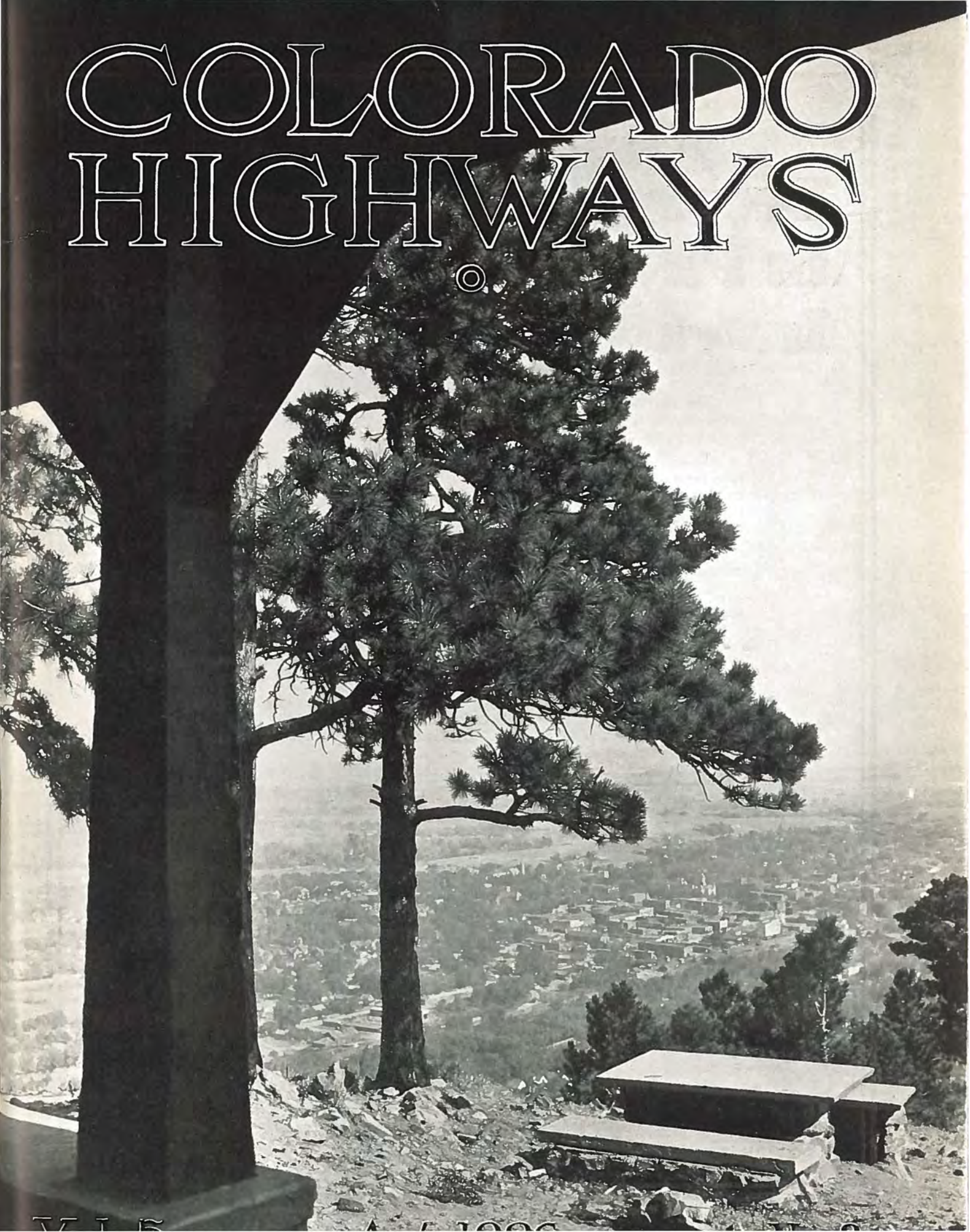

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Colorado Highways
"BETTER ROADS"

VOLUME V. AUGUST, 1926. NUMBER 8

What "Pay-As-We-Go" Would Do For Good Roads in Colorado

FIRST—It would provide the state highway department with funds to launch a progressive program of better road building throughout Colorado.

SECOND—It would enable the highway department to plan its highway construction in every section of the state over a period of years, thereby obtaining most efficient results.

THIRD—It would provide cities and towns with funds to build connecting and "feeder" roads in country districts to the main highways.

FOURTH—It would make those who use roads most pay for their construction and maintenance—yet the cost to motorists would be less than in most states.

FIFTH—It would enable Colorado to obtain $1,400,000 in Federal Aid money annually which will be lost unless the state can match it "dollar for dollar" for highway purposes.

SIXTH—It would save taxpayers more than a half million dollars in interest on outstanding highway bonds.

SEVENTH—It would enable the state to retire past highway bond issues in two years.

EIGHTH—It would make unnecessary the floating of another highway bond issue.

NINTH—It would save motorists $2,000,000 yearly in reduced operating costs through contemplated highway improvements.

TENTH—It would assess part of the cost of good roads upon the tens of thousands of visitors who use our roads annually.

Vote "YES" for the Good Roads Amendment --- *On the Ballot at the November Election*

"Pay-As-We-Go" Finance Plan Meets With Popular Favor in Colorado

Colorado voters will be given an opportunity at the November election of voting for a new era of better road building throughout the state!

The "Pay-As-We-Go" plan of financing state highway activities, incorporated in the Good Roads Amendment, will go on the ballot, since the 33,369 signatures to the proposed amendment have been examined and approved, and no protests have been filed with the secretary of state.

Because the last of the state's $6,000,000 highway bond issue will have been expended during 1926 some method of assuring proper highway construction and maintenance throughout the state must be approved and the "Pay-As-We-Go" plan has met with almost universal favor as the most business-like and scientific way of financing road building.

Unless the Good Roads Amendment is adopted by the voters at the November election, a large bond issue, which nobody wants, or some other system of raising funds for highway construction will be required if Colorado is to build and maintain much needed roads in every section of the state.

Indications are that the costly floating of a bond issue will not be tolerated by the people of the state and that sentiment in practically every county is strong for the "Pay-As-We-Go" or Good Roads Amendment.

Reports from almost every district of the state are to the effect that the "Pay-As-We-Go" plan will be adopted by the voters by an overwhelming majority.

Already the Colorado Good Roads Association has strongly endorsed the amendment, and is planning to wage an intensive campaign in its support. Speakers will go into every county of the state, to explain the plan in detail and show those unfamiliar with the amendment its many praiseworthy features.

It is believed likely that the two major political parties will adopt planks in their state platforms favoring the "Pay-As-We-Go" method of highway financing, in view of the strong sentiment for the plan which has been developing all over the state.

The leaders of the two parties have expressed themselves on many occasions as being unreservedly in favor of the proposal.

Just what the "Pay-As-We-Go" plan is has been set forth in the following brief and authoritative explanation of the principal provisions of the initiated amendment:

An increase of the present two-cents-a-gallon tax on gasoline to three and a half cents a gallon, one cent of the tax to go to the counties, a half cent to the cities of the state, and two cents to the state highway department.

An increase of the present license fees on automobiles to an average of $12 annually. The revenue provided from this source would be divided as follows: Forty per cent to the counties, and 60 per cent to the state highway department. The average motor vehicle license fee in Colorado is approximately $6 at present —$5.95 to be exact. The average for the entire country now is $13.06.

Funds obtained from these increases in gasoline and automobile taxes during 1927, it has been estimated, would be apportioned approximately as follows:

For the counties of the state: $1,862,500.

For the cities and towns: $462,000.

For the state: $1,850,000.

All these funds, under provision of the Good Roads Amendment, would have to be expended on highway improvements.

The amendment would also provide for retiring at once the remaining portion of the $6,000,000 highway bond issue voted by the people in 1922, which is payable over a period of twenty years. The last payment in retiring these bonds would be made in 1928, the amendment provides.

Such speedy retirement of the bond issue would save more than a half million dollars in interest payments on the outstanding bonds. The exact sum to be saved the taxpayers and for the benefit of the state's highway system would be $625,000, it has been calculated by experts.

Adoption of the Good Roads Amendment by the voters at the polls this fall would provide for a $5,500,000 state highway program of construction and maintenance annually, including federal aid—approximately the amount the state has been expending on roads through use of bond issue funds, the last of which will be spent this year.

The initiated measure is entitled "An act in relation to the public highways," and specifies that the law shall become effective, upon its aprpoval by the voters at the polls, on January 1, 1927.

Annual automobile license fees to be charged under the new plan would range from $10 for cars weighing 2,000 pounds or less to $55 for machines of 6,001 to 6,500 pounds in weight. An increase of $2.50 over the basic fee of $10 is provided for every increase of 500 pounds over the basic weight of 2,000 pounds. Thus an

Wise Hill, showing result of State Project work, located 10 miles south of Craig, leading to the Moffat county oil fields.

Scene on U. S. Highway No. 50, located between Canon City and Florence, in Fremont county.

automobile weighing from 2,001 to 2.500 pounds would be taxed $12.50; one weighing 2,501 to 3,000 pounds, $15, etc.

Sponsors of the "Pay-As-We-Go" plan declare that, if adopted, it will permanently solve Colorado's pressing problem of state highway financing. It will make it possible for the state highway department, which is declared to be one of the most efficient in the United States, to cooperate with the cities and counties of the state in planning road construction and improvements over a period of years, and in this manner reducing engineering costs.

The plan also contemplates the abolition of the personal property tax on automobiles after 1926.

Abolition of the personal property tax on autos is proposed in the senate joint resolution No. 7, which the last state legislature voted should be referred to the people of the state at the coming general election for their formal approval or rejection. Approval of this referendum measure is expected to be voted by those voting for the Good Roads Amendment.

As proof that the "Pay-As-We-Go" plan is essentially the most equitable method of financing Colorado's highway construction and maintenance, advocates of the plan cite the fact that motor car owners in the state now pay an average of $14.11 annually in license fees and gasoline taxes—substantially less than the average for the entire United States, which is $22.50.

With the exception of only two other states, Illinois and North Dakota, Colorado motorists pay less in license fees and gasoline taxes than the automobile users of any other state in the Union!

In approving the plan of paying for state highways as they are built, Coloradoans would be following the method worked out with splendid success in Wisconsin, Nebraska, Texas, Indiana and other commonwealths. By paying road bills as the roads are constructed and maintained, the great state of Wisconsin has kept free of public debt, except for a small debt of $1,800,000 of Civil War days, which is being paid off from year to year.

Many states are burdened with public debts of hundreds of millions of dollars, through the pernicious practice of issuing bonds for highways and other purposes, proponents of the "Pay-As-We-Go" plan point out. Bond issues for road building constitute probably the most extravagant system of financing yet devised, they declare.

"The soundest public principle is the pay-as-you-go policy," declares State Treasurer Solomon Levitan of Wisconsin.

Colorado Good Roads Association officials, who are staunchly behind the Good Roads Amendment, declare that they have found people of all classes in practically every region of the state opposed to bond issues for road building. They say the citizens of the state are lining up for the "Pay-As-We-Go" program as the only logical alternative to another bond issue.

In the past several years highway activities of the Centennial state have been conducted to a large extent from funds obtained from the sale of state highway bonds, but this system has been regarded as entirely too expensive and extravagant due to heavy interest payments required on the bonds.

It was a desire to eliminate this costly method of road building that inspired good roads enthusiasts to consult with expert financiers and formulate, largely from the experiences of other states, the "Pay-As-We-Go" plan.

Adoption of this plan at the November election would save to the state $1,400,000 annually in Federal Aid money, for the construction of new major highways, it is pointed out. Unless the voters do approve the initiated amendment the state may lose this money from the federal government, which is made available to Colorado only on condition that the state set aside an equal amount of money for highway purposes.

Most of the Chambers of Commerce in the state have already gone on record in favor of the amendment, according to reports received.

Officials of the Colorado Good Roads Association declare that wherever the provisions of the plan have been explained, motorists have become enthusiastically in favor of it as the most logical solution of the problem of economical financing the state's highway construction and maintenance activities.

An active newspaper campaign in favor of the plan is anticipated, inasmuch as many editors have already familiarized themselves with the principles of the program and have heartily endorsed it.

It was the county commissioners who circulated the petitions in every county of the state. More than 7,000 signatures of registered voters over the required number were obtained before the petitions were filed with the secretary of state on July 2.

The plan provides that distribution of the gasoline tax among the counties shall be in proportion to the mileage of state roads in the counties, and that such funds must be spent only by direction of the county commissioners on the construction and maintenance of roads.

Looking east on State Road No. 54, near Wray, gravel surfaced under State Project contract employing farmer labor.

The motor vehicle fees collected would be distributed according to the number of vehicles registered in each county.

It is also provided that the funds alloted the cities and towns must be used in the building and improvement of connecting links to the main highways or highways built by the state to the corporate limits of the cities.

These provisions, it is evident, would enable the agricultural and mining districts of the state to construct "feeder" roads to the main traffic arteries of the state. Such connecting roads would mean much to the farmer in reduced transportation charges. The farmer's markets would be moved just that much nearer to the farm.

It is estimated that the increased gasoline tax proposed under the "Pay-As-We-Go" plan would bring in about $3,150,000 annually, and that the increased motor vehicle license fees would approximate $2,500,000 yearly.

The state's share of the revenue under the plan would be about $4,250,000, it has been calculated.

From all reports the proposed Good Roads Amendment will be adopted by an overwhelming vote throughout the state. Everywhere intelligent citizens have lined up behind the program, which will mean a new and better system of road construction and improvement in Colorado.

Those who have studied the plan most are its most enthusiastic advocates, for it is grounded in good, hard common sense and a desire to call a halt to the unduly expensive method of floating bond issues for highway purposes.

Highway experts have sounded a warning that unless Colorado voters go to the polls and make sure the passage of the Good Roads Amendment that the state's highway activities will be seriously crippled.

One feature of the plan has appealed very strongly to business men and that is the increased gasoline tax, which they declare, places more equitably upon the man who benefits most from highways the task of contributing in proportion to his use toward their proper maintenance and construction.

In this manner, too, the thousands of tourists and visitors who flock to Colorado every summer would share proportionately in the burden of building and improving the roads over which they enjoy a summer's motoring. This would be no unfair tax upon the visitors to the state, it is pointed out, since the increased gasoline tax they would be required to pay would be actually less than is levied in many other states.

Those who appreciate the real value of splendid highways should be sure to go to the polls at the November general election and vote "YES" for the Good Roads Amendment!

State Highway Forces Rush Work on 1926 Road Projects

During the first seven months of the present year, twenty-seven federal aid highway projects, calling for a total expenditure of $2,300,000, have been contracted by the Colorado highway department to low bidders, and are now under construction throughout the state!

Forty state projects, involving an expenditure of $500,000, are also under way!

Up to August 1, approximately $1,250,000 worth of highway construction work had been actually completed, under the direction and supervision of the state highway department!

Colorado highway department officials may well be proud of such an achievement—especially during the first seven months of a year in which road work got a late start largely on account of unfavorable weather conditions.

The principal contracts let are on the main North-and-South state highway, from Fort Collins, through Loveland, Berthoud, Longmont, Denver, Colorado Springs and Pueblo to Trinidad.

Other important projects were undertaken along the main highway between Greeley and Sterling, and along the Santa Fe Trail in the Arkansas Valley.

There are also a number of important scattered projects on the Western Slope.

The larger of the state projects include work on State Highway No. 6, between Parkdale and Salida, Loveland pass in Clear Creek county, Highway No. 58, which is known as the Guy Hill road in Jefferson county, all of which are being constructed by convict labor.

Other large state projects are located on Road No. 8 between Limon and Deer Trail in Elbert county and Road No. 102, which is the Kansas City Air Line, between Adams and Arapahoe counties, and several surfacing projects scattered generally over the state.

A review of the construction activities along the main North-and-South state highway is of more than usual interest just at this time, as an illustration of the large amount of important and vitally necessary highway construction and improvement work being pushed ahead at top speed by the Colorado highway department.

The highway from Fort Collins to Berthoud, was paved in previous years by the department, and through Berthoud and south for 4.2 miles a concrete paving project begun a year ago is now practically 75 per cent complete.

From the Boulder-Larimer county line south to Longmont work has just recently begun on a concrete paving project 5.8 miles long.

From the Six-Mile corner south of Longmont, for 5.6 miles, a contract has been let for grading and drainage of the highway, preparatory to paving next year.

From Lafayette south to Denver the highway has been paved in previous years.

Brown's Canon bridge over the Arkansas River, south of Salida, constructed with Federal Aid funds.

Scene on Victory Highway, located west of Steamboat Springs, constructed under contract with Federal Aid funds.

Paving from Denver to Gann was previously completed, and from Gann to Castle Rock three projects totaling 13.2 miles of paving have just been practically completed. A barbecue and celebration of this achievement was held at Castle Rock, Saturday, August 7.

Grading and drainage of 10.3 miles, from Castle Rock to Larkspur, are now under way. Plans are being made now for grading and draining the section of the main highway between Larkspur, through Palmer Lake to Monument, this year. Two railroad underpasses just north of Monument, to eliminate grade crossings over the Denver & Rio Grande Western and Atchison, Topeka and Santa Fe railroads, are also planned in connection with this important road improvement project.

From Monument to Husted, 4.8 miles of concrete pavement are now being laid. Previously the department had paved the stretch of roadway from Husted to Colorado Springs.

North of Trinidad, two highway paving projects totaling 7.2 miles are now under construction. These projects call for asphalt paving.

In brief, these are the outstanding highway projects which the state highway department worked out for the improvement of the most heavily traveled road in Colorado—a giant artery of traffic running through the heart of the Centennial state, from north to south.

There are several highway projects under way, also, in practically every section of the state.

Considerable work has been undertaken on the important road from Greeley to Sterling. In April a contract was let by the department for 7.6 miles of grading and drainage east of Greeley. This work includes a new bridge over the South Platte river.

Plans are being prepared now by the engineering division for 20 miles more of grading and drainage along this highway. It is expected that this work will be started this fall.

From Fort Morgan to west of Wiggins a 20.6-miles grading and drainage project, for which the contract was let a year ago, was completed this year.

Recently a contract was let for 4.5 miles of concrete paving west of Fort Morgan. Between Merino and Brush 5.4 miles of highway are being paved at the present time.

When the main North-and-South state highway improvements planned between Denver and Colorado Springs are finally completed, a large number of dangerous railroad grade crossings will have been entirely eliminated, and in their stead seven underpasses will be used.

This improvement alone will mean the saving of many lives and the prevention of innumerable accidents and injuries in the years to come, the highway safety experts declare. This work is in line with similar safety highway construction throughout the United States, and is of most vital importance to the thousands of Coloradoans as well as the tourists who visit the state for their vacations each summer.

Certainly such a comprehensive program of highway construction and improvement throughout the state speaks volumes for the efficiency and effectiveness of the work of the state highway department.

But this work cannot be continued next year in the way it should be, the highway officials declare, unless adequate finances are assured, since the last of the state's $6,000,000 highway bond issue voted by the people in 1922 will have been expended by the close of the present year.

Therefore, funds from some other source are necessary, if Colorado's highway program is not to be seriously crippled. Much needed roads in many sections of the state, which the department plans to construct or improve during the coming year will be neglected unless the necessary money for the work is raised in some manner.

In short, this is the critical condition which faces the state highway department today.

With the idea of solving the difficult problem of properly and economically financing road building and maintenance activities in the state for all time to come the Colorado County Commisioners Association, prominent motorists and good roads experts studied the matter for many months and finally decided to follow the successful method adopted and in use in several other states, including Nebraska, Wisconsin and Texas—the "Pay-As-We-Go" plan.

This "Pay-As-We-Go" method of financing highway activities of the state was agreed upon in preference to large bond issue proposals. It was generally agreed that bond issues for road building in the end cost the taxpayers at least double the actual amount of bonds issued on account of the heavy interest payments required for many years.

"Pay-As-We-Go" means just what it says—pay for the roads as they are built and used, from year to year, and thereby avoid the payment of twice the cost of the highways through interest charges which would be necessitated if bonds were floated.

The county commissioners and good roads enthusiasts worked the plan out in detail and incorporated it in a proposed state constitutional amendment. Peti-

tions were circulated throughout the state for the required signatures of voters to insure the proposal a place on the ballot at the November election, to give the people of the state an opportunity of endorsing and authorizing this method of financing.

Although only a limited period of time was available in which to circulate the petitions, the proposal found favor almost everywhere, and signatures were obtained in every county in the state. Seven thousand voters more than the required number signed the petitions.

The "Pay-As-We-Go" plan has been quite aptly termed as the "Pay-As-We-Ride" plan of financing by numerous good roads enthusiasts. The advantages of the system of paying for new and improved roads as they are used are self evident to those who give the matter a little thought.

Past methods of unduly burdening the taxpayers with heavy bond issues have proven unsatisfactory in a large number of states in which they have been tried.

The sentiment throughout Colorado has become more and more pronounced against the issuance of any further bond issues for state highway purposes, according to road officials who have investigated the subject.

The Colorado Good Roads Association, the Colorado County Commissioners Association and good roads advocates in every part of the state have given their support to the "Pay-As-We-Go" plan of financing, which will be placed before the voters of the state for their approval or rejection at the November election. It is predicted that the Good Roads Amendment, which is the "Pay-As-We-Go" plan written into legal phraseology, will be approved by the great majority of the ballots cast when the voters go to the polls.

Should the citizens of the state fail to pass the amendment at the election the plans of the Colorado highway department for more and better roads in 1927 will be cut short to such an extent that the state will lose practically $1,400,000 in federal aid funds which could be used for road building within the state if the measure is adopted. Unless the plan is approved at the polls the state will not have enough money to meet the federal government's requirement of matching "dollar for dollar" with state funds the money made available for this state for federal aid in highway construction.

New roads which the department would like to build, and vitally needed improvements to highways already built, in practically every section of the state simply would have to be postponed for another year or perhaps several years if the Good Roads Amendment is defeated in the election, highway officials point out.

Work which should be done next year in virtually every county of the state will have to be left undone if the people do not vote for the "Pay-As-We-Go" plan.

Leading motorists who are in touch with the situation declare that the work of the state highway department during the present year has been ample evidence of the department's high state of efficiency and service, and sufficient reason in itself for a generous approval of the "Pay-As-We-Go" method of financing, which alone will permit the department to continue its comprehensive program of road construction and maintenance during the coming years.

"Colorado will take a back seat in the work of paving and improving the highways of the state unless the Good Roads Amendment is adopted at the November election," declared a prominent highway expert in discussing the critical condition facing the state in the event the financing plan is not approved by the voters.

"Adoption of the plan would permit the state highway department to continue next year and every year thereafter with a program of highway work which would be progressive and far-sighted. It would enable the department to carry on the good work it has been doing in so many parts of the state so far this year, and in previous years.

"With the adoption of the 'Pay-As-We-Go' plan, which is expected, this state will take second place to none of the other states of the west in that most important task of building, extending, improving and maintaining good roads.

"Not only the farmers will reap rich benefits from the adoption of this plan, through the construction and improvement of agricultural region roads to markets, but residents of cities will be enabled to enjoy additional miles of smoothly paved highways. Tourists and visitors who flock to Colorado's famous scenic resorts from every state of the Union, spending millions of dollars in this state annually, would come in ever increasing thousands with the construction of more and better roads which the 'Pay-As-We-Go' plan would make possible.

"Let everyone who wants Colorado to have the best roads possible at a minimum expense, boost for the Good Roads Amendment!"

Completed State Project on Hoosier Pass, 10,000 feet in elevation, located in Summit county.

Scene on road between Durango and Silverton, now being improved by state and federal road forces.

Flagstaff Mountain Highway

By C. H. Vivian

THE completion this summer of the Flagstaff Mountain road gives the city of Boulder a scenic highway which equals or excels the famed lariat trail which ascends Lookout Mountain above Golden.

The two roads are very similar, both climbing the abrupt slope of the first tier of foothills, giving the motorist unparalleled views of the valley on the one side and the snow-mantled range on the other. They rise to approximately the same heights above the cities they overlook.

Boulderites claim their highway is the peer of all such roads in the state from the sightseer's angle. Whereas the Lookout Mountain drive crosses the almost barren slopes of Mount Zion, the sides of Flagstaff Mountain are covered from bottom to top by verdure ranging from wildflowers and grass to towering pines and spruces. Moreover, the slope is broken by jutting masses of red sandstone which at times assume the spectacular in size and outline, relieving the traveler of any sense of monotony.

The road winds in and out of these rock forms, breaking forth here and there on vantage points which give sweeping panoramas of the city of Boulder and the fertile farming region which stretches to the east and north. This is all irigated land, practically all under cultivation and from these aerial observation spots it appears as a gigantic green carpet, broken here and there by glistening lakes.

The view of the Continental Divide from the upper portions of the highway is one of the most impressive that can be secured. It covers a sweep from the Arapahoes on the south to Long's on the north. The serrated line is snow-covered even during the hottest summer. Arapahoe glacier looms forth in all its striking magnificence, the altitude of the road being such as to expose the entire area of the ice sheet to view.

As the motorist ascends the sinuous road, vistas to the north and south are unfolded at various points. Immediately to the south are the Flatirons, eccentric and beautiful rock forms created from the same sandstone strata which are responsible for the Garden of the Gods. Beyond these sheer-faced sentinels are the heavily-timbered, sharp-pinnacled peaks known as Green, Bear and South Boulder, while on toward the horizon is the hoary head of Pike's Peak. To the north there stretches the unbroken foothills chain which reaches to Wyoming.

Flagstaff Mountain itself rises to a pyramidal crest directly west of the city of Boulder. It is 7,025 feet in elevation, being 1,675 feet higher than the business section of the city, though less than two miles away by air line. Legend has it that the Arapahoe Indians used to build their signal fires there, creating beacons which were visible many miles out on the plains. For many years the Stars and Stripes have waved there, a flag furnished by patriotic and civic organizations of Boulder being unfurled constantly from a 100-foot flagpole given by H. O. Andrew of Boulder, former state senator.

Nearly sixty years ago, when the discovery of gold at Gold Hill gave birth to the cluster of log houses which has since become Boulder, the hardy pioneers created a rough wagon road up Gregory canon, which divides Flagstaff Mountain from Green Mountain on the south. This was used for logging operations and subsequently for a time became a part of the road to Black Hawk and Central City. It contained grades up to 30 per cent and was abandoned to all traffic as soon as the slopes on either side had given up their saw timber.

To take its place, a wagon road was built up the face of Flagstaff Mountain, starting on the Fortieth parallel just west of the Colorado Chautaqua grounds and progressing by means of high grades, frequent sharp curves and veritable ladder-like switchbacks. This road leads to Kossler's lake, the eastern end of the Public Service Company of Colorado's hydraulic line from Nederland dam. It then veers to the south, descending into the valley of South Boulder creek, touching the stream above the box canon which extends westward above Eldorado Springs.

This roadway was so narrow and steep as to be dangerous and despite its scenic allurements, it has never been accepted as a local automobile highway, much less as a route to be recommended to tourist drivers from the flat country.

For a number of years Boulder people dreamed of a wide, safe road which could be easily negotiated. Particularly after they noted the popularity of the Lookout Mountain drive were their hearts set upon girdling Flagstaff Mountain with a similar artery for motorists. It was found, however, that it could not be considered as a commercial road and that state and federal funds were therefore not available for its construction.

Investigations and discussions revealed that local funds must be applied and it was difficult to divert county monies for purely scenic highway purposes, as public sentiment was against it in virtually all sections except the city of Boulder.

However, some three years ago Commisioner E. B. Hill made a start by constructing a segment a mile long connecting the crest of the peak with the existing road, thus making it possible for intrepid motorists to drive clear to the summit. This was a rather unorthodox pro-

Shelter house, in Panorama Park, at summit of Flagstaff highway, constructed by Lions Club of Boulder.

ject, inasmuch as the lower portions of the highway remained unimproved, but Hill had an object in view.

His purpose in building this stretch was to encourage people to make the trip to the summit, educate them to the scenic potentialities of the area and thus gain their support for additional construction. The segment built was a comparatively level spur, following along the top of the saddle extending backward from the pinnacle of Flagstaff to the old road. It cost $5,227.

Hill's theory proved sound. Motorists made the climb in sufficient numbers to create a sizable demand that the lower reaches of the mountain be provided with a modern road. Accordingly, in 1925 the county constructed 4,300 feet of new highway, eliminating some of the steepest grades from the old road. This project started at Panorama Park, approximately half a mile above the base of the mountain, the road to that point being in such condition that it could be negotiated comparatively easy. This segment, built by county forces, cost $11,600. It was largely steam shovel work.

There still remained 9,667 feet of line to provide a first class road to the spur link extending to the crest of the mountain. This was placed under contract this year and was under construction during April, May, June and July. The successful bidder was Thomas Murphy of Florence, Colo., his figure being low at $19,000. He started clearing the right of way on April 22, and a few days later had a full force of construction men at work.

He sub-contracted approximately 5,000 feet on the lower end to Johnson and Graham of Canon City and 1,400 feet to Roy Peterson of Sugar Loaf, concentrating his own crew on the upper end, where rock work was heaviest.

Only a center line stake survey was run and no attempt was made to classify the materials of excavation. The contractor found that the total excavation was approximately 28,000 cubic yards and that it ran about 35 per cent rock and 65 per cent common.

The road is 22 feet wide, including ditch. It has a fall of 12 inches toward the inside to facilitate drainage. It has a maximum grade of 6 per cent, except for a few short stretches of 7 per cent. The minimum radius for curves is 50 feet.

The construction was practically all on sidehill sections, with slopes varying from 10 degrees to nearly vertical. Practically no material had to be handled endwise. The general method followed was to cut 15 feet into the hillside from the staked center line, sidecasting the excavated material to build the outer edge. In most places the materials of excavation were great enough that no care had to be taken in shooting and the blasted rock was allowed to go down the hillside.

Approximately one-half the contract, along the lower section, was in red sandstone and the characteristic soil resulting from its erosion. This rock yielded well to drilling and shooting. The upper portion of the line was in granite, some of which was particularly resistant to both drills and powder.

A diversity of drilling methods was used. On the lower section, Johnson and Graham used a Gardner portable compressor, belt-driven from a Fordson tractor. It furnished air for one Denver Rock Drill Company drill.

On the middle section Contractor Peterson, a practical miner, utilized hand drilling, both single and double jacking being used.

Contractor Murphy used power drills on his section. Air was furnished by a stationary, gas-driven Ingersoll-Rand compressor. A 2-inch iron pipe line delivered it to a No. 35 Ingersoll-Rand Jackhammer.

Murphy's section included 400 feet of especially hard granite, the line being in solid rock throughout that length. The cost of excavation over this segment was $3.60 a foot. Not only was the rock extremely tough in itself, but it "lay" in such a position as to add difficulty to the drilling and shooting crews. The drills could average only 90 feet of hole a day in this formation.

On the entire job approximately $1,200 worth of explosives was used. Dynamite of 40 and 60 per cent strengths was employed.

Considerable of the common excavation was handled with fresno scrapers, fifteen teams being used. In rock the handling of materials was essentially by hand. The labor force on the work was forty-seven men.

The surfacing material is of high grade and was abundant in the excavation. This was put on to a depth of from six to eighteen inches, team-drawn graders being used for the purpose. It is a fine-grained gravel which packs readily into a compact cushion which will insure a smooth, resilient, easily-maintained roadway.

The distance from Boulder to the top of the mountain is approximately six miles, of which four and a half miles traverses the mountain itself.

The highway makes accessible scores of sightly picnicking plots. The largest of these, Panorama Park, already is improved by a rustic stone shelter house and several cooking ovens, constructed by the Lions Club of Boulder.

There are several springs on the mountain which can be developed. The Woman's Club of Boulder has interested itself in this enterprise and has appropriated funds which will be used for the purpose. Pipe will be laid where necessary to carry spring water to the roadside spots of beauty.

There still remains approximately a half-mile of roadway at the base of the mountain to be improved. It is probable that this will be rebuilt next year.

Another possibility is to continue the road down into the valley of South Boulder creek, where connections could be made with both the Pine Cliff road and Eldorado Springs, furnishing two circle drives analogous to those in the Denver Mountain Parks.

It is expected that the new road will prove popular with Denver motorists as traffic congestion increases in the mountain parks. From Denver to the summit of Flagstaff Mountain is a drive of less than forty miles. It can be made in two hours of leisurely traveling.

The road represents a total expenditure by Boulder county of $37,000 to date. When the lower section is rebuilt, the sum will reach $45,000 to $50,000.

All the engineering work incident to the project was done by George E. Wilson, county surveyor of Boulder county.

Our Cover Picture

A view of the city of Boulder taken from the shelter house in Panorama Park on Flagstaff Mountain in Boulder county is shown on the cover of this month's issue of COLORADO HIGHWAYS.

Follow the Route Numbers

FIFTEEN hundred United States highways markers, in the form of a shield, with the state designation, "COLORADO," across the top, the letters "U S" for the United States in the center, and the number of the highway itself below, are now being posted along the main interstate highways running through the state, by the state highway department, for the benefit and information of motorists, particularly those from other states.

Highway department officials declare these markers, which were officially authorized by the joint board of officials of the state highway departments and the federal bureau of public roads, will be set in place within the next thirty days at the most.

These main arteries of motor travel were selected for such designation by representatives of state and federal governments with the idea of selecting and marking a limited system of roads for the benefit of motorists who desire to travel across the continent and wish to follow the same road for most of the journey.

Such markers, it is pointed out, will be of exceptional value to the state of Colorado, since they will be the guide posts of tourist travel from many states into this commonwealth—the "nation's playground."

After these main interstate highways have been marked in this fashion the state highway department plans to erect about 4,000 caution and warning signs at the proper places for the protection of motorists.

The principal highways in Colorado which are now being marked as United States highways, and numbered accordingly, include two cross-continent highways running from east to west and one from north to south.

No. 40 starts at Wilmington, Delaware, but at Manhattan, Kan., it divides into two branches known as 40 North and 40 South. The former enters Colorado east of Burlington and continues to Limon. From then on through Denver over Berthoud Pass, Steamboat Springs, Craig and to San Francisco, it is No. 40. No. 40 South, which is the other branch of Highway 40, dividing at Manhattan, enters Colorado east of Cheyenne Wells, passes through Limon, Colorado Springs, Buena Vista, Tennessee Pass, Glenwood Springs and joins No. 50 at Grand Junction.

No. 50 starts at Annapolis, Maryland, and enters Colorado in the Arkansas Valley, passes through La Junta, Pueblo, over Monarch Pass, Montrose, Grand Junction and joins No. 40 near Wadsworth, Nevada.

The principal north and south highway, under this system, is No. 85, extending from Canada down through Cheyenne, Greeley, Denver, Colorado Springs, Pueblo, Trinidad, through to Bowie, Texas.

No. 285 connects Denver and Laramie, Wyoming, via Fort Collins and Virginia Dale.

These are the only two distinctly north and south roads which the joint board granted to Colorado. Some of the other roads which extend a good deal in a northerly and southerly direction are simply treated as connecting lines between easterly and westerly roads.

The other Colorado highways to be marked as U. S. roads are described as follows by the state highway department:

No. 38, which starts at Lincoln, Neb., enters Colorado east of Holyoke, extends westerly through Sterling, Fort Morgan and joins No. 85 at Greeley.

No. 138, which connects No. 30 at Chappell, Neb., on the Lincoln Highway, with Sterling, Colo.

No. 350, which connects La Junta with Trinidad.

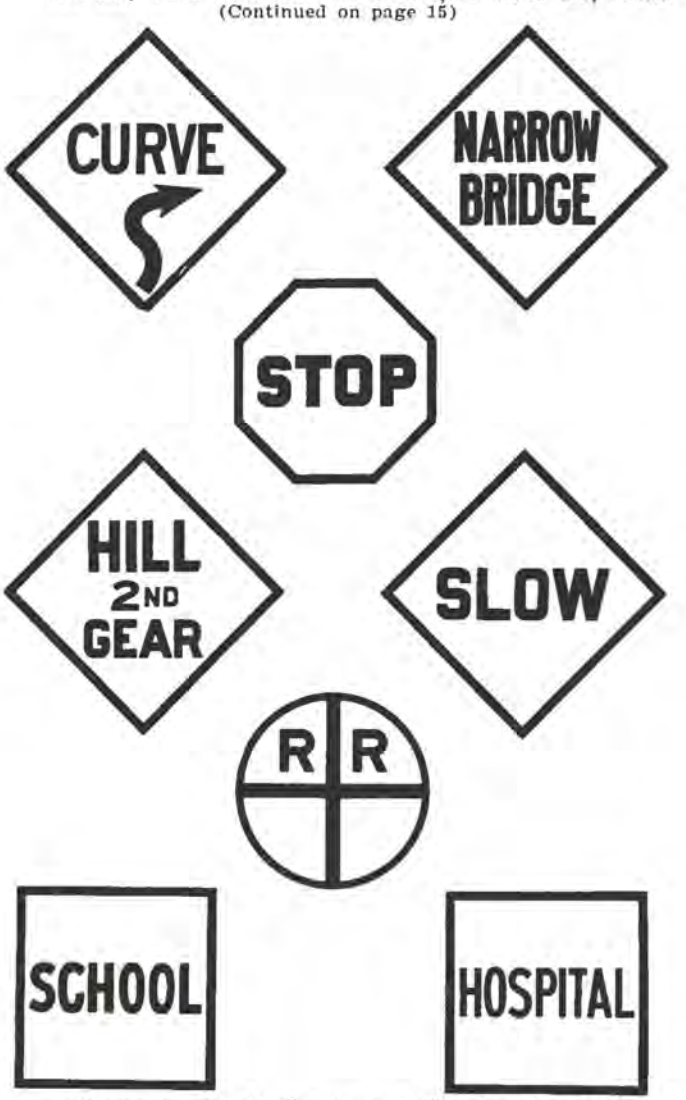
No. 450, which begins at Walsenburg and extends westerly over La Veta Pass and Wolf Creek Pass through Pagosa Springs, Durango, Cortez and westerly to Moab, Utah.

No. 550, which connects Road No. 50 at Montrose with Road No. 450 at Durango.

No. 560, which extends from Cortez, on Road 450, south-

(Continued on page 15)

Standard route marker adopted by the U. S. Joint Board on Interstate Highways for use on all United States highway routes. The color scheme is black and white. These shields are being posted on the interstate roads running through Colorado.



Illustrations of the Caution and Warning signs to be erected by Colorado highway department in the near future for the protection of motorists on State Roads.

WHAT THE STATE EDITORS SAY

"The Lake county commissioners assured Dan C. Straight, president of the Colorado Association of County Commissioners, last night, that they were heartily in favor of the 'Pay-As-We-Go' plan for the construction of roads by increasing the motor vehicle license fees and the gasoline tax. Mr. Straight finds the 'Pay-As-We-Go' plan is being enthusiastically supported in all parts of the state. Many other commonwealths of the Union, he points out, have adopted similar plans."—Leadville Herald-Democrat.

"Under the 'Pay-As-We-Go' plan better roads will result, and increased mileage will be obtainable therefore from the gasoline purchased, which it is believed would offset the extra tax. Unless the proposed law goes through, the state will have no funds with which to meet the federal aid, and this will cause a loss of more than $1,000,000 which otherwise would be available.

"The measure has strong support and would eliminate the paying of interest on bonds for road purposes."—La Junta Tribune.

"W. L. Rees, county commissioner, in a talk before the Pueblo Auto Trades association, predicted that if the 'Pay-As-We Go' plan of highway financing was placed on the November ballot and carried, that paving of the Colorado Springs-Pueblo highway would start within the next year and that before many years the entire stretch of highway between these two cities would be paved."—Pueblo Chieftain.

"The interest shown in the 'Pay-As-We-Go' highway budget plan that is sponsored by the county commissioners, and which would probably cause the building of many new roads and hard-surfaced thorofares in the state is so great that The Independent is publishing in full the proposed act and its purposes. The object is continuance of the improved highway program."—Walsenburg Independent.

"People of the western slope of Colorado are even more enthusiastic over highway improvements than those of the eastern slope, according to Dan C. Straight, president of the state association of county commissioners. Mr. Straight has returned home from a trip devoted to boosting for the 'Pay-As-We-Go' plan of highway financing. Mr. Straight displayed a large sheaf of favorable newspaper editorials and personal letters showing the success of his trip."—Greeley Tribune-Republican.

"The 'Pay-As-We-Go' amendment that will be on the ballot in the election this fall is sponsored by the County Commissioners' Association of Colorado. The plan presented in this amendment is generally conceded to be the most feasible and equitable way to raise the money necessary to construct and maintain the highways of the state."—La Jara Gazette.

"The county commissioners of southeast Colorado"—the Arkansas Valley—"at a meeting in Pueblo last Saturday endorsed the 'Pay-As-We-Go' plan for raising funds to maintain and build state highways. The plan would do away with further bond issues and place the building and upkeep of roads upon those who use the roads most. Under the plan incorporated cities and towns in the state would share in the distribution of the funds derived to the extent of an amount equal to one-half cent er gallon of gasoline. This fund would be used on roads now paved or improved to city limits."—Pueblo Times.

"That the county commissioners of this district, No. 2, are very much in favor of the 'Pay-As-We-Go' plan for construction and maintenance of state roads is evidenced in the resolutions passed at the annual meeting held this week in Aspen."—Delta Tribune.

"One of the most important measures ever to come before the voters of Colorado will be the 'Pay-As-We-Go' bill, initiated under the sponsorship of the county commissioners of Colorado. The state highway department is working with the county commissioners of the state in an endeavor to educate the people as to the importance of the proposed law."—Golden Transcript.

"The 'Pay-As-We-Go' plan for caring for the needs of the state highway department will be among the eight measures having places on the ballot at the next state election. This new plan for financing the highway department was drawn up by the Colorado Association of County Commissioners, and meets with the approval of the state highway commissioners. This measure will be one of the most important of the eight to be voted on by the people in November."—Pueblo Star-Journal.

"The proposed 'Pay-As-We-Go' highway proposition is not a bond issue, therefore, there would be no heavy interest charges to pay. Interest money can be used in building roads. It will retire past bond issues in two years and save $625,000 in interest on outstanding bonds. Not only this, but it will provide funds to meet $1,400,000 yearly aid of the federal government, which otherwise would be lost. The combined motor vehicle and gasoline tax under this plan will be less than the average in other states."—Collbran Voice.

"The 'Pay-As-We Go' measure merits the favorable consideration of voters. If Colorado is to continue its good roads program money must be provided. Even this year the state is losing a great deal of federal money because it is unable to match it dollar for dollar.

"This paper believes the measure should be adopted. The 'Pay-As-We-Go' plan seems to be the very best way to secure better roads for Colorado."—Steamboat Springs Pilot.

Follow the Route Numbers

(Continued from page 12)

erly through the Indian reservation to connection with Highway No. 60 at Gallup, New Mexico.

The interstate highway metal markers used in designating these roads are placed seven feet from the edge of the pavement, to the side of the road. The bottom of the marker is about two and a half feet above the grade of the road.

It was decided to so place the markers after officials had studied the experience of Wyoming in this regard, and after driving over some of the roads for the purpose of determining the value of placing the signs as indicated with special reference to night driving.

Although this location of the markers is bound to interfere somewhat with maintenance work, it was found to be absolutely necessary from the standpoint of posting the markers so as to obtain the greatest possible benefit for the traveler, particularly the night traveler.

It was agreed that unless the signs were so placed they would not be of maximum value to the motorist.

These standards are being placed approximately two miles apart where cross roads or branches do not indicate a deviation from the route. The standards are posted on alternate sides of the highway and the signs are made up of two shields placed back to back so that they can be read by travelers going in either direction.

The state highway department began the erection of these signs about two weeks ago, with a supervisor and one working crew. The crew was placed in charge of a foreman with a truck and the necessary tools and two assistants. The supervisor goes ahead and logs the roads and advises the foreman as to the exact spot where he wishes the sign to be placed.

The supervisor also is logging the roads for the warning and caution signs, which will be erected when the markers have all been posted.

At present the shield markers displaying the numbers of the main interstate highways are being put in place as speedily as possible, for the department desires to have them erected before the work of posting the caution and warning signs is begun.

The shield markers are being fabricated at the state penitentiary by the license plate division.

BIDS OPENED

Proj. No.	Length	Type	Location	Low Bidder	Bid Price
293-B	80 ft. Bridge	Steel Bridge and Graveled Approaches	Betw. Colona and Ridgway	Geo. F. Wear	$ 21,645.25
536	76 ft. Bridge	Timber Bridge and Graded Approaches	2 mi. S. E. of Franktown	A. R. Mackey, Greeley	4,353.40
546 No. 2		Reconstruction of Timber Bridges	West of Divide	J. R. Donaghy	2,977.60
262-G No. 1	5.014 mi.	Gravel Surface	Betw. Russel and La Veta Pass	Central Construction Co., La Veta	44,822.00*
287-A-2	4.011 mi. 16.61 mi.	Concrete Paving Subgrade Treatment	West of Fort Morgan	H. C. Lallier Const. & E. Co., Denver	119,016.60*
294-B	1.416 mi.	Gravel Surface	Betw. Mancos and Cortez	Engler & Tryssler, Durango	21,551.40*
295-B	6.622 mi.	Gravel Surface	Southerly from La Jara	Jno. A. Duncan, Pagosa Springs	32,316.80*

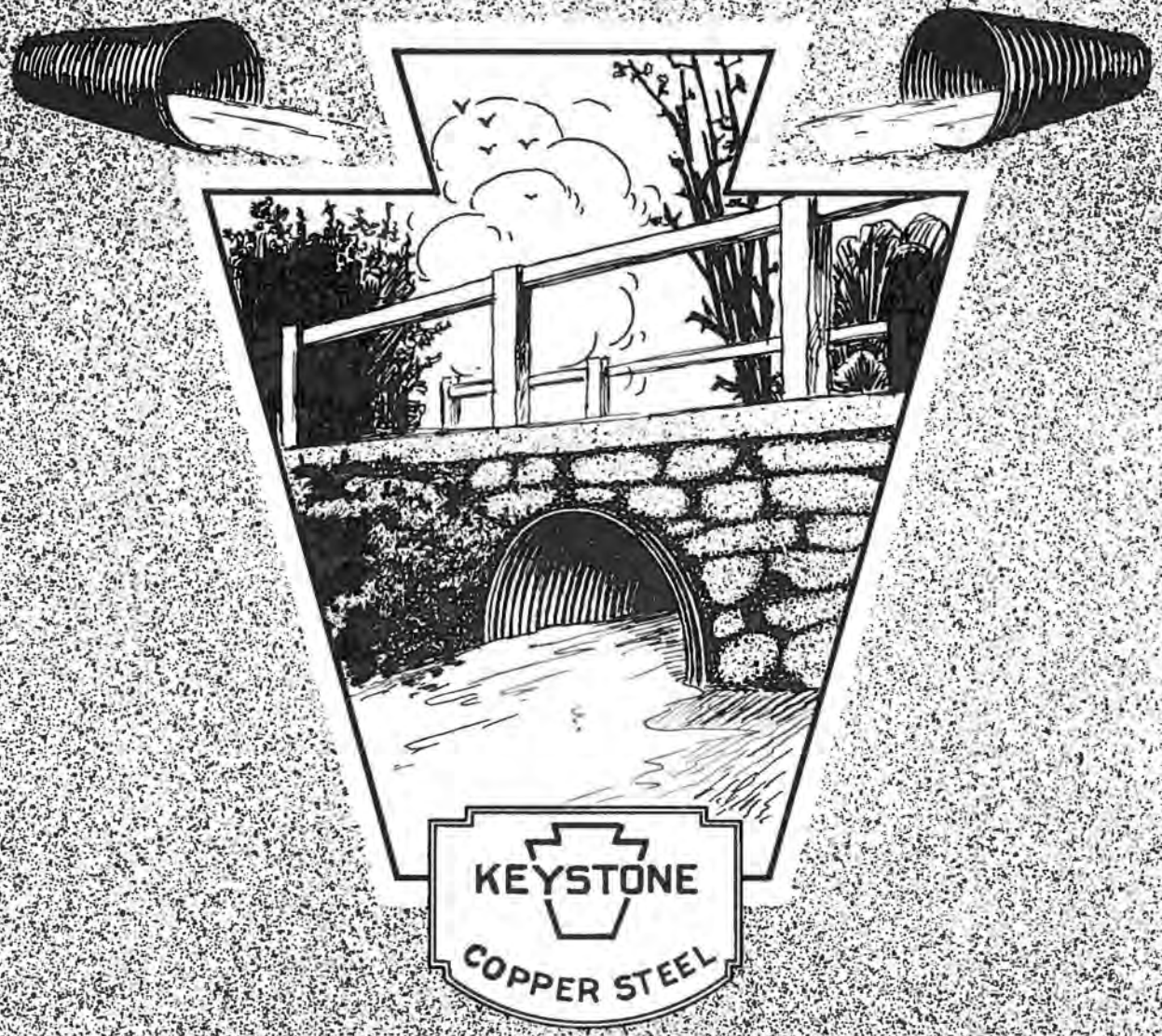
*Contract awarded July 31, 1926.

PLANS SUBMITTED TO U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj. No.	Length	Type	Location
254-C	0.108 mi.	Steel Bridge and Approaches	Betw. Hot Sulphur Springs and Parshall
258-D	3.898 mi.	Gravel Surface	Betw. Cerro Summit and Cimmaron
262-H	3.296 mi.	Gravel Surface	Betw. Walsenburg and La Veta
265-B	3.775 mi.	Gravel Surface	Betw. Durango and Rayfield
271-B	0.778 mi.	Gravel Surface and Concrete Pav.	West of Portland
276		Concrete Bridge and Approaches	North of Colorado Springs
281-E	0.812 mi.	Concrete Paving	Between Lafayette and Longmont
292-A	6.417 mi.	Graded	Leadville-Wolcott
297-B	2.237 mi.	Gravel Surface	Palisades-De Beque
299-A	5.888 mi.	Gravel Surface	Delta-Grand Junction

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1925

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj. No.
2-R	North of Trinidad	6.66 mi.	Asphalt Paving	Strange-Maguire Pav. Co.	$ 331,632.00	14	2-R
2-R3	North of Trinidad	0.553 mi.	Pav. Underpass	Strange-Maguire Pav. Co.	28,882.70	0	2-R3
169-R	Las Animas	6.35 mi.	Concrete Paving	F. C. Dreher	25,336.00	8	169-R
213-D	Durango, west	3.877 mi.	Gravel Surfacing	Shields & Kyle	47,692.00	32	213-D
242-AR1	East of Fruita	125 ft.	Steel Bridge	F. H. Knollman	19,999.00	1	242AR1
246-E & 231-R	West of Avondale	2.454 mi.	Concrete Paving	Strange-Maguire Pav. Co.	68,083.90	1	246-E & 231-R
253-B	Brookston-Milner	3.064 mi.	Gravel Surfacing	Hinman Bros.	66,583.00	100	253-B
254-B	Hot Sulphur Springs-Parshall	1.087 mi.	Gravel Surfacing	Pioneer Const. Co.	61,071.00	94	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	60	258-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	90	258-C
258-D	Iola-Cebolla	4.426 mi.	Gravel Surfacing	H. C. Lallier Const. Co.	52,739.80	1	258-D
261-A	Rifle-Grand Valley	16 mi.	Gravel Surfacing	Hinman Bros	132,556.00	100	261-A
262-E	West of Walsenburg	3.527 mi.	Gravel Surfacing	Pople Bros.	24,979.00	83	262-E
262-F	LaVeta Pass-Russell	2 mi.	Crushed Rock Surf.	Central Const. Co	22,017.00	70	262-F
262-G1	Russell-La Veta Pass	5.014 mi.	Gravel Surfacing	Central Const. Co.	44,822.00	0	262-G1
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.			
271-D	West of Pueblo	0.137 mi.	Bridge	C. A. Switzer			
271-E	East of Portland	1.303 mi.	Gravel Surfacing	E. H. Honnen	35,815.00	4	271-E
272-C	East of Pueblo	0.322 mi.	Concrete Paving	Strange-Maguire Pav. Co.			
275-A	Gann-Sedalia	7 mi.	Concrete Paving	Strange-Maguire Pav. Co.	314,174.00	80	275-A
275-B	Sedalia-Castle Rock	5.334 mi.	Concrete Paving	J. Fred Roberts & Sons	198,771.00	90	275-B
275-C	Husted-Monument	4.795 mi.	Concrete Paving	J. L. Busselle & Co.	186,585.20	22	275-C
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	78	275-D
275-F1	Castle Rock-Larkspur	10.303 mi.	Grading	J. Fred Roberts & Sons	132,679.00	0	275-F1
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	79	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	62	279-C
281-D1 & 251-B1	Longmont-Lafayette	5.813 mi.	Grading	F. L. Hoffman	99,631.50	0	281-D1 & 251-B1
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	43	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	52	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	32	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	60	283-B
283-C	North from Longmont	5.79 mi.	Concrete Paving	J. H. Miller & Co.	196,703.90	0	283-C
286-A	Nunn-Dover	0.549 mi.	R. R. Grade Crossing	Brown & Smith			
286-B	Nunn, north	19 mi.	Grading	James Collier	87,249.00	95	186-B
287-A	Fort Morgan, west	20.62 mi.	Grading	H. C. Lallier Construction Co.	101,817.00	100	287-A
287-A2	Fort Morgan, west	4.011 mi. 16.61 mi.	Concrete Paving Subgrade Treatment	H. C. Lallier Const. Co.	119,016.60	0	287-A2
287-B	Greeley, east	7.565 mi.	Grading	A. R. Mackey	127,303.00	61	287-B
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee			
288-A1 & B2	Southwest of Merino	5.409 mi.	Concrete Paving	Edward Selander	137,695.00	58	288-A1 & B2
294-A	Mancos-Cortez	2.9 mi.	Gravel Surfacing	Engler & Teyssier	23,273.00	90	294-A
294-B	Mancos-Cortez	1.416 mi.	Gravel Surfacing	Engler & Teyssier	21,551 40	0	294-B
295-B	La Jara, south	6.622 mi.	Gravel Surfacing	John A. Duncan	32,316.80	0	295-B
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	50	298-A



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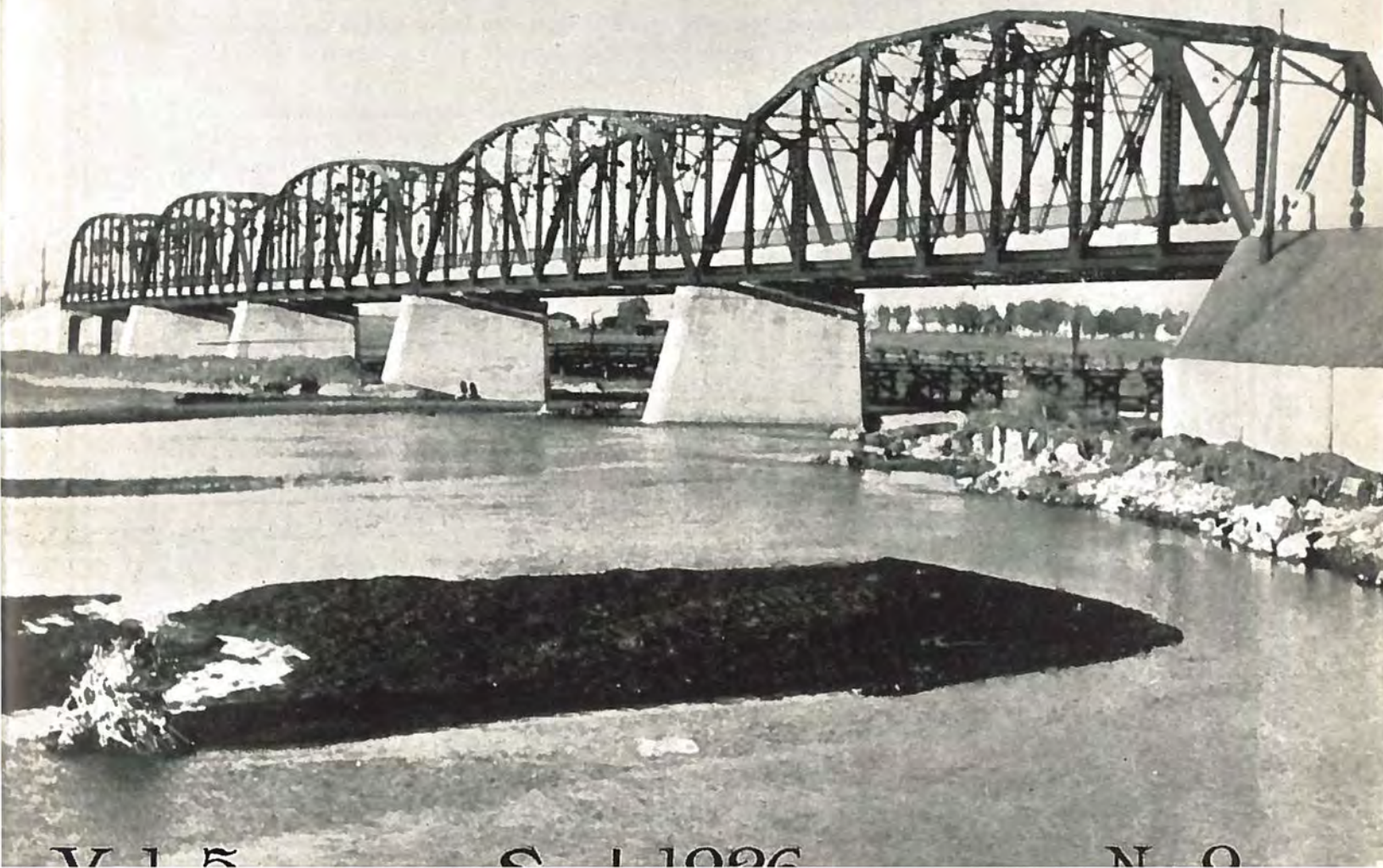
COLORADO HIGHWAYS



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Colorado Highways

"BETTER ROADS"

Official Publication of the
COLORADO STATE HIGHWAY DEPARTMENT
Denver, Colorado

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Colorado Highways
"BETTER ROADS"
VOLUME V. SEPTEMBER, 1926. NUMBER 9

Good Roads Amendment Means Increased Prosperity

Let's pay as we go!

A vote for the Good Roads Amendment "Pay-As-We-Go" plan of financing state highway activities, beginning in 1927, is a vote for a more prosperous Colorado!

"Pay-As-We-Go" is just good, sound common sense. It is very simple.

It means that the state of Colorado should NOT burden itself with expensive, extravagant bond issues, but that it should pay for its highway construction and maintenance as the roads are built.

"Pay-As-We-Go" would provide approximately $5,500,000 for state roads annually — practically the amount now spent, but which will not be available after this year unless the Good Roads amendment is voted at the polls in the November election.

Expenditure of the last of the $6,000,000 highway bond issue voted by the people in 1922 makes it imperative for the state of Colorado to issue more bonds or adopt some plan of highway financing to enable the state to keep pace in the construction and maintenance of much-needed highways.

"Pay-As-We-Go" was approved by the state's highway experts as the most economical and business-like method of raising funds for roads. It was selected as the best alternative method to another bond issue, which evidently is NOT desired by anyone.

The expenditure of the $5,500,000 annually, which would be made available by the adoption of the Good Roads Amendment in November, would very materially enhance the general prosperity of every section of the state, it is pointed out.

These five and a half millions would be spent throughout the state, so that every region and district would harvest its proportionate benefit.

The expenditure of these millions throughout Colorado every year, beginning January 1, 1927, would add measurably to the prosperity and wealth of every section and county in the state. Not only the counties, but the cities and towns as well, would materially benefit from the adoption of the "Pay-As-We-Go" plan.

So, let's pay as we go!

Colorado Faces Serious Problem; Road Funds Must Be Raised

Citizens of Colorado are facing a serious problem —the immediate necessity of providing adequate finances for the proper construction and maintenance of state highways.

Since the unexpended balance of the $6,000,000 state highway bond issue voted by the people in 1922 is being spent this year, new funds for highway activities must be raised in some manner before next January 1, to enable the state to continue its present progressive program of road construction and improvement.

Unless money is raised in some manner, Colorado will be compelled to take a back seat among other states in the matter of good roads, and the highways of the state can be maintained in only the most haphazard manner. It will be practically impossible, with the very limited funds available, to improve or build new roads.

Fresh finances for the state's highway activities simply must be found, as a matter of sound business. For good roads are the fundamental basis of good times and prosperity in both the agricultural and rural districts and the cities and towns.

Convinced that it is poor business practice to build roads by issuing many millions of dollars worth of bonds, highway experts and good roads enthusiasts have formulated the "Pay-As-We-Go" plan of financing the state's highway work beginning in 1927 as the only logical alternative to another large bond issue.

Citizens will be given an opportunity to vote in favor of this plan, which is also known as the Good Roads Amendment, on the November election ballot.

"Pay-As-We-Go" is a plan for raising funds to pay for state highways as they are built and put into use. If adopted at the general election, it will prevent the possibility of the issuance of additional bonds, which would mortgage the future generations, and in the end mean an extravagant expenditure of two dollars for every dollar's worth of highway work obtained. For the interest charges on bond issues usually amount to as much as the entire principal of the bonds.

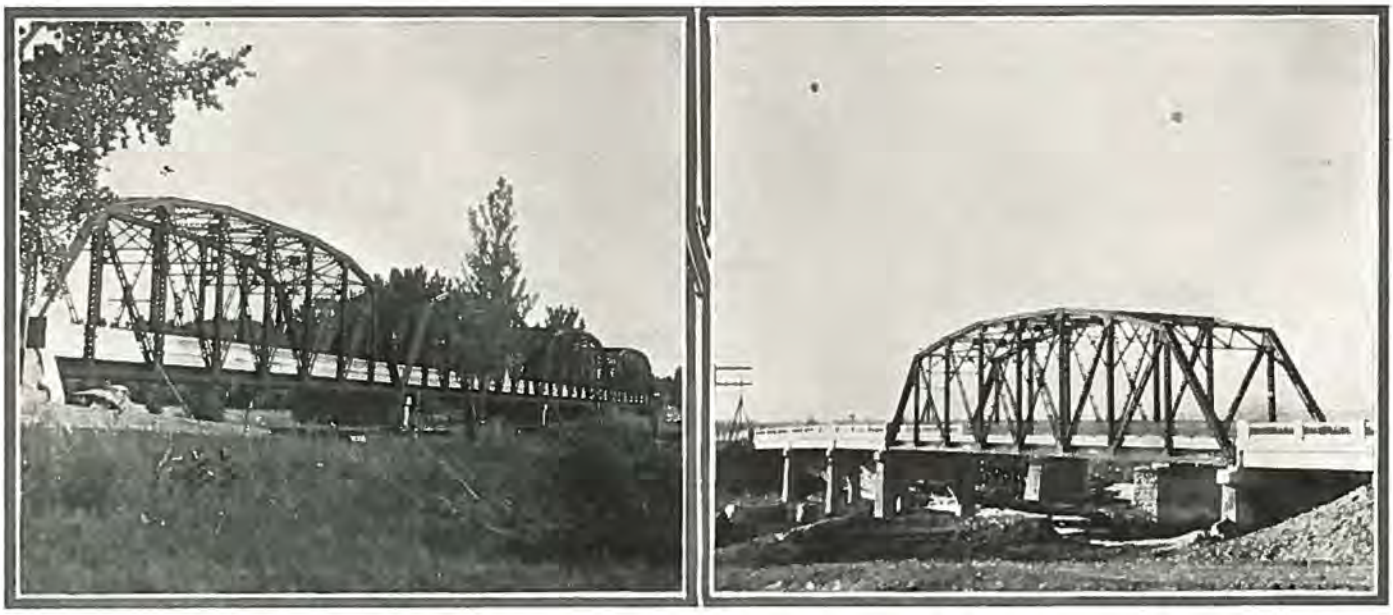
If the voters of Colorado adopt the "Pay-As-We-Go" plan—and reports from every section of the state indicate they will—the present gasoline tax of two cents a gallon will be increased to three and a half cents, and the present motor vehicle license fees will be increased. This would place the burden of building and maintaining our highways more squarely upon those who use them most, which is only fair and just.

Even with these increases, Colorado motorists would be paying actually less on the average than the automobile owners of the other states of the nation pay in gasoline and motor vehicle license taxes.

The fundamental fairness of the "Pay-As-We-Go" plan has made it the most popular method of highway financing that has ever been proposed. Business men, farmers and residents of cities and towns throughout the state are strongly supporting the measure, because they understand that unless it is adopted Colorado's fine roads will fall into neglect and much needed improvements and new highways cannot be built for years.

Widespread benefits would be derived in every section of the state from this plan of raising funds. Money obtained would be divided between the state highway department and the counties and cities and towns, for construction and improvement of the main highways of

Scenes on the new 13-mile stretch of pavement north of Castle Rock, Douglas county. (Left) Looking toward "Castle Rock," showing new pavement and Cyclone guard fence. (Right) Stretch of pavement showing heavy excavations required in building new roadbed, north of Sedalia.



Types of heavy steel and concrete bridges constructed with federal aid funds by the state highway department, to meet the demand of ever-increasing motor vehicle traffic. (Left) Beautiful 450-foot bridge spanning the Gunnison River at Delta, one of the finest bridges of its type in Colorado. (Right) State highway bridge crossing the Apishapa River near Manzanola, an important link in one of the main arteries of highway travel in the Arkansas valley.

the commonwealth as well as the vitally needed connecting and feeder routes linking the rural districts with towns and cities in every region and section.

The plan has been drafted into an initiated measure, and placed on the November election ballot by the signatures of some 33,000 voters.

It is entitled: *"An act to provide revenues for the construction, maintenance and improvement of public highways, by a tax upon the sale of petroleum products and by graduated motor vehicle registration license fees."*

Unless a majority of the voters vote "YES" for this proposed law the highway activities of the state will be seriously crippled.

After months of serious study highway experts drafted the "Pay-As-We-Go" plan from the experience of many other states, where it has been found to work out very satisfactorily. This plan was decided upon in preference to a proposed bond issue of approximately $50,000,000. Surely Coloradoans do not want to saddle themselves and their children with a huge highway bond issue!

By placing the cost of paved and improved roads more largely upon the motorists who use the roads and benefit most from their construction and proper maintenance, highway experts point out that in Colorado hundreds of thousands of tourists who motor through the state during the summer months will be compelled to contribute very materially to the upkeep of the highways.

Motor busses too, which now use the roads of the state extensively without payment of any special license fees, would, under the "Pay-As-We-Go" plan, pay a more proportionate share of the cost of road building and repairs.

In view of the imperative need for a new method of raising funds for highway purposes and the many benefits to be derived from the Good Roads Amendment, thousands of motorists and citizens throughout the state are already strongly in favor of the adoption of the measure at the polls in November.

Funds derived from the "Pay-As-We-Go" system would not all be expended by the state highway department, but would be apportioned three ways: to the counties, to the cities, and to the highway department. They would be used by the counties, cities and towns and highway department in the construction, improvement and maintenance of roads throughout the entire state.

Better roads would be the result in every region of the state.

Estimates of the amount of revenue which would be raised by the "Pay-As-We-Go" plan, and the apportionment among the counties, cities and the state for the first three years the plan would be in force, after its approval by the voters in November are outlined as follows:

Year	Counties	Cities	State
1927.....	$1,862,500	$462,000	$1,850,000
1928.....	2,459,200	469,643	2,701,700
1929.....	2,535,000	487,500	4,290,000

During the years 1927 and 1928 the outstanding portion of the $6,000,000 state highway bond issue voted by the people of Colorado in 1922 would be retired, it is proposed, under the proposed financing plan.

In addition to proposing an increase in gasoline and motor vehicle license fees, the "Pay-As-We-Go" plan contemplates other changes, which may be outlined briefly as follows:

Abolishment of the personal property tax on automobiles, after 1926. Abolition of this tax was proposed by a senate joint resolution No. 7, during the last session of the legislature, and it will be submitted to voters at the fall election as a referendum measure on the general election ballot. This measure should be adopted along with the Good Roads Amendment.

Provision that the new plan of highway financing shall take effect January 1, 1927.

One cent of the 3½ cents a gallon gasoline tax would be the counties, a half cent to the cities and towns of the state, and two cents to the state highway department.

The proposed increase in motor vehicle license fees to an average of $12 annually would be divided 40 per cent to the counties and 60 per cent to the state highway department.

Provision is also made for retirement within the next two years of the remaining portion of the $6,000,000 state highway bond issue which otherwise would be repayable over a period of 20 years. The early retirement of this outstanding highway bond issue would save the taxpayers in interest payments, it has been estimated, approximately, $625,000. A permanent, scientific solution of the state's highway financing problem will have been approved and put into effect if the voters adopt the Good Roads Amendment at the election, it is pointed out.

The results will be measured in more and better roads from year to year in every section of the entire state.

Men who have given much study to the subject say that sound business practice favors the adoption of the "Pay-As-We-Go" plan as the most conservative and economical method of raising funds for highway purposes that has been tried and proven successful in the experience of older states than Colorado.

They point out that such states as Wisconsin, Indiana, Nebraska and Texas are now successfully carrying out this plan. Good business judgment in those states has worked the plan out in detail so that it is functioning in a highly satisfactory manner, they declare.

The insidious evil of long term borrowing of funds with which to build and improve public roads through the issuance of state bonds has been apparent to the casual student of the matter, and the "Pay-As-We-Go" or, as some have called it, the "pay-as-we-ride" plan has been adopted as the alternative.

Indications and reports from practically every section of Colorado lead to the belief that the taxpayers and voters of the state have largely made up their minds that the Good Roads Amendment should be adopted by an overwhelming majority.

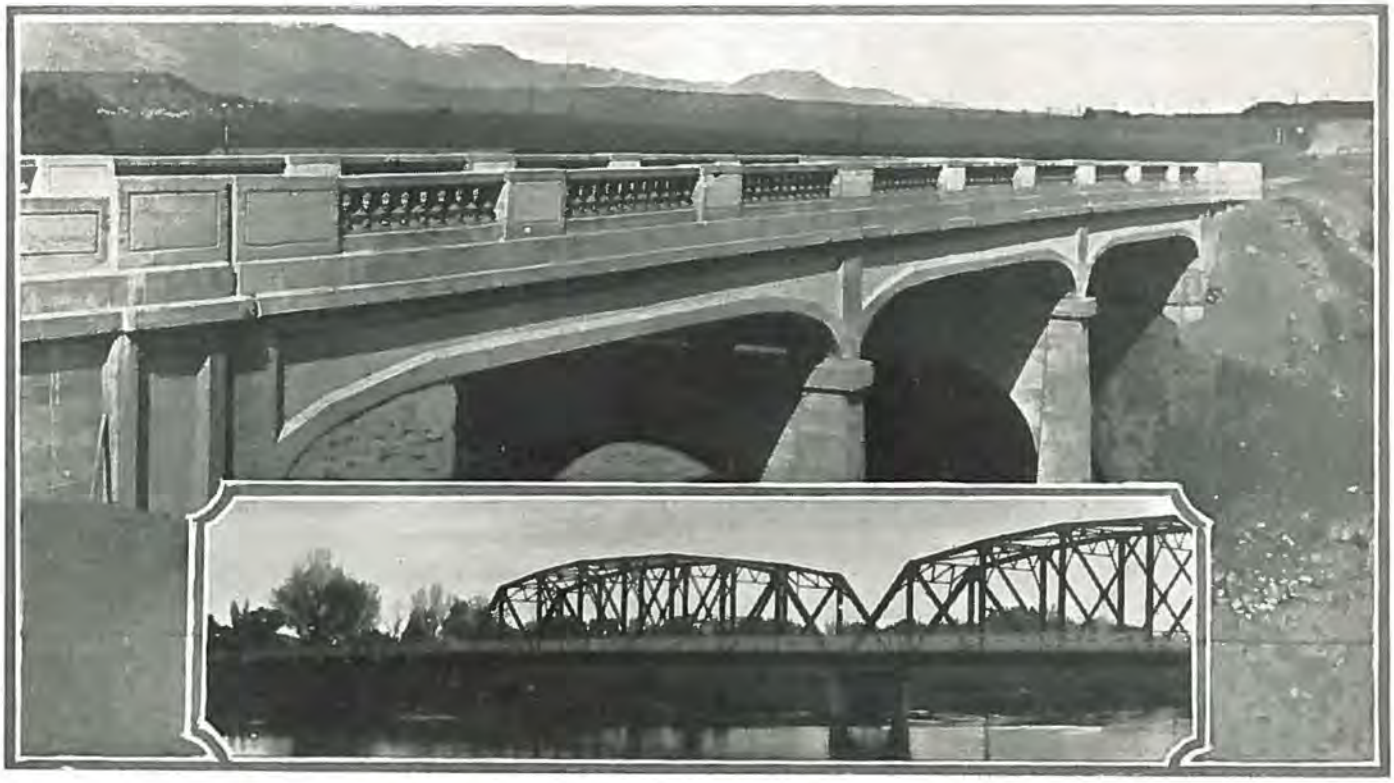
Wherever the plan has been explained and discussed it has met with almost unanimous support.

County commissioners of the state as a body have gone on record in favor of the plan. These men know what road building and maintenance means and they have studied the problem until they are convinced that the "Pay-As-We-Go" plan is the best possible method of financing.

The Colorado Good Roads Association has also enthusiastically endorsed the plan and, with the assistance of the county commissioners and good roads enthusiasts generally, have launched a vigorous campaign of education in behalf of the proposition.

Chambers of Commerce and civic and commercial associations throughout the state have gone on record in favor of the proposal in a large number of cities and towns.

Adoption of the Good Roads Amendment will provide sufficient revenue for the state to meet on a "dollar for dollar" basis, about $1,400,000 annually available to the state of Colorado in federal aid funds for highway purposes. Otherwise this substantial federal aid would be lost to the state. Considerable mileage can be built and maintained annually through the expenditure of this $1,400,000 which is given the state for paving and improving the principal highways only on condition that the state of Colorado expend a like sum for such improvements.



The two bridges shown in the accompanying picture are the three-span concrete girder bridge over Pine Creek, 160 feet in length, five miles north of Colorado Springs, and the Alamosa bridge, crossing the Rio Grande del Norte at Alamosa. The Alamosa bridge, shown in the insert, has two 150-foot truss spans, with concrete pile trestle approach. It has a total length of 460 feet.

Cities of State Will Benefit from "Pay-As-We-Go" Plan

Under the "Pay-As-We-Go" plan of financing state highway construction and manitenance, which will be voted upon by the people of Colorado at the November election, the cities and towns of the state would be given a part of the funds raised for road building purposes.

The plan includes provision for an increase in gasoline taxes, and that one-half cent of the proposed tax be distributed among cities and towns for their use in highway construction and maintenance, according to population.

An approximate estimate of the revenue to be raised for the respective cities and towns during 1927, the first year the "Pay-As-We-Go" plan would be effective, has been made, as follows:

	Population	Total Amount
ADAMS COUNTY		
Brighton	3,500	$ 2,887.50
Westminster	400	440.00
		$ 3,327.50
ALAMOSA COUNTY		
Alamosa	3,600	$ 2,970.00
Hooper	160	176.00
		$ 3,146.00
ARAPAHOE COUNTY		
Aurora	1,100	$ 907.50
Deer Trail	400	440.00
Englewood	6,000	4,125.00
Sheridan	650	715.00
Littleton	1,900	1,567.50
		$ 7,755.00
ARCHULETA COUNTY		
Pagosa Springs	1,200	$ 990.00
BACA COUNTY		
Springfield	450	$ 495.00
Two Buttes	90	99.00
		$ 594.00
BENT COUNTY		
Las Animas	2,800	$ 2,310.00
BOULDER COUNTY		
Boulder	13,000	$ 8,937.50
Eldora	100	110.00
Jamestown	85	93.50
Lafayette	1,875	1,544.95
Longmont	6,500	4,468.75
Louisville	2,000	1,650.00
Lyons	675	742.50
Nederland	300	330.00
Superior	300	330.00
Ward	100	110.00
		$ 18,317.20
CHAFFEE COUNTY		
Buena Vista	1,000	$ 1,100.00
Poncha Springs	75	82.50
Salida	4,800	3,960.00
St. Elmo	25	27.50
		$ 5,170.00
CHEYENNE COUNTY		
Cheyenne Wells	600	$ 660.00
CLEAR CREEK COUNTY		
Empire	100	$ 110.00
Gerogetown	450	495.00
Idaho Springs	1,300	1,072.50
Silver Plume	200	220.00
		$ 1,897.50
CONEJOS COUNTY		
Antonito	1,050	$ 866.25
La Jara	550	605.00
Manassa	1,025	845.90
Sanford	575	632.50
		$ 2,949.65
COSTELLA COUNTY		
Blanca	365	$ 401.50
CROWLEY COUNTY		
Olney Springs	300	$ 330.00
Crowley	290	319.00
Ordway	1,250	1,031.25
Sugar City	850	935.00
		$ 2,615.25
CUSTER COUNTY		
Silver Cliff	280	$ 308.00
West Cliff	350	385.00
		$ 693.00
DELTA COUNTY		
Cedaredge	500	$ 550.00
Crawford	150	165.00
Delta	2,800	2,310.00
Hotchkiss	650	715.00
Paonia	1,050	866.25
Orchard City	500	550.00
		$ 5,156.25
DENVER COUNTY		
Denver	300,000	$165,000.00
DOLORES COUNTY		
Rico	250	$ 275.00
DOUGLAS COUNTY		
Castle Rock	600	$ 660.00
EAGLE COUNTY		
Basalt	210	$ 231.00
Eagle	430	473.00
Red Cliff	250	275.00
Gypsum	170	187.00
Minturn	350	385.00
		$ 1,551.00
ELBERT COUNTY		
Elizabeth	250	$ 275.00
Kiowa	185	203.50
Simla	525	577.50
		$ 1,055.00
EL PASO COUNTY		
Calahan	600	$ 660.00
Colorado Springs	34,000	23,375.00
Fountain	625	687.50
Green Mountain Falls	100	110.00
Manitou Springs	1,610	1,328.25
Monument	205	225.00
Palmer Lake	180	198.00
		$ 26,584.25

	Population	Total Amount
FREMONT COUNTY		
Canon City	5,500	$ 3,781.25
Coal Creek	600	660.00
Florence	3,000	2,475.00
Portland	600	660.00
Rockvale	1,300	1,072.50
Williamsburg	320	352.00
		$ 9,000.75
GARFIELD COUNTY		
Carbondale	360	$ 396.00
Glenwood Springs	2,200	1,815.00
Grand Valley	350	385.00
New Castle	450	495.00
Rifle	1,000	1,100.00
Silt	180	198.00
		$ 4,389.00
GILPIN COUNTY		
Black Hawk	200	$ 220.00
Central City	400	440.00
		$ 660.00
GRAND COUNTY		
Hot Sulphur Springs	150	$ 165.00
Kremmling	300	330.00
		$ 495.00
GUNNISON COUNTY		
Crested Butte	1,225	$ 1,010.90
Gunnison	1,500	1,237.50
Marble	100	110.00
Pitkin	200	220.00
		$2,578.40
HINSDALE COUNTY		
Lake City	300	$ 330.00
HUERFANO COUNTY		
La Veta	850	$ 935.00
Walsenburg	4,500	3,712.50
		$ 4,647.50
JACKSON COUNTY		
Walden	250	$ 275.00
JEFFERSON COUNTY		
Arvada	1,200	$ 990.00
Edgewater	850	935.00
Golden	3,000	2,475.00
Morrison	250	275.00
		$ 4,675.00
KIOWA COUNTY		
Eads	450	$ 495.00
Haswell	175	192.50
		$ 687.50
KIT CARSON COUNTY		
Burlington	1,200	$ 990.00
Flagler	700	770.00
Seibert	325	357.50
Stratton	530	583.00
Vona	300	330.00
		$ 3,030.50
LA PLATA COUNTY		
Animas City	275	$ 302.50
Bayfield	325	357.50
Durango	6,000	4,125.00
Ignacio	350	385.00
		$ 5,170.00
LARIMER COUNTY		
Berthoud	950	$ 1,045.00
Estes Park	750	825.00
Fort Collins	15,000	10,312.50
Loveland	6,000	4,125.00
Timnath	200	220.00
Wellington	1,000	1,100.00
		$ 17,627.50

	Population	Total Amount
LAS ANIMAS COUNTY		
Aguilar	1,500	$ 1,237.50
Branson	300	330.00
Delagua	1,100	907.50
Hastings	325	357.50
Trinidad	12,100	8,318.75
		$ 11,151.25
LINCOLN COUNTY		
Arriba	480	$ 528.00
Hugo	1,000	1,100.00
Limon	1,400	1,155.00
		$ 2,783.00
LOGAN COUNTY		
Crook	250	$ 275.00
Fleming	600	660.00
Iliff	350	385.00
Merino	350	385.00
Peetz	350	385.00
Sterling	7,250	4,984.10
		$ 7,074.10
LAKE COUNTY		
Leadville	5,000	$ 4,125.00
MESA COUNTY		
Collbran	300	$ 330.00
De Beque	400	440.00
Fruita	1,200	990.00
Grand Junction	10,000	6,875.00
Palisades	1,000	1,100.00
		$ 9,735.00
MINERAL COUNTY		
Creede	450	$ 495.00
MOFFAT COUNTY		
Craig	2,000	$ 1,650.00
MONTEZUMA COUNTY		
Cortez	700	$ 770.00
Dolores	475	522.50
Mancos	800	880.00
		$ 2,172.50
MONTROSE COUNTY		
Montrose	4,000	$ 3,300.00
Nucla	270	297.00
Olathe	500	550.00
		$ 4,147.00
MORGAN COUNTY		
Brush	2,500	$ 2,062.50
Fort Morgan	4,500	3,712.50
Hillrose	225	247.50
		$ 6,022.50
OTERO COUNTY		
Cheraw	250	$ 275.00
Fowler	1,200	990.00
La Junta	6,000	4,125.00
Manzanola	650	715.00
Rocky Ford	4,300	3,547.50
Swink	450	495.00
		$ 10,147.50
OURAY COUNTY		
Ouray	900	$ 990.00
Ridgway	420	462.00
		$ 1,452.00
PARK COUNTY		
Fairplay	200	$ 220.00

One of the longest concrete bridges in Colorado is the Huerfano River highway structure shown in the accompanying photograph. This huge bridge has five spans, each 80 feet in length, making the entire length of the structure 400 feet.

	Population	Total Amount
PHILLIPS COUNTY		
Haxtun	1,250	$ 1,031.25
Holyoke	1,450	1,196.25
		$ 2,227.50
PITKIN COUNTY		
Aspen	1,300	$ 1,072.50
PROWERS COUNTY		
Granada	350	$ 385.00
Hartman	200	220.00
Holly	1,150	948.75
Lamar	4,000	3,300.00
Wiley	600	660.00
		$ 5,513.75
PUEBLO COUNTY		
Pueblo	45,000	$ 30,937.50
RIO BLANCO COUNTY		
Meeker	1,000	$ 1,100.00
RIO GRANDE COUNTY		
Del Norte	1,000	$ 1,100.00
Monte Vista	2,900	2,392.50
		$ 3,492.50
ROUTT COUNTY		
Hayden	550	$ 605.00
Oak Creek	1,000	1,100.00
Steamboat Springs	1,500	1,237.50
Yampa	285	313.50
		$ 3,256.00
SAGUACHE COUNTY		
Bonanza	130	$ 143.00
Center	600	660.00
Crestone	100	110.00
Moffat	150	165.00
Saguache	850	935.00
		$2,013.00
SAN JUAN COUNTY		
Eureka	150	$ 165.00
Silverton	500	550.00
		$ 715.00
SAN MIGUEL COUNTY		
Norwood	420	$ 462.00
Ophir	35	38.50
Sawpit	10	11.00
Telluride	1,700	1,402.50
		$ 1,914.00
SEDGWICK COUNTY		
Julesburg	1,500	$ 1,237.50
Sedgwick	500	550.00
		$ 1,787.50
SUMMIT COUNTY		
Breckenridge	500	$ 550.00
Dillon	100	110.00
Frisco	50	55.00
Kokomo	60	66.00
		$ 781.00
TELLER COUNTY		
Cripple Creek	2,250	$ 1,856.25
Florissant	52	57.20
Gillette	50	55.00
Goldfield	350	385.00
Victor	1,500	1,237.50
		$ 3,590.95
WASHINGTON COUNTY		
Akron	1,500	$ 1,237.50
Otis	625	687.50
		$ 1,925.00
WELD COUNTY		
Ault	850	$ 935.00
Dacona	300	330.00
Eaton	1,500	1,237.50
Erie	800	880.00
Evans	550	605.00
Firestone	280	308.00
Fort Lupton	1,700	1,402.50
Frederick	500	550.00
Gilcrest	300	330.00
Greeley	12,200	8,387.50
Grover	152	167.20
Hudson	340	374.00
Johnstown	400	440.00
Keenesburg	300	330.00
Keota	150	165.00
Kersey	400	440.00
La Salle	550	605.00
Mead	150	165.00
Milliken	400	440.00
Raymer	325	357.50
Nunn	250	275.00
Pierce	325	357.50
Platteville	500	550.00
Severance	250	275.00
Windsor	1,300	1,072.50
		$ 20,979.20
YUMA COUNTY		
Eckley	360	$ 396.00
Wray	1,800	1,485.00
Yuma	1,300	1,072.50
		$ 2,953.50
Total	655,969	$450,109.00

Map Showing U. S. Highway System in Colorado

COLORADO'S principal highways are shown in the accompanying map on this page, revised as of the date, July, 1926, to show the United States highways, which constitute the main interstate roads running through the state.

These United States highways, described by the heavy black lines, as shown in the map legend, have been designated recently for the benefit of motorists by some 1,500 markers in the form of a shield which have been posted along the routes.

The shield markers, fixed on steel posts, and placed alongside the highways, have the word, "COLORADO," stamped across the top, the letters, "U S" for the United States in the center, and the number of the highway itself below.

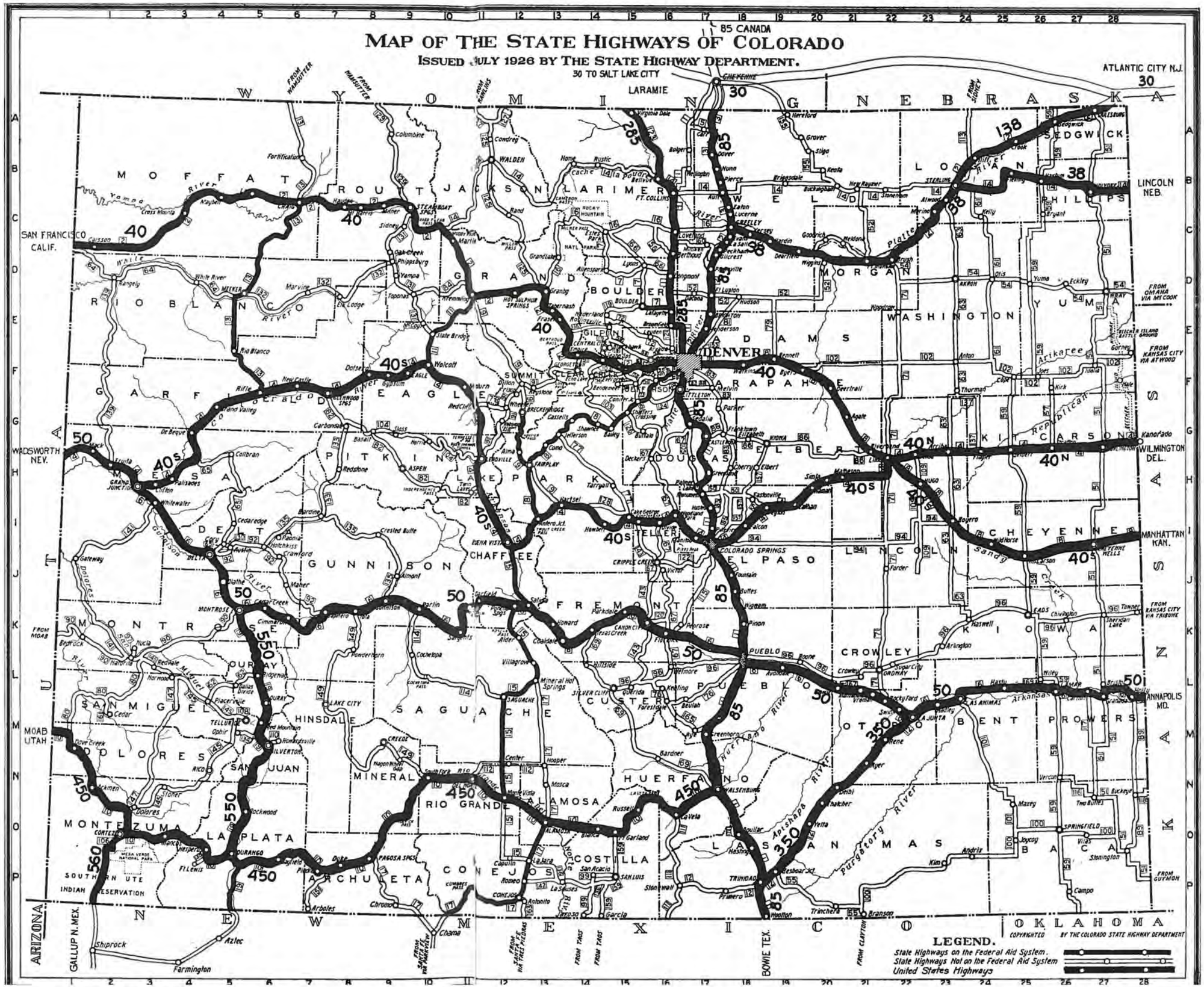
By following these markers, motorists may travel along the same interstate route across the entire country. These road signs will guide thousands of tourists into Colorado over good roads every year. They are so placed that they are easily visible in the light of automobile lamps during night driving.

State highways on the federal aid system, as well as state highways not on the federal aid system, are also shown distinctly in the accompanying map, which is issued officially by the Colorado state highway department.

Terminal points on the interstate highways are given on the map opposite the points where these roads enter Colorado.

United States Highway No. 50, for instance, begins, as shown by the map, at Annapolis, Md., and enters Colorado in the Arkansas valley, passes through Holly, Lamar, La Junta, Pueblo, Canon City, Salida, over Monarch pass, through Gunnison, Montrose and Grand Junction, and joins United States Highway No. 40 near Wadsworth, Nevada.

Follow the Markers!



State Paves 13-Mile Stretch

Thirteen miles of new concrete paving, from Gann to Castle Rock, county seat of Douglas County, have just recently been completed by the Colorado highway department and formally opened to the public.

This new paving link in the much traveled Denver-to-Colorado Springs highway, has made it possible for the motorist to journey on a smoothly paved road all the way from Denver through Castle Rock.

Ten miles of grading, from Castle Rock to Larkspur, is now under construction, and when completed, probably this fall, will constitute ten more miles of new highway connecting with the recently opened thirteen miles of concrete pavement.

With the completion of this grading project, the dream of Douglas county will be realized, for the improved highway will run through the richest part of the county, and for the entire length of the county.

The necessity of an improved new road through Douglas county has been shown by the traffic count for 1926, which gives an average of approximately 3,000 automobiles passing over the route every day.

The paving from Gann to Castle Rock was laid under three project contracts. The exact distance of the combined projects was 13.2 miles. A barbecue and celebration of the completion of the paving was held at Castle Rock.

A special effort will be made to finish the 10.3 miles of grading and drainage now under way between Castle Rock and Larkspur, some time this fall, according to Elzie E. Montgomery, division engineer at large for the state highway department, who is supervising the work.

One "death trap" railroad crossing, at Tomah, will be eliminated by the new graded highway. This road is being constructed, with a detour alongside of it, by the J. Fred Roberts & Sons Construction company, of Denver.

More than 100,000 cubic yards of material will have to be moved in the construction of that section of the new highway from Tomah to Larkspur.

Four grading outfits, with 20 teams in each outfit, and a total of 75 to 80 men are being employed on this grading and drainage project. A 100-foot concrete pile trestle bridge will be erected on this roadway just south of Castle Rock, over East Plum creek.

A railroad underpass was constructed north of Castle Rock as a part of the recently completed thirteen miles of paving. Two railway crossings were eliminated by the relocation of the highway between Gann and Sedalia, resulting in heavy grading work, as shown by the estimated 170,000 cubic yards of material moved. Steam shovels, tractors and elevating graders were used on the grading.

The first seven miles of pavement from Gann southward were let to the Strange-Maguire Paving company of Pueblo. The grading was sub-let to Platt Rogers, Inc., also of Pueblo. The Pueblo Bridge company constructed three concrete pile trestle bridges.

The next five and three-tenths miles of pavement, extending to the southern limits of the town of Castle Rock, with the exception of nine tenths of a mile for a separate underpass project just north of Castle Rock, were laid by the J. Fred Roberts & Sons Construction company of Denver.

Grading on this project required 47,000 cubic yards of common excavation to be moved.

Seven railroad crossings, where many serious and fatal accidents have taken place in the past, will be eliminated and three underpasses will be constructed instead, in the realignment of the road between Castle Rock and Husted, the state highway department has announced. The new highway will also avoid the steep hill near Larkspur and two other hills near Greenland.

Almost five miles of concrete paving is now being laid between Husted and Monument.

View of the recently completed railroad underpass north of Castle Rock on the Denver-Colorado Springs paved highway. Completion of this underpass eliminates another "death-trap." Constructed by the state highway department with federal aid funds.

Cameron Pass Highway Is Opened

ONE of the finest scenic mountain highways in the world—the new Cameron Pass Highway, direct route between Fort Collins and the rich North Park region in northwestern Colorado—was formally opened Labor Day with a huge barbecue picnic and celebration, on Cameron Pass, the summit of the highway, at an altitude of 10,280 feet above sea level.

Following the trail blazed by Indians, pioneers and the early-day Union Pacific surveyors, the new highway runs westward from Fort Collins through the beautiful canon of the Cache la Poudre River to Cameron Mountain and Cameron Pass, and thence downward into that sportsman's paradise known as North Park.

The road shortens the distance between Denver, Omaha, Fort Collins and other points and Salt Lake City by almost 200 miles. It brings Pacific coast points within a four-day motor trip radius, by way of Walden and Steamboat Springs and thence by Victory Highway west through Salt Lake City.

"Cameron Pass, 70 miles west of Fort Collins and 30 miles southeast of Walden, lies between the junction of the Medicine Bow range and the continental divide," stated the invitations to the celebration which were issued by the county commissioners of Larimer and Jackson counties and the Fort Collins Chamber of Commerce. "This pass gives motorists a low route over the 'top of the world' in which one never needs to shift gears.

"It has taken 14 years of the combined efforts of Larimer and Jackson counties, the state of Colorado and the federal government to complete the highway which now opens to the public a route 20 feet wide and an ever-changing panorama of mountain views."

Major L. D. Blauvelt, state highway engineer, was the chief speaker at the celebration. The economic benefits which will result from the opening of this new short route, providing an outlet for the rich agricultural, livestock, mineral and timber resources of the North Park country into Fort Collins were evident to the many persons attending the barbecue celebration.

"Taken as a whole, the route from Fort Collins to Walden is one of the most scenic highways in the United States and affords wonderful camping grounds, with an abundance of shade, wood, pure water and excellent fishing," states the official report of the federal forest service on the new highway.

About 10 miles west and slightly north of Fort Collins the road enters the historical Cache la Poudre canon, where Colorado convict labor, under the supervision of Warden Thomas J. Tynan, built almost 50 miles of marvelous highway to Chambers Lake, at the upper end of the canon. The forest service built 5.5 miles of the new road through the pass itself. The remainder of the highway was constructed by the state and the counties of Larimer and Jackson.

The highway will be of considerable value in making it easier to maintain and properly care for the Arapahoe and Colorado National forests, through which it passes.

Cameron Mountain and Cameron Pass were named after a Colonel Cameron, who led a surveying party over the route for the Union Pacific railroad in the seventies. At that time the railroad was considering routing its main line through that region.

On the Cameron Pass Highway in winter time, looking around the shoulder of Cameron Mountain. The highway continues westward down the Michigan River valley into Walden, North Park. Highway officials plan to keep the pass open, and cleared of snow this winter, it is announced. Photo by United States Bureau of Roads.

At the celebration it was emphasized and formally recognized that the late H. A. Edmonds, former member of the highway advisory board from Fort Collins, was the "father" of the Cameron Pass Highway. Officials in attendance at the gathering pointed out that it was Edmonds who had the vision for such a highway, and who worked energetically with others for its completion.

Our Cover Picture

One of the most beautiful, as well as practical, bridges in Colorado is the Las Animas steel and concrete bridge shown on our cover page. This bridge crosses the Arkansas River at Las Animas. It consists of five 150-feet through truss spans, giving it a total length of 750 feet. It was erected by the state highway department, with federal aid. This photograph and the other bridge pictures in this issue of Colorado Highways were taken by the United States Bureau of Roads.

Strength of Mortar and Concrete as Influenced by Grading Sand

Reported by J. G. Rose, Materials Engineer, United States Bureau of Public Roads

IN connection with the testing of materials for Federal-aid highway projects in Colorado a study has been made of the relation between the grading of sand for use in concrete and the strength developed in mortar and concrete; and the study has led to the development of a graph which may be used as the basis for a preliminary judgment of the quality of sands proposed for use.

The samples of sand and gravel, or crushed rock, upon which the study was based were contributed by the state highway department of Colorado as materials to be tested for use on federal-aid projects. Approximately 200 samples of sand and gravel are represented by the study. The source of the materials was widespread, almost every county in the state having contributed one or more samples.

The testing work was done by the Pierce Testing Laboratory, of Denver, and standard methods of testing concrete materials approved by the American Society for Testing Materials were followed in making all tests. Standard briquettes of 1:3 mortar were used for the tensile tests, and 6 by 12 inch cylinders of 1:2:4 mix were used for the compression-test specimens. The consistency of the concrete was such as to show a slump of from 1 to 2 inches as determined by the standard slump-cone method. All observations are based upon the 28-day strength of the specimens, both in tension and in compression.

While assembling the test data for the study it was observed that the strength of the 6 by 12 inch cylinders varied from about 1,500 pounds per square inch to a little over 3,500 pounds per square inch. In order to observe the variation in grading between the high and low strengths, the test reports were divided into four groups, each group having a range in strength of 500 pounds; and after computing the average grading of the maximum strength group (3,000 to 3,500 pounds per square inch) and plotting this average grading upon the graph, it was observed that part of the reports in the remaining three groups fell above the maximum strength curve, and part fell below it. The three groups were, therefore, divided again into two groups each, depending on whether the grading of the samples fell above or below the maximum strength curve. Samples falling partly above and partly below the maximum strength curve were listed in both groups; and the average gradings for the six groups thus obtained were then computed and plotted on the graph. The groups thus established, according to grading, were then averaged for tensile strength.

The curves derived for the above averages as shown in Figure 1, lead to the following conclusions:

1. That there is an ideal grading of sands which will produce maximum strength in concrete.

2. That the ideal grading curve assumes an arched form, showing a predominance of the material retained upon the coarser sieves.

3. That for a given mix, there is a practical limit to the quantity of material passing each size sieve, where a given strength of concrete is required.

4. That an exceptionally high tensile strength of sand in 1:3 mortar is not necessarily associated with a high compression strength of the same material when mixed with the average coarse aggregate in concrete, hence the tensile strength is not a proper gauge of the quality of a sand for concrete.

Justification of the relation between the grading and strength of sands as shown by the curves is dependent upon a combination of coordination of several well known factors or theories of concrete. The maximum strength curve is, doubtless, associated with maximum density, or minimum voids, in the combined aggregates. The decline in strength as the grading becomes finer is associated with increased surface area, and a corresponding increase of voids. As the grading of the sands becomes coarser than that shown by the maximum strength curve, the probability of increased strength indicated by the surface-area theory is overcome by a tendency of the coarser grains of sand to wedge themselves in between the coarse aggregate, thus increasing the voids to such an extent that a deficiency of mortar is produced. Hence, a decline in compression strength is recorded with the increase in coarseness of the sand. This, at least, is one explanation which comes to mind. Probably there are others. The relation of the grading curves to the tensile strength developed in 1:3 mortar bears out the surface-area theory; that is, that the finer the sand the greater will

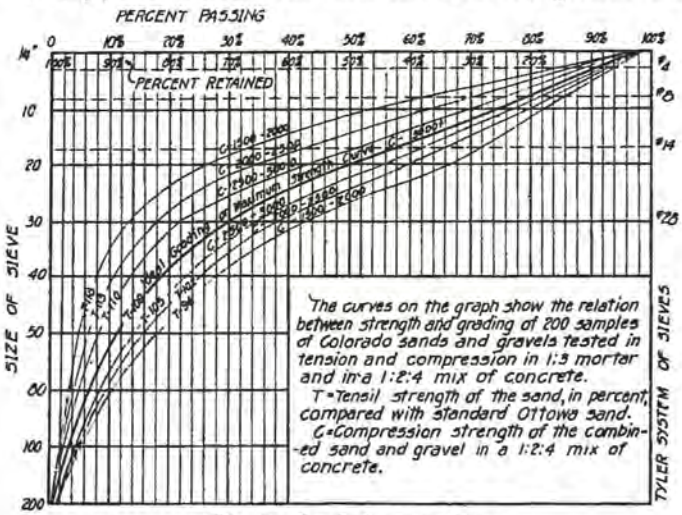


Fig. 1.—Sand Analysis Chart

be the surface area to be covered by a unit volume of cement, hence, the weaker the bond.

Utility of the Graph

By plotting the sieve analysis of a sand upon the graph, a ready means of visualizing the quality of the material for concrete is produced. The area between

(Continued on Page 18)

Strength of Mortar and Concrete as Influenced by Grading Sand

(Continued from Page 14)

the upper and lower curves on the graph forms a practical safety zone for the grading of acceptable sands. If the plotted grading of a sand falls outside of this area, in whole or in part, there is but little chance that it will pass standard specification requirements without increasing the proportion of cement.

In making a materials survey for a project, selection of the best source of supply will be greatly facilitated by a comparison of the mechanical analyses of the samples when plotted on the graph. As a precaution in making selection of a sand, it should be realized that several other factors in addition to the grading affect the strength of sands. Variation in structure and soundness, and the presence of organic matter, silt, clay, acids, alkali, and other foreign substances all have their influence on the strength of the sand in concrete. Hence, a considerable variation in strength from the average strength curve for each group shown on the graph should be expected. Eliminating these factors the range of grading for any given strength and mix should be small. Final selection, of course, should always be determined by a more complete laboratory test. But once a complete laboratory determination for the quality of a sand has been made, and the mechanical analysis plotted, any change in quality due to variation in grading is easily detected by a screen analysis made in the field during the progress of construction and plotted on the graph.

View of Cripple Creek, one of the greatest gold mining camps in the world, taken from improved state highway, a part of Teller county's splendid mountain road system.

Railroad Grade Crossings Still a Serious Hazard

Railroad grade crossing accidents continue to be one of the most serious problems confronting the country, says the United States Bureau of Public Roads. Statistics issued by the Department of Commerce show that 8,582 people were killed or injured at grade crossings in 1923. This represents an increase of nearly 20 per cent over the number killed or injured in 1922.

It is true that the number of motor vehicles in use increased somewhat more than 20 per cent in 1923, but increased volume of traffic should be met with increased protection; it should not be accepted as a satisfactory excuse for the mounting death toll.

The policy of the Bureau of Public Roads in effect for some years is to eliminate grade crossing on Federal Aid roads wherever practicable. This policy has met with hearty co-operation from state highway departments and the public in general. Many crossings have been eliminated by the construction of underpasses and overhead crossings and by relocation of the highways so as to avoid crossing and recrossing tracks. In particular cases as many as seven or eight crossings on a single road have been eliminated by the latter method.

Safety campaigns and grade crossing elimination have undoubtedly kept the number of accidents and deaths from reaching much more appalling figures, but it is apparent that a still greater effort must be made if the accident rate is to be reduced.

EVEN PACE EATS DISTANCE

When the average autoist gets onto a few miles of exceptionally good graveled road he is inclined to think that it is far better than paving, but on a long trip where speed and comfort count, give us the paving. You can make better time on a good gravel road for short spurts, but the moderate, steady gait is what counts in the run. Besides, the autoists who are traveling over paving know there is usually a speed limit that is enforced, and the majority of them observe it very closely, hence there is very little reckless driving, as compared with the traffic on graveled roads.—Round Lake Graphic.

The follow who makes his environment his excuse for remaining little lacks one of the very essentials that make a man big in any position.

INDIVIDUAL OR PUBLIC?

It is not difficult to see that a trucking company, or a railway company operating trucks, may find vehicles of very large size a means to economy, but why should the selfish advantage which will inhere from the operation of two or three hundred such vehicles over a road be permitted to interfere with the progress and safety of all the rest of the traffic on the road, particularly in view of the fact that the highway has been built by the whole public and paid for by general contribution in the shape of taxes?

It is manifest that we need some carefully considered and well thought out legislation leading to the regulation of vehicle sizes.—Road Economics.

Roads rule the world—not kings nor congresses, not courts nor constables, not ships nor soldiers. The road is the only royal line in a democracy, the only legislature that never changes, the only court that never sleeps, the only army that never quits, the first aid to the redemption of any nation, the exodus from stagnation in any society, the call from savagery in any tribe, the high priest of prosperity, after the order of Malchisedec, without beginning of days or end of life. The road is umpire in every war and when the new map is made, it simply pushes on its great campaign of help, hope, brotherhood, efficiency and peace.—Author Unknown.

ANOTHER TOMBSTONE TALE

Daring Dick was a speeder, you bet!
Every motorist's goat he would get;
On a bad winding hill,
Oh boy! what a spill!
And they haven't found Dickey as yet.

PROJECT ADVERTISED FOR BID

Proj. No.	Length	Type	Location	Bids Opened
265-B	3.831 mi.	Gravel Surface	Betw. Durango and Bayfield	September 10, 1926

BIDS OPENED

Proj. No.	Length	Type	Location	Low Bidder	Bid Price
551-A*	3.6 mi.	Mtn Grading	On Mount Evans	Luke E. Smith & Co., Denver	$ 74,223.00
271-B	0.778 mi.	Paving, Graveling and Bridge	At Portland	H. M. Fox, Florence	58,802.65
292-A	6.417 mi.	Grading	North from Minturn	H. C. Lallier Const. & Engr. Co., Denver	92,571.80
297B	2.237 mi.	Gravel Surface	Northeast of Palisades	Winterborn & Lumsden, Grand Junction	30,581.24
299A	5.888 mi.	Gravel Surface	Northwest of Delta	Strange-Maguire Pav. Co., Pueblo	51,582.55
584	34 ft. Bridge	Concrete Bridge	At Cascade	J. Ralph Donaghy, Colorado Springs	4,078.50
584-B	20 ft. Bridge	Concrete Slab	Near Calahan	J. Ralph Donaghy, Colorado Springs	3,450.90
614-A	60 ft. Bridge	Steel Bridge	East of Parkdale	H. M. Fox, Florence	5,172.00

*Contract awarded August 16, 1926.

PLANS SUBMITTED TO U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj. No.	Length	Type	Location
254-C	0.108 mi.	Steel Bridge and Approaches	Between Hot Sulphur Springs and Parshall
281-E	0.812 mi.	Concrete Paving	Between Lafayette and Longmont

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
134-A	7. mi.	Sand-Clay Surface	West of Burlington
157-A*	4. mi.	Grading	North of Buena Vista
247-C	0.5 mi.	R. R. Underpass and Paving	At Swink
275-E	2. mi.	R. R. Underpass and Paving	At Monument
275-G	12. mi.	Paving	Larkspur-Monument
279-D	0.5 mi.	Paving	Morrison
287-C	14. mi.	Grading	East of Kersey

*Plans completed.

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1925

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj No
2-R	North of Trinidad	6.66 mi.	Asphalt Paving	Strange-Maguire Pav. Co.	$ 331,632.00	25	2-R
2-R3	North of Trinidad	0.553 mi.	Pav. Underpass	Strange-Maguire Pav. Co.	28,882.70	0	2-R3
169-R	Las Animas	0.35 mi.	Concrete Paving	F. C. Dreher	25,336.00	8	169-R
213-D	Durango, west	3.877 mi.	Gravel Surfacing	Shields & Kyle	47,692.00	43	213-D
242-AR1	East of Fruita	125 ft.	Steel Bridge	F. H. Knollman	19,999.00	1	242AR1
246-E & 231-R	West of Avondale	2.454 mi.	Concrete Paving	Strange-Maguire Pav. Co.	68,083.90	16	246-E & 231-R
254-B	Hot Sulphur Springs-Parshall	1.087 mi.	Gravel Surfacing	Pioneer Const. Co.	61,071.00	94	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	69	258-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	90	258-C
258-D	Iola-Cebolla	4.426 mi.	Gravel Surfacing	H. C. Lallier Const. Co.	52,739.80	10	258-D
262-E	West of Walsenburg	3.527 mi.	Gravel Surfacing	Pople Bros.	24,979.00	83	262-E
262-F	LaVeta Pass-Russell	2 mi.	Crushed Rock Surf.	Central Const. Co.	22,017.00	81	262-F
262-G1	Russell-La Veta Pass	5.014 mi.	Gravel Surfacing	Central Const. Co.	44,822.00	1	262-G1
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.			
271-E	East of Portland	1.303 mi.	Gravel Surfacing	E. H. Honnen	35,815.00	35	271-E
275-A	Gann-Sedalia	7 mi.	Concrete Paving	Strange-Maguire Pav. Co.	314,174.00	83	275-A
275-B	Sedalia-Castle Rock	5.334 mi.	Concrete Paving	J. Fred Roberts & Sons	198,771.00	92	275-B
275-C	Husted-Monument	4.795 mi.	Concrete Paving	J. L. Busselle & Co.	186,585.20	22	275-C
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	86	275-D
275-F1	Castle Rock-Larkspur	10.303 mi.	Grading	J. Fred Roberts & Sons	132,679.00	7	275-F1
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	79	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	73	279-C
281-D1 & 251-B1	Longmont-Lafayette	5.813 mi.	Grading	F. L. Hoffman	99,631.50	11	281-D1 & 251-B1
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	47	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	70	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	46	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	65	283-B
283-C	North from Longmont	5.79 mi.	Concrete Paving	J. H. Miller & Co.	196,703.90	1	283-C
286-B	Nunn, north	19 mi.	Grading	James Collier	87,249.00	100	186-B
287-A2	Fort Morgan, west	4.011 mi. 16.61 mi.	Concrete Paving Subgrade Treatment	H. C. Lallier Const. Co.	119,016.60	1	287-A2
287-B	Greeley, east	7.565 mi.	Grading	A. R. Mackey	127,303.00	74	287-B
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee			
288-A1 & B2	Southwest of Merino	5.409 mi.	Concrete Paving	Edward Selander	137,695.00	58	288-A1 & B2
293-B	Colona-Ridgway	80 ft.	Steel Bridge	Geo. F. Wear	21,645.25	0	293-B
294-A	Mancos-Cortez	2.9 mi.	Gravel Surfacing	Engler & Teyssier	23,273.00	100	294-A
294-B	Mancos-Cortez	1.416 mi.	Gravel Surfacing	Engler & Teyssier	21,551.40	1	294-B
295-B	La Jara, south	6.622 mi.	Gravel Surfacing	John A. Duncan	32,316.80	0	295-B
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	66	298-A

What Do You Do?

When your pavement wears out?

Answer: Replace or add wearing surface.

When your shoes wear out?

Answer: Replace with new ones or re-sole them.

When your auto tires wear out?

Answer: Replace with new ones or have the old ones retreaded.

THEN—

Why not give your gravel surfaced streets or roads the protection or wearing surface they need. They will wear out eventually and cost you a great deal more if that wearing surface is not replaced before the base is exposed to the hard grind of today's traffic.

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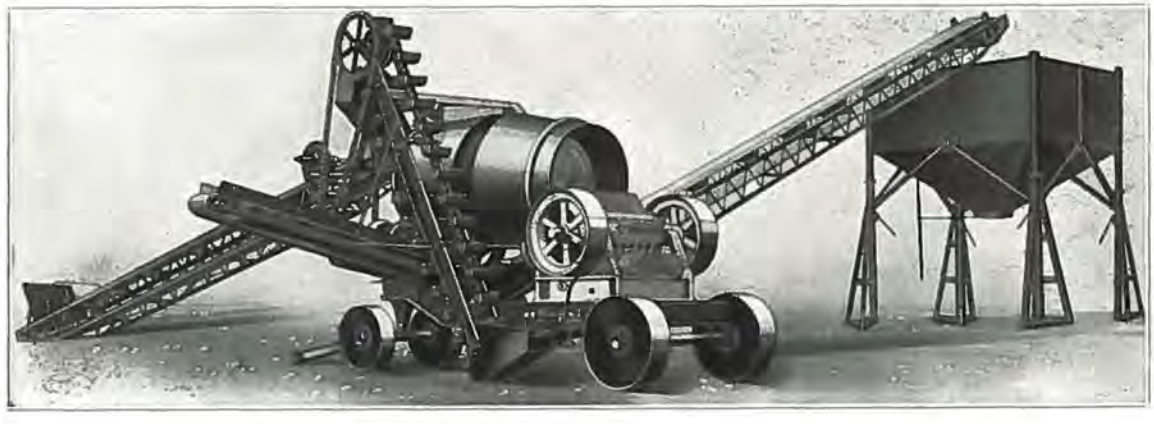

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No. 2—1¼ cu. yd. clamshell bucket on 45 ft. boom or 1 cu. yd. on 50 ft. boom. Lifting capacity, 15 tons at 12 ft. radius. 4 cylinder, 6x7 in. gasoline engine, 925 R. P. M.

Write for Crane Bulletin No. Cr. 39

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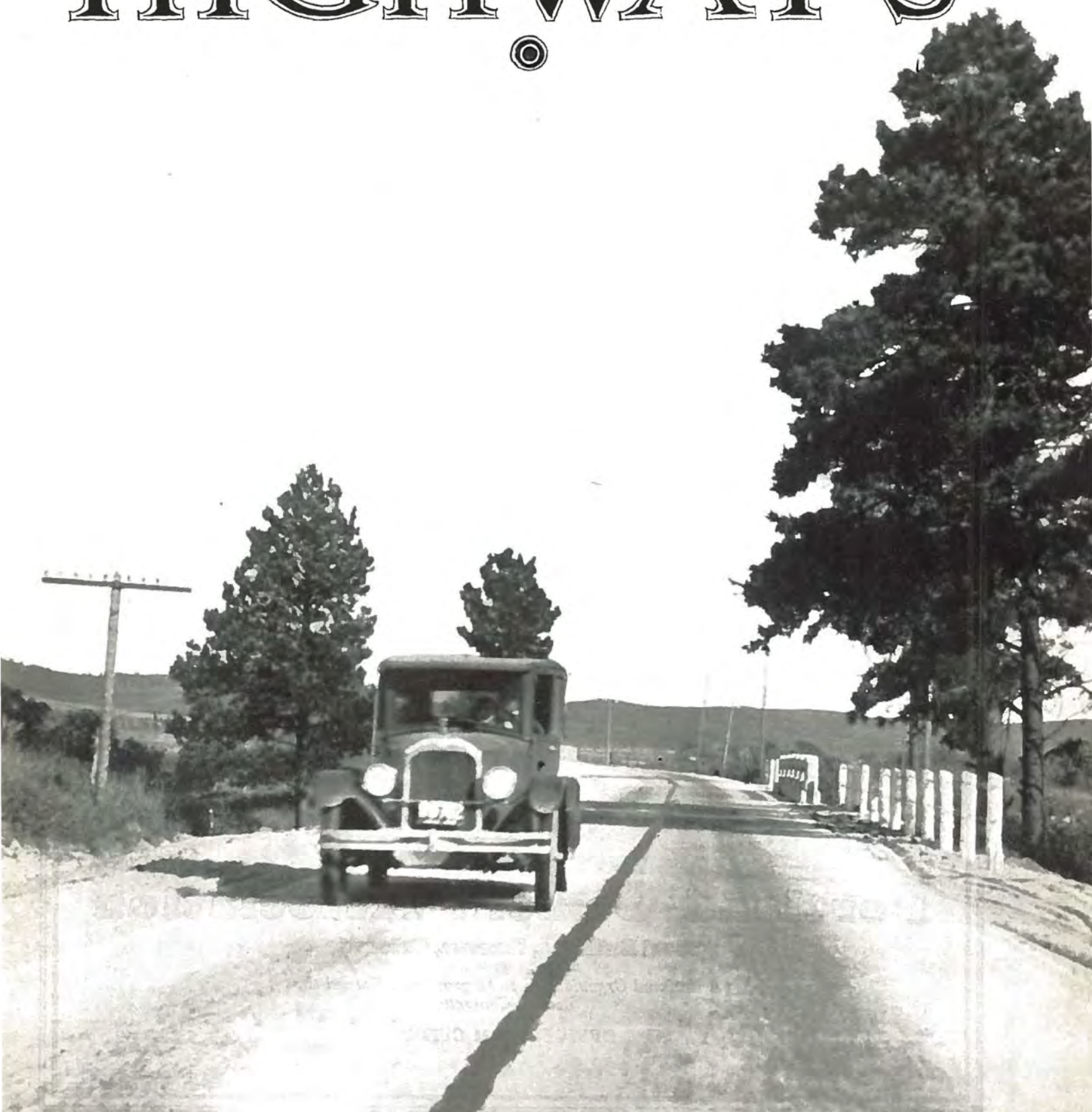

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10 CENTS A COPY. **$1.00 A YEAR.**

Colorado Highways

"BETTER ROADS"

VOLUME V. OCTOBER, 1926. NUMBER 10

Road Finance Plan Will Save Auto Owners Huge Sum

ADOPTION of the "Pay-As-We-Go" plan of financing in the highway November election, through approval by the voters of Amendments Nos. 3 and 8, will insure the construction of more and better highways in every part of Colorado.

Should the amendments fail of adoption only a strictly limited program of highway work could be undertaken next year, for new funds for road purposes must be raised to enable the state to obtain $1,400,000 in federal aid funds which are available only when matched "dollar for dollar" by state funds.

Expenditure of the last of the money received from the sale of the 1922 highway bond issue makes it imperative that fresh finances be obtained for the construction and improvement of many miles of urgently needed roads.

Adoption of the "Pay-As-We-Go" plan, providing for repeal of the present personal property tax on automobiles, and increased gasoline and motor vehicle license taxes, would save the taxpayers $625,000 in interest on outstanding bonds, through retirement of these bonds in two years.

It would also make it unnecessary to issue more bonds, which unfairly burden the taxpayer with heavy interest charges which, in time, amount to as much as the entire principal of the bonds.

It would actually save motorists approximately $2,000,000 yearly in reduced operating costs through highway improvements which would be possible.

It would require those who use the roads most to pay a larger portion of the cost of building and maintaining the roads, and permit tourists to contribute substantially to road work. Yet the cost to motorists would be less than in most states.

It would provide incorporated towns and cities with funds to build "feeder" roads in rural districts connecting with main highways.

Vote "YES" on Amendments Nos. 3 and 8 on the November Ballot!

State Completes 300 Miles of Federal Standard Highways

COLORADO'S state highway department is literally "pulling" the state out of the mud and dust!

Just how efficient the highway department is in building and improving the roads throughout the entire state is shown by the fact that during the past year almost 300 miles of roads have been either paved, surfaced or graded.

In addition, more than 100 miles of pavement, surfacing and grading are now under construction in every part of the state.

Certainly this splendid record of accomplishment is something of which the Colorado highway department may be justly proud!

Neither industrial nor agricultural progress can be made in the mud. Smooth, hard-surfaced, paved and improved highways not only speed up commercial activities, but advance the civic and recreational opportunities of the people.

There is pleasure as well as profit to be enjoyed from a comprehensive network of good roads in Colorado.

An official estimate of the mileage of highway work completed throughout the state during the past year is announced by the highway department as follows:

Paved highway, 30 miles.

Surfaced road, 90 miles.

Graded highway, 165 miles.

In addition to this completed work, considerable mileage has been covered by road improvements not directly reduceable to actual mileage, consisting of widening curves, broadening narrow places in the road, "daylighting" cuts and grading up bridge approaches.

Seventy-four bridges of concrete, steel and timber were either completed during the past year or are under construction at the present time, the state highway department records show.

Just how much this extensive program of highway activity which has been completed during the year ended October 1, 1926, means to the agricultural, industrial and commercial interests of Colorado would be difficult to estimate.

What this additional mileage of good roads means to the citizens and motorists, as well as the tourists of the state, is practically impossible to determine.

Good health and improved health of hundreds of residents of the state may be attributable in a large degree to these splendid roads.

Surely a state highway department which has been achieving such material results in improved and better roads throughout the state is deserving of the confidence of the voters who will go to the polls on November 2 to vote on the "Pay-As-We-Go" plan of future highway financing.

If this plan is not adopted at the election Colorado will be faced with a serious situation, and crippled in its road program to such an extent that only a very strictly limited program of highway work can be undertaken in 1927.

New road funds positively must be raised and raised immediately. The "Pay-As-We-Go" plan of raising funds is not only the most practicable and business-like

Two Northern Colorado cities, Fort Collins and Brighton, county seats of Larimer and Adams counties, respectively. These pictures give something of the idea of the large number of automobiles in the prosperous towns of the state. Automobiles, with paved and improved roads, have brought the farmer closer to his markets, and shortened distances amazingly, resulting in substantial savings to both producer and consumer alike.

A fine, gravel-surfaced highway threading its way through the rolling hills of Jackson county, between Walden and Laramie.

method adopted from the successful experiences of other states, but absolutely the ONLY plan suggested for financing highway activities.

Unless the voters adopt it the state is expected to lose $1,400,000 annually in federal aid funds which will be available for use on highway construction in Colorado only on the condition that the state has sufficient funds to appropriate an equal sum for the same purpose.

The necessity for new funds for road purposes is made imperative by the expenditure this fall of the last of the revenue derived from the sale of the highway bonds voted by the people in 1922. Since the bond issue was authorized the state has sold $1,500,000 worth of the bonds annually and used the money to meet federal aid funds and for highway purposes generally.

With the exhaustion of the bond issue revenue this fall, new highway funds must be raised in some manner to enable the state to continue its present comprehensive program of road building and maintenance in every region of the state. Without additional funds it is likely that the roads may be neglected for the reason that it will be impossible with strictly limited funds to properly care for the highways, road experts state.

If the "Pay-As-We-Go" plan is adopted at the November election ample funds will be available for a continuation of the present progressive program of paving, surfacing and grading.

Another bond issue would be unnecessary if the "Pay-As-We-Go" Amendment Nos. 3 and 8 are adopted at the election. Amendment No. 3, referred to the people by the last session of the legislature, would authorize the next legislature to repeal the personal property tax on automobiles, if adopted. Amendment No. 8, initiated by the signatures of more than 33,000 voters, would increase the state gasoline tax 1½ cents a gallon, and raise the motor vehicle registration license fees, which would be levied on the basis of weight.

Cities and towns and counties as well as the state would receive portions of the funds raised under the "Pay-As-We-Go" plan, with the understanding that such moneys would be expended only for the building and improvement of roads and bridges.

The plan to pay for the roads as they are built and put into use was adopted from the successful experience of such states as Wisconsin, Nebraska and Texas, and approved by good roads enthusiasts of Colorado in preference to a proposed huge highway bond issue, which, it was felt, would not be voted by the taxpayers of the state. Heavy interest charges on bond issues, it was pointed out, in the end call for an expenditure of about $2 for every $1 worth of road work obtained.

Officials of the Colorado Good Roads Association, which is sponsoring the "Pay-As-We-Go" plan, declare a vote for Amendments 3 and 8 is a vote for good roads and that a vote against these amendments is a vote against good roads.

As evidence that the state highway department is anxious to take advantage of every possible economy in road building, it may be pointed out that convict gangs of road builders have been obtained from Warden Thomas J. Tynan of the state penitentiary for work on three highway projects, where they are now employed.

Coloradoans know that many scores of miles of the finest roads in the state have been built by convicts.

The three projects on which convict road gangs are now at work are announced as follows:

Between Parkdale and Salida, on Loveland Pass road above Silver Plume, and on the Guy Hill road.

With close to 300 miles of highway improvement completed during the past year and another 100 miles of construction now actively under way in every section of Colorado, the state highway department has established a record of achievement which would certainly entitle it to a vote of confidence by the people of the state, through the adoption of the "Pay-As-We-Go" plan, Amendments Nos. 3 and 8, at the November election.

Without the new funds for highway purposes which the adoption of the "Pay-As-We-Go" Amendments

would raise, the state will be so crippled financially that it will not be able to build and maintain but a very few roads in Colorado.

Motorists will have to drive their cars over rough and bumpy roads in many places and, in other sections, through mud or dust, for it will be absolutely impossible, on account of insufficient funds, to properly maintain roads already improved.

The feature of the "Pay-As-We-Go" plan authorizing the legislature to repeal the present personal property tax on automobiles should appeal to motorists strongly, since the repeal of this substantial tax would practically balance the increased gasoline and motor vehicle registration license fees that are proposed.

It was felt that a readjustment of the taxes for good roads, from the personal property tax to a basis of gasoline and license fees would be a fairer and more equitable method of raising the required revenues for good roads construction, improvement and maintenance.

Under the "Pay-As-We-Go" plan, motorists will pay-as-they-ride, or in proportion to the use they actually get out of the good roads of the state, through the gasoline tax.

The new funds which would be raised under this plan, which is actually the only plan for raising highway funds to be submitted to the voters, would enable the state to continue during 1927 and every year thereafter, with a comprehensive program of road building that would be equal to, or slightly greater than, this year's program.

In other words, the new revenue received would make it possible for the state highway department and the various cities and counties of the state to pave or improve approximately 300 miles of highway annually throughout the state, and get under way each year an additional 100 miles of highway construction and improvement.

Think what marvelous benefits would result during the next few years from such road building activity. Substantial sums of money would be spent in this work in every county of the state each year, furnishing much employment to citizens of the state. The results would be measured in increased general prosperity, and better times. Farmers would be brought closer to their markets and the markets closer to the producers. This should make for lower living costs.

Commercial and industrial enterprises would benefit directly from the increased mileage of improved roads, which mean improved transportation facilities.

The more complete the network of improved roads become, the closer the cities and towns of the state will be knit together in one composite unit, with unified purposes and common objectives. The state will be strengthened agriculturally, commercially, financially and socially.

State to Vote "Pay-As-We-Go" Plan to Meet Road Crisis

FACE to face with the immediate necessity of providing a new method of financing highway work in Colorado, citizens are preparing to vote for the Good Roads Amendment—the "Pay-As-We-Go" plan —at the November election, according to reports received from every section of the state by the Colorado Good Roads Association.

The vital need for new funds was emphasized by the sale on October 1 of the last $500,000 worth of state highway bonds voted by the people of Colorado in 1922.

Expenditure of this sum before the end of the present year will exhaust the funds derived from the entire bond issue, thereby necessitating new finances for the construction and proper maintenance of the roads throughout the state.

The Good Roads Amendment will be No. 8, or the last of the proposed changes in state laws, on the election ballot. It has been declared not only the most simple and business-like method of raising funds for highway purposes, but actually the ONLY plan that has been advanced.

In brief, the "Pay-As-We-Go" plan proposes to raise the necessary highway revenue by increasing the state gasoline tax 1½ cents a gallon, and by increasing the state motor vehicle registration license fees, which would be levied on the basis of weight of the vehicles.

Unless this plan is adopted by the voters at the polls November 2, the state will be without adequate funds to obtain approximately $1,500,000 in federal aid funds for highway construction in Colorado during the coming year. The only possible alternative to the proposal that the state pay for its roads as they are built and used would be the issuance by the state of many millions of dollars in bonds, it is declared.

Bond issues, experience has proven, are highly expensive, in that the interest payments on the bonds alone usually amount to as much as the principal, thereby resulting in a final payment by the taxpayers of $2 for every $1 worth of highway work obtained.

Officials of the Colorado Good Roads Association declare that a wave of sentiment is sweeping the state in favor of the "Pay-As-We-Go" plan, which has been incorporated in the Good Roads Amendment.

They point out that the people are beginning to realize the essential fairness of the "Pay-As-We Go" principle, which is simply that those who use and derive the main benefits directly from the use of the highways of the state shall pay a more proportionate share of the cost of road construction and maintenance.

"Pay-As-We-Go" has been defined as a pay-as-we-ride plan of road financing. Through gasoline and motor vehicle registration license fees those who use the highways will pay as they ride and in direct proportion to the amount of their use of the roads. Isn't this the fairest system that could be devised?

Those who vote for the Good Roads Amendment should also vote in favor of the referendum measure, No. 3, on the November ballot, which was passed by the last legislature and referred to the people at the

Motoring along a beautiful stretch of graveled highway between Mancos and Durango, which was constructed with federal aid and state funds.

coming election. This measure proposes a repeal of the property tax on automobiles to relieve motorists of this tax.

Voters should be sure and vote "YES" on both the Good Roads Amendment, No. 8, and the proposal to repeal the property tax on motor vehicles, which is No. 3. They should be adopted together.

The ballot title of the Good Roads Amendment, which will be on the November ballot, reads as follows: "AN ACT TO PROVIDE REVENUES FOR THE CONSTRUCTION, MAINTENANCE AND IMPROVEMENT OF PUBLIC HIGHWAYS, BY A TAX UPON THE SALE OF PETROLEUM PRODUCTS AND BY GRADUATED MOTOR VEHICLE REGISTRATION LICENSE FEES."

Provisions of the act may be summarized as follows:

1. The act shall become operative beginning January 1, 1927.

2. A tax of 3½ cents shall be collected on each gallon of gasoline sold for operating motor vehicles, except road rollers, traction engines used exclusively in drawing or propelling farm machinery, and other customary exceptions.

3. Four-sevenths of the money raised by the gasoline tax shall be accredited to the state highway department, two-sevenths to the several counties of the state, and one-seventh to the various cities and towns, to be expended only upon the construction and maintenance of roads. Funds to be given the counties would be distributed in proportion to the mileage of state highways in the counties and would be expended under the direction of the county commissioners. Funds to be given the cities and towns would be apportioned on a basis of population, and would be used in building or maintaining highways forming connecting links in the vicinity of the respective towns.

4. Annual motor vehicle registration license fees shall be based on factory shipping weight, with passenger cars weighing 2,000 pounds or less paying $10. For each additional 500 pounds in weight an additional fee of $2.50 would be charged.

5. Trucks whose factory rated carrying capacity is 1 ton or over shall be taxed at the rate of 50 cents per 100 pounds capacity plus factory shipping weight; those of less than 1 ton capacity shall be charged $15.

6. Sixty per cent of the funds raised from these fees would go to the state highway department, and 40 per cent to the counties.

7. The county clerk and recorder in each county except Denver is designated as the authorized agent for the administration of provisions of the act in each county, and shall receive as fees for services as such agent 25 cents for each motor vehicle registration up to 1,000, and 15 cents for each additional registration, to be deducted from the registration license fees.

There are other details in the proposed amendment to the present state highway laws, but those given above are the principal features of the "Pay-As-We-Go" plan which has been embodied in the Good Roads Amendment.

"All good citizens of Colorado who desire to have their state known as a state of good roads, which are, after all, the best guarantee of normal, prosperous conditions, should make it a point to vote for Amendment No. 8, the Good Roads Amendment, in the November election," declared a leading official of the Colorado Good Roads Association, in discussing the road financing problem.

"If Colorado, the beautiful playgrounds as well

as the treasure house of the nation, is to continue as a progressive, energetic state, she must not neglect her roads," he continued.

"Unless the people adopt the Good Roads Amendment at the election it will be a physical impossibility for the state to continue its present program of road construction and improvement.

"Funds heretofore available for a proper road building and maintenance program have been derived from the sale of the $6,000,000 bond issue voted by the people of the state in 1922," he explained. "By the end of 1926 the last $500,000 of this revenue will have been expended in this year's road program.

"Unless new funds are authorized by the adoption of the 'Pay-As-We-Go' principle, the state is in danger of losing a substantial sum of money which the federal government has made available for highway construction in Colorado on the condition that the state raise a similar sum for the same purpose.

"Good roads actually spell prosperity for the farmer, the business man, the merchant and the state in general. Good roads cost money, but I believe everyone today realizes that good roads are actually an investment, which net very substantial returns in good, healthy business and agricultural conditions.

"Those who have given serious thought and study to the problem of conservative, sound highway financing are convinced that the fairest and soundest method of getting the most for the money expended for new and improved highways is the 'Pay-As-We-Go' plan, which will come before the voters of Colorado for their approval in the November election.

"Those who have the best interests of the state at heart should be sure and cast their ballots for the Good Roads Amendment No. 8, and urge their friends to do likewise. Unless this amendment is adopted at the polls Colorado will not be able to build and improve many urgently needed roads in various sections of the state.

"Let each of us do his part to see that the present splendid program of state highway construction and maintenance is continued next year, and every year thereafter. One of the most admirable features of the 'Pay-As-We-Go' plan is that it will permanently solve the pressing problem of adequately financing a good roads program throughout the state."

Civic organizations, chambers of commerce and business men's groups throughout the state ably assisted the county commissioners and good roads enthusiasts in circulating initiated petitions to secure for the Good Roads Amendment a place on the ballot this fall.

Industries of the Centennial State, as well as the thousands of actual farmers who absolutely must have better roads and more of them, are active in support of the Good Roads Amendment.

The traffic and commerce of the state—the constant, daily interchange of products of farm and mill—and the ever-increasing, continuous flow of passenger traffic, make it imperative that more and better roads be built and maintained from month to month and from year to year.

A vote for Amendment No. 8 is a vote for good roads, and more of them; a vote against this amendment is a vote for poor roads, mud holes and ruts! Adoption of the Good Roads Amendment means many more miles of smoothly paved and improved highways in various sections of the state during the coming year; defeat of the proposal means that farmers needing new and better roads in many localities may be forced to get along without them as best they can.

Let's all work for the Good Roads Amendment and vote for it, so that Colorado may have a network of the finest roads in the Rocky Mountain region!

"Death trap" railroad crossing at Tomah, on the Denver-Colorado Springs highway, just south of Castle Rock, which will be eliminated by the new highway now under construction.

More Federal Aid Proposed

A PROPOSAL to authorize greater amounts of federal aid funds in sparsely populated states in order that money already allotted those states may be used to expedite the completion of interstate highway systems—a matter of particular interest to western states—will be considered at the annual convention of the American Association of State Highway Officials, to be held at Pinehurst, North Carolina, November 8 to 12.

This announcement has just been received by the Colorado state highway department from the association headquarters.

Many other important measures of interstate character will be before the convention for consideration. Definite plans for presenting a uniform traffic law to the various state legislatures will be discussed as the result of a study already made by special committees.

Several leading highway officials feel that the uniform traffic signs being posted upon the interstate highways of the nation, and uniform traffic laws will greatly reduce the accident and death casualities so prevalent at the present time.

While the federal government has authorized federal aid funds for two more years to co-operate with the states in completing the system already approved, there are a number of items which will doubtless come before congress at the next session in the hope that greater efficiency may be secured.

Among those will be the consideration of the use of federal funds for construction of roadway wider than 18 feet in congested territory, and the permission of a greater amount of federal funds in the less densely populated states in order that the money already allotted to those states may be used to expedite the completion of the interstate system.

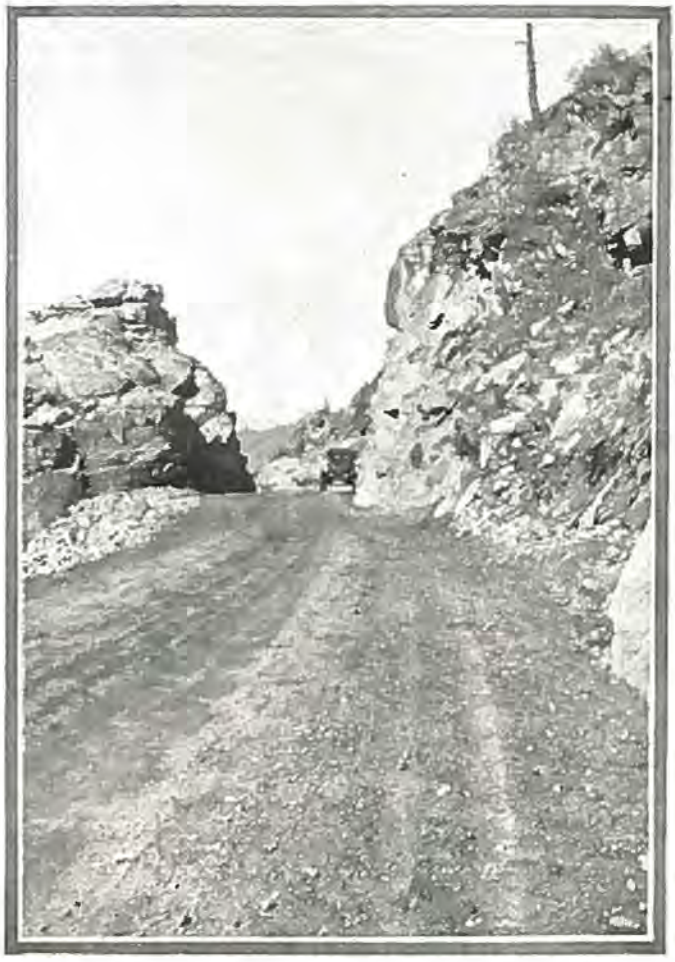
Secretary of Agriculture William M. Jardine will address the convention on the night of November 10, touching upon some of the phases of the work between the federal government and state highway departments.

The convention will also hold an open forum discussion upon the following subjects:

Snow Removal: The Value of a Traffic Survey; Operation of State-Owned Equipment Outfits; and Should Highway Departments Furnish Material to Contractors?

Our Cover Picture

Motoring on an Indian summer day along the recently completed new stretch of concrete pavement on the Denver-Colorado Springs highway, between Sedalia and Castle Rock. The black streak in the center of the pavement is the new dividing line of asphaltic material which is used to fill the new longitudinal joint now being made in pavement as a preventative of cracking. The black center line is also a safety factor, since it evenly divides the road, showing the motorist by night or day his fair half of the highway. It is anticipated that many accidents will be prevented by this safety division line.



The Grottos section on Independence Pass highway, showing a cut through solid rock. Constructed by the U. S. Forest Service.

WAKE UP, GEORGIA

Did you ever picture what would happen if—

The roads should be torn up and left in their former condition? Should these roads go back to their former state and the motor vehicles which have come with them disappear there would be many changes, many people now living in the suburbs would have to move to the city, causing a decrease in value of suburban real estate. Cities would have trouble in getting fresh milk and food. Much of the farm land would decrease in value and the effect on rural social life would be serious. In fact, motor vehicles and the roads on which to use them form such an important part of our economic and social life that it is hard to picture the full extent what would happen.

When the Federal Aid highway system provided for by the recently enacted Federal Highway Act is completed there will be a network of roads 180,000 miles in length, covering the whole United States. The time required for the completion of the system will depend upon the rate at which the necessary funds are provided.—Georgia Highways.

The only article of domestic manufacture which is popular with some Americans is the product of the U. S. Mints.

Good Roads Spell Progress

PROGRESS and prosperity follow the path of public improvements. Roads are the arteries of a nation. "Good roads saved France from the Germans in the World War."

Colorado is now famous throughout the world for her marvelous highways, and the roads connecting her towns and her wonderful mountain scenery. Factories are being constructed, thousands of homes are being built, and large sums are being spent annually by visitors and touring capitalists, who are attracted in the first place by our roads and our system of highway communication.

If we do not keep abreast of the demand for good roads, our enterprising citizens will move away, or transfer their interest elsewhere, and gradually our small towns will mean nothing more than a dot on the map.

Why? Because in these days of millions of motor cars, good streets and roads are sought, and poor ones shunned. Community growth and community roads are one and the same. The subject of roads is not a subject of politics, but a subject of plain horse-sense.

Every thinking person knows that roads increase the value of surrounding property many times in excess of their cost, and the biggest receipts are reaped by the taxpayer himself.

Every dollar spent on roads and highways increases property values many more dollars—every dollar so spent is laid on the ground and stays there. It develops our national resources, and turns them into money—it stimulates our industrial, agricultural and financial activities. All material used is created and produced right here in the state of Colorado.

Roads are not expenditures—they are an investment which pays dividends—big dividends!

Let us build a lot of roads. It is not so important **HOW** the money is raised, but that a **LOT** of it be raised.

However raised, it is not **SPENT,** but money **CIRCULATED.** It increases the pay envelope of everyone.

The plan "PAY-AS-WE-GO," incorporated in the Good Roads Amendment, will go on the ballot for November election and this most important measure must have the support and co-operation of every contractor in Colorado, whether he is actively engaged in highway construction or not.

Every voter must help put this issue over and avail ourselves of federal aid. President Coolidge has signed the bill for federal aid for 1928-1929. We must match it or lose it.

Colorado must maintain her leadership in Good Roads if she wishes to maintain her prosperity. Roads and Prosperity! Let's vote for roads—because they **PAY.**

The big problem facing those who are interested in putting highway construction upon a permanent and practical basis is the political one of getting the votes to win at the next election.

The plan "PAY-AS-WE-GO" has the endorsement of the principal industrial and all business bodies of the entire state.

Combined Financial Statement—December 1st, 1925, to August 31st, 1926

BALANCES, DECEMBER 1, 1925			
Highway Fund	$1,374,062.55		
Federal Aid Bond Fund	373.59		
County Bond Fund	2,159.89		
		$1,376,596.03	
RECEIPTS			
Half Mill Levy	$ 568,423.32		
Gasoline Tax	713,197.43		
Internal Improvement	72,500.00		
Federal Aid	669,588.40		
County Aid	45,956.84		
Excess War Supplies	9,520.46		
Highway Bonds	1,500,000.00		
Total Receipts		$3,579,186.45	
Total Balances and Receipts			$4,955,782.48
DISBURSEMENTS			
Federal Aid Projects	$1,574,529.70		
State Projects	386,117.10		
Maintenance	544,339.04		
Property and Equipment	17,123.58		
Surveys	6,231.74		
General Office Administration	49,752.45		
Engineering Administration	43,141.12		
Road Signs and Traffic Census	7,489.00		
County Bond Projects	2,093.66		
Total Disbursements		$2,630,817.39	
BALANCES, AUGUST 31, 1926			
Highway Fund	$1,945,902.47		
Federal Aid Bond Fund	378,996.39		
County Bond Fund	66.23		
Total Balances		$2,324,965.09	
Total Disbursements and Balances			$4,955,782.48

ROAD NEWS FROM STATE PRESS

"HIGHWAY paving that is now being constructed by the state of Colorado is divided by a line in the center. The line is filled with pitch. Whether this division and the cushion add strength and endurance to the paving is a matter for the engineers to say. That the line is a safety device quickly becomes apparent to any person who drives on the paving. Some of the older paving has been marked by white painted lines. Such lines are easily seen in the daytime, but do not show well at night. The glistening streak of asphalt, however, is easily seen in the glare of lights of an approaching car. The driver easily may know that he is allowing the approaching car sufficient room and also has the assurance that his car is not leaving the pavement for the ditch. The dividing line stands as a constant reminder of a fair division of the road, and there are not many drivers who long disregard the suggestion."—Sterling Advocate.

"Motorists of Colorado who engage in the pastime of bowling over the highway signs have been given notice by the state highway department that the practice must cease immediately.

"If the custom continues, according to highway officials, prosecutions will be instituted against drivers, and jail sentences will be asked for the destruction of state property."—Grand Junction Sentinel.

"The maintenance of three western Colorado highways and their present condition is 100 per cent, according to the report of the federal highway inspectors who recently inspected these roads.

"Only rarely do roads get in the 100 per cent column, local highway officials declare. Highways 102 and 174, between Ouray and Red Mountain Pass; Highway 172, from Sapinero east; and 210-B, between DeBeque and Grand Valley, are the three 100 per cent roads."—Telluride Journal.

"Formal opening of the completed Denver-Black Hills highway has been preceded the past 10 days by a large number of tourists traveling in both directions. It is stated that automobile tourists and truck operators prefer the shorter route, better grade and condition of the new road as compared with the old route.

"The opening of this road, which provides a direct route from Denver to the Black Hills country, will be the means of bringing thousands of tourists through this country who have previously been directed over north and south routes running west of here."—Peetz Gazette.

"Every now and then somebody announces the discovery or rediscovery of a shorter and better pass across the mountains of Colorado. The Fort Collins Express-Courier tells us that 'the most direct, low-grade, high-speed route across the mountains' is the way State Highway Engineer Blauvelt describes the Poudre-Cameron Pass road.

"There is no higher authority on highways in the state than our state highway engineer. Frank Blair, chairman of the state highway advisory board, says Cameron Pass is not surpassed for beautiful scenery. The new road seems to be popular."—Grand Junction Sentinel.

"Urging that when the highways are improved that they be paved to a wider width than is being done at present, the Casper Daily Tribune offers the following suggestion:

"'More than 40,000 miles of highways will be paved this year, after which the mileage of hard surfaced roads in the United States will be in excess of 500,000. This is twice the improved road mileage of ten years ago, says the New York Commercial. Standards of living cannot be raised nor industrial progress made in the mud. But we are rapidly approaching the time when the linear measurement of our roads will not be as important as width and load-carrying capacity.

"'If every state in the union was honeycombed with paved highways, it would be a number of years before we would acutely feel the need for increased road width. But all states are not, nor is there any immediate prospect of their reaching that point. This results in forcing the constantly increasing motor traffic on to the existing stretches of pavement, with congestion, delay, accidents and rapid highway depreciation as a result.

"'Let's begin to make our roads wider and heavier.'"—Fort Collins Express-Courier.

"Good roads have not been given the credit due them as the advance agent of civilization and human progress. The church, the public school, the printing press, the home, all these have played a part, but have not improved methods of communication accomplished even more?

"Hard surfaced highways stretching from state to state and from ocean to ocean and border to border are welding the American people into a solid, coherent nation, abolishing provincialism and sectionalism, destroying dialects and spreading tolerance and understanding everywhere.

"The first smooth all-year-round roads were built in this country within the memory of many now living. For the reasons that traffic was heavier, the people more progressive and the municipal governments more prosperous the first pavements were constructed in the largest cities. Dirt roads and cobblestones preceded them. Today the farmers and small towns are as insistent as city taxpayers for good roads, and the urbanite demands improved highways in the country for his automobiles and trucks.

"Just because much of the traffic on the public highways is pleasure bent does not make the paved highway an expensive luxury. For the farmer, the business man and the nation's transportation system they are an essential institution."—Rocky Ford Gazette.

EQUIPMENT COMPANY NAMES OFFICERS

New officers for the H. W. Moore Equipment company of Denver have been announced, following the death of the well known president of the concern, Mr. Harold W. Moore, who passed away on Wednesday, September 8.

An announcement by the company reads, in part, as follows:

"We cannot replace this man who loved and was loved by all who came in contact with him, and we mourn deeply our friend and guiding spirit, and heart of our organization.

"The business he founded and loved will be continued and we pledge our whole-hearted support to the policies as established by our esteemed president, and will carry on to success this business built upon the foundation so well laid for us."

Mr. John C. Moore has been announced as the new president of the company. Mr. Charles Mellish will be the vice-president and treasurer, and Mr. George Meffley will oe the general manager of the company.

Good nature is every fool's virtue, but it's different with good manners.

BIDS OPENED

Proj. No.	Length	Type	Location	Successful Bidder	Bid Price
265-B	3.831 mi.	Gravel Surfacing	Durango-Bayfield	Engler & Teyssier, Durango	$ 52,134.55
258-E	3.898 mi.	Gravel Surfacing	Cimarron-Cerro Summit	Strange-Maguire Pav. Co., Salt Lake City	49,850.50
262-H	3.296 mi.	Gravel Surfacing	Walsenburg-La Veta	Central Constr. Co., La Veta, Colo.	34,788.00

PROJECTS ADVERTISED FOR BIDS

Proj. No.	Length	Type	Location	Bids Opened
157-A	3.997 mi.	Grading	North of Buena Vista	
526-A	50-ft. span	Steel Bridge	Over Duck Creek, north of Ordway	
526-B	50-ft. span	Steel Bridge	Over Bob Creek, south of Ordway	
552-B	50-ft span	Steel Bridge	Over South Boulder Creek, near Rollinsville	
79-A	10 19-ft. spans	Timber Trestle	Over Big Sandy Creek, east of Simla	
144-A	4.694 mi.	Gravel Surfacing	Near Ingleside	
626	0.738 mi.	Grading	East of Pinecliff	

PLANS SUBMITTED TO U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

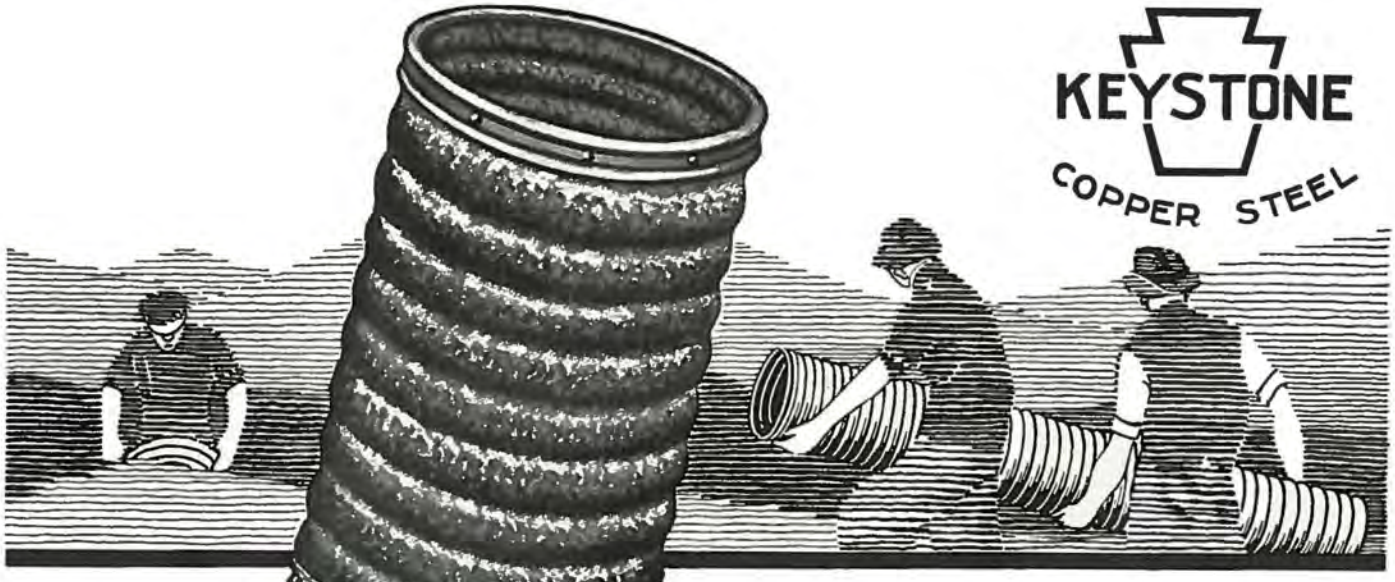
Proj. No.	Length	Type	Location
134-A	11.174 mi.	Sand Surfacing	Burlington-Stratton
254-C	150-ft. bridge	Steel Truss Bridge	Over Colorado River, 2 mi. southwest of Hot Sulphur Springs
276	0.133 mi.	Concrete Bridge, Paved approaches	North of Colorado Springs
281-E	0.812 mi.	Concrete Pavement	Lafayette
296-B	4.351 mi.	Gravel Surfacing	South of Pueblo

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
247-C	0.5 mi.	R. R. Underpass and Paving	At Swink
275-E	2. mi.	R. R. Underpass and Paving	At Monument
275-G	12. mi.	Paving	Larkspur-Monument
279-D	0.5 mi.	Paving	Morrison
279-E	4.5 mi.	Grading	Conifer-Baileys
282-D	3.5 mi.	Gravel Surfacing	North of Meeker
287-C	14. mi.	Grading	East of Kersey—Plans finished
560	3. mi.	Gravel Surfacing	Deer Creek-Littleton

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1925

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj No.
2-R4	North of Trinidad	6.66 mi.	Asphalt Paving	Strange-Maguire Pav. Co.	$ 331,632.00	45	2-R4
2-R3	North of Trinidad	0.553 mi.	Pav. Underpass	Strange-Maguire Pav. Co.	28,882.70	0	2-R3
169-R	Las Animas	0.35 mi.	Concrete Paving	F. C. Dreher	25,336.00	8	169-R
213-D	Durango, west	3.877 mi.	Gravel Surfacing	Shields & Kyle	47,692.00	58	213-D
242-AR1	East of Fruita	125 ft.	Steel Bridge	F. H. Knollman	19,999.00	29	242-AR1
246-E & 231-R	West of Avondale	2.454 mi.	Concrete Paving	Strange-Maguire Pav. Co.	68,083.90	51	246-E & 231-R
254-B	Hot Sulphur Springs-Parshall	1.087 mi.	Gravel Surfacing	Pioneer Const. Co.	61,071.00	95	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	74	258-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	95	258-C
258-D	Iola-Cebolla	4.426 mi.	Gravel Surfacing	H. C. Lallier Const. Co.	52,739.80	23	258-D
258-E	Cimarron-Cerro Summit	3.898 mi.	Gravel Surfacing	Strange-Maguire Pav. Co.	49,850.50	0	258-E
262-E	West of Walsenburg	3.527 mi.	Gravel Surfacing	Pople Bros.	24,979.00	83	262-E
262-F	LaVeta Pass-Russell	2 mi.	Crushed Rock Surf.	Central Const. Co.	22,017.00	100	262-F
262-G1	Russell-La Veta Pass	5.014 mi.	Gravel Surfacing	Central Const. Co.	44,822.00	12	262-G1
262-H	Walsenburg-La Veta	3.296 mi.	Gravel Surfacing	Central Constr. Co.	34,788.00	0	262-H
265-B	Durango-Bayfield	3.831 mi.	Gravel Surfacing	Engler & Teyssier	52,134.55	0	265-B
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.			
271-B	At Portland	0.778 mi.	Paving, grav., bridge	H. M. Fox	58,802.65	3	271-B
271-E	East of Portland	1.303 mi.	Gravel Surfacing	E. H. Honnen	35,815.00	70	271-E
275-A	Gann-Sedalia	7 mi.	Concrete Paving	Strange-Maguire Pav. Co.	314,174.00	100	275-A
275-B	Sedalia-Castle Rock	5.334 mi.	Concrete Paving	J. Fred Roberts & Sons	198,771.00	100	275-B
275-C	Husted-Monument	4.795 mi.	Concrete Paving	J. L. Busselle & Co.	186,585.20	56	275-C
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	86	275-D
275-F1	Castle Rock-Larkspur	10.303 mi.	Grading	J. Fred Roberts & Sons	132,679.00	23	275-F1
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	92	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	84	279-C
281-D1 & 251-B1	Longmont-Lafayette	5.813 mi.	Grading	F. L. Hoffman	99,631.50	44	281-D1 & 251-B1
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	68	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	96	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	84	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	83	283-B
283-C	North from Longmont	5.79 mi.	Concrete Paving	J. H. Miller & Co.	196,703.90	18	283-C
287-A2	Fort Morgan, west	4.011 mi. 16.61 mi.	Concrete Paving Subgrade Treatment	H. C. Lallier Const. Co.	119,016.60	54	287-A2
287-B	Greeley, east	7.565 mi.	Grading	A. R. Mackey	127,303.00	87	287-B
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee			
288-A1 & B2	Southwest of Merino	5.409 mi.	Concrete Paving	Edward Selander	137,695.00	89	288-A1 & B2
292-A	North from Minturn	6.417 mi.	Grading	H. C. Lallier Constr. & Eng. Co.	92,571.80	1	292-A
293-B	Colona-Ridgway	80 ft.	Steel Bridge	Geo. F. Wear	21,645.25	22	293-B
294-B	Mancos-Cortez	1.416 mi.	Gravel Surfacing	Engler & Teyssier	21,551.40	19	294-B
295-B	La Jara, south	6.622 mi.	Gravel Surfacing	John A. Duncan	32,316.80	0	295-B
297-B	Northeast of Palisade	2.237 mi.	Gravel Surfacing	Winterburn & Lumsden	30,581.24	0	297-B
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	90	298-A
299-A	Northwest of Delta	5.888 mi.	Gravel Surfacing	Strange-Maguire Pav. Co.	51,582.55	0	299-A



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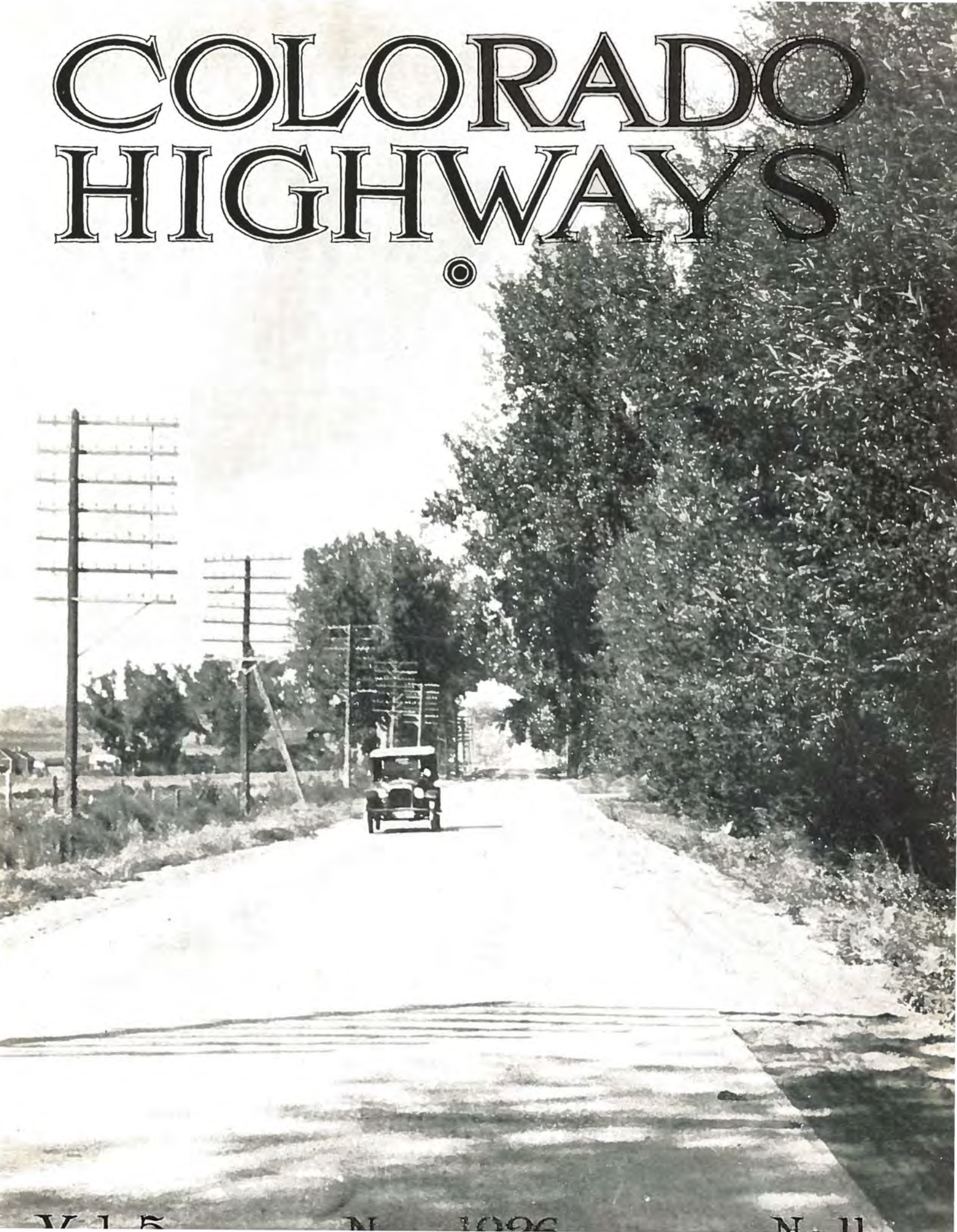

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Colorado Highways

"BETTER ROADS"

Official Publication of the
COLORADO STATE HIGHWAY DEPARTMENT
Denver, Colorado

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Citizens Will Vote Good Roads at Election, Reports Show

VOTERS of Colorado will go to the polls Tuesday, November 2, and adopt by a large majority the "Pay-As-We-Go" Plan Amendments Numbers 3 and 8, thereby approving a permanent system of financing state highway activities, according to reports received from every section of the state by the Colorado Good Roads Association.

The Good Roads Amendments 3 and 8 will authorize the repeal of the present personal property tax on automobiles, and increase the gasoline tax and motor vehicle license fees, making the issuance of further highway bonds unnecessary.

Adoption of these amendments at the election will mean that Colorado will continue building good roads in every part of the state, on approximately the same scale as heretofore.

Should the amendments fail of adoption, Colorado would be in danger of losing $1,400,000 annually in federal aid funds, which can be obtained only if the state is able to appropriate a like sum each year for use on the principal highways.

The $1,500,000 heretofore derived annually from the sale of highway bonds, and used to match the federal aid money, will not be available after the close of the present year, since the bond issue has been exhausted. Therefore new highway funds must be raised if Colorado is not to take a "back seat" in road building.

Repeal of the personal property tax on automobiles, a part of the "Pay-As-We-Go" plan, has appealed widely to motorists who realize that with this tax wiped out the new plan will cost in most instances approximately the same as the present taxes for highway purposes.

Any increase in expense would be more than compensated by the additional mileage of paved and improved roads which would be built under the Good Roads plan, it has been pointed out by highway experts.

Without the adoption of Amendments 3 and 8 motorists would be compelled to ride over rough, muddy and dusty roads in many places, due to the lack of sufficient funds to properly maintain and improve them.

Wear and tear on automobile tires and bodies as well as the additional gasoline required to drive a car over rough roads would cost motorists more than any possible additional expense which the new plan might entail.

The saving realized in driving over smoothly paved and improved highways would be worth, in actual dollars and cents, any additional cost.

The "Pay-As-We-Go" plan, which has worked successfully in many states of the union, has met with the warm approval of Colorado voters who have informed themselves on the subject. The fairness of the plan which provides that those who use the roads pay in proportion to their use, has appealed to thinking people.

Taxpayers who do not wish to be burdened with any further highway bond issues requiring heavy interest payments, have been quick to see the common sense of the "Pay-As-We-Go" plan. Interest charges on bonds have resulted in the payment of about $2 for every $1 worth of highway work obtained through the expenditure of bond issue funds.

Another appealing feature of the Good Roads Amendments 3 and 8 is the increased gasoline tax provision which will make it possible for the hundreds of thousands of tourists who motor over Colorado's highways each summer to pay in accordance with the use they make of the roads. Such taxes collected from the visitors will build and improve just so many more miles of highway than could be constructed otherwise. And at the same time the tax on the tourists will be far from prohibitive. It will be no more than what they are compelled to pay in many other tourists states.

Tourist statistics show that more than three quarters of a million tourists visited Colorado last year remaining in the state at least more than one day. Many of these visitors from all over the world enjoyed Colorado's glorious climate and scenery for several weeks, and some stayed for months. They spent, while here, more than $50,000,000. Quite a "crop," isn't it?

About two-thirds of those who came to Colorado, made the journey into and through the state, by automobile. Even those who came by train took one or more motor journeys into the national parks, national

forests, national monuments and mountain resort centers.

For the benefit of any who have not yet familiarized themselves with the "Pay-As-You-Go" Plan Amendments 3 and 8, which will appear on the election ballots, the following brief summary of the provisions of the amendments is given:

1. Amendment 3, which has been referred to the people by the last legislature, would authorize the legislature to repeal the present personal property tax on automobiles.

2. Amendment 8, which was initiated by the signatures of more than 33,000 qualified voters, would increase the gasoline tax from 2 cents to 3 and 1-2 cents a gallon, and increase motor vehicle license fees, providing for levying these fees on a basis of weight rather than valuation.

Highway experts felt that the gasoline tax and motor vehicle registration license fee constituted the proper method of automobile taxation, and therefore it was decided to give the people an opportunity to vote for the repeal of the personal property tax.

The state highway department would receive four-sevenths of the total revenue derived from the gasoline tax collections; counties would receive two-sevenths, and incorporated towns and cites, one seventh. These funds could be spent only for highway purposes.

The state highway department would receive 60 per cent of the funds obtained from the motor vehicle registration license fee collections, and the counties would receive the remaining 40 per cent. These moneys, too, could be spent only for roads.

The motor vehicle license fees, levied on the basis of the weight of the car, would amount to $10 annually for each automobile weighing 2,000 pounds or less, and $2.50 additional for each additional 500 pounds in weight.

Heavy motor buses and trucks which wear down a road more than ordinary vehicles would consequently have to pay in proportion to their weight under the new plan.

Without the new funds for highway purposes which the "Pay-As-We-Go" Amendments would provide, Colorado would be able to build and maintain only a very few of the many important and much needed highways throughout the state.

The importance of good roads and more of them is realized universally. But good roads and pavement cost money, and unless the necessary money is obtained, those who use the highways—and everyone uses them these days—will have to bump along over many rough stretches, eat dust and plough through mud, until the required funds are raised by some method or other.

Therefore a vote for Amendments 3 and 8 is a vote for good roads; a vote against these amendments is a vote against good roads.

Adoption of the amendments at the election will mean a more prosperous Colorado in 1927 and thereafter. It will mean that the difficult problem of properly financing the highway activities of the state has been solved permanently.

"Pay-As-We-Go" is good business, good common sense. Its adoption will mean that Colorado will build her roads from year to year, paying for them as they are built. It will mean that motorists and those who use the roads will pay for them as they ride. Property owners also will help pay for the roads, through the one-half mill levy for state highways.

The adoption of Amendments 3 and 8 will provide approximately $5,500,000 for the construction, improvement and maintenance of roads annually throughout

Two stretches of concrete pavement which delight the hearts of the motorists living in the regions served by these highways, are pictured above. On the left a small bridge and a stretch of pavement in Jefferson county, between Denver and Arvada, are shown. On the right is a view of pavement and another concrete bridge, over Crooked Creek, in Otero county.

A beautiful gravel-surfaced highway, between Brookton and Milner, in Routt county is shown in the accompanying photograph. This is one of the most interesting road views in this section of the state. The highway was improved with federal aid funds.

the state—practically the amount now expended, but which will not be available unless the amendments are adopted at the election.

Expenditure of the $5,500,000 each year for good roads in every section of the state would materially add to the general prosperity of Colorado, it is pointed out. Every county and town would receive its proportionate share of this highway fund, for use on roads in their respective localities.

To vote properly for Amendments 3 and 8, the voter should mark an X after each of the two following proposals on the ballot:

"FOR THE AMENDMENT TO SECTION SIX OF ARTICLE TEN OF THE CONSTITUTION RELATING TO THE TAXATION OF MOTOR VEHICLES," and

"AN ACT TO PROVIDE REVENUES FOR THE CONSTRUCTION, MAINTENANCE AND IMPROVEMENT OF PUBLIC HIGHWAYS, BY A TAX UPON THE SALE OF PETROLEUM PRODUCTS AND BY A GRADUATED MOTOR VEHICLE REGISTRATION LICENSE FEES."

Colorado Good Roads Association officials urge the citizens of the state who desire to see Colorado continue her present progressive system of road building, to vote "YES" on the above two Good Roads Amendments when they mark their ballots on Tuesday, November 2.

It has been estimated by highway experts that the road improvements which would be possible under the "Pay-As-We-Go" plan would actually save close to $2,000,000 annually to the motorists of the state through reduced motoring costs. Many substantial savings would be effected such as reduced expenses for tires, gasoline, oil and general wear and tear on motor vehicles.

Farmers Market Livestock Cheaply Over Highways

GOOD roads mean much to the farmer in cutting out the livestock middleman.

This is strikingly illustrated in a census made by the Department of Agriculture covering the territory surrounding Indianapolis.

Figures covering the transportation of hogs into this market for the year 1923 show that approximately one-third of the receipts of hogs at the Indianapolis market were delivered over the highways. A total of 934,960 hogs were delivered by truck.

Ninety-five per cent of all hogs marketed within a 50-mile limit were delivered by truck, the department figures show. Other shipments came from 75 to 100 miles away.

Before the days of the motor truck and paved and improved highways, practically all livestock sales by farmers were made to the local stock buyers. These buyers, who assembled the hogs in carload lots, traded on a margin of 75 cents to $1.25 below the market price. The farmer delivered his hogs at the place where the stock buyer selected to assemble his carload lot.

The traffic census shows that within the territory of the 50-mile radius from Indianapolis the local hog buyer has been eliminated.

The farmer hauls his own stock to the market now, on improved highways, and gets the full market price. He does not have to split with the middleman.

The time required to make delivery within a radius of 50 miles with a motor truck over good roads is probably no greater than that which was required by hauling with a team a distance of 8 to 10 miles in the early days over muddy, rough roads.

Editors Favor Highways Plan in Newspapers of State

COUNTY commissioners throughout the state are organized to support the "Pay-As-We-Go" plan of highway financing incorporated in one of the proposed constitutional amendments published elsewhere in The Advocate today. To all appearance, the commissioners are unanimously in favor of this measure. They are experienced in highway matters and in taxation; their recommendation is worth consideration.

Voters should remember that they have the alternative of the "Pay-As-We-Go" plan or no plan at all. The last general assembly made no provision for financing highway work after this year. If the proposed constitutional amendment should fail of passage, the state would have no funds to match the federal aid money that is available and virtually all highway construction throughout the state would have to stop.

It should be remembered also, that the "Pay-As-We-Go" plan is even more than its name implies. It will provide the funds with which outstanding bonds will be retired as they become due, and present indebtedness will be lifted.

This plan would provide highway funds not only for the state, but for the counties and the cities, the money to the cities to be used in improving those parts of state highways within city limits.

One of the most important features of the plan is that it would place upon the bus and truck lines, which now are virtually untaxed but which are the most destructive of traffic, a fair measure of the cost of the highways. The increased gasoline tax also would be a reasonable and fair way to tax the tourists from other states who profit by the wonderful highways of Colorado.

Under this plan the present property tax on automobiles would be abolished after this year.

The "Pay-As-We-Go" plan will do for Colorado what a $50,000,000 bond issue would do, but without burdening the state with additional indebtedness. It would take the state highway department out of politics about as completely as can well be, and should produce the highways.—Sterling Advocate.

In the coming election the voters and taxpayers of Colorado will have an opportunity of deciding whether they wish to contniue paying twice as much for their highways as they are worth or adopt what is known as the "Pay-As-We-Go" plan, sponsored by the Colorado State Association of County Commissioners. Under this plan the motorists of the state will pay exactly what the highways cost to construct and maintain as each year's expense will be taken care of in that year by a license fee and a gasoline tax.

The continued issuance of bonds to construct and maintain state highways means that we will pay as much interest as principal in the long run. As an illustration, if the state issues five million dollars in bonds which run 20 years at 5 per cent, the interest in that period will amount to as much as the principal, providing the bonds are not retired.

Unless the "Pay-As-We-Go" plan is adopted we will of necessity be compelled to issue bonds each year, which procedure will mean that we will have from five to ten million in bonds outstanding and drawing interest at all times.—Trinidad Picketwire.

We all want good roads passing our farm or home or place of business, and we are entitled to them.

Good roads pay.

A few years ago it took five gallons of gas to make a round trip from Red Cliff to Leadville; today a gallon and a half will suffice.

It would be a crime to stop our road building campaign now. Let those who use and abuse the roads pay as the "Pay-As-We-Go" plan provides.

We must finish our roads.—Holy Cross Trail.

Under the "Pay-As-We-Go" plan of financing state highway construction and maintenance, which will be voted upon by the people of Colorado at the November election, the cities and towns of the state will be given a part of the funds raised for road building purposes.—Cheyenne Wells Record.

The more we think about the tax on gasoline as a means of raising money for highway purposes the stronger it appeals to us as being the only just way of raising such funds. If we tax real and personal property alone for highway purposes the owner of a car or truck, who may not own another taxable thing, gets the use of the highways virtually tax free. The tourist would also get the use of the highways tax free. But both must pay their share in a tax on gasoline.

That we must have more and better highways in Colorado if we wish to attract the tourists in greater number, and their money with them, is pretty generally conceded.—Windsor Poudre Valley, reprinted in the Eaton Herald.

The "Pay-As-We-Go" highway finance plan was indorsed by the Colorado Society of Engineers in their monthly meeting in the Odd Fellows' temple last night. The plan will be put before the voters in the November election. It was explained to the society by Oliver T. Reedy, senior assistant state highway engineer.—Rocky Mountain News.

Our attention has been called to the fact that the money apportioned to the towns and cities under the pro-

The dashing, colorful waters of the Blue River are spanned near Dillon, Colo., by the 100-foot steel pony truss bridge shown in the above photograph. This bridge and its firm, concrete foundations, were constructed by the state, with federal aid funds.

posed plan of financing the state highways is to be used in improving that portion of the state highways within the city limits. This appears to be but fair, and, if used strictly for this purpose, the objections raised to the measure on that score are not serious.—Grand Junction Sentinel.

The "Pay-As-We-Go" plan for Colorado's highway department, to be put before the electorate in the November election, was discussed at the Chamber of Commerce forum meeting at noon yesterday, with Dr. F. L. Bartlett, Charles D. Vail, commissioner of parks and highways; Leslie Hubbard and Mayor Stapleton as the speakers.

Dr. Bartlett opened the discussion with an address explaining the features of the proposed initiated "Pay-As-We-Go" measure, No. 8, being considered in conjunction with constitutional amendment No. 3, which would repeal the present licensing fee system and the ad valorem tax on motor vehicles in the state.

Dr. Bartlett declared that if Colorado is to continue to make use of federal aid in road building to the extent of $1,400,000 a year, some such measure as initiated measure No. 8 must be passed, and there will be no funds available to meet the outstanding bond issues of $6,000,000 and $5,000,000.

"The $6,000,000 which we raised for road building some years ago will be exhausted this year," Dr. Bartlett said. "There will be no funds in sight next year to continue the seventy-five uncompleted road projects now started, most of them interlocking roads.

"Our experience has been that we cannot afford to leave this matter to the legislature in their next session. It is a question up to the people of Colorado: Do we want good roads or don't we?"—Rocky Mountain News.

Indorsement of the proposed "Pay-As-We-Go" plan for state highway construction which will be brought up for vote at the general election in November, was given by the Colorado Society of Electrical Engineers at their monthly meeting yesterday, and received favorable comment from a number of speakers at the Chamber of Commerce meeting at noon yesterday.

One of the important factors in the plan, declared C. D. Vail, manager of parks and improvements, one of the speakers at the forum, would be the creation of funds for the use of cities which have not been able to pave their streets which connect up the state highways which approach them on both sides. As a result, he said, paving halts at the city limits through the lack of provision to pave the streets which serve as main arteries of traffic.—Denver Times.

The three county commissioners of Morgan county are in favor of the adoption of the "Pay-As-We-Go" plan of financing the state highways of Colorado and are urging Morgan county voters to cast their ballots in favor of the amendments which contain that plan at the November election. O. B. Schooley of Brush, one of the Morgan county commissioners, is a member of the advisory board of the Colorado Good Roads Association, one of the organizations, which is sponsoring the plan.

The $6,000,000 bond issue for state highways voted in 1922 will be spent this year and some other plan must be adopted. The bond plan does not meet with favor. The proposed plan will raise funds to pay for state highways as they are built and put into use.—Fort Morgan Times.

Major Political Parties Favor Good Roads in Platforms

REALIZING that good roads constitute one of the most vital matters of state interest to come before the voters of Colorado at the November election, when the Good Roads Amendments No. 3 and No. 8 will be voted upon, both the Democratic and Republican parties enthusiastically adopted good roads planks in their respective party platforms.

The two major political parties of the state placed themselves, without qualification, strongly in favor of a continued program of highway construction, improvement and maintenance throughout Colorado. Such a program cannot be carried out unless the people adopt Amendments 3 and 8, which provide for a "Pay-As-We-Go" plan of highway financing, state highway officials declare.

The only way of insuring a continuance of a good roads program in the state is by the adoption of Amendments 3 and 8, road experts point out, for new funds for highway purposes must be raised at once, and NO OTHER PLAN HAS BEEN PROPOSED!

For the information of those who may be interested in knowing that both the Republican and Democratic parties heartily favor a comprehensive and adequate good roads policy for the state, the good roads planks of the two parties are quoted, as follows:

Democratic:

"We recognize the value and necessity of a system of permanent highways connecting every part of the state, and we favor a policy of reasonable extension of the present existing state highways."

Republican:

"We favor a policy of good roads for Colorado, realizing that adequate road improvement insures our future development."

In brief, everyone favors the continued construction, improvement and maintenance of an adequate, comprehensive system of highways throughout the entire state. Everyone wants more and better highways—more and more miles of paved and improved roads, in every section of the state.

There is ONLY ONE WAY to obtain these much needed and vitally necessary roads. The state faces a financial crisis in highway matters, since funds heretofore derived from the sale of the 1922 highway bond issue will not be available after the close of this year, 1926, because all the bonds have been sold and the money spent for improved roads.

The ONLY WAY is for the citizens of Colorado to vote for Amendments 3 and 8 in the election of November 2.

If these amendments are not adopted, only a rigidly limited amount of highway work can be done in 1927. It will be impossible to maintain roads the way they should be maintained, and but a very few miles of construction can be undertaken.

Another strip of fine gravel surfacing is shown above. This improved road lies between Rifle and Grand Valley, not far from Rifle, and was gravel surfaced with federal aid funds.

America Is Building Better Roads for Modern "Gasoline Horses"

WITH 20,000,000 more motor vehicles now on the nation's roadways than there were twenty years ago, it is no wonder that highway building has come to be one of the country's chief industries, says the 1926 Editor's Reference Book on Cement and Concrete.

In considering that these 20,000,000 or so vehicles are motorized with something like 700,000,000 gasoline horses, it is not astounding that the antiquated road building methods of only a few years ago are being dumped into the discard along with divided seats and goggles.

The modern roadway is built for the motorist, the fellow who now does, or should, pay for the highways, the Reference Book continues. In the good old days the rural road was built with the idea of furnishing some sort of trail from county to county. The early rural road received about the same care as a drainage ditch. Nowadays the highway is as carefully constructed as a skyscraper. The road is now designed with the motorist in mind.

One of the chief provisions now being made by highway commissions is that of wider rural roads, either through building them wider or through the broadening of existing pavements. For instance, unforseen traffic increases have made it necessary to widen the Lincoln highway west of Philadelphia. Ultimately a concrete road 40 feet wide will extend from Philadelphia to Harrisburg, a distance of 85 miles.

The other two dimensions of the road are being given equal attention by state highway departments. A few years ago it was customary in building a concrete pavement to thicken the pavement in the center. Findings from road tests have revealed that better service is obtained by thickening the outer few feet of the pavement since the strain is greater at the edge. Most states now have adopted concrete road specifications calling for a thicker-at-the-edge design.

Today the concrete rural road mileage has almost reached the 40,000 mile mark. Yet this considerable mileage would scarcely provide comfortable parking place for the nation's automobiles.

However, the concrete mileage is increasing about 6,000 miles each year. During the current season an almost unbroken stretch of concrete roadway will be completed which will extend from a few miles north of Green Bay, Wis., through Chicago and on to Topeka, a distance of nearly 1,000 miles. This one highway is an indication of the rural road building of the future.

Another plan adopted by many states where no good detours are available is the building of a concrete road half at a time, a method whereby traffic may continue throughout construction. For example, New Jersey built the 20-foot Shore Route in two ten-foot strips. During the construction of the first strip traffic passed over ten-foot gravel shoulders at either side of the pavement bed. Later when the first completed strip of pavement had cured properly it was opened to traffic along with one of the ten-foot shoulders, thus giving a 20-foot roadway.

A view a short distance east of Canon City, showing a well-protected curve on a stretch of gravel-surfaced highway.

Curves on the up-to-date highway are no longer dangerous. By widening the pavement and by superelevating the outer pavement edge highway engineers have taken another big step in providing safety and comfort for the motorist.

The highway user is getting more and more for his money. W. H. Connell, president of the American Road Builders' Association, estimates that improved roads save American motorists $1,630,000,000 annually. Since the yearly road bill is about one billion dollars, better roads not only pay the entire road bill but they save $500,000,000 a year.

These 700,000,000 gasoline horses now loose on the highways will soon be increased to 1,000,000,000. It is the job of the highway builder to provide suitable roadways for them.

Improved Roads Pay Dividends of 21 Per Cent Annually

IMPROVED highways pay big dividends to motorists, through substantial savings in reduced wear and tear on automobile tires, springs and the entire mechanism and body of a car as well as in reduced gasoline consumption and depreciation.

In fact, improved highways pay dividends of 21 per cent annually to the motorists using them, as compared with travel over the old time rough roads, according to an editorial published recently in the Los Angeles Examiner.

Under the date of August 3, 1926, The Examiner printed the following editorial which every highway student and motorist should read for his own information:

"The State Highway Commission announces that traffic on the state highways of California has increased 93 per cent in the past four years, and that the total automobile mileage of the state now amounts to 2,120,000,000 miles.

"The figures are obtained by actual count effected by the Commission's employes at 103 different points in California. There are around 1,500,000 automobiles registered in California. If the Commission's mileage estimate be accepted, there is a grand average yearly mileage of 1400 miles per car—on state highways alone, which, of course, does not include town or city travel.

"Now let us see what light these figures shed on the state highway system, regarded as a money investment. The people's outlay for modern highways, to date, has been about $100,000,000. How well has this investment paid?

"The largest item of profit, that of new commerce, time-saving and cheaper haulage of goods, cannot be computed or even estimated in money at all. It is huge.

"The other great item of human gain, which is recreational, also cannot be stated in dollars and cents.

"Suppose those 2,120,000,000 miles had been traveled over the old dirt roads, with chuckholes, bad grades, haphazard turns and poor traction. Isn't it well within the facts to put the saving of car expense at one cent a mile?

"And that means a saving of $21,200,000 a year in tires, springs, gasoline and depreciation! At that rate, we could rip out our entire state highway system every five years, and rebuild it out of the amount saved in the wear and tear to automobiles. Highways pay."

A CATCH IN IT?

"Hello, Shiek," hailed the flapper. "Take me for a nice long ride in your new car?"

"Got your walking shoes?" asked the shiek suspiciously. "No."

"Got a pair of roller skates with you?" "No."

"Carry a six gun?" "No."

"Well then, climb aboard, but I'll bet there's a catch in it somewhere."

A "train" of road machinery on the way... In this modern train the tractor serves as the locomotive, pulling a grader, cook house and supply wagon.

Automobiles Being Built Faster Than Highways Can Be Paved

THE pressing need for more paved roads in Colorado as well as in many other states of the union is clearly illustrated by the fact that the construction of paved roads is lagging further and further behind the production of automobiles and trucks throughout the nation.

An interesting comparison may be drawn between the output of motor vehicles and the roads paved during recent years by replacing the mileage of the highways built by the number of cars that can use them at the same time without too much congestion.

On each mile of two-track road built, there is room for 200 automobiles, according to figures recently cited by Dean A. N. Johnson, of the University of Maryland, in a paper before the American Society of Civil Engineers at New York.

This number will not permit cars to pass around the slower moving motor vehicles, and therefore all machines must move at a uniform speed.

In this paper, Dean Johnson gave 50 to 60 feet as the minimum spacing between cars—or 60 to 75 feet, including the length of the car itself—when the automobiles were moving freely at 25 to 30 miles an hour on a main highway.

Reducing this somewhat to be conservative, 100 cars can be accomodated in motion on each side of a mile, or 5,280 feet of pavement, 18 feet wide, so long as they keep in line and all run at the same rate of speed.

On this basis, last year, only one-third of the 3,650,000 motor vehicles produced could be used at one time on the concrete roads built during the year.

While this is a better showing, proportionately, than in 1919, when less than one-sixth of the new cars could be so accommodated, in the actual number of surplus cars the congestion is growing.

In 1914 the difference between the automobiles made during the year and those that could be accommodated by the concrete roads built was only 359,000; in 1919 it was 1,666,000; while in 1924 it had risen to 2,436,000.

Our Cover Picture

One of the many inviting drives to be found throughout Colorado is shown in the cover page photograph of a stretch of concrete paving in the northern part of the state, easily accessible from Denver and many other cities of the state. The highway scene reproduced on our cover page was photographed about two and a half miles south of Longmont, on the Denver-Fort Collins highway, in Boulder county. This drive is particularly beautiful at this time of the year, since it leads one close to the mountains, as well as through one of the richest agricultural regions of the state.

Better Roads Benefit Everyone Everywhere

Good roads promote happiness and bring prosperity; they make country living more tolerable, and soothe the frayed nerves of the urbanite; they make for infinitely better educational advantages and are missionaries of religion; they are markers of civilization and progress.

Good roads are works of faith; ministrations to the hungry, thirsty, stranger, naked, sick, and imprisoned.

All agencies, whether engaged in actual construction or in the promotion of sentiment resulting in road construction, are beneficial not only to those living immediately along the highway improved, but to all interested in the progress and development of the community, the parish, the state.

Good roads, therefore, are helpful to all classes and conditions of mankind, rewarding the efforts of those who work earnestly and intelligently for success, no matter where—in the field, in the shop, in the bank, in the commercial establishments, lawyer, doctor or educator.

Are not highways bands of friendship, making friends of strangers and cementing the unity of the Nation by easy intercourse?

BIDS OPENED

Proj. No.	Length	Type	Location	LOW BIDDER	Bid Price
157-A	3.997 mi.	Grading	North of Buena Vista	E. H. Honnen, Colorado Springs	$ 47,545.00
526-A	50 ft. span	Steel Bridge	Duck Cr., 10 mi. N. of Ordway	Monarch Engineering Co., Denver	4,010.20
526-B	50 ft span	Steel Bridge	Bob Cr., 3 mi. S. Ordway	Monarch Engineering Co., Denver	3,899.70
552-B	50 ft. span	Steel Bridge	So. Boulder Cr., near Rollinsville	Strochle Mach. Sup. Co., Black Hawk, Colo.	6,025.40
79-A*	10 19-ft. spans	Timber Trestle	Big Sandy Cr., E. of Simla	A. R. Mackey, Greeley	10,421.26
144-A No. 1*	4.694 mi.	Gravel Surface	Near Ingleside	Orley La Nier, Fort Morgan	31,564.50
626	0.738 mi.	Grading	East of Pinecliff	Hinman Bros. Construction Co., Denver	11,394.60

* Contracts awarded.

PROJECT ADVERTISED FOR BIDS

Proj. No.	Length	Type	Location	Bids Opened
296-B	4.351 mi.	Gravel Surface	South of Pueblo	Bids opened November 3, 1926

PLANS SUBMITTED TO U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj. No.	Length	Type	Location
134-A	11.174 mi.	Sand Surfacing	Burlington-Stratton
287-C No. 1	10.242 mi.	Grading	East of Kersey

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
145-A	4.0 mi.	Gravel Surface	West of Glenwood Springs
247-C	0 5 mi.	R. R. Underpass and Paving	At Swink
254-C	150 ft.	Steel Truss Bridge	Colorado River, 2 mi. Southwest of Hot Sulphur Springs
254-D	2.5 mi.	Gravel Surface	East of Parshall
275-E	2. mi.	R. R. Underpass and Paving	At Monument
275-G	12. mi.	Paving	Larkspur-Monument
279-D	0.5 mi.	Paving	Morrison
279-E	4.5 mi.	Grading	Conifer-Baileys
282-D	3.5 mi.	Gravel Surfacing	North of Meeker (completed)
560	3. mi.	Gravel Surfacing	Deer Creek-Littleton

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1926

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj No.
2-R4	North of Trinidad	6.66 mi.	Asphalt Paving	Strange-Maguire Pav. Co.	$ 331,632.00	45	2-R4
2-R3	North of Trinidad	0.553 mi.	Pav. Underpass	Strange-Maguire Pav. Co.	28,882.70	0	2-R3
213-D	Durango, west	3.877 mi.	Gravel Surfacing	Shields & Kyle	47,692.00	70	213-D
242-AR1	East of Fruita	125 ft.	Steel Bridge	F. H. Knollman	19,999.00	29	242-AR1
246-E & 231-R	West of Avondale	2.454 mi.	Concrete Paving	Strange-Maguire Pav. Co.	68,083.90	51	246-E & 231-R
254-B	Hot Sulphur Springs-Parshall	1.087 mi.	Gravel Surfacing	Pioneer Const. Co.	61,071.00	95	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	74	258-B
258-C	West of Gunnison	5.587 mi.	Gravel Surfacing	Ed. H. Honnen	60,100.00	100	258-C
258-D	Iola-Cebolla	4.426 mi.	Gravel Surfacing	H. C. Lallier Const. Co.	52,739.80	23	258-D
258-E	Cimarron-Cerro Summit	3.898 mi.	Gravel Surfacing	Strange-Maguire Pav. Co.	49,850 50	0	258-E
262-G1	Russell-La Veta Pass	5.014 mi.	Gravel Surfacing	Central Const. Co.	44,822.00	34	262-G1
262-H	Walsenburg-La Veta	3.296 mi.	Gravel Surfacing	Central Constr. Co.	34,788.00	0	262-H
265-B	Durango-Bayfield	3.831 mi.	Gravel Surfacing	Engler & Teyssier	52,134.55	0	265-B
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.			
271-B	At Portland	0.778 mi.	Paving, grav., bridge	H. M. Fox	58,802.65	3	271-B
271-E	East of Portland	1.303 mi.	Gravel Surfacing	E. H. Honnen	35,815.00	70	271-E
275-C	Husted-Monument	4.795 mi.	Concrete Paving	J. L. Busselle & Co.	186,585.20	56	275-C
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	89	275-D
275-F1	Castle Rock-Larkspur	10.303 mi.	Grading	J. Fred Roberts & Sons	132,679.00	37	275-F1
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	95	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	88	279-C
281-D1 & 251-B1	Longmont-Lafayette	5.813 mi.	Grading	F. L. Hoffman	99,631.50	44	281-D1 & 251-B1
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	68	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	96	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	84	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	85	283-B
283-C	North from Longmont	5.79 mi.	Concrete Paving	J. H. Miller & Co.	196,703.90	18	283-C
287-A2	Fort Morgan, west	4.011 mi. 16.61 mi.	Concrete Paving Subgrade Treatment	H. C. Lallier Const. Co.	119,016.60	54	287-A2
287-B	Greeley, east	7.565 mi.	Grading	A. R. Mackey	127,303.00	88	287-B
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee			
288-A1 & B2	Southwest of Merino	5.409 mi.	Concrete Paving	Edward Selander	137,695.00	100	288-A1 & B2
292-A	North from Minturn	6.417 mi.	Grading	H. C. Lallier Constr. & Eng. Co.	92,571.80	6	292-A
293-B	Colona-Ridgway	80 ft.	Steel Bridge	Geo. F. Wear	21,645.2[illegible]	22	293-B
294-B	Mancos-Cortez	1.416 mi.	Gravel Surfacing	Engler & Teyssier	21,551.40	45	294-B
295-B	La Jara, south	6.622 mi.	Gravel Surfacing	John A. Duncan	32,316.80	5	295-B
297-B	Northeast of Palisade	2.237 mi.	Gravel Surfacing	Winterburn & Lumsden	30,581.24	0	297-B
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	90	298-A
299-A	Northwest of Delta	5.888 mi.	Gravel Surfacing	Strange-Maguire Pav. Co.	51,582.55	0	299-A

Keystone

Culverts—are more than a conduit for water—they're a tribute to your judgment of economy.

A vote for the

Pay-As-We-Go

plan of financing State Highways is a vote for a more prosperous Colorado.

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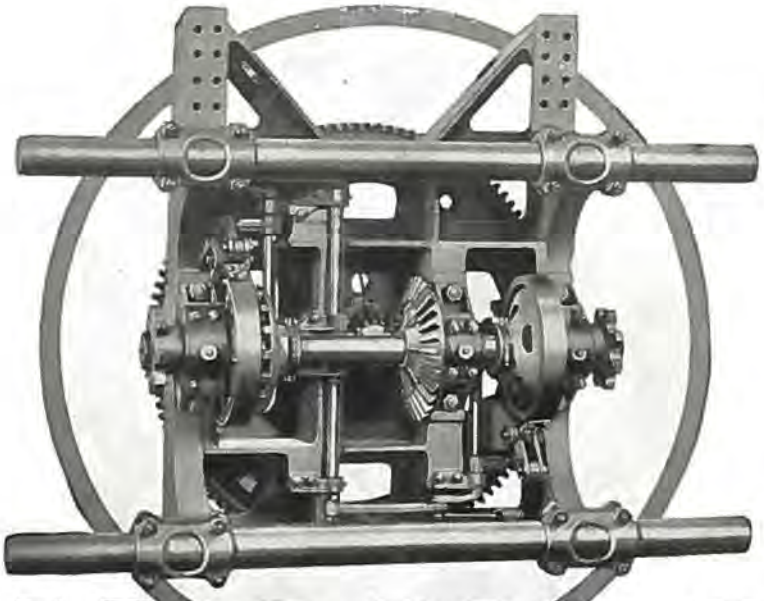

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COLORADO HIGHWAYS

Colorado Highways

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10 CENTS A COPY. **$1.00 A YEAR.**

OUR COVER PICTURE

THIS month's cover page of "Colorado Highways" shows a stretch of newly constructed federal aid gravel highway located between Rifle and Grand Valley, in Garfield county. This section of modern roadway serves as an artery of travel to the heart of Colorado's world famous oil shale fields. The old abandoned road may be seen below the new highway in the lower left center of the picture. The new road measures from 30 to 40 feet in width, and is built on a 1 per cent grade, while the old road used since the days of the pioneer was little more than a trail. The new highway is a fine example of the type of roads that have been constructed in Colorado within the past five years by the State Highway Department.

Colorado Highways
"BETTER ROADS"

VOLUME V. DECEMBER, 1926. NUMBER 12

Legislature to Solve Problem of Raising Highway Funds

LEGISLATIVE action by the General Assembly which convenes at the capitol early in January may yet save the day for Colorado's highway system!

Defeat of the "Pay-As-We-Go" amendments at the November election left the state highway department face to face with a serious shortage of highway funds, which imperils the good roads program of the commonwealth.

Since the highway bond issue funds voted in 1922 have been exhausted, some means of raising necessary additional funds for important road work must be adopted by the incoming legislature or Colorado's highway program will be virtually blocked!

Unless emergency legislation is enacted, the state is in danger of losing all or most of the $1,350,000 available in federal aid funds. This federal money can be obtained in 1927 only on condition that the state appropriate a like sum for joint expenditure in improving the principal highways of the state.

Only $1,800,000 will be available in state revenues for highway purposes next year, compared to approximately $5,000,000 expended in 1926, unless new road funds are raised by legislative action. But maintenance alone will require over $800,000 of the $1,800,000. Administration, machinery upkeep and other fixed expenses of the highway department will cost at least another $100,000, leaving only $900,000 or less for road construction in the sixty-three counties and matching federal aid.

With this critical condition confronting the state, good roads officials and legislators are giving much thought to the problem of providing adequate funds for a continuance of Colorado's good roads program. Students of the matter feel that more funds for highway purposes are absolutely imperative, if the roads of the state are to be properly kept up and improved.

More roads and better roads are vital to the welfare and prosperity of the state! Muddy, dusty and rough roads actually cost motorists more in the long run than good roads!

Indications are that the problem of properly financing highway activities of the state will be the most important subject of legislation to be considered by the assembly.

Governor-elect William H. ("Billy") Adams has indicated in interviews with newspaper correspondents at his ranch near Alamosa that he will co-operate with members of the law-making body in working out a measure that will provide sufficient revenue to carry on Colorado's road program in the future.

Governor Adams did not say what sort of a measure he would favor. But those who have been associated with the Alamosa statesman during his forty years of legislative activity declare that any suggestion he may make to the legislators will be "safe and sound."

The pressing problem of providing sufficient funds for a continuation of the state's usual program of highway construction and maintenance will be considered also at a meeting of the entire membership of the Colorado State Association of County Commissioners, which will be held in Denver, at the statehouse, December 14, 15 and 16. The full program of this convention will be found in another part of this issue of Colorado Highways.

The commissioners' association sponsored the "Pay-As-We-Go" amendments to raise road funds, but these amendments were defeated at the polls, along with every other amendment, when the people evidently determined to vote "No" on every initiated or referred measure.

The state highway advisory board, charged with making up the 1927 highway budget under the present trying circumstances, when only $1,800,000 is available to date for road purposes during the coming year, held its semi-annual meeting December 6. The board will draft the budget and submit it to Governor Morley for his approval, and consider in detail the entire problem of highway financing.

"Failure of the people to render favorable judgment on the 'Pay-As-We-Go' proposal for financing the state highway department leaves the incoming state legislature to wrestle with the problem of finding funds to carry on the building and maintenance of good roads," stated the Pueblo Star-Journal in a recent editorial.

"Last month the state sold the last $500,000 in bonds of the $6,000,000 issue voted by the people in 1922, and the expectation is that by the end of the year all the funds received from the gasoline tax and from motor vehicle licenses will be practically the only funds available for the use of the state highway department, and it is difficult to see how the usual road program can be continued without additional funds being obtained. . . .

"Members of the state highway department and all others interested in good roads for Colorado must devise some method of financing the highway department

in order that the state may take advantage of federal appropriations in addition to performing the other highway work which the state must do alone.

"Colorado wants good roads and is willing to pay for them, but the plans submitted to the voters this month failed for many reasons, one being that there was a disposition on the part of the voters to cast ballots against all propositions submitted, regardless of their merits.

"Owing to the necessity existing for prompt action it is certain that whatever legislation is passed will bear the emergency clause. Without this it would be possible to delay matters through the filing of a referendum petition, thus putting off final action until the next election and leaving the state highway department in a precarious condition."

The Brush, Colo., News, in commenting upon the failure of the "Pay-As-We-Go" plan at the election, said:

"Colorado citizens voted themselves out of miles and miles of good roads last week, when they turned down Amendments 3 and 8.

"There will be no more federal aid according to latest announcement from the state road department. In Morgan county, alone, this would have amounted to more than $100,000. Many people fail to see the good of a plan until it has passed by."

The Craig, Colo., Courier stated editorially:

"The defeat of the 'Pay-As-We-Go' plan makes it imperative that other means be devised for securing funds for state highways. Unless funds are provided for Colorado's road building program we shall be unable to take advantage of federal appropriations for highway construction on the 50-50 plan and no new projects can be started next year.

"We believe that Colorado is not prepared to abandon its highway construction program and that means will be provided."

County Commissioners to Meet and Discuss Road Matters

TO consider the problem of properly financing highway work in Colorado, on account of the shortage of highway funds and the defeat of the proposed "Pay-As-We-Go" plan at the November election, the Colorado State Association of County Commissioners will hold its nineteenth annual meeting at the state capitol in Denver, December 14, 15 and 16.

Other matters of special interest will also be considered at the convention. On the afternoon of the first day, for instance, a joint meeting of the association has been arranged with the county clerks, sheriffs, treasurers, assessors and county attorneys, to discuss subjects of mutual interest.

Governor-elect William H. ("Billy") Adams and all state senators and representatives who will comprise the coming legislature, which will be faced with the problem of enacting measures to adequately finance highway activities, have been especially invited to be present at the convention meetings. Legislators who attend the gathering will be enabled to obtain first-hand information concerning the road needs of the state from those who deal with highway problems the year around. The county commissioners have always been active in fostering a good roads program in Colorado.

Governor Adams will deliver an address before the convention the morning of Tuesday, December 14.

In addition to the county officials and legislators who will be present, state and federal highway officials are expected to attend. The convention will be held shortly after the semi-annual meeting of the state highway advisory board, which is confronted with the difficult problem of drafting a tentative highway budget for 1927 with insufficient funds to properly meet the road needs of the state.

Since the highway bond issue voted by the people of the state in 1922 has been exhausted, only $1,800,000 will be available in 1927 for state road construction and maintenance, unless the legislature enacts emergency measures to raise additional funds.

It is anticipated that the county commissioners' association, after extended discussion of the problem, will strongly recommend to the incoming legislature whatever measures may be deemed advisable to insure a program of road construction and improvement at least as comprehensive as that of 1926, when approximately $4,500,000 was expended.

Members of the state highway advisory board and officials of the Colorado Good Roads Association, which has always been active on behalf of more and better highways throughout the state, have also been invited to attend the convention sessions and participate in the discussions.

The highway financing problem will be taken up for consideration beginning at 2 o'clock the afternoon of Wednesday, December 15. The discussion will be begun under the subject, "Failure of the 'Pay-As-We-Go' Plan as an Initiated Measure—Why Did It Fail? —What Next?"

This will be followed Thursday morning, December 16, with a further discussion of the matter, and addresses the same morning by Major L. D. Blauvelt, state highway engineer; Frank Blair, chairman of the state highway advisory board; and June Johnson, district engineer for the U. S. Bureau of Public Roads.

Special invitations have been extended to all newly elected county commissioners throughout the state, and it is expected that most of them will attend the convention sessions, which will be presided over by Dan Straight, of Greeley, president of the association. The meeting was called for December this year, rather than for January, when it is usually held, on account of the urgent necessity for early discussion of the highway financing problem and recommendations for a solution.

In speaking of the gathering, President Straight declared that he and all the other officers of the association were working hard to make it one of the best

conventions ever held in the history of the organization.

"Indications are that the convention will be harmonious and constructive, and one that will result in much good," said Straight. "We expect to have present many of the men who have devoted much of their lives to the upbuilding of Colorado, and who have been most active in road work in the various counties.

"Colorado, with her world-famed mountain grandeur and scenery unsurpassed by any region in the world, with her highly productive farming regions and vast resources, depends upon good roads to a marked degree for her well being and prosperity.

"Already much has been accomplished in road building in this state, but much more still remains to be done. During the past harvest season in the farming districts the roads carried the largest tonnage of crops in the history of the state, and the need for more and better roads was impressed upon the minds of many citizens.

"In many instances, due to the smooth roads and pavements in various sections, motorists witnessed a single team of horses trotting along with a heavy wagonload of sugar beets, bound for the beet dump. Most of us have no difficulty in recalling those days only a few years ago when farmers were compelled to use four or six horses on a load of beets, due to rough and muddy roads over which they had to travel. This is just one instance of what has been done to improve the roads of the state, especially where it will benefit the farmer.

"But as the state continues to develop, we must continue to improve our highways, thereby materially aiding and fostering the growth and development of every section of the state."

President Straight said he was convinced that the "Pay-As-We-Go" plan amendments were defeated at the election, in which every one of the seven amendments covering various subjects was defeated, because of the pernicious propaganda spread throughout the state to "Vote 'NO' on all the amendments." Not only the highway amendments, but all the proposed measures were "snowed under."

A fine stretch of graveled road, located north of Salida on State Highway No. 15, constructed by the State Highway Department with federal aid funds.

The southern entrance to the city of Longmont, showing concrete paving connecting with state paved road No. 185, in Boulder county.

One of the features of the convention will be the annual Hardesty banquet, which will be given those attending the gathering at 6:30 p. m. the evening of Wednesday, December 15. The visiting commissioners and their wives will be guests of The R. Hardesty Manufacturing Company. The usual excellent banquet and entertainment are promised for the affair, which will be held in the Albany Hotel.

President Straight announced when in Denver recently that Room 171 at the Albany has been reserved, as usual, for the headquarters and office of the secretary-treasurer of the association, T. W. Monell of Montrose.

The H. W. Moore Equipment Company will be host to the commissioners at a luncheon to be served Wednesday noon, at their plant at West Sixth Avenue and Acoma Street. The arrangements will be in charge of George Meffley and H. W. Moore, Jr. Automobiles will transport the commissioners from the capitol to the plant. The luncheon is expected to prove one of the high lights of the meeting. Baur's will do the catering, and a few short talks will be made by prominent speakers.

A joint legislative committee representing the commissioners, sheriffs, county assessors, treasurers, clerks and attorneys will be named at the convention, to look after matters of interest to county officials which may be considered by the legislature.

The complete program of the convention is printed herewith for the convenience and benefit of the various officials planning to attend the sessions:

NINETEENTH ANNUAL MEETING
OF THE
COLORADO
STATE ASSOCIATION
OF COUNTY
COMMISSIONERS
State Capitol Building
Denver, Colo.
December 14, 15, 16, 1926

OFFICERS—Dan Straight, Greeley, Colo., President; W. L. Rees, Pueblo, Colo., 1st Vice-President; H. Emperius, Alamosa, Colo., 2nd Vice-President; W. G. Huntley, Burlington, Colo., 3rd Vice-President; T. W. Monell, Montrose, Secretary-Treasurer.

LEGISLATIVE COMMITTEE—J. E. Beckley, Delta; J. B. Fowler, Colorado Springs; Chas. A. Sommerville, Canon City; C. A. Hewitt, Greeley; Chas. D. Vaile, Denver; Guy Miller, Boulder; A. H. Poppen, Steamboat Springs.

FINANCE COMMITTEE (As selected by Convention)—Harris Aiken, Fort Collins; Chas. D. Vaile, Denver; Al T. Woods, Placerville; W. E. Gardner, Center; Ray McGrath, Lamar; Mel DeWitt, Buena Vista; Raman Miller, Strasburg; Dan Straight, Greeley; V. H. Johnson, Cheyenne Wells.

FIRST DAY

Tuesday, December 14, 1926

FORENOON:

10:00 A. M. Call to Order by President Dan C. Straight. Invocation, Rev. Chas. O. Thibodeau, Greeley. Address of Welcome, Mayor B. F. Stapleton of Denver. Minutes of last meeting. Address, Governor-Elect Hon. Wm. H. Adams. Appointment of Committees—Auditing, Finance, Necrology, Resolutions.

AFTERNOON:

Joint meeting with County Clerks, Sheriffs, Treasurers and Assessors.

2:00 P. M. Protection of Treasurer on bonds by banks for deposits—Albert Horton, Treasurer El Paso County; C. B. Brewer, Treasurer Larimer County.

2:30 P. M. Distribution of State Taxes—H. P. Williams, Treasurer Saguache County.

2:45 P. M. Interest on Delinquent Taxes and Tax Certificates—S. B. Fleming, Treasurer Jefferson County.

3:00 P. M. Automobile Taxes — Charles Haines, Treasurer Huerfano County.

3:15 P. M. Torrens Land Registration—C. R. Furrow, Clerk El Paso County.

3:30 P. M. Election Laws and Amendments — Claude E. Newton, Clerk Weld County.

3:45 P. M. County Clerks' Protective Bonds—Wm. Barber, Clerk Pueblo County.

4:00 P. M. Assessment of Coal Lands and Mineral Reserves—Homer F. Bedford, Assessor Weld County; W. J. Littleton, Assessor Las Animas County.

SECOND DAY

Wednesday, December 15, 1926

FORENOON:

10:00 A. M. Call to Order by President. Reports of Committees on Auditing, Finance, Necrology, Legislation.

11:00 A. M. Boards of Equalization, State and County—Hon. W. L. Boatright, Attorney General.

11:30 A. M. Tax Commission and Equalization Boards—Hon. E. B. Morgan, Chairman Tax Commission.

11:55 A. M. Announcements.

AFTERNOON:

2:00 P. M. The Improved Highway Financing Problem. Discussion: Failure of "Pay-As-We-Go" Plan as an Initiated Measure—Why Did It Fail?—What Next? Led by Hon. Leslie Hubbard, Denver, Former Attorney General; Sen. Nate Warren, Fort Collins; Sen. John J. Tobin, Montrose; Hon. Chas. H. Cowan, Representative Gunnison County; Walter K. Brown, Denver, Colorado, Good Roads Association, Advisory Committee.

5:30 P. M. Recent Highway Financing Legislation in Other States—William R. Kelly, County Attorney Weld County.

EVENING:

6:30 P. M. Hardesty Annual Banquet.

THIRD DAY

Thursday, December 16, 1926

FORENOON:

10:00 A. M. Call to Order by President. How shall we raise increased finances incident to improved road building—by increased property tax or motor fuel and license excise? Discussion led by Gus Johnson, Commissioner Mesa County; Herman Emperius, Commissioner Alamosa County; Wm. Rees, Commissioner Pueblo County; Ray McGrath, Commissioner Prowers County; Jess H. Mulholland, Commissioner La Plata County (10 minutes each).

11:00 A. M. State Highways, 1926 and 1927—Major L. D. Blauvelt, State Highway Engineer.

11:20 A. M. Frank Blair, Sterling, Chairman State Highway Advisory Board.

11:40 A. M. Federal Aid Highways, 1926-1927—June Johnson, District Engineer U. S. Bureau of Public Roads.

AFTERNOON:

2:00 P. M. Reports of Committees — Legislation, Resolutions.

2:30 P. M. Open Discussion of Proposed Road Financing and Other Measures to Be Asked of the Coming Legislature. Should the Counties Give Up to the State their Present Share of Gas and License Revenues?

3:00 P. M. Election of Officers for Ensuing Year—President, 1st, 2nd and 3rd Vice-Presidents, Secretary, Treasurer. Appointment of Executive and Legislative Committees for 1927.

A scene on the world famous Fall River road, in Rocky Mountain National Park, near the summit of Milner Pass.

Delegates to the convention of the American Association of State Highway Officials at Pinehurst, N. C.

Major Blauvelt Elected Head of American Highway Assn.

COLORADO'S state highway department and its directing head, Major Louis D. Blauvelt, state highway engineer, received signal recognition recently when Major Blauvelt was elected president of the American Association of State Highway Officials at the association's twelfth annual meeting in Pinehurst, N. C., November 8 to 12.

President Blauvelt takes pleasure in announcing that the 1927 convention of the association will be held in Denver the week beginning October 10.

As vice-president of the association, Major Blauvelt extended the invitation to the association to hold its convention in Denver next year. He tendered the invitation on behalf of the state of Colorado. It was supported by invitations he presented from the Denver Chamber of Commerce and Mayor Benjamin F. Stapleton.

Major Blauvelt assured the members of the association of a most cordial welcome and ideal climatic conditions in their convention city. He told the convention that he believed it was particularly fitting that the 1927 annual meeting be held in the native state of Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads, who was born in Leadville.

It is expected that approximately 300 delegates, including the most outstanding highway engineers and road experts of the nation, will attend the Denver convention.

The complete roster of new officers of the American Association of State Highway Officials is given, as follows:

President, Louis D. Blauvelt, state highway engineer, Colorado.

Vice-President, Frank T. Sheets, chief highway engineer, Illinois.

Secretary, John N. Mackall, chairman of the Maryland State Highway Commission.

Treasurer, W. N. Mack, Delaware.

Executive Secretary, W. C. Markham, Washington, D. C.

Executive Committee members: C. S. Avery, Oklahoma; C. M. Babcock, Minnesota; W. M. H. Connell, Pennsylvania; Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads, Washington, D. C.; W. R. Neal, Georgia; P. D. Sargent, Maine; Z. E. Sevinson, Wyoming; Harvey M. Toy, California; Fred R. White, Iowa; and Frank Page, North Carolina, past president, whom Major Blauvelt succeeded.

Through his many years of experience, Major Blauvelt has achieved national recognition as a railroad and highway builder and as an engineer.

He was appointed head of the Colorado state highway department in the spring of 1921, when the legislature replaced the old state highway commission with a state highway engineer and advisory board. He has continued as head of the department since that time, directing the extensive construction and improvement of highways throughout the entire state during that period.

President Blauvelt is a member of the American Society of Civil Engineers and the Colorado Society of Engineers.

At the Pinehurst annual meeting, Major Blauvelt presented a testimonial on behalf of the association to Frank F. Rogers, state highway commissioner of Michigan, past president of the organization, as a mark of appreciation of Mr. Rogers' services while president of the association.

The testimonial said, in part:

"The presidency of this organization comes only to those who have rendered signal service in meeting the problems confronting the development and improvement of our highways."

In commenting on the annual meeting, a Pinehurst, N. C., newspaper had the following to say editorially, during the convention:

"Yesterday knowledge sat in conference in the various parlors of the Carolina. Trained men discussed road building, maintenance and operation from all its various angles, and they offered the accumulated wisdom of the recent years during which road building has grown to be a science.

"They studied the experience of each other on materials, designs, traffic control, equipment for operation, bridges, chemistry of road building, construction, and all the things that enter into this new field of transportation that has been so suddenly torn open for human advantage.

"Problems that men have faced in the past on a limited scale came up yesterday like an avalanche, for roads have entered the domain of science, research and engineering on a scale of amazing breadth. And the trained minds were there to state the problems and offer the solutions.

"It is a rare thing that so many technical men of such attainments gather in North Carolina to tackle public matters in a technical way. Hence it is easy to realize that from this meeting will go out through the whole country to other men in the calling a vast fund of information, which will have a general public influence for the common good.

"Pinehurst this week is an institute of technology working in the advanced graduate courses, and probably the best thing Pinehurst does this second week of November, 1926, is the work of its advanced school of road building with students from East, West, North and South."

The outstanding address of the entire convention, according to President Blauvelt, was the speech by the Hon. William M. Jardine, Secretary of Agriculture, a member of President Coolidge's cabinet. Secretary Jardine was the guest of the association and of the chief of the U. S. Bureau of Public Roads, Thomas H. MacDonald. Since the Bureau of Roads is under the Department of Agriculture, Secretary Jardine is most vitally interested in good roads and highway problems generally.

Mr. McDonald's address was also a high light on the program. He declared that the United States represented the highest type of highway development in the world's history, and that the nations of Europe, which he recently visited, are today looking toward America for ideas and information concerning highway construction and improvement.

He said the nation's highways are rendering supreme service, but pointed out that in many instances our roads must be strengthened and rebuilt to meet the ever-increasing traffic demands, especially in the heavily congested regions.

Nothing in past history even remotely approaches in area, extent and quality the road program now in progress in the United States, he said.

Many other notable highway engineers and road construction experts addressed the annual meeting.

Among the various subjects discussed were wider pavements, design of concrete roads, maintenance of highway bridges, the economic use of public funds, snow removal, the value of traffic surveys, operation of state-owned equipment outfits, and safety on the public highways.

Former President Page, in speaking on the subject of permanent and durable highways, declared that the material and integrity of officials were the essential features in national road progress. In this connection he declared that the highways of the United States are a source of genuine pride to the nation.

Officers of the American Association of State Highway Officials for 1927 are shown in the accompanying photograph. Left to right, they are: Frank Page, N. C., past president and member of executive committee; W. N. Mack, Delaware, treasurer; Fred R. White, Iowa, executive committeeman; W. R. Neal, Georgia, executive committeeman; W. M. H. Connell, Pennsylvania, executive committeeman; Major Louis D. Blauvelt, Colorado, president; Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads, executive committeeman; C. S. Avery, Oklahoma, executive committeeman; and Frank T. Sheets, Illinois, vice-president.

Snow Removal Is Important Task in Rocky Mountain States

SNOW removal constitutes one of the most important tasks confronting highway authorities in Colorado and the other Rocky Mountain states. The problem is one of considerable difficulty in many localities, particularly in the mountainous regions.

Frequently enormous drifts of snow and ice as deep as twenty feet must be removed from the main passes of the Rocky Mountains.

For instance, last spring, the Colorado highway department opened Berthoud pass, at an altitude of approximately 11,000 feet, with a giant rotary snow plow that had been especially designed by Major L. D. Blauvelt, state highway engineer. A caterpillar tractor was the motive power used.

More than eight tons of dynamite and other high explosives were used to break the crust of the ice for a distance of two miles on either side of the summit. For 200 feet one slide covered the road to a depth of eleven feet.

A section 10 miles long was cleared in 56 hours actual operating time, according to the Colorado highway department. This has been described as "the most stupendous undertaking ever attempted by road officials in the West." A thousand men with shovels would have been required to remove the snow in the same length of time, engineers stated. The road was opened three weeks earlier than usual.

On the Fall River highway, crossing Milner Pass at 11,797 feet, a large steam shovel was used, and the pass was opened earlier than ever before, last spring. The snow was twenty feet deep at some places.

In the plains counties, roads are being raised from one to two feet above the natural terrain, to prevent snow from accumulating and drofting like it does where the roadbed is below the natural level.

County commissioners in many sections are using tractors with V-shaped plows and tractors and graders for removing snow from highways.

The new highway being constructed over Tennessee Pass, through which the main traffic moves between Denver and Grand Junction, will, because of its relocation and its increased width, from Leadville to Redcliffe, be easier to keep open more months of the year, it is believed.

Lake and Eagle county commissioners plan to make a special effort to keep Tennessee Pass open longer than heretofore.

A general discussion of the snow removal problem in the Rocky Mountain states, particularly in Utah and Wyoming, where conditions are very similar to those in Colorado, is given herewith by B. J. Finch, district engineer, U. S. Bureau of Public Roads, Ogden, Utah, and Z. E. Sevison, state highway engineer for Wyoming.

SNOW REMOVAL IN MOUNTAIN REGIONS

By B. J. Finch,

District Engineer, U. S. Bureau of Public Roads, Ogden, Utah

The problems of organization and operation in snow removal are of a general nature and apply as well to the sparsely settled sections of the West as to the densely populated sections of the East. Snow removal is so closely related to maintenance that it is difficult to separate the two.

An organization for snow removal necessarily has its nucleus in the regular maintenance forces. Because of the variation in the time at which and for which the extra personnel is needed, there must be a great measure of elasticity in the makeup of the forces. This means that the regular force of the maintenance department must be well trained, loyal, and capable of functioning within itself as well as when greatly expanded.

One of the features of snow removal work which applies more peculiarly to the mountainous regions is that of opening up mountain passes in the spring after the snow has disappeared below and only the passes prevent communication between the valleys.

This applies to transcontinental roads as well as to local roads, as wherever the passes in the intermountain region are above 8,000 feet elevation, all communication except by sleds becomes dangerous and almost impossible for a period of from three to five months.

When the time comes for opening these passes there are two distinct problems to be solved. The first is, of course, to get the road opened in the most economical manner and in the shortest time. The other is to protect the grade and structures from erosion while the snow is melting; this can be done only by the prevention of washing by patrolmen who direct the flow of the water to the regular channels as closely behind the melting snow as possible.

Many different devices are now being proposed for this type of snow removal from the heavy rotary plow to the simpler forms of grader.

The amount which can be spent for opening a road depends on its use. If a road is of sufficient importance so that its opening a month in advance of the regular season is worth considerable to the traveling public, a proportionately great expense is justified.

Where the traffic is small, however, say below 50 cars per day, cheaper methods of removal are necessary even if the time of opening is delayed somewhat.

Dusting or Sanding Snow.—One method which is being tried with success in many sections where a fair proportion of sunshiny days prevails is that of "dusting" or "sanding" the snow.

This operation may be briefly described as sprinkling on the surface of the snow a dark colored, light weight, granular material which, when exposed to the sun's rays, attracts and holds enough of the heat to cause the snow around the particles to melt.

This breaks up the even surface of the crust and greatly hastens the disappearance of the drifts. This method is being tried with good success in some parts of Idaho. The work of "sanding" or "dusting" can be done by the same patrolmen who are looking after the flow of water in the ditches.

This method often reduces the time for opening a pass to half that otherwise required without a heavy

expenditure. It also makes unnecessary the shoveling which otherwise would be necessary to eliminate many drifts that may be cut away by the action of the sun.

A crew of two or three men can do the work of a much larger outfit, and the organization correspondingly reduced.

Another factor that enters largely into the question of snow removal is the location and design of the roads. In the densely settled sections of the East the location of a road is more or less fixed by improved real estate.

In the West, however, there is opportunity, particularly in the roads over the mountain passes, to locate the new highway in the place where interference from snow will be at a minimum.

In some cases snow studies have extended over a period of several winters, with the result that when the road has been built it lies where drifting is least likely and where the exposure is such that most of the snow removal is done by the wind and sun.

The day when main highways can remain closed for months is past. The public is demanding, as it has a right to do, traffic facilities for continuous use of the millions of motor cars which it has purchased.

Engineers must face this situation squarely and organize their maintenance departments so that the roads will be in acceptable condition not only for the season of heavy travel, but also for the lighter, but possibly more necessary, traffic during the winter months.

THE SNOW PROBLEM IN WYOMING

By Z. E. Sevison
State Highway Engineer of Wyoming

The writer desires to present those principles adopted at the very beginning of the construction of the highway system of Wyoming, which have governed the location, design and construction of all such highways built in that state. It is believed that these principles are worthy of careful consideration in all localities where snow conditions prevail, in order that this hazard may be reduced to a minimum.

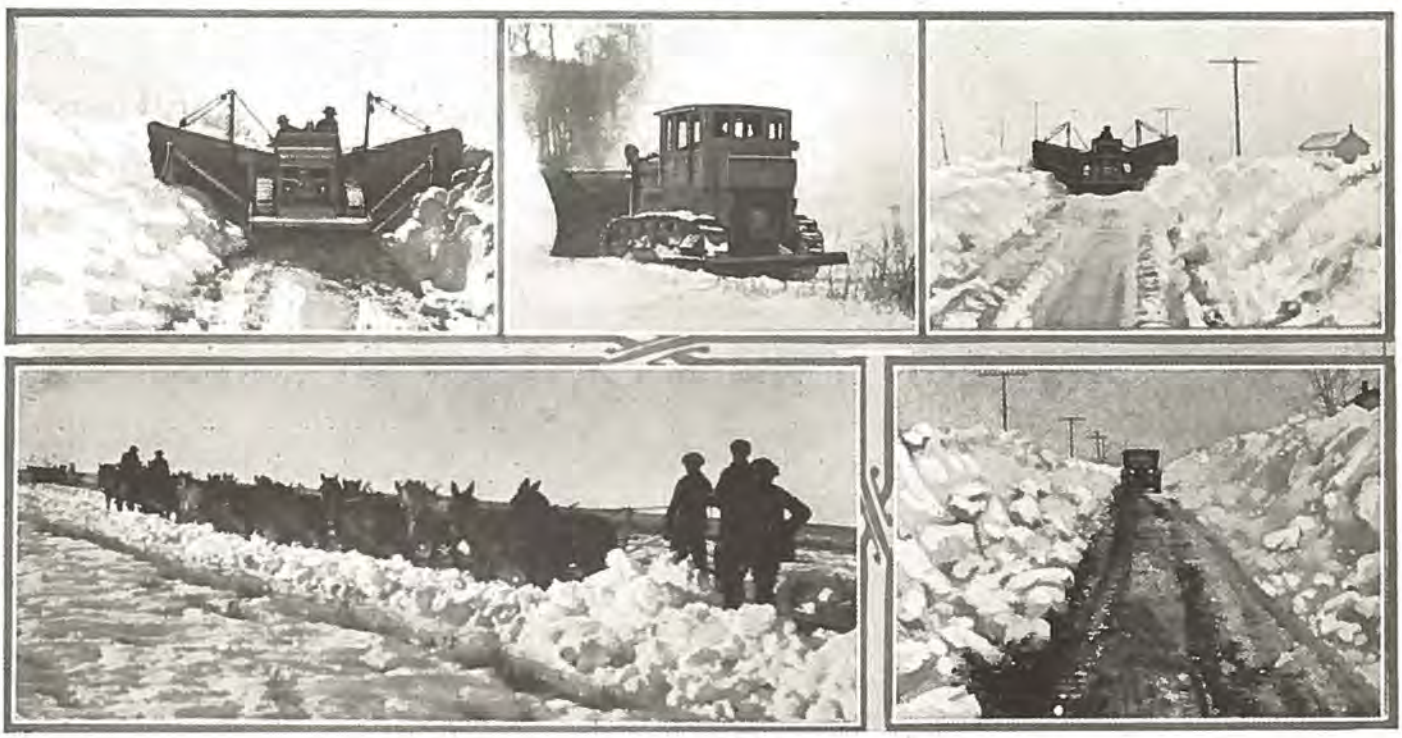
The Matter of Location.—The proper location is of primary importance and should be governed by the topography, the prevailing direction of the wind during the winter, and the exposure, with grade and curvature, within allowable limits, receiving secondary consideration. The sacrifice of alignment and grade to a reasonable extent may be necessary to secure a snow-free road.

In a country subject to snowfall, the successful locating engineer must not only be familiar with the territory in which he is working, but should have a good knowledge of the winter weather conditions which generally prevail.

In the open areas of the western states the location should be made on ridges or on slopes against the prevailing direction of the winter wind, so that an elevated roadbed will be swept clear. All cuts are to be avoided, but where this is impossible the location and construction should be such that they will be swept clear by the wind.

In the mountainous areas where the traffic is not sufficient to justify keeping a road open during the winter months, proper exposure is fundamental, and in conformity therewith the best possible grade and alignment that the country affords should be secured.

The winter season may be utilized to advantage in determining the location, except in forests or mountains, or a preliminary study may be made with sufficient notes as to snow conditions so that the locating engineer may be governed by these when the survey is made. If neither of these plans is followed the final inspection of the line should be made in the winter and prior to the completion of the plans. The notes of the location survey must be complete as to snow conditions so that the designer will have all the necessary data.



Several snow removal scenes on various sections of Colorado roads.

A view showing switchbacks on the state highway leading to the Rangley oil fields north of Grand Junction.

Highway Designs from Standpoint of Snow Hazard. —The design of the highway from the standpoint of snow hazard must be in the hands of an experienced engineer. In general, the surface of the roadway should be from 1 foot to 3 feet above the ground line at center line. This is governed by the lateral slope, vegetation, and the drainage requirements.

Where cuts are unavoidable they should be "daylighted" or widened to the right-of-way line and all material used in fills or wasted below the grade line. The elevated grade line has the advantage of simplifying snow removal, should that be necessary, and this practice should commend itself to the eastern highway engineer; it also provides better drainage. In addition, some cuts will require snow fences. A right-of-way width of not less than 100 feet is recommended in order to reduce the possibility of drifts caused by weeds along the right-of-way fences, and to furnish ample borrow.

Through forests and mountainous country where it is improbable that traffic requirements will demand a year-around road, or where topographical conditions govern, the usual design of balanced quantities should be modified to the extent of elevating the grade line sufficiently so that every advantage of correct exposure will be utilized and a dry roadbed obtained at the earliest possible date each season.

This is important for the reason that few mountain or forest projects have been surfaced, principally due to lack of funds. The construction requirements are practically the same as for the usual location and design. All vegetation, brush, sage brush, and trees should be removed from the right-of-way and borrow-pits should be located so as to take advantage of slopes and wind.

It is realized that highway location and design as herein described may not appear adaptable in the older sections of the United States where the territory is closely built up and it may be necessary to follow established roads and grades, and where rights-of-way are narrow, yet the writer is convinced that these principles may be closely approached.

The major difference between the East and West is characterized by a heavy snowfall in the East without much wind, while in the West (Wyoming particularly) the snowfall in any one storm is usually light, accompanied by winds which cause drifting.

These drifts become hard-packed within the period of duration of the storm and are difficult to remove with ordinary equipment. Even weeds or grass along the shoulder, or a right-of-way fence close to the roadway will cause drifts, hence the importance of proper maintenance to insure clean shoulders in the fall of the year, and wide rights-of-way.

When the traffic has reached a volume on an old road such that reconstruction becomes necessary or a parallel route built, the cost of snow removal on the old route should be compared with that on a route properly located and designed. It seems probable that this item of the final cost of a road has not been given the consideration it should have had in arriving at the economic location.

HIGHWAY ENGINEERS' MEETING PLANNED BY UNIVERSITY

For the discussion of problems of highway location and design, construction and maintenance of various types of highways, cost accounting and testing materials, a Highway Engineers' Conference will be held in Boulder, January 13 and 14, under the auspices of the extension department of the University of Colorado.

The conference will be under the special charge of the civil engineering department of the university. County commissioners and road supervisors are invited to attend the gathering.

Both forenoon and afternoon sessions will be held on each of the two days, but there will be no night sessions.

It is announced that officials of the state highway department, the U. S. Bureau of Public Roads, county commissioners, road supervisors and contractors will appear on the program and participate in the discussion of the topics selected.

States Invested Half Billion In Good Roads During 1926

THE total expenditure by the State Highway Departments in 1925 for road and bridge construction on the several state highway systems amounted to $649,125,101, according to reports from the highway departments just compiled by the Bureau of Public Roads, United States Department of Agriculture.

Of the total expenditure 59.6 per cent was spent for road and bridge construction, 18.4 per cent for maintenance, and 3.5 per cent for materials and equipment.

Administrative and engineering costs accounted for 4.7 per cent of the total, interest and principal payments on bonds 7.8 per cent, and miscellaneous expenditures amounted to 6.0 per cent of the total.

To meet these expenses the highway department received from various sources during the year a total income of $780,081,292, of which $115,656,721 was available as a balance from the previous year's operations, so that the amount of money raised during the year was only $664,424,571. Of the latter amount 43.5 per cent was raised by means of motor vehicle license fees and gasoline taxes, 30 per cent from the former and the balance from the latter.

The sale of bonds realized 21.3 per cent of the total for the year, and federal aid received from the National Government amounted to 13.9 per cent. Funds transferred to the state by the counties and other local governments amounted to 10.8 per cent, and the balance was made up of funds derived from special highway taxes and appropriations and from miscellaneous sources as follows: Taxes, 3.3 per cent; appropriations, 5.0 per cent; and miscellaneous 2.2. per cent.

Although the year's expenditures were slightly greater than the previous year's total of $605,665,207, the balance of $130,956,191 carried over into the current year was even greater than the amount of unexpended funds carried over from 1924. The rate of construction remained about the same as in previous years.

One of the most significant facts brought out by the report is the remarkable increase in the percentage of the total highway income derived from motor vehicle and gasoline taxes, and the falling off in the percentage representing real and personal property taxation. There has been a steady tendency in this direction since 1921. In that year the combined income from motor vehicle licenses and gasoline taxes amounted to 25.9 per cent, the gas tax revenue amounting to less than one per cent. In 1925 the income produced from these sources was 43.5 per cent of the year's total and the gas taxes alone amounted to 13.5 per cent.

In the same period taxes on property specifically for road purposes have dropped from 11.2 per cent to 3.3 per cent of the year's total income. Including the income from appropriations and miscellaneous sources, most of which is raised indirectly by property taxation, the 1921 percentage was 20.7 and the 1925 percentage was 10.5.

Funds raised by the sale of bonds were also a smaller percentage of the total in 1925 than in 1921, being 21.3 per cent in 1925 as compared with 27.8 in 1921.

The expenditures by the various state highway departments during the year are given in the table below. These figures do not include expenditures by county and local authorities for local roads.

Alabama	$ 10,917,204
Arizona	2,442,947
Arkansas	11,200,000
California	18,090,728
Colorado	5,564,590
Connecticut	8,611,936
Delaware	3,492,841
Florida	8,483,752
Georgia	7,902,428
Idaho	3,636,681
Illinois	36,375,983
Indiana	14,517,794
Iowa	14,107,798
Kansas	7,407,369
Kentucky	14,916,316
Louisiana	8,610,624
Maine	7,105,389
Maryland	12,024,781
Massachusetts	12,880,700
Michigan	36,138,549
Minnesota	17,962,567
Mississippi	4,795,192
Missouri	31,593,937
Montana	1,267,242
Nebraska	5,563,752
Nevada	3,055,959
New Hampshire	4,027,241
New Jersey	23,939,454
New Mexico	3,322,548
New York	49,368,770
North Carolina	32,588,514
North Dakota	1,862,348
Ohio	24,086,289
Oklahoma	12,937,673
Oregon	15,553,453
Pennsylvania	62,294,366
Rhode Island	3,045,859
South Carolina	9,132,953
South Dakota	6,378,176
Tennessee	14,379,189
Texas	19,985,007
Utah	4,123,798
Vermont	3,618,327
Virginia	14,071,555
Washington	7,845,566
West Virginia	16,138,729
Wisconsin	7,784,733
Wyoming	3,973,494
Total	$649,125,101

Recent News of Colorado Roads and Interesting Proposals

PLANS for making the famous Fall River scenic highway in Estes Park a "one way" road, and a suggestion that a new 100-foot highway be constructed for both fast and slow moving traffic from the Colorado-Wyoming border to Denver, have been received with widespread interest among highway builders as well as motorists.

Instead of double tracking the Fall River road, it is announced that the federal bureau of roads, which has supervision over the highways of the Rocky Mountain National Park, has made a preliminary survey for a new route from Estes Park across the front range to the Grand Lake region.

It is stated that the proposal is to make this new route and the present Fall River road both "one way" highways, using the Fall River "skyway" for west bound traffic and the new scenic drive for eastward travel.

Increased safety and the exploration of new, heretofore untraveled regions rich in scenic grandeur and wild, rugged mountain beauty, would be achieved by such an accomplishment, it is pointed out.

The proposed new route would start from the High Drive, which is now being rebuilt. It would be located considerably south of the Fall River road, and would cross the Great Divide probably through some other passes than Milner and Fall River. The high point on the new route would be lower, it is stated, than the Fall River pass, which is 11,797 feet above sea level.

The proposal for a new 100-foot highway, from the Broadway viaduct in Denver to the Wyoming state line, passing four or five miles east of Loveland and Fort Collins, was originated, it was announced, by Peter O'Brien of Loveland, former city engineer for Denver and former engineer of Arapahoe county.

It is suggested that the route follow the certain present section line roads.

If the plan should be carried out, in time the present route would be widened to 100 feet and divided into four driveways, each 18 feet wide. The two outer driveways would be for slow moving traffic, with a speed limit of about 25 miles an hour, while the two inside drives would be exclusively for faster motor vehicles, with a speed limit of 50 or 75 miles an hour.

The four separate highways would be separated from each other by four-foot drainage gutters. On each side of the boulevard would be an 8-foot parking space.

All surface crossings would be eliminated and subway crossings would be provided. Increasing traffic on the Greeley, Brighton and Estes Park roads is given by the sponsors of the plan as the principal reason for the construction of such a highway, which they propose should be known as Broadway, since it would be a continuation of the Broadway extension.

Several other recent outstanding announcements of interest to highway experts and motorists have been made at various places in Colorado during the past two weeks.

Superintendent H. E. Albright of Yellowstone National Park announced that approximately $1,000,000 will be spent on roads in the Rocky Mountain National Park during the next three years. Albright, who is the assistant director of the national parks service in the field, in addition to being superintendent of Yellowstone, made this announcement after conferring in Denver with J. W. Johnson, district engineer of the U. S. Bureau of Public Roads.

No more cement will be laid on the highway paving project north of Longmont this fall, with the recent completion of a 2½-mile strip, it was announced by officials of J. H. Miller & Company, construction contractors for the project.

The work of grading and surfacing, however, will continue during the winter months so that the road will be prepared for the laying of concrete as quickly as weather conditions permit in the spring. Bridges and culverts will also be put in during the winter wherever possible.

Scene on the Denver-Colorado Springs concrete paved highway, near Littleton.

New Type of Road Discussed

THE Highway Research Board of the National Research Council at its fourth annual meeting to be held in Washington December 4 and 5 will emphasize the need of a new type of road that will provide a good surface for secondary traffic, yet low in first cost and maintenance.

The secondary and local roads of this country have a far greater mileage than the main traffic lines, yet relative to very large mileage little progress has been made along the lines of improving this type of construction. Because of the small amount of traffic on the local roads, surfaces such as concrete, asphalt and brick are not possible because of the great cost of building the hard surfaced types.

Many communities do not have available deposits of natural road-building materials and consequently the construction of secondary roads have not kept pace with the demand for a serviceable road that will provide a good surface to traffic every day in the year.

A large number of states have constructed these local roads of broken stone, gravel or of selected soil such as sand-clay or top-soil. It has been definitely proven that when a gravel or selected soil road carries more than 500 vehicles a day, this type of road surfacing is unsatisfactory. The surface becomes rough and corrugated and it requires much work on the part of the maintenance forces to put it in good shape.

Several state highway commissions have been experimenting with various materials to determine a method of constructing a road that will cost even less than for a gravel road, yet more satisfactory. In one state the so-called "veneer" type of road has been built and it shows great promise. This type is built by placing 3 inches of 2 to 2½-inch stone directly upon the shaped road surface and rolling it into the soil so that the stone is properly keyed to the subgrade.

Then a light coating of asphaltic road oil is poured on to the stone and this is then followed by placing smaller stone on the surface to prevent the passing cars from "picking up" the asphalt. These smaller stone also wedge into the larger ones underneath, thus forming a hard, dense layer. Other types of construction, such as the sand-asphalt and marl-asphalt, are being tried, both of these types utilizing local material incorporated with small amounts of asphalt to serve as a binding material.

The Highway Research Board is calling attention to the fact that while all present research work should continue, the need of a low cost, serviceable road is necessary so that the local farm roads may be brought into conformity with the increasing demand of traffic. Some method of stabilizing ordinary earth, particularly in wet weather, is needed to answer this problem. Low cost of construction is demanded together with a low maintenance cost.

Good Roads Conventions Planned

GOOD roads have become the paramount subject in every township, municipality, county and state.

Good roads legislation will be of major importance in every state legislature next spring.

Boards of trustees, county commissioners, state and federal highway directors will bend every effort to make 1927 the banner good roads year.

For 55,000 miles of improved highways are on the program for the United States in 1927.

With the federal aid, state aid and local levies and bond issues, very few counties will not be included in the sweeping plans to "drag the people out of the mud."

Majority of the states have gone forward as fast as possible with highways, interstate and intercounty highways have been built at a cost of billions of dollars. Several states which pioneered in good roads are now rebuilding, widening, opening new "feeders" into main arteries.

Still there are a number of states, and dozens of communities, where good roads are still to come. It is in these districts that the intensive campaigns will be made and the combined power of state and county authorities will be used to start, at least, the cry for better roads.

The first gun in the gigantic road building campaign will be fired when the American Road Builders' Association holds its annual conference at Chicago, January 10-15, 1027. President Coolidge is to open the conference, and every governor in the United States will be there in person or be represented.

It is at this convention that detailed plans will be unfolded.

H. G. Shirley, of Richmond, Va., president of the association, says the 55,000 miles of good roads will be built at a cost of one and a quarter billion dollars.

This amazing sum will be spent in all parts of the country. East and West, North and South, will be joined by new or improved transcontinental routes. For the first time in 24 years an official of a foreign government will act as co-chairman of the road congress to be held in Chicago. Mr. F. Diaz Leal, member of the Federal Highway Commission of Mexico, has been invited to preside on Pan-American day, January 12, as a representative of his country. His co-chairman will be Col. R. Keith Compton, director of Public Works, Richmond, Va.

The second annual Southwest Road Show and School will be held in Wichita, Kansas, February 22-25, under the auspices of the Wichita Thresher & Tractor Club, Inc.

This show and school covers more than nine states and will be staged in Wichita's two million dollar Exposition building, which covers almost an entire city block, and has more than three acres of space available for exhibiting purposes.

The show will be under the direct supervision of the Kansas State Highway Commission.

COUNTY CLERKS WILL CONVENE AT CAPITOL DECEMBER 15

Proposed legislation at the coming session of the general assembly of particular interest to county clerks will constitute the chief matter of interest to come before the annual meeting of the Colorado State Association of County Clerks, to be held in the state capitol building, December 15.

The program for the convention is printed in full herewith:

Official Program of the
COLORADO STATE ASSOCIATION OF COUNTY CLERKS
To Be Held in the
Assembly Hall of State Office Building
Denver, Colorado
December 15, 1926

9:45 A. M.
Assembling of members of the association.

10:00 A. M.
Call to order.
Invocation.
Roll call.
Address of welcome by Carl S. Milliken, Secretary of State.
Reading of minutes of previous meeting.
Appointment of special committees.
Report of officers and standing committees:
A. Report of secretary and treasurer.
B. Report of legislative committee:
1. Proposed bill for more adequate protection for County Clerks in the matter of funds collected as agents of Secretary of State — William Barber, Pueblo, Pueblo County.
2. Proposed bill for repeal of Torrens System of Land Registration—C. R. Furrow, Colorado Springs, El Paso County.
3. Proposed bill for amendment of election laws—Claude E. Newton, Greeley, Weld County, and W. S. Lail, Denver.

11:30 A. M.
My Experience Photographing Records—Miss Lillian Hardcastle, Littleton, Arapahoe County.

12:00 M.
Recess.

2:00 P. M.
Address—Chas. M. Armstrong, Secretary of State-elect.

2:15 P. M.
Proposed bill relating to filing of plats —A. L. Marhoff.

2:30 P. M.
Clerks' Problems Relating to County Commissioner's Office—A. H. Crosby, Larimer County.

3:00 P. M.
What Can Be Done to Standardize Legal Forms? — Bessie B. Guthrie, Burlington, Kit Carson County.

3:15 P. M.
Should Deputies Be Bonded?—Denzel L. Yarnell, Grand Junction, Mesa County.

3:30 P. M.
Should the Schedule of Fees and Salaries Be Revised?—S. V. Hobaugh, Montrose, Montrose County.
Unfinished business.
New business.
Election of officers.
Fixing time and place of next meeting.
Adjournment.

Then—and Then Only!

Not until we have done away with certain classes of automobile drivers, either by educational means or force, can the average motorist take the road in safety. When we have

blotted out the drunken driver;
abolished the under-age driver;
out-run the beat-the-train driver;
shot down the highway robber driver;
forced the road-hog into a bottomless ditch;
taught the no signaler driver sign language;
caught the hit-and-run driver for good and all time;
whipped the smartness out of the smart aleck driver;
thrown the bootlegger driver behind the bars for twenty years;
convinced the speedster that he is not in such a hurry after all;
stepped on the loafer driver's rear bumper to speed him up a little;
equipped the one-light driver's car with three lights instead of two;
and just naturally pounded some common sense into the bone-head driver's head, with a sledge hammer if necessary;

—then, and not until then, can the average man drive out to a nearby lake for a picnic supper or a fishing trip with reasonable assurance that he will return home fit and whole, and not to a hospital maimed and mangled.—Marshall (Minn.) News-Messenger.

The Reason

When you see a town wobbling along on low gear like an auto on a muddy road you will find a town where the citizens send out their money to buld up the big cities. As a rule your home merchant can fill your order just as satisfactorily. Try the experiment.—Baudette Region.

PRIMA FACIE

Stranger (at gate)—Is your mother at home?

Youngster—Say, do you suppose I'm mowing this yard because the grass is long?—Life.

BIDS OPENED

Proj. No.	Length	Type	Location	Low Bidder	Bid Price
296-B	4.351 mi.	Gravel Surface	South of Pueblo	Cole Bro., Pueblo Colo.	$ 58,061.00
134-A-1	5.861 mi.	Sand Surface	Betw. Stratton and Burlington	W. A. Colt & Son, Las Animas	40,438.00
25AC-1	.....	Piers & Abutments	2 mi. S.W. of Hot Sulphur Spgs.	Hinman Bros. Constr. Co., Denver	12,383.50
282D	2.864 mi.	Gravel Surface	North of Meeker	Winterborn & Lumsden, Grand Junction	42,135.00

PLANS SUBMITTED TO U. S. BUREAU OF PUBLIC ROADS FOR APPROVAL

Proj. No.	Length	Type	Location
275G	10.869 mi.	Concrete Paving	Larkspur-Monument
281E	0.812 mi.	Concrete Paving	At Lafayette

PLANS BEING DRAFTED

Proj. No.	Length	Type	Location
145-A	4.0 mi.	Gravel Surface	West of Glenwood Springs
247-C	0.5 mi.	R. R. Underpass and Paving	At Swink
254-C	150 ft.	Steel Truss Bridge	Colorado River, 2 mi. Southwest of Hot Sulphur Springs
254-D	2.5 mi.	Gravel Surface	East of Parshall
275-E	2. mi.	R. R. Underpass and Paving	At Monument
279-D	0.5 mi.	Paving	Morrison
279-E	4.5 mi.	Grading	Conifer-Baileys
287C	19.5 mi.	Grading	Between Deerfield and Greeley
560	3. mi.	Gravel Surface	Dear Creek-Littleton

STATUS OF FEDERAL AID PROJECTS UNDER CONTRACT, 1926

Proj. No.	Location	Length	Type	Contractor	Approx. Cost	Per Cent Complete	Proj No.
2-R4	North of Trinidad	6.66 mi.	Asphalt Paving	Strange-Maguire Pav. Co.	$ 331,632.00	78	2-R4
2-R3	North of Trinidad	0.553 mi.	Pav. Underpass	Strange-Maguire Pav. Co.	28,882.70	0	2-R3
79-A	Big Sandy Creek, East of Simla	10 19-ft.	Spans Timber Trestle	A. R. Mackey	10,421.26	1	79-A
144-A1	Near Ingleside	4.694 mi.	Gravel Surface	Orley La Nier	31,564.50	1	144-A1
157-A	North of Buena Vista	3.997 mi.	Grading	E. H. Honnen	47,545.00	25	157-A
213-D	Durango, west	3.877 mi.	Gravel Surfacing	Shields & Kyle	47,692.00	77	213-D
242-AR1	East of Fruita	125 ft.	Steel Bridge	F. H. Knollman	19,999.00	76	242-AR1
246-E & 231-R	West of Avondale	2.454 mi.	Concrete Paving	Strange-Maguire Pav. Co.	68,083.90	89	246-E & 231-R
254-B	Hot Sulphur Springs-Parshall	1.087 mi.	Gravel Surfacing	Pioneer Const. Co.	61,071.00	100	254-B
258-B	S. W. of Gunnison	2.727 mi.	Gravel Surfacing	Lambie-Bate Const. Co.	65,374.00	91	258-B
258-D	Iola-Cebolla	4.426 mi.	Gravel Surfacing	H. C. Lallier Const. Co.	52,739.80	31	258-D
258-E	Cimarron-Cerro Summit	3.898 mi.	Gravel Surfacing	Strange-Maguire Pav. Co.	49,850.50	0	258-E
262-G1	Russell-La Veta Pass	5.014 mi.	Gravel Surfacing	Central Const. Co.	44,822.00	56	262-G1
262-H	Walsenburg-La Veta	3.296 mi.	Gravel Surfacing	Central Constr. Co.	34,788.00	21	262-H
265-B	Durango-Bayfield	3.831 mi.	Gravel Surfacing	Engler & Teyssier	52,134.55	10	265-B
267-B	Hoehne-La Junta	2.200 mi.	Gravel Surfacing	Central Const. Co.			
271-B	At Portland	0.778 mi.	Paving, grav., bridge	H. M. Fox	58,802.65	20	271-B
271-E	East of Portland	1.303 mi.	Gravel Surfacing	E. H. Honnen	35,815.00	82	271-E
275-C	Husted-Monument	4.795 mi.	Concrete Paving	J. L. Busselle & Co.	186,585.20	90	275-C
275-D	North of Castle Rock	0.879 mi.	R. R. Underpass	J. Fred Roberts Const. Co.	55,700.00	97	275-D
275-F1	Castle Rock-Larkspur	10.303 mi.	Grading	J. Fred Roberts & Sons	132,679.00	75	275-F1
278-B	Hugo, east	6.856 mi.	Sand Surfacing	D. S. Reid Const. Co.	17,222.00	95	278-B
279-C	Conifer-Baileys	5.772 mi.	Grading	W. A. Colt & Son	114,542.00	91	279-C
281-D1 & 251-B1	Longmont-Lafayette	5.813 mi.	Grading	F. L. Hoffman	99,631.50	55	281-D1 & 251-B1
282-A	South of Craig	250 ft.	Steel Bridge	Northwestern Const. Co.	79,442.00	77	282-A
282-B	West of Meeker	2.932 mi.	West from Meeker	Winterborn & Lumsden	31,466.00	96	282-B
282-C	North of Rifle	4.052 mi.	Gravel Surfacing	Hinnan Bros.	50,200.00	95	282-C
283-B	Berthoud, south	4.2 mi.	Concrete Paving	C. C. Madsen Const. Co.	168,835.00	89	283-B
283-C	North from Longmont	5.79 mi.	Concrete Paving	J. H. Miller & Co.	196,703.90	70	283.C
287-A2	Fort Morgan, west	4.011 mi. 16.61 mi.	Concrete Paving Subgrade Treatment	H. C. Lallier Const. Co.	119,016.60	83	287-A2
287-B	Greeley, east	7.565 mi.	Grading	A. R. Mackey	127,303.00	100	287-B
288-A	Merino-Brush	19 mi.	Grading and Surf.	Scott & Curlee			
292-A	North from Minturn	6.417 mi.	Grading	H. C. Lallier Constr. & Eng. Co.	92,571.80	13	292-A
293-B	Colona-Ridgway	80 ft.	Steel Bridge	Geo. F. Wear	21,645.25	69	293-B
294-B	Mancos-Cortez	1.416 mi.	Gravel Surfacing	Engler & Teyssier	21,551.40	75	294-B
295-B	La Jara, south	6.622 mi.	Gravel Surfacing	John A. Duncan	32,316.80	10	295-B
297-B	Northeast of Palisade	2.237 mi.	Gravel Surfacing	Winterburn & Lumsden	30,581.24	32	297-B
298-A	Pagosa Springs, east	1.779 mi.	Gravel Surfacing	John A. Duncan	22,465.00	90	298-A
299-A	Northwest of Delta	5.888 mi.	Gravel Surfacing	Strange-Maguire Pav. Co.	51,582.55	39	299-A

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Bids welcome to members of the County Commissioners Association and hopes to have the opportunity of meeting personally all those who attend their convention to be held in Denver, December 14, 15, and 16, and extend to them a Merry Christmas and best wishes for a prosperous 1927.

If we can serve you in any way, we trust you will not hesitate to call upon us.

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