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Official Proceedings

OF THE

Colorado Conservation Commission

From March, 1909, to April, 1910



DENVER, COLORADO
1910

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REPORT

OF THE

Colorado Conservation Commission

TO THE GOVERNOR

Organized at the City of Denver
March 11, 1909



From March, 1909, to April, 1910

DENVER, COLORADO
THE SMITH-BROOKS PRINTING CO., STATE PRINTERS
1910

LETTER OF TRANSMITTAL

Denver, Colorado, May 1, 1910.

To His Excellency, John F. Shafroth, Governor of Colorado:

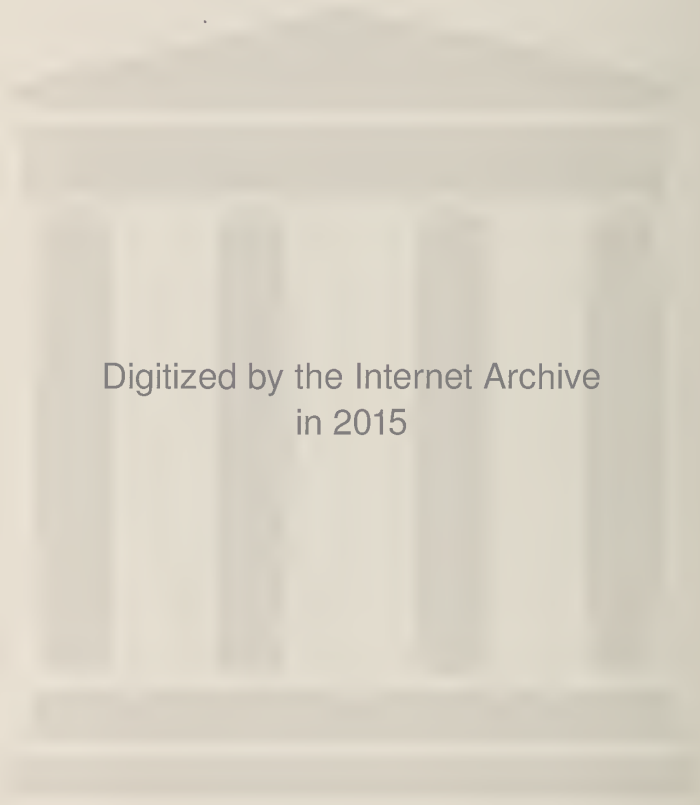
Sir—The Colorado Conservation Commission hereby presents its first report, covering its operations from March 11, 1909, to May 1, 1910.

The Commission is unable at this time to make such report on the natural resources of Colorado as they merit, principally for want of time and because no funds are available for the purpose of collecting the necessary data to make a complete report thereon. The Commission urgently recommends that the State make suitable provision for the work of collecting and tabulating facts for a proper understanding of the nature, extent and value of Colorado's natural resources. And we also urge upon you the necessity of an appropriation being made for the publication from time to time of the proceedings of this Commission.

Very respectfully,

FRANK C. GOUDY,
President.

W. G. M. STONE,
Secretary.



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INTRODUCTION

As a result of the conference of governors of the various states, held at the White House, May 13-15, 1908, called by President Roosevelt to consider the subject of conservation of the natural resources of the United States, Honorable Henry A. Buchtel, then Governor of Colorado, by request of the President of the United States and the Chairman of the National Conservation Association, on the 28th of November, 1908, appointed a commission on the conservation of the natural resources of Colorado, consisting of the following named persons, to wit:

The Attorney General, Denver; D. C. Beaman, Denver; Ellsworth Bethel, Denver; Earl M. Crauston, Denver; Dean of Colorado School of Forestry; Clarence P. Dodge, Colorado Springs; Kenneth C. Fahnestock, Leadville; Frank C. Goudy, Denver; John Grass, Trinidad; John H. Harris, Dolores; Wm. L. Hartman, Pueblo; B. L. Jefferson, Steamboat Springs; A. R. King, Delta; Murdo MacKenzie, Trinidad; President Agricultural College; Dexter T. Sapp, Gunnison; State Engineer, Denver; I. N. Stevens, Pueblo; W. G. M. Stone, Denver; Bulkeley Wells, Telluride; W. M. Wiley, Holly. Twenty-one members in all, and naming Frank C. Goudy as Chairman, with the request that the members attend the Conservation Conference to be held in Washington, D. C., December 8, 1908.

Four of the foregoing members attended the conference, viz.: Ellsworth Bethel, Clarence P. Dodge, Murdo MacKenzie and I. N. Stevens.

The commission, as above named, never met for organization, for the reason that Governor Buchtel's administration was nearing its close.

On the 17th day of February, 1909, his Excellency, John F. Shafroth, successor to Henry A. Buchtel, as Governor of Colorado, at the request of the President of the United States and the Chairman of the National Conservation Commission, appointed a commission on the conservation of the natural resources of Colorado, consisting of the twenty-one persons appointed by his predecessor, and adding thereto fifteen other members, viz.:

Alva Adams, Pueblo; Elias M. Ammons, Littleton; Robert J. Cary, Denver; Robert F. Coyle, Denver; J. A. Eddy, Denver; Robert Gauss, Denver; Charles W. Franklin, Denver; James F. Kyle, Montrose; M. A. Leddy, Manitou; B. T. Napier, Glenwood Springs; Joseph Newitt, Buena Vista; Hugh O'Neill, Denver; T. M. Patterson, Denver; Robert W. Speer, Denver; C. S. Thomas, Denver. Making, in all, thirty-six members. He also designated Mr. F. C. Goudy as Chairman.

THE NAME.

When Governor Buchtel appointed the commission he used the following terms, to wit: "A commission to be known as the Colorado State Commission on the Conservation of Natural Resources;" and the same form of expression was employed by Governor Shafroth. But the more convenient title of "The Colorado Conservation Commission" was adopted, which title was officially given it at the October session.

FIRST MEETING.

On the fourth day of March, 1909, the chairman issued a call for a meeting of the members of the commission, to be held at the rooms of the Denver Chamber of Commerce and Board of Trade, at 10 o'clock a. m. March 11th, to organize and outline such work as the commission might decide to undertake.

Pursuant to the call, on the eleventh day of March at ten o'clock a. m., at the place designated, the following members of the commission met:

Frank C. Gondy, J. A. Eddy, Alva Adams, Ellsworth Bethel, Clarence P. Dodge, Joseph Newitt, Dr. John Grass, Robert J. Cary, Wm. L. Hartman, Murdo MacKenzie, Dexter T. Sapp, W. G. M. Stone, I. N. Stevens, Robert Gauss, Gen. Bulkeley Wells, Dr. B. O. Aylesworth, State Engineer, and Dr. B. L. Jefferson—18.

Whereupon Mr. Gondy, as temporary chairman, addressed the commission as follows:

"At the conference of governors held at the White House in May, 1908, a declaration of principles was adopted containing among other things the following:

"Sources of national wealth exist for the benefit of the people, and monopoly thereof should not be tolerated."

"The conference referred to contemplated co-operation between the federal government and the states, and to that end the following declarations were adopted by the conference, viz.:

"We declare our firm conviction that the conservation of our national resources is a subject of transcendent importance which should engage unremittingly the attention of the nation, the state and the people in earnest co-operation. We commend the wisdom of the president in sounding the note of warning as to the waste and exhaustion of the national resources of the country, and signify our appreciation of his action in calling this conference to consider the same and to seek the remedies therefor through co-

operation of the nation and the states. We agree that this co-operation should find expression in suitable action by the Congress within the limits of, and co-extensive with the national jurisdiction of the subject, and complementary thereto by the legislators of the several states within the limits co-extensive with their jurisdiction. We agree that further action is advisable to ascertain the present condition of our national resources and to promote the conservation of the same, and to that end we recommend an appointment by each state of a commission on the conservation of natural resources to co-operate with each other and with any similar committee on behalf of the federal government.

"In pursuance of these declarations, ex-Governor Buchtel, during the latter part of his term, as Governor of Colorado, appointed a commission for Colorado on the conservation of natural resources, and designated myself as chairman of such commission, but for want of time I failed to call such commission together during his term of office. After His Excellency, Governor Shafroth was inaugurated, I called his attention to the action taken by the conference of governors held in Washington, and requested him to either continue the former commission or select another, as he might deem best. Governor Shafroth kindly notified me that he would prefer to continue the former commission, but deemed it advisable to add a few additional members, which he accordingly did, and it is this commission that I have taken the liberty of calling together upon this occasion for the purpose of organizing such commission for such work as the commission may decide to undertake and to co-operate with like commissions from other states, and also to co-operate with the national commission.

"Since the conference of governors, held at Washington, several of the states, including Colorado, have appointed conservation commissions, and it is my understanding that 36 states have already appointed similar commissions.

"Practically all of the people agree in the basic principles of conservation of our resources. As to the manner of preserving or conserving such resources, there is a great difference of opinion. President Roosevelt, in a special message to the senate and house of representatives on January 22, 1909, gave utterance, among other things, to the following:

"We should do all in our power to develop and protect individual liberty, individual initiative, but subject always to the need of preserving and promoting the general good. The underlying principle of conservation has been described as the application of common sense to common problems for the common good."

"In speaking of our public land policy, he said:

"This policy has for its aim the use of the public land so that it will promote local development by the settlement of homesteaders. * * * Our forest policy was established so that we might use the public forests for the permanent public good. The reclamation act, under which the desert parts of the public domain

are converted to higher uses for the general benefit, was passed so that more Americans might have homes on the land.'

"Under the subject of forests, the president said:

"I urge that provision be made for both protection and more rapid development of the national forests. * * * The time has fully arrived for recognizing in the law the responsibility to the community, the state and the nation which rests upon the private owners of private lands. The ownership of forest land is a public trust. * * * I hold as first among the tasks before the states and the nation in their respective shares in forest conservation, the organization of efficient fire patrols and the enactment of good fire laws on the part of the states.'

"I quote also from the National Conservation Commission's report, wherein this declaration is made:

"Present tax laws prevent reforestation of cut-over land and the perpetuation of existing forests by use. An annual tax on the land itself, exclusive of the timber, and a tax upon the timber when cut, is well adapted to actual conditions of forest investment and is practicable and certain. It is far better that forest lands should pay a moderate tax permanently than that it should pay an excessive revenue temporarily, and then cease to yield at all.'

"The president adds to this:

"Second only in importance to good fire laws, well enforced, is the enactment of tax laws, which will permit the perpetuation of existing forests by use.'

"The president also says, under the title of 'Lands,' in his special message of January 22:

"The remaining public lands should be classified and the arable lands disposed of to homeseekers. The use of the public grazing lands should be regulated in such way as to improve and conserve their value.'

"Under the subject of 'Minerals,' the president also suggests:

"Our mineral resources are limited in quantity and can not be increased or reproduced. Our mineral waste is about one-sixth of our product, or nearly one million dollars for each working day in the year. The loss of structural materials through fire is about another million a day. The loss of life in the mines is appalling.'

"In the report of the National Conservation Commission, made January 11, 1909, I find the following among other things:

"The consumption of nearly all our mineral products is increasing far more rapidly than our population. The consumption of coal is five tons and the waste nearly three tons per capita, while the production of coal is increasing enormously. Waste and loss in mining are diminishing.'

"The report also says:

"The available and easily accessible supplies of coal in the United States aggregate approximately one trillion four billion

tons. At the present increasing rate of production this supply will be so depleted as to approach exhaustion before the middle of the next century. The waste of petroleum, natural gas and many other products or resources is simply appalling.'

"The report, under the head of 'Lands,' speaks of the tremendous losses by erosion.

" 'The greatest unnecessary loss of our soil is preventable erosion.' It is said: 'We take from our forests yearly, including waste in logging and in manufacture, 23,000,000,000 cubic feet of wood, and that not less than 50,000,000 acres of forest is burned over yearly, and so on, but it is not necessary for me to take up your time in repeating upon this occasion.'

"It is claimed by those who have investigated the subject very carefully that as to our waters the run-off is increasing with deforestation and cultivation.

"Mr. M. L. Holman, one of the leading members of the American Society of Mechanical Engineers, in an address delivered in 1908, says, among other things:

" 'Our land may well receive our careful attention and its conservation be thoroughly studied. We shall be face to face in the near future with the fact that there is not sufficient land to support us at our present rate of growth and methods of living; that we are consuming over eight times as much lumber per capita as is used in Europe, and our timber supply in the older parts of the country has been exhausted. It is high time we were taking thought for the future and making provision for a supply of timber for our successors. A good example of what may be accomplished in this line is to be found in Germany. Our own national government has been making well directed efforts in this direction so far as the public lands are concerned, but the states must each work in their respective domains in order to accomplish the best results.'

"The same authority states, under the head of 'Mineral Resources':

" 'Of our mineral resources iron stands at the head, and the latest estimates, based on visible supply and rate of consumption, indicate an exhaustion of the supply in about 200 years. We waste iron and steel because they are cheap, but as time goes on the waste will diminish and the use be curtailed as the law of supply and demand shall dictate. The conservation of iron must be by reducing waste to a minimum. As the supply of iron decreases the price will increase.'

"No one questions that the American people have not been economical in the matter of the use of our wonderful resources. We have until recent years believed, at least many of us seem to have acted upon that theory, that our natural resources were simply inexhaustible. We are now confronted with startling facts which lead, or ought to lead, us to stop and reflect and join in bringing about such legislation as will in some degree help to extend the life of our resources. Of course, it can be said

that the present generation has no interest and that possibly several generations will have no interest in the question of the ultimate outcome or position of our civilization when coal and iron shall have been exhausted. The present civilization is founded practically upon the use of coal and iron, and we are all interested in the future, not only of this great government, but of the American people, and whether the predictions of engineers and others who have given to the subject of our coal and iron supplies much thought and consideration are correct or not as to the same becoming exhausted inside of 200 years (even if we assume that they are mistaken as to the extent of 200 years), the final outcome is appalling and one that should excite the interest of every person.

"It is true we may say we have no interest in the future generations; we live for ourselves in the present. It is true we may hope, as is frequently predicted, that science will solve the many problems, as for instance, what material will take the place of iron and steel when the iron mines are exhausted, and as to what material or substance will take the place of coal when our great coal measures are worked out, but assuming that science may not be able to meet and solve all these questions, one can readily see and easily imagine that the entire fabric of our civilization will have to be changed.

"As to the use of wood for fuel and the generating of electrical power, both of these have their limitations, and thus far nothing has been found that can be relied upon safely to take the place of the two products—coal and iron. Consequently, men like ex-President Roosevelt and President Taft and many others of similar character throughout the country are earnestly considering these problems and are anxious to have every state co-operate with the national government in bringing about such laws and such regulations as will preserve our national resources and aid in so far as it is possible in checking or stopping the waste in mining and the waste in use and the loss of life that so frequently takes place in the development and use of our national resources, particularly those materials that come from mines and mining operations.

"In this arid section we are particularly interested, as I view it, in the conservation of our forests. Men may agree that it is useless to prevent, or to attempt to prevent, the deforestation of the headwaters of the streams furnishing water for irrigation, but it is my deliberate judgment that the people of Colorado and of every section of the arid portion of the country should make it their special business to see to it that our timber is conserved, and that the drainage of the respective irrigation streams is kept forested as far as possible and that reforestation be had in so far as it is practicable or possible. Many of us differ with the policy of the general government as to the forestry service, but who has been able to suggest a better plan? Has any governor or congressman, or any state legislature, or any combination of state legislatures, so far offered any solution better than the one that

is being handled and controlled in large measure by federal officials? Instead of finding fault and criticising along the lines of tearing down the service, let us join in a friendly co-operation and in friendly criticism, to the end that any arbitrary rule or mistake in policy may be corrected or abrogated, and let the State of Colorado join with the other states and with the general government in adopting such policy as will tend to bring the greatest good to the greatest number."

ELECTION OF OFFICERS.

At the close of the chairman's address, Mr. Goudy was unanimously chosen as president of the commission for the ensuing year, and Mr. W. G. M. Stone was elected secretary.

APPOINTMENT OF COMMITTEES.

Upon motion, the president appointed a committee of five on permanent organization, with the request to report at its earliest convenience, and also to specify a committee on each of the following departments of work, viz.:

Resolutions, co-operation, legislation, lands, water, forestry, minerals and natural history.

The committee on permanent organization was composed of Messrs. Wm. L. Hartman, Alva Adams, John Grass, C. P. Dodge and B. L. Jefferson. On motion, Mr. Goudy was added to the committee as chairman *ex officio*.

A recess was then taken until 2 p. m., at which hour the committee on organization, by Alva Adams as chairman, made a partial report, naming the following committees on the several departments of work, to wit:

COMMITTEES.

Resolutions—T. M. Patterson, C. S. Thomas, John Grass, I. N. Stevens, C. P. Dodge.

Legislation—J. T. Barnett, B. T. Napier, T. M. Patterson, J. J. Harris, E. M. Cranston, Hugh O'Neill, J. F. Kyle.

Waters—F. C. Goudy, Alva Adams, State Engineer, W. L. Hartman, R. J. Cary.

Forestry—Colorado School of Forestry, Agricultural College, W. G. M. Stone, D. C. Beaman, A. R. King.

Co-operation—Governor Shafroth, F. C. Goudy, Alva Adams, Murdo MacKenzie, C. S. Thomas, C. P. Dodge.

Lands—W. M. Wiley, B. L. Jefferson, E. M. Ammons, Murdo MacKenzie, F. C. Goudy, J. A. Eddy, Robert Speer.

Minerals—John Grass, Bulkeley Wells, K. L. Fahnestock, C. W. Franklin, D. T. Sapp.

Natural History—Ellsworth Bethel, Robt. F. Coyle, Robert Gauss, M. A. Leddy, Joseph Newitt.

The report of the committee on organization was received and adopted, and on motion, the first person named on each committee was declared chairman thereof.

Numerous resolutions were presented during the sessions concerning the natural resources of the state and the policy to be pursued by the commission, all of which was referred to the committee on resolutions.

Mr. MacKenzie suggested that as there was not sufficient time for the committee on organization to make a full report at the present session, a time should be set for the purpose, and moved that it be fixed for 2 p. m. Friday, May 14, 1909.

Senator Sapp presented the following:

“Resolved, That each of the committees appointed at this session are requested to bring in a report and suggestions at the next meeting, with respect to their various departments,” which was adopted.

The commission then adjourned to meet at Denver, May 14, 1909.

THE MAY MEETING.

Pursuant to adjournment the commission met Friday, May 14, 1909, at 2 p. m., at state capitol, with the president, Frank C. Goudy, in the chair.

The meeting opened in the usual form, with the following members in attendance:

Alva Adams, D. C. Beaman, Ellsworth Bethel, Robert J. Cary, Earl M. Cranston, Wm. C. Sturgis, J. A. Eddy, E. M. Ammons, K. L. Fahnestock, Robt. Gauss, Frank C. Goudy, John S. Harris, Wm. L. Hartman, B. L. Jefferson, T. M. Patterson, M. A. Leddy, B. T. Napier, Joseph Newitt, Dexter T. Sapp, Chas. W. Comstock, Isaac N. Stevens, W. G. M. Stone.

The committee on organization submitted draft of constitution, which was read and passed over to the morning session of the next day for consideration and action.

The following papers were read during the morning and afternoon sessions of this day:

THE CONSERVATION OF OUR NATURAL HISTORY RESOURCES.

BY ELLSWORTH BETHEL.

Professor of Botany in East Side High School, Denver.

Mr. Chairman, Members of the Commission and Friends:

The commission is aware, of course, that there is a committee on the conservation of natural history resources of this state, of which I have the honor to be chairman, and if you will permit I will incorporate a report from this committee in this paper, rather than to give it later, since the report will furnish an outline of the matter which I wish to discuss.

As we understand it, it is the duty of the committee merely to point out what we believe should be accomplished by this commission along the line of the conservation of the natural history resources, and perhaps in a way indicate how some of these ends may be brought about.

If these recommendations meet the approval of the commission, then it can take whatever measures it may deem best to carry them into effect. The work of other committees, I take it, deals largely with problems having a commercial or economic bearing, while this committee is to consider questions of an aesthetic and scientific nature, though they indirectly concern the work of other committees and the facts and statistics which should be gathered and collated can not fail to be of service in carrying out the work recommended by the other committees.

It is apparent to every one that many objects of beauty, to say nothing of utility, are disappearing. Our natural history resources are being wasted and destroyed, perhaps more through thoughtlessness than through the spirit of vandalism, yet the desire to possess, uproot and kill which is all too prevalent demands that we develop a protective sentiment towards nature. The spirit of carelessness and vandalism which manifests itself in the destruction of forests, birds, wild flowers and scenery must be repressed either through laws or by propagating a sentiment of protection and kindness towards every living thing.

Colorado is richly endowed with natural history resources. We have beautiful scenery, an unsurpassed climate, a flora rich and beautiful and second in extent and variety only to California, mineral springs of many kinds of the highest medicinal value, though as yet unappreciated; sunshine and health-giving ozone, unexplored mountains whose heights may tempt the ambition of any mountain-climbing enthusiast, and ruins of an ancient civilization awaiting exploration and study. We have a most interesting geology, and a topography of such variety of mountain and plain, of deep canon and Alpine heights, that our state

should be the Mecca of the scientist, the tourist, and the pleasure seeker.

Have you ever stood on our mountain heights and drunk in the inspiration from a thousand peaks? Have you ever seen the wonderful panorama of one hundred and fifty miles of mountain view which we get from Denver? Have you taken the scores of trips on Colorado railroads through the most picturesque and scenically beautiful region on the continent? If so, you can appreciate the wealth of natural attraction of this Centennial state.

"Surely we have a goodly heritage; our lines have fallen in pleasant places." But how are we going to use these gifts which a beneficent Providence has bestowed upon us? The earth and sky have always been filled with beauty, but the eyes of the people have not been opened. To teach the people how to appreciate and use their heritage is one of our duties. That these gifts are not only not appreciated and wisely used, but are being neglected, abused and ruthlessly wasted and destroyed, is patent to every one. We would urge upon this commission the importance of investigating the natural history resources of the state and to do all in its power to extend to the masses a knowledge of these resources, that the people may rightly appreciate and enjoy their inheritance.

To apprehend and appreciate the beautiful gives an added charm to life and inspires and stimulates to the highest usefulness. These are some of the things which make for happiness and which bring a moral uplift and an appreciation of all that is noblest and best in life. What greater service could we render the people than to acquaint them with all facts which would inculcate in them a love for the aesthetic? Beautiful parks and shaded streets, sanitary and hygienic surroundings and an appreciation of nature will enrich and uplift our people and tend to give us the highest type of citizenship.

Let me read the recommendations of the committee.

Your committee would recommend the following:

First. We believe that the commission should endeavor to disseminate information concerning our natural history resources and should encourage nature study in public schools and a love of nature in all its phases, and endeavor to promote the wisest and best use of these resources in a way that shall not only serve us, but posterity as well.

Second. Should prevent the despoiling of scenery.

Third. Should prevent the wanton destruction of wild flowers, trees and shrubs.

Fourth. Should protect all useful birds and mammals and recommend means and methods for the extermination of animal pests.

Fifth. Should investigate the loco weed and other poisonous plants; also, should investigate plant diseases, whether caused by fungi or by insects, and, where possible, to suggest remedies.

Sixth. Should recommend the establishment of national or state parks within the state.

Seventh. Should recommend the establishment of game and fish preserves.

Eighth. Should protect fossil remains and archaeological ruins, and prevent the removal of relics from such ruins from the state.

Ninth. Should recommend the erection of a state museum or other means of caring for all objects of historic interest or scientific value, that such objects may be kept in the state for the enjoyment and enlightenment of our people.

Tenth. Should ascertain what trees and other native plants are worthy of cultivation and improvement, and what exotic trees or shrubs may be grown under conditions which obtain in this climate, and should recommend the same to the people that the largest use possible may be made, not only of our indigenous plants, but that others of economic or ornamental use may be introduced and cultivated.

Eleventh. Should investigate the mineral springs of the state and give publicity to this valuable asset, that their usefulness may be greatly extended.

Twelfth. Should encourage the good roads movement and the establishment of rapid transit between our larger cities and mountain resorts, that the people may easily and cheaply obtain the advantages of fresh air and magnificent scenery.

I wish now to discuss some of these recommendations in detail.

First. The despoiling of scenery.

That natural scenery should have its beauty marred in the interest of commercialism seems almost incredible. While we can not prevent a man from selling the beauty of his field to advertise tobacco and whiskey, patent medicines, etc., yet a sentiment may be created which will do much to lessen the sign-board nuisance, which, fortunately, is far less in evidence in Colorado than in the East. The existing laws should be rigidly enforced, which would prevent the painting of signs on rocks and cliffs and trees, and the placing of any sign on public lands which will deface or mar the beauty of the landscape.

I wish right here to say a few words regarding the value of scenery. It is one of our most important assets, especially in attracting tourists; however, its value is not appreciated. There are many who seem to think that the tourist trade is of little importance. With our splendid climate, fine scenery and other attractions, we should have many thousands of tourists within our borders the year around. It is said that California has on an average 75,000 tourists in the state all the time. Think what this means to the financial interests of the state. This is an asset not to be despised, but much has to be done to improve and render accessible points of interest, and I note with especial

pleasure the good roads movement in this state, which will be of incalculable benefit, not only to our own people, but to the visitors as well. Rapid transit to pleasure resorts is also necessary.

Here in Denver our chief asset is our splendid panorama of a mountain view, which is probably unsurpassed in the world. Great cities, fine buildings, parks and museums may be seen in many places, but where on this continent is there a spectacle more sublime than the stretch of one hundred and fifty miles of snow-capped peaks, with altitudes two to three miles above the ocean tides? It is a perpetual joy to our citizens, and a vision which the visitor carries away with him, never to be forgotten.

Second. The preservation of wild flowers, trees and shrubs.

The wild flowers of Colorado are a delight to all who see them, and I would not wish to deprive any one of their enjoyment, but there is great danger of the extermination of many beautiful species through thoughtless and indiscriminate picking. In the East the laurel, arbutus, orchids and certain ferns have almost disappeared, and a like fate may befall our Mariposa lily, columbine and tiger lily and other easily exterminated species if something is not done to discourage wholesale destruction which prevails around many resorts.

Protection of Wild Flowers—While many flowers may be gathered with impunity, the rarer kinds should be picked sparingly and every precaution taken not to uproot them, and it is especially important that enough blossoms be left to produce seed. A knife should be used in cutting Mariposa lilies and all others easily uprooted. The columbine is securely rooted, but since it is so handsome and has the additional attraction of being our state flower, none are left to produce seed, and it must ultimately die out in the vicinity of our resorts.

We should encourage plant preservation societies and the putting up of notices about resorts. Many resorts have done this, and Enos Mills, the distinguished lecturer and forester, has posted many unique notices in Estes Park about Long's Peak Inn, of which he is proprietor. These notices caution the people to use a knife or scissors when gathering flowers. To gather sparingly, as a single flower is more beautiful than an armful.

Sheep are a most destructive agent and should not be allowed to graze near resorts. We should not purchase flowers of kinds which are in danger of extermination. The forests are injured by indiscriminate cutting of Christmas trees.

Notices should be posted to indicate what flowers and shrubs are in danger of extermination. There will still be left in greatest abundance many kinds which are beautiful and of which there need be no fear of extermination.

Through the public schools, women's clubs, village improvement societies, and especially through the free literature of the plant preservation society, the people may be educated to the necessity of this protection.

Protection of Birds—Our feathered friends are most deserving of protection. This may be effected by rigid game laws, and especially by creating a healthy sentiment through Audubon societies and instruction in the public schools. Boys must be taught not to throw stones at birds or rob nests. However, we cannot hope for much from boys so long as they are permitted to carry guns. A boy with a gun is a menace, not only to himself, but to every living thing. It is no sport to shoot at a mark. He must kill something. No less destructive are the foreigners at work along railroads. They generally carry firearms, and all birds are food to them. I wish that a large license fee were charged for carrying firearms, as I believe that this is our only hope of preventing the slaughter of the birds. I doubt if any one fully appreciates the value of birds in this state where noxious insects are so prevalent. Before the house-finches and other birds became abundant in this city, the trees were annually defoliated by moths. A robin will collect several hundred insects in a day to feed its young. I have not time to quote statistics, nor are any needed, as I am sure you all realize that birds are indispensable to the fruit industry and agricultural interests.

Bulletins should be published describing the birds, indicating what ones are worthy of protection. Most people are woefully ignorant of our commonest birds, and many are not able even to distinguish the beautiful and invaluable house-finch from his worthless cousin, the English sparrow. By putting up boxes one can bring many useful birds. The National Audubon Society will furnish a great abundance of bird literature gratis to all who apply for it.

Plant Diseases—All kinds of vegetation are affected by rusts, smuts, blights and mildews, as well as by insect pests. Unless one has given this special study, he cannot realize the extent of the ravages of these diseases. Forests are destroyed, and in some places more than fifty per cent. of the native grasses are ruined by plant diseases known as fungi.

I regard this as one of the most important economic problems confronting the agricultural and grazing interests of this state. The study of plant diseases is a specialty of mine, and I have spent my summers for the past fifteen years in the study of these diseases, and now that the government is assisting in the culture work, good results are expected; however, I cannot take time now to discuss these diseases, but hope at some future meeting of the commission to show specimens to demonstrate the importance of these investigations.

Establishment of Parks and Game Preserves—This commission should, I think, be so well informed as to all resources of the state that it would be the logical body for locating parks, and certainly we can render a great service to the state in giving aid to this work. Just now the people of Estes Park are asking to have that place made into a park and game preserve. It is a

most ideal location for such purpose, and the project certainly merits our support.

To protect fossil remains, archaeological ruins, and prevent the removal of relics from the state. The value of these antiquities is not appreciated by our people. Few states can boast of a prehistoric civilization of such interest as ours. Museums of the East are exceedingly anxious to get these relics. They should be kept in the state where they form a part of its history, and if any people are entitled to their enjoyment, it is our own, and they should be kept in the state for study.

Experts tell us that our Cliff-dweller exhibit in the basement of this building is the finest and most valuable in the world. Thousands of people visit this collection every year. Congress has converted the major portion of the Mesa Verde into a national park, but there are other places needing our protection.

A Word About Fossils—The splendid fossil stumps at Florissant, Prof. Cockerell tells me, have been ruined, and the same fate has befallen the fine fossil trees southeast of Denver, near Parker. Most of the large fossil animals so far discovered have been taken to enrich the eastern museums. A few months ago an interesting fossil monster was found in western Colorado, yet \$500 could not be raised to save this fine specimen to the state.

To ascertain what trees and other native plants are worthy of cultivation and improvement, and what exotic trees or shrubs may be grown under conditions which obtain in this climate—to recommend the same to the people, that the largest use possible may be made, not only of our indigenous plants, but that others of economic or ornamental use may be introduced and cultivated.

PLANTS ADAPTED TO THE ARID REGION.

The problem of securing drought-resisting plants for the arid region is an important one, especially since the attempt is being made to farm without irrigation. I doubt not that successful intensive farming depends even more upon the development of a drought-resisting plant than upon conservation of moisture, important even as that may be. The work of the government in securing plants from foreign countries suited to our arid conditions is to be commended. However, it will require much experimenting and the patience of a Burbank or De Vries to bring these plants to the highest state of adaptability, so that they may be depended upon for adverse conditions.

I shall not have time to discuss this interesting question, but hope that Mr. Gauss, a member of this committee who has done work of great merit along this line, will some time give his experiences and observations.

TREE PLANTING.

For many years it was supposed that trees could not be grown on these plains, but we now know that where we can get water almost all kinds may be grown. It is our duty to encourage

tree planting for aesthetic purposes as well as for commercial uses. The kinds may be greatly improved, and instead of cottonwoods and soft maples, the more ornamental and useful hardwoods should be used. There is yet much to be learned, and I doubt not that by the proper amount of experimenting we shall be able to grow successfully even many foreign trees, such as ginkgo, sophora, Japanese walnut, etc.

Our native trees and shrubs are very attractive, but quite unappreciated at home. However, their beauty is being recognized elsewhere and we should not be slow to use them. Where is there an evergreen in the world more beautiful than our blue spruce, the state tree? And our Douglas fir is scarcely less useful as an ornamental tree. Our shrubs are the finest, and I congratulate the park board of Denver on the beauty of Washington Park, where native shrubbery has been so successfully and effectively used. I am informed that General Palmer planted successfully many of our native plants in the parks of Colorado Springs. Through efficient efforts of the mayor and park board, Denver now grows nearly 100 varieties of the finest trees. Our parks give promise of becoming the most beautiful in the country. However, our street shade trees are in wretched condition and should receive immediate attention.

CIVIC IMPROVEMENT.

I come now to the most important recommendation of the list. This commission can do a great deal in promoting civic beauty in cities and healthier, happier, saner country life. We can encourage the establishment of parks and shaded streets. We can furnish data as to tree planting, and kinds of trees adapted to this climate. Every town should have its park board and civic improvement society.

The Park and Forestry Association of Iowa has done a remarkable work in beautifying the towns and villages of that state, and have also helped greatly in the improvement of the farmer's life by many helpful suggestions. Along with civic improvement there always naturally comes better sanitary and hygienic conditions and the conservation of health is in no way more effectively promoted than through public parks and playgrounds.

I should like to see in all larger cities an arboretum, where not only all the trees and shrubs of the state may be seen, but all others which may be grown in this climate. What a place of interest and education it would be! Our people have a right to these fine things. I wish this commission would stand for the labeling of trees in parks. This is one of the hardest things to bring about. I have been trying for quite a while to get the board of capitol managers to label the fine trees of the capitol grounds on account of the great educational value it would have, and I am told that this is soon to be done. I believe that it is argued that it will offer an incentive to break down the trees. This objection seems to me to be about as reasonable as the objections offered by the old deacon against starting a Sunday

school. He said that a Sunday school would bring boys, and boys would bring in mud, and, therefore, he was opposed to it. To know the name of anything is a starting point for finding out all about it. I have also asked that a stone be placed at the east front of the capitol to show the mile-high mark as determined by the United States Coast and Geodetic Survey. Also, to place simple, inexpensive indicators by which anyone could easily recognize the more conspicuous mountain peaks, which are always a subject of inquiry by all visitors, as well as our home people. Surely, the people have a right to know these things, and I hope this commission will stand for the diffusion of such knowledge.

Our people are profoundly ignorant of our interesting and varied resources. There is no accessible literature written in popular language on our natural history. Our beautiful flora is unknown. Our forest trees are not recognized, and their value either for ornamental or commercial purposes not understood. How many people know the commonest shade trees and can give any idea what ones are best adapted to purposes desired? They do not know what fine trees may be grown in this climate and are content with a short-lived Carolina poplar or a soft maple when scores of handsome hardwood trees might be used which would be a joy and delight for several generations.

Many live in sight of our wonderful mountains without knowing the names of the most prominent peaks, such as Pike, and Long, and Evans, and Arapahoe, etc. What a pleasure it is to be able to recognize these beautiful silent sentinels and to know something of the history of their exploration and discovery!

From this window may be seen Pike, Long, Evans, James, Parry, Audubon, Flora, Squaw, Arapahoe, etc., many of them being named for scientists of the early day, but how few people can recognize any of them with certainty!

The people want to know, and they have a right to know, the common things about them and which enter into their everyday life, and this commission can render no better service to our people than to popularize science and aid the people in becoming enlightened and informed as to the beauty of nature and the wisest and best uses of the resources with which heaven has so richly endowed us.

THE PUBLIC DOMAIN.

ITS HISTORY, PRESENT STATUS AND LOGICAL FUTURE UNDER A REPUBLICAN FORM OF GOVERNMENT.

BY J. ARTHUR EDDY, DENVER.

I am thoroughly in accord with the broad principle of conservation of our natural resources—in accord with that principle as I understand, or choose to define, the word “conservation.”

The public give it a wide range of interpretation. Even the governors at the Conservation Congress attached a diversity of meanings to the term. A strict definition of the word would, quite likely, be the actual preservation of our natural resources and not using them at all. Such a literal definition is, of course, absurd and not entertained.

It is important, however, in discussing the question, that one state his understanding of the term. Accordingly, my acceptance of the term "conservation" is: "deriving from our natural resources the greatest possible efficiency consistent with due regard for our present welfare."

There could be no greater evidence of true patriotism than the interest shown by our people in unselfishly undertaking to provide for the welfare of future generations. They are not only agreeable to this, but they are enthusiastic in the undertaking. Our best wish would be, that this interest shall never lessen.

In this wish I share, and, accordingly, it is with no desire to deal out discouragement that I choose to call your attention to dangers to the welfare of our country, through measures masked by this very popular movement, "conservation." Such warning need not in the least cool our ardor in a good cause, but will be healthful in inducing confidence through a better knowledge of the whole subject and avoiding errors.

A "safe and sane" program for the conservation of our natural resources does not in the least require that we revolutionize the fixed principles of our government relative to the rights of the people to the public domain. There is no connection whatever between conservation and controlling trusts and charging the people for natural resources. That fact should not be forgotten—conservation and the regulation of prices in nowise necessitates a tax upon the people.

Conservation does not in the least require that the principle of free soil, the bestowal of all the opportunities and benefits incident to the public domain—with all its natural resources—shall not pass into the equitable individual ownership of the people of the soil.

Conservation does not require that our public lands and their resources shall be transformed into a western ranch for the general government; our citizenship made tenantry and the West for all future time milked by an indirect tax for the benefit of those who have already had their benefits from their local public domain.

Such measures, such program, is persistently and insidiously being fastened upon us under the guise of conservation. Very soon we will become aroused to the issue, and, as an aid that we may be informed and able to view intelligently this great question relative to the public domain, this paper is prepared.

HISTORY OF THE PUBLIC DOMAIN.

Practically all of that portion of our country lying west of Pennsylvania, West Virginia, Kentucky, Tennessee and Georgia, and south of Georgia, with the exception of Texas and the private land grants, has embraced our public domain. A portion of this has passed into private and Indian tribal ownership, and the balance still remains public domain.

The Articles of Confederation of the thirteen original states was signed November 15, 1777. This, though a crude affair, formed the working basis for the final perfection of the United States government under the Constitution, adopted September 13, 1789—twelve years later.

Among the many disturbing and perplexing questions for settlement was the adjustment of the rights of those states claiming lands in the Great West, beyond the borders of the federation, and east of the west boundary of the United States, viz., the Mississippi river. Six of the states held no claim to such lands, and the claims of the seven were generally vague, ill-defined and conflicting, with instances where the claims were five deep on the same land. States without such outside lands insisted that they should apply to the benefit of the whole, and this the seven states resisted. Finally, in 1781, New York patriotically led the way by ceding her outside lands to the United States. Virginia followed three years later, but it was not until 1802—after twenty-five years—that Georgia, the last, came into line.

The Mississippi river on the west and, approximately, the north line of Florida on the south were the original boundaries of the United States. The Louisiana Purchase followed on October 23, 1803; the acquirement through Lewis and Clark in 1805; of Florida July 17, 1821; from Mexico July 4, 1848; from Texas, acquiring a portion of New Mexico and Colorado, December 13, 1850, and, again, from Mexico, the Gadsden tract, June 30, 1854. All of this has since passed into new states or territories. The status of new states, under the Constitution, was long ago expounded by the Supreme Court, as follows: "The right of every new state to exercise all the powers of government which belong to and may be exercised by the original states of the Union must be admitted, and remain unquestioned, except so far as they are temporarily deprived of control over the public domain." And the Constitution itself reads: "The citizen of each state shall be entitled to all the privileges and immunities of citizens in the several states."

According to Henry Gannett of the 1890 census, the land surface of the United States, exclusive of Alaska, is 1,900,800,000 acres. Deducting from this the area of the thirteen original states, District of Columbia, Maine, Vermont, Kentucky, Tennessee and Texas, which were never part of the public domain,

and there remains 1,441,436,160 acres as the greatest possible area that could have been embraced within the public domain.

To determine the amount which the government ever held for disposal there must be deducted: prior sales of lands by the thirteen original states, within the ceded territory; Indian tribal lands, and the hundreds of French, Spanish and other private land grants.

If desired to determine the extent of the direct agency of the government in passing these lands to settlers, there would be the further deductions of grants to states and to railroads—at least 300,000,000 acres—swamp lands and a long list of miscellaneous grants. Such complete data is not at hand, but would be of interest, and the 1,441,436,160 acres would be materially reduced, leaving probably not to exceed 1,000,000,000 acres.

With the close of the Revolutionary war, the thirteen states found themselves sadly impoverished, heavily in debt, the means for carrying on the general government a serious problem and the large army population naturally demoralized and unsettled.

About the only feature of promise as an asset and as affording relief and reward to the disbanded veterans seemed to be the vast stretches of fertile lands lying beyond their respective borders in the Far West. Already some of the states had freely dispensed gifts and benefits, based upon their respective claims to these lands, as bounties to encourage enlistment of soldiers and to meet other requirements incident to the war. Naturally, this added embarrassment to the adjustment to common governmental ownership and largely accounted for Kentucky affording none and Tennessee little or no public domain.

It can readily be appreciated, therefore, that it was universally understood that the use and disposal of these public lands should afford relief from the burden entailed by the war, and of course that meant all such means as would afford revenue.

As an indication of the force of this understanding, in 1795 Congress forbade settlement upon the public domain, and passed another act in keeping therewith in 1804. And in 1807 the President was empowered to use the military to remove settlers or squatters on the public domain. This was essential to the general agreement that the lands were to be sold for the benefit of all.

To realize upon the lands, therefore, the government entered into all sorts of deals and projects with individuals, firms and corporations, in an endeavor to effect sales and divert cash to the treasury. Grants were made in blocks of 1,000,000 to 2,000,000 acres, sales by certificates, and at one time John Clevis Symmes, et al., were almost an adjunct of the government under the treasury department in carrying on its land business. The price of land was first undertaken at \$2.00 per acre; then \$1.00 per acre was endeavored to be maintained, but there were periods when the price was reduced as low as 66 2-3 cents per acre. Leases were also made of large tracts, and in 1785 Congress

passed the first mineral act, which provided for the leasing of mines of gold, silver, copper and lead, with 33 1-3 per cent. royalty to the government.

It is of interest to note, in passing, that our present survey system was adopted in 1785, although not until 1822 was the first surveying district created. The officers of register and receiver, under the treasury department, were created in 1800. In 1812 a commissioner general of land offices; in 1836 a general land office, and on March 3, 1849, the home (now interior) department was created.

About the year 1800 the system of offered lands came into vogue. Under this, the lands of a district were offered at auction at an upset price, and those remaining continued offered at that minimum price.

Inasmuch as the sales dragged, and much land remained, this was supplemented, in 1854, by the graduation act. Under this, remaining offered lands were reduced 25 cents per acre, each five-year period, and to a minimum of 12½ cents. Under this act 25,696,420 acres were disposed of. This act was repealed in 1862. It will be readily appreciated that the great bulk of the large private holdings of government lands resulted from this system. As late as March 13, 1880, President Hayes proclaimed offered land, and the law was not repealed until 1891.

The first suggestion of a pre-emption law came in an act of March 2, 1799, and was occasioned in order to protect settlers who had purchased supposedly within the Symmes Grant boundaries, which were subsequently greatly restricted. From 1801 to 1841 the pre-emption law passed through an evolving process by sixteen separate acts, the last being practically the final one, and under it 173,000,000 acres had been disposed of up to 1882. In 1891 this law was repealed.

The pre-emption law served as the lesson in granting initial possessory rights to settlers first upon the ground, engendered the spirit of claim to the soil which finally culminated in the homestead law.

The first coal land law was passed in 1841, and provided for offer at public sale at an upset price of \$20 per acre, and lands remaining were subject to private entry at that price. In 1865 the act was changed to entry of \$20 per acre. In 1873 our present coal land act was passed with qualifying conditions and at prices of \$20 per acre, if within fifteen miles of a railroad, and \$10 per acre if beyond that distance.

The lease law of 1785 for mineral lands appeared to be thoroughly unsatisfactory, and in several districts acts were passed to sell under the offered system at prices ranging from \$2.50 to \$5.00 per acre. In 1845 President Polk proclaimed against the leasing system of mines, and likewise President Fillmore in 1849. In 1866 Congress passed its first modern mineral law, under which patent would issue upon the expenditure of

\$4,000 in improvements. In 1870 an amendment to the act was passed for placer mineral claims at \$2.50 per acre. In 1872 our present mineral law, somewhat modified since, was passed.

THE FREE SOIL MOVEMENT.

The sentiment which was almost universal in the early history of the public domain, that it be utilized strictly as an asset to be realized upon, gradually changed as the beneficent results of the pre-emption law were observed. The Western people began to assert their rights to the soil, and the people generally to perceive that the settlement and development of the country was of far greater benefit than the paltry revenue received from sales. By 1850 the question of free lands to settlers had become a national issue. In 1852 the "Free Soil Democracy" had the following plank in its platform: "That the public lands of the United States belong to the people, and should not be sold to individuals nor granted to corporations, but should be held as a sacred trust for the benefit of the people, and should be granted in limited quantities, free of cost, to landless settlers."

A fierce political battle ensued. Numerous bills in keeping with this declaration were introduced and defeated. In June, 1860, the homestead bill passed both houses of Congress, but was vetoed by President Buchanan. On May 20, 1862, it had again passed both houses, and was signed by President Lincoln.

It should be noted, in the unprejudiced light of history, that the homestead act, although finally signed by a republican president, was by no means a strictly party measure, and came very near being passed over President Buchanan's veto.

President Johnson, in his annual message of 1865, said: "The homestead policy was established after long and earnest resistance. Experience proves its wisdom. The lands in the hands of industrious settlers, whose labor creates wealth and contributes to the public resources, are worth more to the United States than if they had been reserved as a solitude for future purchasers."

The Public Lands Commission of 1880, in its report, said: "The homestead act is now the approved and preferred method of acquiring title to public lands. It has stood the test of eighteen years, and was the outgrowth of a system extending through nearly eighty years, and now, within the cycle of one hundred years since the United States acquired the first of her public land, the homestead act stands as the concentrated wisdom of legislation for settlement of the public lands. It protects the government, it fills the states with homes, it builds up communities and lessens the chance of social and civil disorder by giving ownership of the soil, in small tracts, to the occupants thereof. It was copied from no other nation's system. It was originally and distinctively American, and remains a monument to the originators."

The declaration by that convention of the "Free Soil Democracy" in 1852 expressed the sentiment that had swept the country

and formed the cardinal principle unique in the history of the world relative to the rights of the people to the soil.

There have been numerous minor amendments since, but the principle of free lands in equitable quantities to landless settlers became firmly fixed, after abundant experience, as a feature of free government.

In keeping with the spirit engendered from experience of liberality relative to the disposal of the public lands, the Timber Culture act was passed in 1873. This, although not altogether satisfactory in results, and accordingly repealed in 1891, nevertheless was a material factor in bringing, in the aggregate, extensive forests upon the treeless prairies and making very considerable amends for the destruction of the vast natural forests of Michigan and other sections, which had supplied their pressing necessities in the years before.

In 1878, to meet the needs of the Rocky Mountain region, the Timber and Stone act was passed, by which 160-acre tracts for such purposes were granted at \$2.50 per acre; and it should be noted that this act provided that free timber, from mineral lands, is granted to bona fide residents for building, agricultural, mining and domestic purposes, and, further, that such privilege has never been withdrawn by any act of Congress.

Another of these acts was the Desert Land act of 1877, which, with the recent Carey act, has brought great benefits to the arid West.

The revulsion of sentiment relative to the administration of the public domain, which came about and as exemplified in the homestead and kindred laws, is nowhere more marked than in the freedom accorded squatters and users of the public lands. We recall that, in the latter part of the eighteenth and beginning of the nineteenth centuries, Congress passed numerous drastic laws forbidding the use of the public domain and authorizing the use of the military to remove squatters.

In 1877, however, this had so changed that the Supreme Court, in passing upon some cases involving squatter's rights, with a lengthy decision, is briefly portrayed, in substance, by the Public Lands Commission of 1880, in commenting thereon, as follows:

"The principle laid down by the court in these decisions seems to recognize the right of occupancy of the public lands as against parties seeking to enjoy the benefits of the pre-emption laws. * * *

"A person not possessing the qualifications prescribed in the pre-emption laws—a minor or a foreigner—one who may have exhausted his pre-emption right, who is already the proprietor of 320 acres of land, who may have large possessions already acquired from the public domain by settlement or otherwise—may occupy the public lands to an extent only limited

by his desire or means of making the requisite improvement; there is no power to restrain or oust him, save the power of the executive to bring the land into market. * * *

"It will perhaps be conceded that the meritorious settler already occupying public lands, with valuable improvements thereon, should not be deprived of his home and improvements in favor of another who may have acquired some technical advantage over him under the law, and in such case the prior settler should be allowed the preference right to enter."

This undoubtedly portrays a spirit of extreme liberality, but is of value, at this time, in marking the traditional sentiment of the people toward the actual occupant of the soil. In keeping with this the public domain, with the exception of the forest reserves, has been and still continues as a public common, from the Alleghanies to the Pacific, until acquired by duly certified settlers.

PRESENT STATUS AND FUTURE OF THE PUBLIC DOMAIN.

Our minds having been refreshed by this brief resume of the history of the public domain, we are the better prepared to understandingly view present conditions and more intelligently consider what provisions should apply to the future of our public lands.

Under the operations of the various measures which we have reviewed, practically all of what was supposed to be arable lands were taken up many years ago. There then came a grand halt, for, with the exception of desultory acquisitions for irrigation, for stock waterings, for mines, timber and miscellaneous purposes, the entry of public lands—the great agricultural movement—ceased. This was because the conditions of aridity rendered the land laws inapplicable for exercising that principle of granting the lands in equitable quantities to landless settlers.

This grand halt came twenty-five or thirty years ago, leaving more lands in the public domain than were ever taken under those laws, based upon the most beneficent principles, but which had become inefficient before half the lands were disposed of.

Has that grand principle, first voiced in the convention of the Free Soil Democracy in 1852, survived this halting period? Are there influences at work to discard the verdict of experience, and to again adopt those principles governing from 1777 to 1862, and whose repudiation has been almost unanimously approved by the wisdom of our people?

A ray of encouragement comes to us through the recent passage of the Mondell Enlarged Homestead act, as an aid and encouragement to the dry land farmers who are nobly and bravely endeavoring to overcome the obstacle of semi-aridity, and which movement has to an extent revived the taking of lands.

This, however, can at best be but limited in extent. The Secretary of the Interior, in his last report, says: "The home-

stead law is not applicable to much of the balance of the public domain." And so there remains to-day, inclusive of the forest reserves, approximately 550,000,000 acres of public land; as great an area as has been disposed of under the pre-emption, homestead and kindred laws. All of these lands are to-day, and for many years have been, in use by our people as a public common. A vast expanse of these lands is untillable and can never be else than grazing lands. It is occupied to-day for that purpose. The occupants have no tenure in their holdings to afford them security for their business, no incentive to make the best use of the lands, as against over-grazing, to make suitable improvements and otherwise, and they are deprived of those features of dignity and independence from freehold conducive to best citizenship.

Should this continue? Is the homestead principle to be abolished, or to be put into effect to apply to these lands also? If that principle was right since 1862, it must continue to be right until there shall be no public domain.

The Public Lands Commission of 1880, 29 years ago, sounded the keynote against this in its report, when, after commenting upon the non-application of our land laws to the arid conditions, said: "An equivalent to 160 acres of arable land would be given in a larger area of desert or irrigable lands. It could be called a desert homestead."

The report of the Public Lands Commission of 1903, 23 years later, concurred in part with this opinion. It said: "After the agricultural possibilities of the public lands have been ascertained with reasonable certainty, provision should be made for dividing them into areas sufficiently large to support a family, and no larger, and permit settlement on such area."

Such recommendations have never been acted upon. The principal reasons therefor are two: First, because a satisfactory arrangement to carry out such purpose presents a serious problem; and, second, the most potent, those directly in interest—the people of the West—have slept on their rights and have not presented a tangible and reasonable demand.

Why they have not done so is well expressed in the said report of the Public Lands Commission of 1903, comprised of W. A. Richards, F. H. Newell and Gifford Pinchot, as follows: "The public lands which now remain are chiefly arid in character. Hence these laws and practices are no longer well suited for the most economical and effective disposal of lands to actual settlers. * * * In spite of the recognition that the land laws might be improved, there is a general fear of change and a wide demand that the present laws be allowed to stand. This is due to dread of the introduction of unfamiliar requirements and to the fear that new enactments may recognize physical conditions even less than the present ones, and may be even less suited to the needs of the country. By the use of practices sanctioned by custom, the people have heretofore been able to get along fairly well; any change in their minds is associated

with more difficult requirements, and they dread innovations which may hinder rather than help home-making."

In addition to this, there is also a "dragon in the way," the shadow of which is presented in the same report and which serves most effectually to negate its previous suggestion of change of land laws and would block any such attempt. It is as follows: "Until it can be *definitely ascertained* that any given area of the public lands is, and in all probability forever will remain, unsuited to agriculture development, the title to that land should remain in the general government in trust for the future settler."

Of course, a *definite* determination as to "*forever*" means a long time to wait, not only for the present user, but also for a settler.

And so the people of the West have allowed the matter to rock along, and, as remarked, slept on their rights.

A very material factor to account for this rests in the fact that any law to possess a grazier settler with an equitable quantity of these grazing lands will sound the death-knell to the business of grazing large herds on the public lands. The men controlling large grazing interests can, and naturally would, combat any such measures most strenuously. The small men are not equipped by organization, or otherwise, to successfully contend for such a law, and those who would be new in the field for such benefits are not available for effort.

In consequence of this there has, in the time, been growing insidiously and persistently, through a small coterie at Washington, aided by peculiar, but most effective, powers for influencing the public mind, a sentiment to again return to and adopt those principles relative to the public domain which prevailed from 1777 to 1862—that is, to administer the public domain for revenue for the general government.

The most potent factor leading up to this condition has been that feature of conservation—the forest reserves. Starting as a reasonable and plausible measure for the protection and economic use of the forests on the public domain, and receiving therefor the almost unanimous approval of the people, the system has, emboldened by the acceptance of its peculiar and un-American methods, and form of organization, elaborated upon and expanded its powers until now it embraces a domain approximately as large as the thirteen original states and subject to a system of administration strictly for revenue, exaggerating that for the public domain, following the close of the war of the Revolution, and which, as we have seen, after 80 years of experience was unanimously repudiated.

Still further emboldened by the acquiescence of the people in its usurpations, that coterie at Washington undertakes to embrace within its control and subject to the same system the entire remaining public domain. To this end the report of the said Public Lands Commission of 1903 presents the most elaborate

plan, carefully worked out in all details, for placing the grazing lands under leasehold, and coupled with the same government supervision and dictation as is now in force upon the forest reserves. This only awaits the action of Congress to put the plan into full effect.

We are told that conditions have changed; that we cannot view the public domain as formerly when settlers were needed; that it must now apply to the benefit of all of the people of all of the states. By these few it is viewed as if Uncle Sam had tired of his big farm out West existing as a common, and had sent his eastern agents to shape it up, warn Western trespassers off, or into line to contribute by rentals for every conceivable feature upon which a charge can be based.

This plan would put an indirect tax upon the people of the West for all time to come. It would rob the West of that tremendous asset, viz., "*opportunity*," that has brought the tens of thousands into our ranks of citizenship.

Are we willing to admit that conditions have so changed that we do not desire that incentive? Have conditions so changed that we are ready to surrender the right of the people to the soil as accorded those of other states, but that we instead shall pay, to the full dollar, for benefits incident to the public domain?

The issue was clearly drawn and the gauntlet cast fairly before us by the exponent of these pernicious doctrines, Gifford Pinchot, in his public address in Denver on March 18, 1909. According to the verbatim record of that meeting he said:

"In my judgment it is a perfectly fair and right thing for any man who comes and takes property belonging to all the people, which because he has it somebody else cannot have, that he should make a return of some kind to the people. The time of free land, free timber, free everything, has gone by."

Since then, as a rebuke, the Enlarged Homestead act was passed.

It is much the same sentiment of those few who insist that the Constitution should be arbitrarily "*construed*" to fit what they perceive to be changed conditions. An attorney general is found to render an opinion that the waters of our streams may be charged for irrigation and power purposes; already our coal lands on the forest reserves are withdrawn from entry, to yield a revenue of royalty; a construction, to apply to the open public domain, is placed on the coal land law to destroy all incentive for prospecting, rob the discoverer of all the benefit of "*opportunity*" through its discovery, so that only the rich can buy those lands at their full value for cash on the nail.

These are only illustrations, but every feature incident to the public domain is booked for the same programme. These same people proclaim solemnly for settlers and home builders; nevertheless, we have read the report of the Public Lands Commission of 1903, their numerous reports and written expressions

since, and the papers before the Conservation Congress of 1908, and in none of them is there the intimation of an honest desire that the homestead principle should likewise apply for the benefit of the grazier to these lands. In fact, the tomb of any such prospect or hope is sealed by those words: "Until it can be definitely ascertained that any given area of the public lands is, and in all probability forever will remain, unsuited to agricultural development, the title to that land should remain in the general government in trust for the future settler."

Of a certainty, the people of the West have and are now sleeping on their rights. They should emphasize the sentiment that it is a crime to perpetuate the public domain.

There is absolutely no shadow of a doubt that a means, a method or a plan can be devised whereby the lands of the public domain, inclusive of all natural resources, can be passed equitably and justly—with the interests of all properly safe-guarded—into the hands of the users of the soil. It rests with the people of the West to rouse themselves from this inexcusable condition of apathy and set themselves to the task.

No more striking truth could be uttered than that of Governor Brooks of Wyoming, at the Conservation Congress, when he said: "To get settlers is the best conservation, the very best."

The vital principle incident to settlement is that it takes the ownership of land, in equitable quantity, from the government to the one who will use it. This applies not one whit less to the grazier, the miner, the fish pond builder, etc., than to the farmer. Any citizen of this country who will take and use beneficially and equitably any portion of the public lands, with their natural resources, should be afforded every possible opportunity for so doing, and we, as a republican form of government, should only endure the jeopardy of a public domain pending such expeditious disposal.

Where there are portions of the public lands covered with actual timber, or that in reasonable time will become reforested, and which timbered condition renders them of value in preserving the supply of our streams, ample provision should be made for rigidly maintaining such timbered condition.

That the government, however, should undertake to engage in timber growing and selling as a commercial pursuit is unquestionably a pernicious practice and foreign to the principles of our republican institutions. Our present forester in reporting for the Forest Commission of 1896, recognized the claim of the people to this principle, when he said: "While it is not desirable, perhaps, that the government in the immediate future should enter into competition with the private owners of forest lands, it is evident that ultimately the sale of forest supplies from the government timber lands should not only cover all expenses of government forest management, but produce a steadily increasing income."

That hesitancy—that temerity—has long since been overcome, and, in addition to that of the timber, there are forty-one other lines of business put into operation in competition with and to tax the people of the West, and “*conservation*” is made to hide the odium of this curse.

This laudible and patriotic movement for the wise and judicious use of our natural resources must not be made the mask for perpetrating worse injuries, and inflicting such iniquities as the destruction of our well tried and proven national principles.

The doctrine of free soil, applicable to all the natural resources of the public domain, must remain co-existent with our government until every foot of the public land has passed equitably to its rightful owner, viz., the individual. Nor must it be allowed in the slightest degree to rob Americanism of its distinguishing quality, viz., “individualism.”

The incentive of property interest, coupled with education and moral suasion, should meet all demands of conservation.

It should not be forgotten that Holland, with scarcely a natural resource except salt and sand, became one of the most prosperous nations on this earth, for it never sacrificed that vital principle—individualism. There are other features beside natural resources and their conservation vitally essential to a great nation.

FORESTRY.

BY DR. WM. C. STURGIS,

Dean of the School of Forestry, Colorado Springs.

Mr. Chairman and Gentlemen of the Commission:

When, some weeks ago, I was asked by the secretary of this state commission to prepare a paper for this meeting, I was somewhat at a loss how to proceed. For, in the first place, the preparation of a written address is a somewhat uncongenial task to me, and in the second place, while I am by courtesy chairman of the committee on forestry, I am not a forester by training or profession. Fortunately, the term “Forestry,” which I have selected as my topic, is of the broadest scope, and I therefore feel free to address you on almost any topic.

I shall, however, confine myself to one branch of my subject upon which I have spent much thought and with which I have become tolerably familiar, i. e., the consideration of how forests may best be preserved, on whom the responsibility of this work should properly fall, and how men should be prepared to discharge this responsibility to the people at large.

The mere mention of forests nowadays calls up visions of vast natural resources unequalled in value to the nation. They

form a nation's greatest material asset. Even when the trees composing them are felled and converted into lumber they still represent an enormous value. Incalculably greater, however, is their value while still standing and fulfilling their natural and beneficent functions. For, whether we consider forests as a protection to the soil against erosion, or as conservers of moisture, or as conducing to equalization of stream-flow and the prevention of floods, or as a protection from winds and consequent over-rapid evaporation, or as factors in the determination of climate, to the thoughtful mind the cumulative value of the forest to every phase of human life and civilization can not fail to be in the highest degree impressive. Still greater value attaches to the forest when we consider that standing timber and manufactured lumber are not mutually exclusive terms; that we are not obliged to choose one or the other of these uses of the forest, but may enjoy both simultaneously. For a forest may be treated as a perennial resource producing regular and successive annual crops for an indefinite period, while, at the same time, it fulfils all the uses of standing timber.

The latter topic falls outside the scope of my purpose this afternoon, partly because of my inability to discuss it with full understanding, but chiefly because it has been recently set forth with extraordinary ability and completeness in the report of the committee on forestry of the Denver Chamber of Commerce and Board of Trade. It remains, then, to consider the forest as a crop, and how and by whom this crop should be owned, harvested and perpetuated. It need hardly be emphasized that the old methods of harvesting a timber crop whereby immediate returns were made to outweigh future income, and all prospects of successive crops were precluded by the destructive methods of harvesting, have now fallen into well-merited disrepute. It is generally recognized that the forest can be made a source both of immediate returns and of future income; that it is interest-bearing capital, profitable from a business point of view if scientifically administered. But the question at once arises, By whom shall this administration be effected, and how, in this new industry? Are we to obtain experts thoroughly trained in every branch of their profession and whom we may place in charge of this vastly important work? My object this afternoon is to answer these questions as best I may.

I can imagine a state in which every farmer possessed his own wood lot or tract of timber, so that agricultural land and forest land was judiciously intermingled and equally cared for. I can further imagine, though with more difficulty, every citizen of such a community regarding his neighbors' interests and those of the whole community as of at least equal importance with his own. In such a state forests, well cared for and producing regular annual returns, would occupy all land which was not more valuable for other purposes; but, inasmuch as in this ideal state the good of the people at large would, by common consent, be paramount to that of any one individual or group of individuals,

it would follow either that certain tracts of public land, if such existed, would be segregated for permanent forests, or that certain individuals would be obliged, by a sort of willing enforcement, to put their lands into forests rather than into agricultural crops. Evidently such a state of things is, under existing social conditions, purely imaginary. Moreover, even if this altruistic community were realizable, it is a question whether small wood lots could be developed with sufficient rapidity and whether, if developed, they would serve any very useful purpose, since the efficiency of a forest, apart from its annual crop value in lumber, depends on its unbroken extent.

While, therefore, everything should be done under existing circumstances to encourage the planting of forest trees by individuals, so that every farmer should have his own wood lot as a source of lumber and income, it is difficult to imagine how, even in an ideal community, the individual ownership of forest lands could subserve the best interests of either the forest or the community. Still less is this so in the present state of society. To turn over vast areas of the public forested domain to individuals whose eyes are fixed only on immediate profits of the largest possible dimensions, or even to permit the private ownership and unregulated control of the country's most valuable assets, seems to me, to say the least, an injudicious and a destructive policy. There are times and circumstances when the rights of private ownership must give way to the welfare of the community. In France a movement is on foot—if, indeed, it is not already being enforced—to place privately owned forest lands under the management of the government, the latter repaying itself for the cost of management and turning over to the owner the net income.

Passing, then, from the question of individual ownership of forested land, we have to consider, at least in this country, the ownership by the several states of the forests within their respective borders. This theory is a distinct advance over that of individual ownership, since thereby every citizen of the state is a part owner of the forests and, theoretically at least, has a voice in deciding the use that shall be made of them. Moreover, every citizen shares in the profits accruing from the forest, whether those profits be direct or indirect. That this theory is perfectly practicable is proved by the example of several of the eastern states, notably New York and Pennsylvania, where large forested areas have been held or purchased by the state and are now showing large returns on the investment, not only in actual cash, but in the protection of watersheds and the innumerable other uses which a forest serves. The fact that the state owns these forests is, moreover, a fair guarantee, in the present state of public opinion, that the forests will be perpetuated and even increased in area.

There is, however, one feature of the state ownership of forests which must not be overlooked. Whereas the benefit arising from most natural resources is limited to the area in which

those resources occur, this is not altogether true of forestry. The destruction of forests at the headwaters of a great river may result in the destruction of life and property a thousand miles away. Here there is a case in which the interests, not of one state alone, but of many states, are concerned. Surely it is a proposition repugnant alike to reason and justice that a single state should, by a destructive policy regarding its forested lands, entail destruction upon far-distant or neighboring states of the Union. Nor is this a fancied danger merely. It is quite conceivable that a state owning great forests might decide, rightly or wrongly, that the lands so occupied could be settled more rapidly and produce a larger revenue to the citizens of the state if the forests were removed. As a result of this policy it might easily occur that the interests of a majority of the people would be jeopardized or ruined for the advantage of a few of the people. There is another consideration which has some weight in this connection. In the administration of a forest it is usually quite essential that the particular forest in question should be regarded and managed as a whole. The same policy, the same method of administration, should apply to the whole area. But forests are not limited by the artificial boundaries of states. A single forest may extend unbroken over an area included in two or even more states. What certainty is there, under such conditions, of uniformity of policy and administration and hence of the most economical and efficient management of the forest? Without the heartiest co-operation between the states concerned a uniform policy would be impossible and it might even occur that a policy adopted by one of the states regarding its portion of the forest might be highly prejudicial to the forest as a whole, to parts of it belonging to the neighboring states or to the citizens of that state. While, therefore, state ownership as well as individual ownership of forests is to be encouraged under certain circumstances and with certain restrictions, I am forced to the conclusion that the ownership of any natural resource, the conservation and management of which directly affects the welfare of the whole people, should be vested in the whole people, that is, in the government. This is the theory which the nation has finally adopted, to which successive presidents have given effectiveness, and which has now proved its efficiency. The theory itself is, I believe, now generally endorsed by the people at large, notwithstanding the fact that in putting the theory into practice individual rights, real or fancied, have occasionally been infringed upon, and that mistakes in administration have unquestionably but unavoidably been made. As I have already said, the case of the forests is one in which the theory of the national welfare must prevail over that of individual rights. As to mistake, in the manner of administering the national domain, one thing is certain. No body of men are quicker in seeing their mistakes, none are more eager to have mistakes pointed out to them, and none are more ready to rec-

tify proven errors, than are the members of the forest service. It is our part to await the developments of this comparatively new policy, to watch its progress with interest, to applaud generously where applause is due, and to criticize as freely where we are convinced that just criticism may be made. There is, however, one point in this connection which I desire to emphasize. If there is to be a national domain held and administered by the government for the good, not of one section only, but of the nation at large, the absolute control of that domain by the government must be recognized and enforced. With the boundaries of the forest reserves there can be no divided policies, no antagonistic rights. There, subject only to the will of Congress, the forest service is and must be supreme. The forests exist for what they are and for what they can be made to produce. Nothing can be permitted within their limits which directly or indirectly tends to diminish their efficiency, not as a grazing ground, not as mining area, not as a place for homesteads, legitimate as all of these uses of the public domain are, but their efficiency as forests.

Such, then, being the theory of government ownership of the public forest domain, a most serious question confronts us. Even to patrol these vast and happily growing areas a veritable army of men is needed. And, moreover, these men must be specialists in various degrees. Some must be hardy mountaineers and woodsmen, trained to endure hardships, wise and tactful in dealing with a multitude of new problems, resourceful in emergencies, alert to discover the first indications of danger, prompt to repel them. Others must be trained foresters, thoroughly grounded in every detail of plant life and growth, well versed in every branch of science bearing directly upon forestry, conversant with many subjects the bearing of which on forestry proper, though indirect, is none the less real. Finally there must be trained office men, administrators, lawyers, clerks, accountants and the like, all trained along special lines in their profession. Where are these men of specialized abilities to be found, how and by whom are they to be trained? Among the many problems demanding immediate solution which have confronted the forest service from the beginning, none has been, indeed still continues in a measure, more difficult than this. Germany and France have for generations been the trainers of practical foresters. True, it is obvious that we, with our utterly different conditions and problems, could not with advantage employ foresters trained abroad. The men to practice forestry in America must be Americans educated and trained in America. How and by whom, then, are they to be trained? Three answers at once occur to us—government schools, state schools and privately endowed schools.

At first sight there is much to recommend the training of foresters by the government; for the forest service is analogous to the army and navy in this respect, that it is a branch of the federal government employed for the well-being of the nation.

Moreover, there is room in the forest service for far more than all graduates of all forest schools in this country at present, and as a matter of fact the great majority of our forestry graduates enter the government service. There is every prospect that these conditions will prevail for many years to come. Furthermore, the ownership on the part of the government of great areas, requiring the supervision of an army of employes under strict discipline and control, argues for one centralized authority. What more natural than that the government should train its own men for service in its own forests?

There are known facts which in a measure counteract this theory of government forest schools. If all forestry graduates, without exception, entered the government service, and if there were no prospects of a change in this regard, the government might properly enter the field of education; but there are many forests, both state and private, over which the federal government has no control, and an increasing number of foresters are entering state and private employ. There would be more such were it not for the prestige attaching to service under the government, the urgent demand on the part of the latter and the consequent high pay and rapid recognition of merit, and the further fact that owners of forests have not yet come to a full appreciation of the value of their forests as a permanent source of income and the consequent need of expert foresters. The time is not far distant, however, when a trained forester will be found in charge of every large forest, and when the consulting forester will rank with the consulting engineer. Evidently, therefore, it is no function of the federal government to train foresters any more than engineers, unless it can monopolize their services.

The theory of state schools stands on a much firmer basis, and I am by no means sure that this will not finally supersede all others, as a theory. Where the state owns forests it would naturally desire a school of forestry within its borders, for it would draw its students mainly from within the borders of the state; they would therefore be men familiar with local conditions, and upon graduation they would naturally elect to serve the state, other things being equal. The management of the state forest would therefore be in the hands of men familiar with their environment—a point of immense advantage and one to which I wish to call your attention presently.

The only objection to state schools of forestry—and it is a very real and serious one—is the existing undignified rivalry among institutions of higher learning, the overweening greed for mere numbers, and the political jobbery which characterizes the policy of many of our state schools. Such conditions would unavoidably lead to the multiplication beyond all reason or demand of forest schools or departments, the lowering of standards, owing to a lack of competent teachers, and the rivalry for students, and the flooding of the country with half-trained men incapable of being a credit to their profession and unable to bring the hoped

for results to their employers. The whole cause of forestry would thereby suffer and fall into disrepute. If certain states could be selected as centers for forest education, and the remainder barred from entering this special field, the evils above mentioned might be eliminated, but it is extremely doubtful whether the states could ever be induced to enter into such an agreement. Nevertheless, at present some of our best schools of forestry are those connected with certain of the state universities. How long this field of education will remain happily restricted, no one can foresee. Probably only so long as most of the states fail to recognize forestry as a profession.

Finally, there will always, I imagine, be privately supported schools of forestry, and very properly, especially within the boundaries of states owning no forests. Such schools may be called "General Purpose" forest schools, training men for service, not in one locality only, but wherever foresters are in demand.

As a matter of fact, of the four great schools of forestry in the United States at present, two are connected with privately endowed institutions and two with state universities. These four are Yale, the Universities of Michigan, Nebraska and Colorado. Of these, the first is sufficient for the eastern states, Michigan and Nebraska serve the northern and the prairie states respectively, while Colorado is the school of the Rocky Mountain states. There is, in my opinion, and in that of men far more familiar than I with the actual and prospective needs of American forestry, room for one and only one more great school of forestry, i. e., on the Pacific Coast. The four schools already existing occupy strategic positions in four great natural divisions of the United States. These, to my mind, should be the recognized centers of forestry education in this country, representing and maintaining the highest ideals and standards, content with nothing short of the best, deserving the active support of the people at large, and co-operating in every possible way with each other. This by no means precludes the existence of lesser schools, or of elementary instruction in forestry anywhere and everywhere throughout the land, but it does recognize the fact that this is a land of forestal diversity, and it provides for a sufficient number of centers of advanced learning, of research, and of the most thorough training to any one of which the prospective forester can turn, according to the location of his future activities, or the special field to which he desires to devote his energies.

I am thus led to speak more in detail of that one of these four schools which I have the honor to represent to-day, and in so doing I want to deprecate in the strongest possible terms any idea that, in matters pertaining to forestry education, I represent any particular section or that I desire to exalt any particular school at the expense of any other or all others that exist now or may arise later. The Colorado School of Forestry, though I happen at the moment to be its dean, means very little to me. The cause of forestry education in this country means to me in-

calculably much. But I have seen this school grow from puny infancy to a pretty stalwart childhood, with every promise now of a vigorous manhood and a long life of usefulness. To it I have given my best thought and energy for five years, and I am naturally eager that you should know what it is, what it stands for and what it deserves, and will deserve more fully at your hands.

In the year 1903 Gen. Wm. J. Palmer and Dr. Wm. A. Bell deeded to Colorado College, for the purposes of a school of forestry, a tract of land situated partly in Teller county, partly in Douglas county, and known as Manitou park. This area comprises about 12,000 acres, a small proportion being pasture and arable land, the larger portion being covered with a good growth of timber. The forest consists largely of yellow pine, but there is a good intermixture of Douglas fir, Englemann's spruce and blue spruce. Indeed, every variety of conifer indigenous to the Rocky Mountain region can be grown on the tract. The location of Manitou park renders it peculiarly adapted to the purposes of a school of forestry of national importance, for, in the first place, it is within the area covered by the majority of the national forest reserves, and is in itself an epitome of conditions prevailing on those reserves. Hence, the Colorado student of forestry who contemplates entering the government service, and therefore finding his employment on the forest reserves, gets his training and practice under conditions identical with those which will later confront him. He becomes familiar with the conditions of tree growth in a semi-arid and elevated region; he learns to know the species of trees with which he will have to deal, and he soon comes to appreciate the feelings and the rights, real or fancied, of the grazier, the prospector and the homesteader. Here his advantage over the forester trained in the East is immense. The latter has been trained among hardwood forests, where conditions are as different as possible from those on the majority of the reserves. It may take him a year or more to adjust himself to his new surroundings, to learn the ways of the unfamiliar forest. Moreover, say what we will, the eastern man, transplanted to the West (and the reverse is equally true), regards himself for a time, and is regarded, as something of an alien. He is not native to the ways of the people; his viewpoint is not theirs; he is not in sympathy with those to whom are granted privileges within the reserves. Not rarely he is at the outset somewhat overimpressed with his official position. Small wonder, then, that friction and ill-feeling result and that the forest service is misunderstood and unfairly criticised. The men employed on the western reserves should be western men, or, at least, men trained in the West. Herein lies the great opportunity of a western school. Secondly, this great forest laboratory of Manitou park is surrounded on three sides by the Pike national forest, while other reserves are readily accessible. Here, then, the student is enabled not only to conduct his own experiments and researches, but to watch the operations of experts in lumbering,

thinning, planting, seeding, and the many other activities of a well-managed government forest.

It was characteristic of Gen. Palmer to make, not money or books or teachers or workshops, the foundation of a school of forestry, but a forest itself, an outdoor laboratory for research; for a forest reserve is to a forest school what a chemical laboratory is to a student of chemistry—nothing can take its place, no forest school can exist without it. At the same time Gen. Palmer gave to the school a small sum of money for initial expenses, and, until his death, he contributed monthly the money needed for salaries. Thus, then, this school was founded, with its own forest laboratory, a professor of forestry, and the use of the college laboratories and class rooms in engineering, biology, chemistry, physics, geology, etc.

But the road was by no means a smooth one. Students entered the school poorly prepared, and with no conception of the arduous nature of the work before them. Much larger sums were required for equipments than was anticipated. The ranch lands at Maniton park failed to show the hoped-for profits. The state legislature refused to pass a bill freeing the property of the infant school from taxation, and we were obliged to face an annual tax bill of nearly \$1,000.00. At times things looked very dark. But slowly the incompetent students were weeded out, and the school became more widely known. Inquiries began pouring in from all over the United States, and even from Scotland, Honolulu and China. The first year eleven students entered, of whom only four were able to keep up with the pace. The next year five more entered successfully. Last year the entering class consisted of twenty-three, almost every man of them showing good preparation and the determination to work.

Meantime I had been doing what I could to keep the school on its feet financially, to maintain a high standard, to plead with our legislators and to raise an endowment fund. To the latter there were a few contributors, entirely in the East. Not a single western man has thus far contributed a cent toward endowing this distinctively western school.

As the school grew we were faced by the necessity of growing and expanding on next to nothing. Our expenses were heavy, our debts were heavier. Colorado College, hampered for lack of funds to pay its own way, could offer no assistance. Yet our students were increasing in numbers; more and more men were applying for entrance; another instructor had to be obtained, and, with it all, taxes were increasing, and our sources of income showed no commensurate increase. The only thing to do was to go ahead, and trust to the merits of our work. By strict economy our indebtedness was practically paid off in two years; the course was changed from three years leading to no degree to four years carrying the degree of forest engineer; the scope of the instruction was broadened, until now it covers, as an undergraduate four-year course, practically the whole ground covered

by the Yale two-year graduate course; temporary instructors and lecturers were summoned to our assistance. Finally a ten-weeks course for rangers was organized this year, and proved eminently successful, largely owing to the splendid co-operation of the forest officers in Denver.

Thus this Colorado school to-day stands firmly established; offering a course of study second to that of no other similar school; endorsed by our great ex-president, Mr. Roosevelt, and the whole forest service; prepared to train western men for service to the West; unique in position; equipped for work as is no other school of forestry in the country, but with no funds; hence weak just when strength is most needed, walking with halting steps when occasion prompts to speed. Of the four great schools of forestry in the United States, Yale has an endowment of \$275,000. Michigan and Nebraska are liberally supported by their state governments. Colorado alone, with opportunities surpassing all the others, has neither endowment nor state subsidy, and is burdened by the state with \$1,000 a year of taxation.

What, then, of the future? I have my dreams for this school, and chief among them is an endowment fund of \$200,000, almost equaling that of Yale. With this everything would be possible. Let us see how it works out—the interest of this fund:

Professor of forestry and director.....	\$ 3,000
Assistant professor of forestry.....	2,000
Assistant professor of engineering.....	1,500
Apparatus, tools and books.....	500
Ten scholarships	2,000
Three fellowships.....	3,000
	<hr/>
	\$12,000

Apart from a building, this seems to me an adequate and necessary income for such a school as I have in mind. It provides for equipment, for instruction, for assistance to students. And this latter provision is a necessity. Not long ago one of our best students came to me with the news that he must give up the course. I questioned him and, with some diffidence, he explained that there was a laboratory fee of \$3.00 and a text book costing \$2.00, and this sum he was unable to pay. Needless to say, the money was provided, but it is striking that in this case the sum of \$5.00 might have been the determining factor in a man's career, to make or mar it. Nor is this case unique. Probably 80% of the applications and inquiries, which I receive almost daily, specify that the applicant's ability to take the course depends on the securing of outside work. In such cases I invariably advise the applicant to remain out for a year, or more if necessary, and thus earn the money required for the course. For I know that only a man of very exceptional ability and strength can spare any of his energies from the rigorous work, providing for only one month a year of vacation, required for a degree. Hence, I would provide ten scholarships of \$200 a year each.

As to the fellowships, these would be for graduate work only. I am convinced that to equip a forester thoroughly for his profession no one school and no one set of experiences is sufficient. Hence, I would enable a few carefully selected graduates each year to go abroad and study in the great forest schools of Germany or France; or, if preferred, to travel extensively in this country, mastering forestry conditions throughout the United States, or studying in exhaustive detail at least one phase of the lumber industry. Of the holder of such a fellowship monthly reports would be required, and at the close of the year a thesis covering the whole field of his work and warranting the degree of master of forestry. Such fellowships should have an annual value of \$1,000. This, then, in closing, is my ideal for this Colorado, this western, this national school. I see it growing year by year in thoroughness and usefulness. I see it winning more and more the sympathy and co-operation of the people of the West. I see it a mighty factor in the building up of this great land of opportunity and in conserving the nation's greatest assets. I see it unburdened, free to run its course without let or hindrance. Finally, I see it standing on a firm foundation, a model of what such schools should be, uplifted above the strife of political factions, wise in administration, fertile in resource, thorough in education, sending out year by year men completely equipped to aid in the mighty task of conserving and perpetuating for future generations the forests of this land.

SOME SUGGESTIONS ON STATE LEGISLATION FOR THE CONSERVATION OF NATURAL RESOURCES.

BY HON. EARL M. CRANSTON,
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The great natural resources universally recognized are water, timber, land, minerals, including coal, and in Colorado we may with good reason add game, climate and scenery. The last three of these at least are materially affected by the conservation and consumption of the first two, water and timber. Coal once gone is gone forever; timber may be replaced in time; water may be restored with proper timber conditions and in turn promotes the growth of timber. Climate and scenery may be assisted by water and timber, and climate affects and is affected by both of the latter. Water and timber vitally affect land.

So we see the correlation and interdependency of these primal resources. It is a singular fact that while the great artificial industries of the state have their boards, commissions and inspectors created by statute and maintained by legislative appropriations, no provision whatever has been made for the protection of our great natural resources which are more valuable to us than all our man-created wealth. Furthermore, it is the natural wealth

alone which makes possible the creation of the other wealth, and so the first thing which our legislature should do is to establish a commission on the conservation of the natural resources of the state.

We make no suggestion as to the manner of selection or constitution of such a commission, except that it should contain some public officers whose duties adapt them to the work, and some public spirited men who are students and workers in the fields affected; and this commission should have such ample legislative appropriation and authority as to make this work effective. The commission should have power to make investigation as to all matters connected with its purposes, and should be required to gather and report to the governor, for use with the legislature, detailed data on all lines helpful to its objects.

If it should be granted that as a people we have been extravagant and wasteful in our use and consumption of water, timber and coal—and we think no thoughtful man would deny this—it behooves us to take account of stock, discover the causes and observe the effects of the waste, and to promptly take steps to remedy the situation in so far as we can.

This should be the first object of the commission above suggested, which should include in its investigations all facts and conditions bearing upon the subjects under consideration, such as—

First: The original acreage of state land and the classification of the same.

Second: The present acreage, with like classification, including thorough investigation as to the character of the lands now owned.

Third: Denuded forest acreage and the desirability and possibility of reforestation of the same involving,

Fourth: Measurements of streams fed by state lands and flowing through state lands, with study of timber conditions as affecting such flow; and,

Fifth: The cause, extent and effects of erosion in various localities, with recommendations as to needed legislation calculated to improve timber and water conditions responsible therefor.

Sixth: Worked out coal areas and the mining methods employed, with full information as to percentage and manner of waste and suggestions to obviate or minimize the same in future operations.

The above are merely hints as to the scope of the investigation which the proposed bureau should make. Its administrative powers should be complete and it should be clothed with ample authority to make needful rules and regulations to assist in the enforcement of legislative acts passed in furtherance of its purposes.

A number of states, notably New York, commenced to take this subject in hand years ago and the beneficial results are increasingly apparent. As early as 1822 Governor De Witt Clinton warned the people that the forests were being rapidly depleted. Within the last twenty-five years Governors Cleveland, Hill, Flower, Roosevelt and Hughes have enforced the warning and reiterated the necessity of state attention to the matter. A forest commission has long been in operation there.

Governor Flower's specific recommendations in connection with the forest commission were, first, that the forest tracts owned by individuals or private associations and used merely for the purpose of recreation, should be secured as a part of the forest preserves and protected against denudation by a contract with the state providing for exemption from taxation in consideration of forest protection and restrictions on the removal of timber; and, second, that revenues should be secured to the state "by granting permission to fell trees above a certain diameter on state lands and to remove the timber."

Governor Flower in his subsequent message to the legislature stated that 225,000 acres of land had been offered to the state upon the terms of the proposed contract; and that timber amounting to \$52,400.00 in revenue to the state had been sold during the first year, a sum largely in excess of the cost of maintaining the forestry bureau, and this without injury to the forests.

The work of re-forestation is also rapidly progressing. Last year it was reported that 1,100,000 pine and spruce trees had been set out in the preceding twelve months. They also have a "Forest reserve board" and a "water supply commission."

In pointing out what has been done by other states, we are not unmindful of the beginning already made here in Colorado for forest and coal protection by our state land board. Probably as much has been done as can be done in this direction with the limited facilities afforded this board, especially in view of the distraction of its members by pressing duties of the various offices to which they were elected by the people, to which duties, of course, the greater portion of their time must be given.

The attention of a board thus constituted to subjects which are merely incidental to their respective offices is of necessity much restricted, and the results are bound to be unsatisfactory and incomplete. Their work, however conscientious, should be immediately supplemented by the commission suggested and at the earliest practicable moment the commission should altogether supersede the land board in special control over, and responsibility for, all these matters involving our permanent natural resources. As the commission would ascertain the conditions and develop the field, its functions would gradually increase, until finally it would occupy the entire domain involved.

In this connection I may say that the register of the state land board favors the establishment of a geological department under the supervision of the land board, with a state geologist as its practical head, to act in conjunction with the government forest supervisors and to assist in the wise use of the natural resources of the state.

The co-operation suggested between the federal and state authorities would be most wise and it would seem that if the expert services of the state geologist were necessary to assist in administration matters connected with his specialty, the services of other experts ought to be provided for and secured in matters involving technical knowledge respecting other classes of natural resources, such as water, timber, etc. The state engineer, for instance, on water, and the president of the State Agricultural College on land, and so on through the list of other natural resources.

As to some of the above matters, the work of investigation may well be extended to private lands also. The proper use and conservation of these great national necessities, water, land, wood and coal, are so essential to the welfare of all the people as to warrant an assertion by the state of an interest in the subject-matter; and in at least one jurisdiction, legislation designed to protect this interest has been upheld by the court of last resort. The gist of that opinion, given by the Supreme Court of Maine in response to a question submitted by the Maine senate, is reported to be that, under certain assumed circumstances, the legislature might pass general laws to prohibit the wasteful and unnecessary cutting or destruction of small trees growing on wild or uncultivated land by the owner thereof, without compensation to such owner. The opinion applied to cases in which such small trees were of equal or greater value standing or remaining for their future growth than for immediate cutting, and in which such trees were not intended or sought to be cut for the purpose of clearing or improving the land for use and occupation in a business way or for pleasure purposes. The intent of the legislature was to prevent or diminish injurious drouths or freshets by protecting the natural water supply and preventing erosion and filling up of the water bodies. Under such circumstances the court held that the contemplated legislation, designed to promote the common welfare of the people, would not violate that portion of the Maine constitution which provides that "private property shall not be taken for public use without just compensation." The opinion is not at hand, but the substance is reported as above.

President Roosevelt, at the White House conference on conservation a year ago, thus quotes from this opinion:

"First, such property is not the result of productive labor, but is derived solely from the state itself, the original owner; second, the amount of land being incapable of increase, if the owners of large tracts can waste them at will without state restrictions, the state and its people may be helplessly impover-

ished and one great purpose of government defeated. * * * We do not think the proposed legislation would operate to 'take' private property within the inhibition of the constitution. While it might restrict the owner of wild and uncultivated lands in his use of them, might delay his taking some of the product, might delay his anticipated profits and even thereby might cause him some loss of profit, it would nevertheless leave him his lands, their product and increase, untouched, and without diminution of title, estate or quantity. He would still have large measure of control and large opportunity to realize values. He might suffer delay, but not deprivation. * * * The proposed legislation * * * would be within the legislative power and would not operate as a taking of private property for which compensation must be made."

At the same time he mentions a case in the Court of Errors and Appeals of New Jersey recently sustained by the Supreme Court of the United States, and, quoting Mr. Justice Holmes, says:

"The state as quasi sovereign and representative of the interests of the public has a standing in court to protect the atmosphere, the water and the forests within its territory, irrespective of the assent or dissent of the private owners of the land most immediately concerned. * * * It appears to us that few public interests are more obvious, indisputable and independent of particular theory than the interest of the public of a state to maintain the rivers that are wholly within it substantially undiminished, except by such drafts upon them as the guardian of the public welfare may permit for the purpose of turning them to a more perfect use.

"This public interest is omnipresent wherever there is a state, and grows more pressing as population grows.

"We are of opinion, further, that the constitutional power of the state to insist that its natural advantages shall remain unimpaired by its citizens is not dependent upon any nice estimate of the extent of present use or speculation as to future needs. The legal conception of the necessary is apt to be confined to somewhat rudimentary wants, and there are benefits from a great river that might escape a lawyer's view.

"But the state is not required to submit even to an æsthetic analysis. Any analysis may be inadequate. It finds itself in possession of what all admit to be a great public good, and what it has it may keep and give no one a reason for its will."

Hudson Water Company vs. McCarter, 209 U. S., 353.

The Conservation Conference, in its resolutions, included the following declaration:

"We urge the continuation and extension of forest policies adapted to secure the husbanding and renewal of our diminishing timber supply, the prevention of soil erosion, the protection of headwaters, and the maintenance of the purity and naviga-

bility of our streams. We recognize that the private ownership of forest lands entails responsibilities in the interests of all the people, and we favor the enactment of laws looking to the protection and replacement of privately owned forests."

While the Maine decision may seem to many to be traveling far, it is suggestive of the increasing tendency of the times and of the growing disposition of government to assert its authority in the face of alleged personal or property rights in cases where the common public welfare is broadly involved.

But the state should not be content with asserting its right to prevent waste and destruction even on private lands where public interest is concerned. It should endeavor to repair such waste and destruction so far as possible wherever found.

Section 6 of article XVIII of the state constitution provides:

"The general assembly shall enact laws in order to prevent the destruction of, and to keep in good preservation, the forests upon the lands of the state, or upon lands of the public domain, the control of which shall be conferred by Congress upon the state."

And section 7 reads as follows:

"The general assembly may provide that the increase in the value of private lands caused by the planting of hedges, orchards and forests thereon shall not, for a limited time, to be fixed by law, be taken into account in assessing such lands for taxation."

Legislation to induce private owners to reforest denuded private lands would be most salutary. Such acts exempting lands of this character from taxation for a term of years have been passed by the legislatures in half a dozen states, Maryland and Pennsylvania among them, and in two others are now being advocated.

The purchase of lands for state forests might also be advisable. Doubtless some denuded private lands could be reforested in no other way, for there are unquestionably some owners of such lands to whom no inducement for reforestation by private effort would appeal in any degree.

In addition to providing for a commission as above outlined, the legislature should arrange for a proper field force charged with the administration in the field of all conservation laws. In a state like ours a practical expert should be placed at the head of each of the three departments of wood, water and coal, with a thoroughly equipped and organized corps of assistants and employes under him. In the beginning only the skeleton of such an official organism would be needed—enough to make an outline for the work of the commission and assist in the task of investigation as herein suggested. As conditions are revealed, studied and understood, the final organization in the field can be filled out as need may require.

No suggestion is made as to statutes and regulations in detail which should be prescribed by the legislature or by the

commission for conservation administration. The proposed investigation and the practical operation of the new department would be required to show what is necessary; and even if all conditions were already known to us, the matter of remedy is too large a discussion for the brief time allowed us to-day. It would be absolutely impossible to attempt even to outline what might be needed by way of statute or regulation. All we can do to-day is to consider in the most general way the present situation so far as known to us and the manner in which we may become better advised upon it, together with some concerted plan for the supplementing of our present information, and for the prevention of further waste until such time as we definitely see just where we are and what we need.

We have not enlarged in this discussion upon matters pertaining to game, climate and scenery because the limited time does not permit us to do so. As to these, suggestions might well be made analogous to those just outlined in connection with other natural resources.

OUR COAL LANDS.

BY DR. JOHN GRASS, TRINIDAD.

Nations, like individuals, must suffer the consequences of their own improvidence. A rich inheritance bestowed upon either can be dissipated and squandered or cherished and conserved.

No other country has ever been endowed with such a wealth of natural resources as ours. For three hundred years each generation in its turn has taken from it all the profit to be had without considering the effect upon future production or future generations. With those resources that are not reproductive they have been even more careless, if possible, than they have with those that might be again restored.

Among the most important of all that go to make up the plant of our great industrial concern is that of our *coal*. For the past fifty years greater proportionate inroads have been made upon our visible supply of this one essential to our industrial greatness than upon any other one thing.

The area of coal-producing lands in the United States is estimated at 496,746 square miles. Of this amount 327,596 square miles is believed to contain workable veins; 137,375 square miles is considered uncertain in its coal values, and in 31,805 square miles the coal lies beneath such a deep cover as to make it inaccessible.

Our total production of coal in the United States for 1907 was 480,363,424 short tons. The term "short ton" means 2,000 pounds, as in contradistinction to the "long ton," which means

2,240 pounds. For the purposes of this paper the short ton will be used in making all estimates of tonnage.

The value of the coal mined in 1907 was \$614,788,898, being only \$32,000,000 less than the value of the entire product of all other minerals combined for that period of time.

The development and consumption of coal has more than kept pace with our increase of population. Going back a little over fifty years, or to the middle of the last century, and comparing the statistics of coal production with our increase of population, it is found that, according to the United States census of 1850, we had 23,191,876 people, while the coal productions of that year was 6,445,681 tons, being several million tons less than was produced in Colorado last year. Las Animas county alone produced 4,768,882 tons in 1907, which is two-thirds as much as was produced in our entire country fifty-eight years ago. The per capita production in 1850 amounted to less than one-third of a ton, while the production of 480,363,424 tons for 1907, with an estimated population of 85,000,000, gives a per capita production of over five and one-half tons. In other words, there is fifteen times more coal produced now for each individual than there was then.

To make still plainer the rapid increase in the production and consumption of our coal, let me call your attention to the fact that, up to the close of 1865, the entire coal production of this country had only amounted to 284,890,055 tons. This was the close of a period in our national life when we thought we were very capable of doing great things. We had just successfully closed the civil war, and four years later completed the construction of the Union Pacific Railway, the greatest military and industrial achievements of that century. Subsequent events have shown that we were the merest tyros in industrial success. Taking as an example the amount of coal mined at that time, in comparison with what we are producing now, we had hardly made a beginning. The amount of coal production for 1907 alone was almost double what had been produced from the first settlement of our country up to 1866. In the first decade, from 1866 to 1876, the production amounted to 419,425,104 tons. From 1876 to 1886 the production amounted to 847,760,319 tons. In the next ten years, ending with 1895, the production amounted to 1,586,098,641 tons. The next ten years, ending with 1905, the production was 2,832,402,746 tons. Thus it will be seen that, in every decade of ten years since 1865, our coal production has been practically doubled. If we should continue in the future to increase this production in the same proportion that we have since 1865, the close of the present century would see our supply almost exhausted. It would reach, in round numbers, 3,000,000,000 tons in another hundred years, while our total capacity of production does not exceed that amount. It is hardly conceivable that this rapid increase in our coal consumption will be kept up until the complete exhaustion of our great fuel beds, but the possibilities of such a disaster are too great to be neglected or passed over lightly. The probability of faulty estimates

in computing the producing capacity of our coal lands will be considered when treating of some of the difficulties which surround the mining of coal in our own state.

Colorado has an estimated coal area of 17,130 square miles, of which 10,130 square miles are classed as containing workable veins of coal; 4,180 square miles are classed as of uncertain value, and 280 square miles are considered as worthless on account of their great depth beneath the surface. These coal fields are grouped along the lower flanks and among the foothills of the mountainous portions of the state.

Without describing the locations of these various fields in detail, it may be said that the coals found in this state are of all classes, ranging from the poorest grades of lignite to the highest grades of bituminous and anthracite. Some of the lower grade coals in the eastern fields have been produced extensively, largely on account of their close proximity to market. The high-grade coals of the Trinidad field have been more extensively worked than others, because of their value for both coke and steam purposes. The Canon City coal is ranked as among the very best coals in the West for domestic purposes. The coal fields in the interior of the state, especially those of the Middle and North parks, are less understood and less developed than in any other portion. The coals from the southwestern part of the state have been well known for many years, but the high mountain grades which it is necessary to overcome in order to reach the present markets have kept these excellent fields from the stage of development which they would have otherwise attained.

The coal fields attracting the greatest attention at the present time are in Routt county. Their prominence is due to their close proximity to market over the Moffat road, and because of the high quality of the coal. Most of it is first-class steaming coal, and also ranks high for domestic use. A limited amount of anthracite has been reported in the vicinity of Pilot Knob and in the Flat Tops, west of Yampa.

The first coal mining as an industry began in Colorado in 1864, and amounted to a production of 500 tons. In 1876 the production for the first time reached 100,000 tons. Since that time it has gone steadily forward until in 1907 it had reached 10,790,236 tons, making it the seventh state in the Union as a producer of coal. In proportion to the estimated extent of our coal area, and according to estimates of the possible coal production of our entire country, Colorado ought to have a productive capacity of about 70 billion tons. But from our knowledge of what has been shown by prospecting and development work in our largest coal-producing district, it is almost a certainty that it will not produce one-third that amount. The entire Trinidad field has been classed by the geological survey as containing "workable beds of coal," but men who have spent time and energy and money in prospecting and mining these lands know that such a conclusion is greatly at variance with the facts.

This opinion must not be construed as a criticism upon the efficiency of our geological service, nor upon the integrity or ability of those who are employed in this valuable department of our government work; it only means that it is not within the powers of the human mind to estimate from surface indications, with any well defined accuracy, the amount of any mineral that lies buried in the earth. We may with reasonably certainty divine the presence of coal, but the amount, and the difficulties of extracting it, will only be found out by diligent prospecting of the coal beds deep beneath the surface and far away from the outcrop. It is not within the province of the government to provide such information, but it is only upon such knowledge as this that even an approximately correct estimate could be made. Of course, in states like Pennsylvania, where the fields have been extensively prospected and worked for a great many years, a more definite knowledge may be obtained. This, however, cannot yet be said to apply to any of the coal fields of the West.

Take, as a further example, the Raton Mountain region, noted on the geological coal map published in 1907 as all containing workable coal. The coal-bearing measures, the slight evidences of local disturbances in the formation, the frequent outcrops of coal, the nearly horizontal lay of the veins, all point to the truthfulness of such a statement. But as coal operators began to prospect and open up different portions of that region, it was found that many of these indications were misleading. Tunnels were frequently driven in upon veins that became too thin to work. Basaltic dykes were often encountered that destroyed extensive areas of coal. Exploration with diamond drills has shown large tracts of land where the veins were too thin or too impure to be worked. In some places the mines have been flooded with such excessive volumes of water that the largest pumps have been unable to handle it. All these, and many other conditions which will not be considered for the want of time, have convinced me that the continuity and producing capacity of our least faulty coal veins are very uncertain.

There are some of our natural resources that may be exhausted, and yet, after many years of painstaking effort, be partially or wholly restored; but when our coal is gone we must either turn to other sources for heat and power, or do without. It can never again be replaced. Our other fuel supplies, such as petroleum, natural gas and wood, are disappearing with even greater rapidity than the coal. The natural gas fields are short lived, and many of them have already been exhausted. This is also true of the petroleum. It is believed by those who are familiar with our gas and oil production that from thirty to forty years will be the limit of their usefulness. The failure of either one or both of these will still further shorten the period of our coal supply. This possibility makes still greater the necessity

for conserving and protecting in every legitimate way what we still have left.

The title to much of our coal land has been acquired by methods that have not always been creditable to those who procured it. Some twenty-eight years ago, when I first came to the Colorado coal fields, the usual method of acquiring title to these valuable properties was by homestead entries instead of paying \$20 per acre for them, as provided by law. In this connection, my mind goes back to one 5,000-acre tract which was all acquired by homestead entries, and which is now one of the most valuable operating coal mines in the Trinidad field. Notwithstanding the fact that veins from four to eight feet in thickness cropped out at various places on the property, the government was openly defrauded out of \$100,000. Any man who had the courage at that time to insist that such methods were criminal and contrary to good public policy was denounced as a crank who threatened the title to vested interests. In fact, the land thieves seemed to have the right of way.

To illustrate some of the difficulties that one had to overcome in trying to secure a legitimate title against these fraudulent coal entries, the history of some lands on the north side of Fisher's peak, that had been taken up by homestead entry, will be in point. These particular lands lay along the border of the outcrop, and had several exposures of excellent coal along the north side. An application to enter as coal land was made, and, of course, rejected, because final receipts had already been issued by the land office to some fictitious names who had claimed it for agricultural purposes. Upon complaint to the general land office, an investigation was ordered and the fraudulent entries were cancelled. Then the coal company to whom this land had been transferred under the agricultural titles sought to recover the land by coal entry. In doing this they had filings tendered by some of their employes, thus bringing on a contest against those who had first claimed it as coal land. The original applicants who sought to secure it under the coal land laws were defeated in the local land office, the general land office, and before the secretary of the interior. Being of that kind of blood which does not quit until the end of the fight, the case was then appealed to the United States Supreme Court, where it was finally won. Such difficulties as these made most men hesitate to come in conflict with the fraudulent entry system in trying to secure legitimate title to coal lands. If they ultimately won, it was at such great cost of time and money as few could afford.

After the device of securing coal lands through fraudulent agricultural entries had been made more or less impracticable, by reason of these contests and exposures, entries under the timber and stone land laws were resorted to. In this way the government was paid \$2.50 per acre for the land, whereas under the homestead entries it received absolutely nothing.

Then there were the lien scrip entries, where the government was jobbed in both the issue and the use of the scrip.

These few of the many incidents of this kind which came under my observation will illustrate what has been taking place throughout the entire West wherever public lands containing coal were subject to entry. It also shows some of the great difficulties our government has had to contend with in trying to protect our public domain in the interest of those for whom it was originally intended. Both the inefficiency of our coal land laws and the apparent lack of an honest effort upon the part of some government officials to enforce the laws we had were responsible for the conditions I have related.

It is my belief that before we can have effective protection and before we can properly conserve what coal lands we have there must be legislation that will not leave it to the Land Department to say what land is and what land is not probably valuable for coal. This should be fixed by geological survey alone, and then the surface and mineral rights should be separated, so that one could be taken without including the other. If the surface right is valuable for agriculture, for timber or for stone, it can then be taken up under the laws governing such entries without making it a subterfuge for stealing something more valuable that lies beneath the surface. There should be no more outright coal entries permitted, at least in those districts where most of the available lands have already passed to private ownership. The patented lands in most of our coal districts now belong to, or are controlled by, the large operators. These will supply the demands upon our markets for at least twenty-five years. When the necessities require the opening up of additional lands, the government should only part with them by lease upon a nominal rental, reserving certain rights in the land which may be exercised by the state or federal government. These rights should include a control of the waste in mining and the prevention of a price for the product that is above a legitimate profit upon the capital invested. The idea that the government should have anything to say about the manner of conducting one's business or the amount of profit that shall be taken has always been very distasteful to some of our citizens, but in this, as in all other things that vitally concern the welfare of the general public, humanity is so constituted that there must be a restraining hand somewhere, or else great wrong will be done. The state already controls, in some degree, the operation of the mines so as to secure the protection of life. May it not also control them in the matter of preventing waste? Municipalities everywhere control the price of water, light and gas; may we not with equal justice control the price of coal? The tendency of all large industrial enterprises is toward combination and monopoly of trade. Competition as an element in business is gradually being driven out. In coal mining the individual producer no longer counts. When competition, which tends to bring down prices, goes out, then monopoly, which tends to raise prices, comes in.

That the consolidation of large industries may cheapen the cost of production is an established fact, and in this way it will be highly beneficial. The great danger, however, that may come from it lies in the power of a few to in this way control the product and sell it at an exorbitant price to the consumer. The remedy for such a condition is not in destroying the consolidation, but in limiting its power for harm. Therefore, I insist that there ought to be some recognized relation between the cost of production and the amount of profit when we are forced to deal with a condition of monopoly. It might not be necessary for the government to exercise such a control of the coal industry in this state for many years. If conditions go on as they are now, it might never be necessary. No good citizen will ever complain of paying a legitimate profit upon invested capital, but if combinations are made that play the game against the public with stacked cards when dealing in the necessities of life, then the government ought to be empowered to hold the winning hand. It would be of but little use to conserve our natural resources and then permit the buccaneers of high finance to juggle with them to the detriment of our people.

While we should conserve the coal lands still belonging to the government by reserving certain rights that will have under control the waste in mining and the prevention of exorbitant prices to the consumer, we can never conserve by curtailing the amount of production. This will always be regulated by the law of supply and demand. Coal will always be mined in proportion to the producer's ability to sell at a profit. If we should place a limit upon the amount we produce, we at the same time place a limit upon the industrial development of the country. The individual who can, by his inventive genius, show us where we can utilize all of the heat units in coal instead of throwing from 90 to 95 per cent. of it away, as we now do in our imperfect methods of combustion, will do infinitely more to save our fuel supply than all other agencies combined. If the use of producer gas, wherein the coal is converted into gas for fuel purposes instead of burning the coal directly, shall grow to have the efficiency that some men are now claiming for it, there will be in this way a saving of from 30 to 50 per cent. that has heretofore been lost. But unless some such discoveries are made, or some other agent, such as electricity, shall take the place of coal in all purposes for which it is now used, then there are many children now born who will see our great coal industries at an end.

Well may we stand amazed when considering the rapid depletion that is taking place in those things that are so very essential to our national existence. The great wonder is that we have been so slow in recognizing this waste and destruction, which has been going on so recklessly since the creation of our government. But for the call of a man who saw the approaching danger and sounded the alarm, our nation might still be slumbering in fancied security of inexhaustible minerals and forests and soil

and streams. Now that the awakening has come, meetings like this have been called in thirty-six states of the Union to deliberate, decide and declare what ought to be done.

Of course, there will always be more or less opposition to any policy that overturns established customs or interferes with selfish interests; but the great majority of the American people believe, with Theodore Roosevelt, that the reckless waste and spoliation of our natural resources must speedily come to an end.

The commission adjourned to meet at 10 a. m., May 15th.

Saturday, May 15th, 10 a. m., 1910, the commission met, with President Frank C. Goudy in the chair. By special invitation Governor Shafroth addressed the commission touching its importance and work.

The first business appearing was the consideration of the report of the committee on organization, as by the action of the day previous.

After some amendments of the report and a full discussion of the several parts it embraced it was referred back to the committee, with the request that it report an amended draft of a Constitution at an adjourned meeting, which was set for the purpose for October 4th, at 2 p. m.

Ex-Governor Adams presented the following resolution, which was adopted, to wit:

"It shall be the duty of the secretary to keep a record of the proceedings of the commission and conduct all correspondence pertaining to its business, and to report to the proper state, county or municipal officials any unlawful waste or destruction of natural resources of which he may receive trustworthy information."

Mr. Earl B. Cranston offered the following resolution, which was adopted, viz.:

"Resolved, That a committee of five be appointed by the chair—the chair to be ex officio chairman, making six in all—to solicit funds for running expenses until next meeting, making some compensation for our secretary and the publication of our annual report."

The following members were appointed as such committee: Earl B. Cranston, D. C. Beaman, J. Arthur Eddy, Dexter T. Sapp, Murdo MacKenzie, and F. C. Goudy ex officio chairman.

Mr. Murdo MacKenzie moved "That the different committees on conservation be instructed to bring before the next meeting a report pointing out where evils, if any, now exist in their several fields of investigation and study, and suggest such remedies as to them may seem best."

The same was duly seconded and carried.

The commission then adjourned to meet at Denver, Monday and Tuesday, October 4 and 5, 1909, the committees to meet at 9 a. m., October 4th, and the commission, as a body, to meet at 2 p. m., October 4th, the principal purpose of the adjournment to this time being to hear the report of the committee on organization and to adopt a Constitution.

THE OCTOBER MEETING.

Pursuant to adjournment, the Colorado Conservation Commission met at 2 p. m., October 4, 1910, at the senate chamber, state capitol, with the president, Mr. Frank C. Goudy, in the chair.

Members present at this session: E. M. Ammons, Ellsworth Bethel, Earl M. Cranston, Clarence P. Dodge, J. A. Eddy, K. L. Fahnestock, Chas. W. Franklin, Frank C. Goudy, John Grass, Murdo MacKenzie, Walter J. Morrill, T. M. Patterson, W. G. M. Stone, W. M. Wiley.

Regrets from: Alva Adams, D. C. Beaman, Robert F. Coyle, Robert Gauss, Wm. L. Hartman, M. A. Leddy, Joseph Newitt, R. W. Speer, Chas. A. Long.

Reports were submitted from the following standing committees on conservation and referred to the committee on resolutions, viz.: Lands, water, and minerals.

REPORT OF COMMITTEE ON LANDS.

BY W. M. WILEY, CHAIRMAN.

It is the sense of this committee that all non-timber land suitable for grazing or agriculture should be excluded from the forest reserves.

We insist that the forestry service be so managed as to do away with all unnecessary friction and irritation between the officers of such service and the users of the natural forests, and that the federal officers in control of the reserves be urged to modify their rules so as to cast no unnecessary burden on those permitted to use such reserves.

We believe that Congress should enact legislation to the end that the public domain outside of forest reserves should be devoted to the use of the people, either by a liberal plan of homesteading or by a just and equitable plan of leasing.

REPORT OF COMMITTEE ON WATERS.

BY FRANK C. GOLDBY, CHAIRMAN.

On some phases of the conservation of waters we believe:

That additional legislation should be had, to the end that private enterprise should be encouraged in carrying on the work of reclaiming lands by irrigation. Provision should be made for the better protection of parties making bona fide filings claiming the right to divert waters from the natural streams until the necessary diverting works can be completed, where the claimant or claimants are proceeding with diligence. Also,

That legislation should be had to limit or prevent speculators from making and holding filings on natural streams used for irrigation without doing anything by way of construction, thereby preventing or delaying the building of water systems by those who are willing and able to put in such work. We further believe

That the general government should promptly accept and approve all good faith filings authorized by law for rights of way duly tendered by persons, associations or corporations desiring to construct irrigation ditches and reservoirs on the public domain, whether the same are situated within the boundaries of forest reserves or not, where such filings do not conflict with prior rights, and that such filings be accepted without imposing conditions or restrictions not authorized by law.

REPORT OF COMMITTEE ON MINERALS.

BY DR. JOHN GRASS.

We believe that our public lands should be so classified by the government as to distinguish as nearly as possible between the agricultural, grazing, timber, stone and mineral land. Where land is found to be valuable for more than one purpose the government should be given the same protection, in all the different forms of procuring title to public lands, that has recently been given by the Mondell act, which successfully provides against fraudulently procuring coal lands under the pre-emption and homestead entries. In this way all the different lands subject to entry might be properly disposed of without making the entry of any of them a subterfuge for procuring something of greater value that is hidden beneath the surface. In some states, when all the coal lands have passed to private ownership, and particularly in the anthracite fields of Pennsylvania, where all that class of coal has passed into the hands of a few, the public has been made to pay exorbitant prices for its fuel.

Realizing that the tendency of all our great industries is towards consolidation and a consequent destruction of competi-

tion, we urge the necessity for such legislation, both state and national, as will only permit the government to part with our remaining coal and oil lands by a lease upon a reasonable royalty basis. In doing this there should be a reservation of such rights in the land as will prevent wasteful methods in mining and also protect the general public against a price for the product that is above a legitimate profit upon the capital invested.

In metal mining we urge the owners of mines to carefully dump waste by itself, and keep any low-grade ore, which can not be profitably marketed at the time it is mined, in separate dumps, where it can easily be handled in future years should concentrating, smelting or other methods of treatment make it available as a marketable product.

We urge the United States Monetary Commission to use its utmost endeavors for speedily obtaining the consent of the other nations of the world to a universal ratio between gold and silver, so as to insure to our mines a stable value for the white metal.

The importance and extent of our various mining industries make their success for the present and future of the greatest possible concern to all classes of our people. We therefore urge upon Congress to establish a national bureau of mines, to conduct such inquiries and investigations as will best aid our people in conserving the lives of our miners and the resources of our mines.

The committees on forestry and natural history made no formal report, but Prof. E Bethel, chairman of the latter, read a statement issued by the Estes Park Improvement and Protective Association September 4, 1909, on which no action was taken.

The committee on organization reported an amended draft of a Constitution, which, after due consideration, was unanimously adopted, as follows:

CONSTITUTION AND BY-LAWS OF THE COLORADO CONSERVATION COMMISSION.

CONSTITUTION.

ARTICLE I.

NAME.

This commission, appointed by the governor of this state, February 17, 1909, on the conservation of natural resources, shall be called The Colorado Conservation Commission.

ARTICLE II.

MEMBERSHIP AND QUORUM.

This commission shall be limited to thirty-six persons, and ten members shall constitute a quorum.

ARTICLE III.

VACANCIES.

All vacancies, from whatever cause, shall be filled by appointment by the governor of Colorado.

ARTICLE IV.

PURPOSE AND AIM.

Section 1. The purpose and aim of this commission shall be to promulgate and promote the principle and practice of conservation of all natural resources of this state, to the end that they may be wisely and economically used and not unlawfully employed or prodigally wasted.

Sec. 2. It shall collect facts and data relative to such resources, showing of what they consist, where found, their extent and their values; their uses, their consumption and probable longevity, in order that the work of this commission shall be educational, practical and useful.

ARTICLE V.

SUBJECTS FOR CONSIDERATION.

Within the purpose and aim of this commission the following shall be regarded as proper subjects for consideration: Lands and soils, waters, forests, minerals and objects of natural history.

ARTICLE VI.

OFFICERS.

The officers of this commission shall consist of a president, three vice-presidents and a secretary-treasurer, all of whom shall be elected by ballot at the annual meeting.

ARTICLE VII.

ELECTIONS.

Section 1. The annual election of officers shall be held at 11:00 o'clock a. m. on the last day of the regular annual session.

Sec. 2. Any member in good standing shall be eligible to office.

ARTICLE VIII.

VOTING.

Section 1. Each member of the commission in good standing shall be entitled to one vote.

Sec. 2. Proxies are not to be used or recognized at any time.

ARTICLE IX.

FUNDS FOR EXPENSES.

Section 1. The necessary funds for defraying the expenses incurred by the commission, including the executive committee, shall be provided by voluntary subscriptions, except that each member shall pay into the treasury of the commission an annual membership fee of five dollars, except the secretary.

Sec. 2. The annual membership dues shall become due and payable at the beginning of each fiscal year.

ARTICLE X.

ANNUAL MEETING.

The commission shall meet at such time and place as shall be fixed by the executive committee; provided, however, that the annual session of the commission shall be held at the city and county of Denver on the first Tuesday in March, unless otherwise ordered by the commission itself.

ARTICLE XI.

STANDING COMMITTEES.

Section 1. There shall be two classes of standing committees, one class on conservation and another class on administration.

Sec. 2. The class on conservation shall consist of five committees, one for each of the five subjects of conservation, designated in article V of this Constitution.

Sec. 3. The class on administration shall embrace five committees, to wit: (a) One on co-operation; (b) one on legislation; (c) one on resolutions; (d) one on ways and means, and (e) an executive committee.

Sec. 4. All committees of these two classes shall contain five members each, appointed annually by the president immediately after the annual meeting.

Sec. 5. The committee on waters shall consist of one member from each of the five irrigation divisions of the state.

Sec. 6. The president shall be an additional member ex officio of both the executive committee and the committee on ways and means.

Sec. 7. There may be other committees as the necessities of the commission require.

ARTICLE XII.

AUTHORITY OF COMMITTEES.

Nothing in this Constitution or the By-Laws shall be construed to authorize or permit any committee to implicate or bind this commission upon any question of policy whatever, unless properly authorized thereto by this commission.

ARTICLE XIII.

AMENDMENTS.

This Constitution and By-Laws may be amended by a majority vote of the members present at any annual meeting, and by a two-thirds vote of the members present at any special meeting of the commission.

BY-LAWS.

ARTICLE I.

DUTIES OF OFFICERS.

Section 1. The duties of the respective officers shall be the same as are usual in similar bodies, except in the case of the secretary-treasurer.

Sec. 2. It shall be the duty of the secretary-treasurer not only to keep a record of the proceedings of the commission, conduct all correspondence pertaining to its business, and attend to the ordinary routine of the office; but as secretary he shall advise all committees of such matters as should properly be brought to their attention; notify members in arrears of their delinquency, and inform the president of all vacancies of memberships; and, so far as possible, he shall carry out the provisions of article IV of the foregoing Constitution; and he shall report to the proper state, county or municipal officials, and to this commission, any and all unlawful or extravagant use or prodigal waste or destruction of our natural resources of which he may receive trustworthy information.

Sec. 3. It shall be his duty as treasurer to collect all dues and receive all collections from the committees on ways and means, and he shall deposit all funds of the commission in some bank approved by the ways and means committee, and he shall pay out no monies except on order, countersigned by the president and accompanied by proper vouchers or bills of account.

Sec. 4. The secretary-treasurer shall execute a bond with the committee on ways and means in the sum of \$2,000 for the faithful performance of his duties as treasurer of the commission.

ARTICLE II.

DUTIES OF COMMITTEES.

Section 1. It shall be the duty of each of the five conservation committees to consider the subject in its charge in the light of section 2, article IV, of the foregoing Constitution, and bring before each session such matters as may seem important to record, discuss or to act upon.

Sec. 2. It shall be the duty of the *committee on co-operation* to receive and consider any and all questions involving co-operation with any conservation commission that may submit matters for attention or advice, and report to the commission such recommendations as it may deem proper.

Sec. 3. The *committee on legislation* shall have charge of devising, preparing and recommending such new laws as in its judgment may help to better conserve the natural resources of the state.

Sec. 4. The *committee on resolutions* shall carefully consider all resolutions referred to it. If the nature of any resolution is such that it should be taken up by some other committee, it can so refer it. All others shall be disposed of in the usual manner.

Sec. 5. It shall be the duty of the *committee on ways and means* to solicit and collect such funds as may be necessary to carry forward the purposes and aims of this commission, and turn the same over to the treasurer. It shall see that all monies are banked and properly paid out, as provided by section 3, article I, of these By-Laws, and it shall at least once a year audit the accounts of the treasurer and report to the annual meeting the condition of the finances of the commission.

Sec. 6. The *executive committee* shall have charge of the commission between its sessions, arrange the preliminaries for the meeting, fix the hours and length of sessions, call extra sessions, and in conjunction with the secretary prepare suitable programmes of exercises and business. It shall have charge of any messages from the commission to the Congress of the United State, or to the legislature of the state of Colorado, and it shall perform such other duties as are not otherwise provided for in these By-Laws.

ARTICLE III.

SPECIAL MEETINGS.

Special sessions may be held at any time the commission may determine when in regular session, or by call of the executive committee, which call shall state the time, place and purpose of the meeting. Every member shall be notified by the secretary at once at his regular postoffice address, and no call shall be made under ten days prior to the session so called.

ARTICLE IV.

RESIGNATIONS.

Section 1. Any member of the commission may resign at any time by handing the same in writing to the secretary, who shall at once notify the president.

Sec. 2. The absence of any member for two consecutive meetings, or failure to pay his annual dues without satisfactory excuse or explanation to the president, shall be reported to the governor with the recommendation that such failure on the part of the member be considered a resignation.

ARTICLE V.

RULES OF ORDER.

For parliamentary purposes, Roberts' Rules of Order are hereby adopted.

Adopted at a special session of the commission held in Denver, Colorado, on the 4th day of October, 1909.

FRANK C. GOUDY,
President.

Attest:

W. G. M. STONE,
Secretary.

The commission adjourned to meet at 9:30 a. m. the following day.

Tuesday, 9:30 a. m., October 5, 1909.

The commission met at the senate chamber and was called to order by the president.

Hon. T. M. Patterson offered a resolution, requesting the federal government to make a careful survey of the reserves and segregate all lands not forest lands, which was referred to the resolutions committee.

The following papers were then read, to wit:

THE ETHICS OF THE NATIONAL FOREST.

BY HON. H. H. EDDY, DENVER.

Before going on with a discussion of the ethics of the national forest, permit me to offer one general observation that may of itself aid in the proper consideration of my theme. In the doing of public business, whether of legislation or administration, there may be certain features of the law or its execution that for their rightness or wrongness are not to be tested by the

ten commandments. It is conceivable—indeed, it often happens—that government possesses the unquestionable prerogative of doing that which would unnecessarily impose burden or restraint upon the citizen. Such an imposition, while clearly within the rights of the government, would nevertheless be the commission of a governmental wrong. At least, I so read the theory of our Constitutions.

As a corollary of this proposition it follows that, in the enactment or enforcement of a generally beneficial law, individual hardship bordering on the wrong may be wrought without seriously detracting from the propriety of such a law, so long as it measures up to the statesmanlike standard of the greater good to the greater number. It can not well be otherwise under the rule of the majority. Man has not progressed so far as to frame law in the concrete. His laws must be more or less in the abstract; general in character.

It were well, before that fine frenzy which in a greater or less degree has attacked both advocate and critic of the present national forest administration is allowed to run further course, breeding bitterness with passing time, that the forests of fact and opinion be cleared of their underbrush, now impeding settlement of such differences as really exist and of their downhanging foliage now obstructing a clear view of the real questions at issue.

In an ethical examination of the national forest question, and especially those phases of the question that of late have become controversially so acute, it may not fall amiss to look to the title of that unappropriated public domain out of which these national forests have been carved, and likewise to inquire whether or not the fee simple of the owner has been clouded by process of that ancient custom wherefrom long continued usage confers the right to use.

It is needless to discuss the ownership of the public domain. Title to it was acquired by all the people of the United States, by their joint sacrifice of blood and treasure, by conquest and purchase. Were it any less than absurd to question the title so acquired, it would be but to cast doubt upon that of the site of this splendid pile of granite and upon that of every holding of real estate, state, municipal and private, throughout the vast territory known as the Great West. We may alone except such titles as have descended from Spanish grants confirmed by this government. There can be none so foolhardy as to raise such a question.

As to the second inquiry: Has the government, with intent or by neglect, allowed a certain freedom of privilege with respect to the public domain to grow into an unwritten and unrepeatable law? A categorical answer to this question will avail nothing, nor in answering it can there be any glossing over. Here is the gist of the controversy now waging over the disposition and

administration of the public domain. Is this not so? Listen to the words of one of the ablest and most highly esteemed of those who have arrayed themselves against the administration of the national forests. "The charges," he says, "for grazing stock in the forests and for timber used by the settlers are justified by Mr. Pinchot and his supporters, because the grass and the trees belong to the whole people and not to the settlers adjacent." Again, "It is gross injustice and discrimination to urge, at this late day, the question of ownership."

Here the title, and, by a not unfair inference, the legal right to do the things complained of, is conceded. It is the moral, the ethical right that is questioned. The position taken and so valiantly maintained by our fellow-citizen just quoted, and those who think with him, is not to be trifled with nor lightly thrust aside. If such an issue had been raised, with Ohio settled and immigration's tide flowing on into Indiana, there would then have been vastly more force in the contention than here and now. Environment weakens many a precedent.

Before wading too far into the mire of the present controversy it may be well to steady ourselves and seek firmer ground upon which to proceed. From the beginning, and until quite recently, our governmental public land policy has been guided naturally, if not wisely, by the same spirit as influenced our pioneer people in the misuse of the wealth of resource, upon the soil, in the soil and beneath the soil. These resources were by nature bounteously bestowed, and in their use her beneficiaries have been, when not liberally wasteful, at least wastefully liberal. It in no wise mitigates this fact that both liberality and wastefulness were fairly an incident of prevailing conditions. To government, as well as governed, the supply seemed without end. Rich fields beyond, with the glamor that distance lends, were ever beckoning them on. Time was to fix a limit upon both the recklessness and restlessness of the possessors of the richest continental domain on earth. Time was to be when they were to pause, and, as swift runners at a relay, take breath and reckoning. That time has come. Thus pausing, our people, north, south, east and west, have joined in the solemn decree that henceforth conservation and reclamation, as twin servitors, shall be bound to the splendid tasks—the one of the preservation and the other of the restoration of material opportunity to the use of the future as well as of the present.

With substantially one voice the fiat has been sent forth that prodigality shall give way to carefulness. If there be those who from disposition or self-interest dissent, these are either silent or hide their opposition to the purpose in carping at the details of its accomplishment. It would be unfair to place all who criticise administrative detail in the selfish class, but such as these should be sure of the basic truth as well as applicability of their complaints and be diligent in taking the public into their fullest confidence, or suspicion as to their motive will be

justified. On the other hand, the administration, being likewise called to account, should be equally frank with the public, meeting every well-grounded and properly presented complaint with clear justification within the law or the exercise of a sound discretion under the law. Failing in either respect, it must confess error, make amends so far as this may be possible and secure the future against the repetition of acts justly complained of. If both administration and honest critic were to thus govern themselves it would not be long before they would be working together in a spirit of amity, inspired only by loyalty to the best interests of the greater public. Until this is done there will be, as now, much riding tilt at windmills.

Champions of the national forests administration seem too much disposed to content themselves with dealing in general terms, with the application of general principles to general conditions and to resent attack based upon concrete cases. Those who attack the administration are too apt to push aside as of little moment both general principle and general condition and cloud their vision with instances of hardship, resulting, perhaps, from a too harsh rule or law, or a too rigid enforcement of the one or the other where it would be better to exercise a sound discretion. Conceding to both the service and its critics a sincere desire to be right, and do the right, it is plain that by pursuing the course just indicated harmony can never be reached.

If those who oppose the methods or present policy of forest administration are really desirous of working reform in method and policy, with the single purpose of bettering the service by bringing it into a more harmonious relation with those whose activities it most sensitively touches, and if at the same time these same opponents are believers in forest conservation, then they should approve as well as condemn, encourage as well as criticise. Continual fault-finding, with occasional ridicule and too frequent vituperation, are instruments of destruction, not of construction.

With those who maintain, or would do so if they but spoke the truth of their hearts, that forest reservation can serve no good purpose, or that the evil of it overbalances the good, we can have no argument here. The wisdom or unwisdom of it is not now the question. As well contend with the man in the stocks that the town authorities could not put him there. We can not reason out to any good purpose the contention that we are considering without an agreed premise. The national forests are an accomplished fact, and, so far as the future may be read, they will remain to vex the unconverted. Here is our premise. Here is solid ground. These forests have been created, and it is proposed to maintain them, with two avowed objects in view: their preservation for future as well as present supply of timber and the conservation of water for the benefit of commerce, irrigation and domestic use. Other reasons for these reservations are advanced. These are more or less incidental, and not a few of

them more or less problematical. The two principal objects just referred to have emerged from the realms of speculation and by a general consensus of opinion have been placed upon a plane of seeming practicability.

Here in Colorado, as well as in some other parts of the Rocky Mountain region, forest reservation meets conditions not common farther to the east of us. Here, and speaking generally, our forest lands, once denuded of their covering, are valueless for agriculture, and perhaps practically so for any other purpose. There, to the east of the Mississippi, the reverse was largely true, and from the viewpoint of the pioneer, forests upon lands more valuable for agriculture than forestry were doomed, and rightly so. Right here is disclosed a weakness in the claim of discrimination by reason of the reversal of the government land policy quoted above. The giving way of the forest before the ax of the pioneer when it meant that trees were to be replaced with farms, villages and cities, is, no matter what was the waste involved, very different from destroying the forest to harvest desolation.

Considering the not very high standard of Colorado forests from a commercial standpoint and their tremendous and even inestimable value as conservators and thus as preservers of our vast and rapidly developing irrigation system of water, we might, so far as our own immediate interests are concerned, look upon the first great object of conservation as a negligible factor in the problem to be solved. Forest products *can* be bought and transported hither from far away. Not so with a water supply. For those products there are many substitute materials. For water there is none. Only in so far as forests do conserve the water supply, the industries of our state, excepting agriculture (and using the word in a broad sense), could, and undoubtedly would, have been developed had there not been a stick of growing timber within its boundaries. This would have been done more tardily and more expensively, but surely our vast riches would not have been left untouched. Not so with agriculture. As we were, we would have remained, a desert. If these statements be true, if this line of reasoning be sound, then, so long as our forests be preserved and they should be preserved to the very last living tree of them not a positive detriment, we need not indulge in over-much wrangling as to the futility, or otherwise, of attempts at reforestation, or of forestation, pure and simple. Suppose such attempts are made and fail, or succeeding, are by natural limitation upon so contracted a scale as to render them comparatively unimportant, save as scientific experiments, no harm will have been done, and, by addition to our positive knowledge, possibly much good.

We have our national forests. In the wisdom of at least one of the avowed purposes of their creation—conservation of water—an overwhelming majority of our people have an abiding faith. For this reason it becomes the duty of every one of us, as patriotic citizens, to aid as we may in perfecting the system of their

administration. How can this best be done? By treating the administration of the forests from a personal standpoint; by ridicule; by vituperation; by exaggerated, if not biased, criticism; by overlooking the good that is being done and exhausting our energies in seeking and publishing to the world every instance of friction or hardship that may have resulted from misconstrued or misapplied law or overzealous service, thus embittering, if not seeking to embitter, the general public against not alone those who administer the forests, but as well against the reservation idea itself? Or would it be better to pursue the other alternative, and work with the administration rather than against it; encourage it for the great good that it is undoubtedly doing; criticise only with a desire and in the spirit of progress and improvement? Undoubtedly the latter course would be the choice of all were it not for a most remarkable condition that seems to have developed itself. In the minds of some of our well-meaning citizens it appears to have come about that one holding a subordinate, if an honorable and most important, position in our government has set up an independent autocracy all by himself—an autocracy that threatens, at the very least, the development of that great section of our country that he has taken over as his very own and the freedom of opportunity of the people who reside therein. Ask one of these friends of ours, perhaps more cantankerous than his fellows, perhaps not, "Why is not something done to curb the spirit and check the progress of this forest-mad swashbuckler before it is too late?" and he will be apt to reply, "It can not be done." As likely as not you will see falling across his face the shadows that tyranny casts. In his voice you may discover those sub-tones that only utter hopelessness begets. Pursuing your inquiry, you will say, "Can you not appeal to his immediate superior in official rank if not in real power?" Then comes the doleful answer: "No good; he is acting under the rules and regulations approved by that superior."

Then go to the president. "No good again; the president believes in him." But he violates the law; why not go to the courts? Here, surely, you may properly expect some lifting of the darkness that is settling all about you. But you will be disappointed, for you will be told, "There is no hope there. The acts of the forester, unless disavowed, are the acts of the secretary, and the courts have held that the acts of the head of an executive department are discretionary as well as ministerial, and 'subject to review in no other way than by the Congress' from which his power to act is derived." Inevitably, there being nothing else for you to do, you will say, "Then to Congress." This will be the straw that will break the camel's back. Up will go the hands of the man you have been torturing, but his tongue will refuse to perform its functions. Deep in his heart he may be saying: "To the devil with Congress; I'd rather take it out in pounding Pinchot."

Truly, this is a most strange and, if it be fact rather than fancy, a most deplorable state of affairs, unless it be true that

the present head of the forestry service is a patriotic and far-seeing man, with high ideals for the country's greatest good, and that his policy not only meets with the sincere approval of those above him, but is likewise reasonably within the law. If this supposition be true, I presume there will be nothing for any of us to do but submit to the inevitable. That the administration of the national forests may be all that has just been suggested, and yet be guilty of mistakes and excess of zeal in the conduct of affairs, is not to be wondered at.

It should be constantly kept in mind by both sides to the present controversy that the providing and setting up of the machinery of so vast an administration as the national forests require, and especially since such a complete and sudden reversal of a good part of the government's land policy was involved, was an immense undertaking, and that friction, due to hasty and perhaps mistaken adjustment of the several parts, was sure to follow. That it should have been otherwise would have been nothing less than miraculous. Therefore it is that those who direct this great governmental machine should be both painstaking and patient—painstaking in reducing or removing friction when disclosed, and at all times patient with and considerate of those directly affected by so complete and sweeping a denial of those privileges that had been theirs so long as to appear to be rights.

On the other hand, those of us who stand over against these our servants—the great body of the people—must consider that this great work that our government has undertaken in our behalf can not be developed in its perfection within so brief a time, and that, no matter how able and zealous may be those appointed to work out its details—many, intricate and delicate—it can not ever be brought to the high estate that we all desire without our sympathetic and well-considered aid.

It has been seriously suggested that the ambitious and self-sacrificing man in whose hands lie the immediate responsibilities of our national forests is not only opposed to the diminution of the reserves to the extent of the agricultural and grazing lands now included within them, but that he designs that all of the unappropriated public domain shall be brought within them, to the end that a great profit-bearing governmental estate may be created. If there be any truth in this, then of a surety we should address ourselves to Congress immediately the first evidence of activity in that direction appears. No addition to the present reserves can be made in our state without act of Congress. It is questionable, however, if great impression can be made upon that body if our efforts are substantially confined to abuse of Pinchot and Pinchotism. There is not lacking evidence that both are exceedingly popular in a very considerable section of the Union. Such a fact will have no little influence upon Congress.

Clearly it is due the conservation idea that there should be included within the national forests every acre of land, *but no other acre*, necessary to the full fruition of their legitimate purposes, viz., the preservation, and, reasonably, the propagation of timber and the conservation of water. Neither pretext nor subterfuge should anywhere be in evidence. Just as clearly are the mountain states entitled for their people—those now there or wishing to go there—to the right to enter upon and possess, under the terms and conditions laid down by the government, every acre of home-making land.

It is homes that build states. It is not an individual right in the land that we are supporting, but a right to buy the land as long as there is fit land to sell. And it is the intending buyer, and no one else, who should be empowered to judge of the fitness. Let it be remembered that, in the last analysis, there never was lawfully obtained from the federal government a single acre of land that was not bought. It may have been paid for in money or in services, and the price may have been paid before or after acquirement. It was paid for.

Looking at least to the immediate future, and in view of these words recently spoken by the president, it would seem that we, even including our lugubrious friend whom we but a moments ago excused from the rack, may look forward to a wise and just solution of this great problem and a fair adjustment of all differences that have arisen, or may arise, during the process of that solution. The president said: "In my judgment he is the best friend of the policy of conservation who insists that every step taken in that direction should be within the law and buttressed by legal authority. Insistence on this is not inconsistent with a whole-hearted and bona fide interest and enthusiasm in favor of conservation."

Before closing, permit me to offer a suggestion, which I do with some hesitancy, not being a member of this commission. You who are should erect a committee, carefully and fairly named, and of those willing to sacrifice somewhat for the public good, the business of which should be to stand, as it were, between the people of the state and the administration of the national forests, presenting to the latter such carefully sifted complaints of hardships or serious annoyances as may come to its knowledge, with recommendations pertinent to the same. This commission possesses official character, can not well be one-sided, and its recommendations and representations would undoubtedly have great weight with that administration. The same committee, or perhaps another, should be clothed with the same relations as to the reclamation service. By this suggestion I mean no reflection upon any other organization. You, with your semi-official character and composed of men not of one mind in the beginning, are peculiarly fitted to meet and discharge such a responsibility.

HOW CAN WE SAVE THE WILD GAME OF COLORADO FROM DESTRUCTION?

BY DR. MARY E. BATES, M. D.,

President Colorado Humane Education Society, Denver.

How to save the wild game of Colorado from extinction is a many sided question, involving problems of the highest ethical importance to the individual and to society, not less than interests of the greatest commercial value to the community.

The question "How?" is inseparable from the question "Why?" As the course of the empire gathered the great West unto itself, pioneer man met the primitive conditions of the new country with the modern weapons of self-preservation.

For food and for fear, man killed, and as ever, in the cruelties of dominion, in the exultation of power, in the "lust of blood," man found "sport."

Through the ages, man's conventional idea of sport, which has survived as a yellow streak through his developed greatness, consists in "going out to kill something," and it is the very wantonness of cruelty, whether the victim be soul or body, human or lower animal, innocent or vicious, wherein lies the real essence of "sporting," disguise it as one will.

It is this element in man's relation to his brothers of forest and plain that has offered the greatest obstacles to the development of a proper judgment which would seek, and find, and hold a normal balance of killing, drawing the line justly at the right of the greater to the life of the lesser—for fear and for food.

Although real need to kill for either of these reasons had all but passed away, slaughter for sport kept on until in the course of time men came to realize that at that rate there would be soon no more game to kill for sport, and that a limit must be put to killing to insure its continuance!

Recourse was had to legislative enactment, the law affording the only effective basis for compulsory limitation of hunting privileges and the enforcement of game protection.

The first game law in Colorado was passed in 1883. Each succeeding Legislature has added to it, and amended it, until there has grown up a very complex and comprehensive system of game and fish "cultivation and protection" as a separate part of the state government—the Game and Fish Department, under the direction of the Game and Fish Commissioner. It was not intended, I believe, to include the fish laws in the subject assigned for this paper.

The so-called game laws of Colorado fall under two divisions—the bird laws and the quadruped game laws. The problems are similar and the solution is the same.

Examination of the reports of the different Game Commissioners show that the game laws are the composite result of various influences directly concerned with the continuance of game hunting for hides, and horns, and feathers, the edible bits and other delectable accompaniments of the lure of sport, the joy of the chase and the gory glories of the kill. This includes the commercial activities of firms catering to transportation, feeding, housing and equipment of sportsmen and the legal disposition of game secured.

The laws insure a revenue to the state to be expended in their enforcement, and have even been known to furnish a surplus. These facts constitute to some legislative minds an irresistible argument in the support of the theory that game sports in Colorado offer a powerful incentive to capital from other states to come into Colorado.

It is to these influences and to the indifference and commercial stupidity of the blind "good people" of the state that we are indebted for the fact that there are still left a few wild game animals to be protected, and that there is yet time to save them from extinction.

Like every other question everywhere, the game question will never be settled until it is settled right; and it can never be settled right until the game laws are remodeled upon a new foundation of the highest moral motives and the soundest commercial sense.

The humane idea—the protection of the birth right of the beautiful, innocent and helpless game animals to life, liberty and the pursuit of happiness, is the highest moral motive, and it will bring to the state and to the people of the state its greatest commercial reward, second only to the better good such a lesson would mean to heart of the world.

In the third annual report, ending December, 1907, of the Provincial Game and Forest Warden of Vancouver, B. C., I find this statement:

"In addition, game protection is not now looked upon as a fad of a few enthusiastic or interested sportsmen; numbers of men who never before gave a thought to the subject now take an interest in it; in fact, the majority of the intelligent thinkers in the province are now well aware, or are rapidly becoming so, that our game is an asset of such value that it is worth the expenditure of a great deal of money."

Our own Enos A. Mills, nature lover, poet, historian of the wild life of the Rockies, astute and successful manager of the Long's Peak Inn, formerly United States lecturer on forestry, ex-United States snow observer, etc., a man learned in the law of scenery, a world traveler wise in the appreciation of the dollars and cents values of natural resources, said to me the other day: "The people of Colorado must come to realize that their greatest asset is its climate and its scenery and the wild life

that should go with them. As agriculture has surpassed mining so will this interest surpass agriculture in commercial value to them."

What would happen if the United States owned this country? asks the Game and Forest Warden of Vancouver, and replies: "They now see their folly in not looking after their game years ago and are spending thousands and thousands of dollars in restocking, buying up land for game reserves and employing game wardens. It is certain that if they had such a country as this they would spend millions on it, and time would show their money well invested. Again, look at South Africa; there the protection of their wild life has been left too late and they now have to regret that many valuable animals that once roamed the country are at the present time practically extinct."

I fear that Colorado will not be entitled to this compliment until an awakened public sentiment demands the writing into the law of the state these higher and better paying ideals, and compels their effective enforcement, for the motive of loyalty to a law is as vital to its value as perfection of technical construction and legality of enactment.

To do this a vigorous campaign of education must be conducted along all of the lines suggested by the past experiences and available at this day. Only through enlightened, educated public sentiment will the right law be made effective.

In some communities this will amount to practically a revolution of thought and deed, judging from Game Commissioner Farr's report of 1907, in which he complains that "In different parts of the state there live a great many people who do not take the game law seriously."

I cannot but believe that this depends quite as much upon the wrong motives of the laws themselves as upon their imperfect enforcement. Priding ourselves upon being law abiding, most flagrant and brazen violations of the game laws have always been, and still are, notoriously indulged and tolerated by those who in all other ways are law abiding citizens.

In December, 1902, the commissioner then in charge, Gordon Land, said in his report: "The utter inefficiency of local wardens, who are influenced by their surroundings and governed by their friendships; the unwillingness of those who live in remote sections of the state to inform upon their neighbors, or in any way aid in the enforcement of laws for the protection of the game that they believe is solely to benefit the tourist and city sportsmen, and, finally, when these people who are in every other regard honest, upright, intelligent and law abiding citizens witness, as they do every succeeding year, the wholesale killing of our four-footed game by skin hunters and Indians, I am only surprised that they do not kill more than they find convenient for their winter use."

Although the game laws since 1892 have been greatly improved in every way and far better provisions made for their enforcement, the experience of every game commissioner has been about the same, modified more by the characters of the game wardens than by the attitude of the people.

In 1899 Commissioner Swan reported that obstacles in the way of the strict enforcement of the law for the protection of game were sometimes well nigh discouraging and at all times real and tangible.

The obstacles that he names that are still operative are: The lax enforcement of game and fish laws in the past history of Colorado, making a sincere attempt to enforce these laws against all alike seem in the nature of a new departure, in a legal sense; and an attempt to abridge the rights of those who have lived by killing and marketing game at all seasons, and those who have killed game at all seasons for personal and domestic use.

Under the proposed regime, when game shall be protected as a part of the general scheme of conservation and development of all of the natural resources of Colorado, those same residents will come to recognize in the game a real, live and ever growing asset and find it to their financial interest to insure the enforcement of protecting laws. They will learn that it pays to take that kind of a game law seriously.

It is already beginning to work out in this way in at least one portion of the game country. It furnishes an example of the voluntary communal assumption by agreement of law which is often the forerunner of the law itself.

Last year, in the Estes Park region, when the plan to make a national game park, including but not disturbing private rights already established, but protecting forever the game birds and quadrupeds, was discussed, one man expressed the majority sentiment in these words: "You needn't think I propose to let any mountain sheep butt *me* off the cliff."

This year so pronounced has been the change in understanding, due, chiefly, no doubt, to the invaluable educational and advertising work of the indefatigable Mr. Mills, twenty-one different land owners in the Estes Park country have signed an agreement that not only will they not permit tourists to shoot over their holdings, but that they themselves will not shoot any kind of game at any time.

They have discovered that people will go a long ways to look at live mountain sheep, and, since most of the inhabitants of the park are there to make their living, it has finally dawned on them that they must have live mountain sheep for people to come and spend a few days and many dollars to look at.

The economic and the aesthetic value of deer, antelope, elk, mountain sheep and birds as encouragers of tourist traffic is beyond computing.

Another obstacle noted by Commissioner Swan, in '98, is still extant, to wit: "The disinclination of many of the district attorneys throughout the state, especially in the game districts, though by no means confined to such, to do their whole duty in the enforcement of a law that seems to lack popularity among a certain class of the voting population."

"The same apparent disinclination on the part of some judges of courts of record, no less than justices of peace, especially in the game districts, but by no means confined to such, to hold guilty parties brought before them responsible for their acts as in other misdemeanor cases. Jurors who are themselves guilty of violations of game law, as frequently happens in the game country, are not inclined to convict another for a like offense."

Removal of these obstacles is to be but slowly expected under the present type of laws for game protection. It requires a rare kind of moral courage under present and past conditions for judges and jurors and district attorneys to carry out a law that they know they were expected to side-step when elected and sworn to enforce. When the people in the game communities come to realize that each live deer or antelope or elk or mountain sheep means added income from sight seekers, these obstacles will naturally cease to exist, for all will join together for the preservation of a common asset.

They but need to know their true value, when neither resident nor tourist, Indian or Indian agent, or yet the President of the United States, will be permitted to eat or kill or hunt the game that will lay the golden eggs.

Then convictions in courts of law will be absolutely sure, and it is always the certainty of conviction that determines the success of the law.

Since the State Humane Society became by statute the State Bureau of Child and Animal Protection in 1901, the growth of humane sentiment has been increasingly great. The state has taken this board seriously, and this in itself acts as a powerful educational influence.

While it has caused to be put upon the statutes many valuable laws for child and animal protection, its sincere and consistent efforts for their enforcement have been bitterly resented; but so great has been the influence of its propaganda of humane education that at the last session of the legislature it was found easily possible for the Humane Education Society to amend the game law by this provision: "Whenever it shall become necessary by reason of snow or other failure of their natural food supply, to feed any of the animals enumerated in this section (deer, mountain sheep, elk and antelope) in order to keep them from starving, it shall be the duty of the state game and fish commissioner to provide them with such food as may be necessary, to be paid out of the fees of his office, with the approval of the governor, and the auditor shall issue his warrant for the same."

The literature in support of this amendment, the unusually severe winter and almost unheard of suffering of elk and deer and antelope, seem to have stimulated a larger and more active sympathy and helped to open the eyes of the people as well as their hearts to the greater opportunity. I believe that in no other place in the world, except for game in the National Parks, does such a law exist.

It is doubtless due to the fact that the Audubon movement has been so universal (the activities of Audubon societies have been national as well as local, whereas the movement for animal protection has been sporadic and confined, and nationally ignored), that the laws for bird protection are so much better in comparison than those for quadruped game protection in most of the states.

Colorado's law, after the so-called model bird law, passed in 1903, and is entitled "An act to Protect Birds, Their Nests and Eggs."

"When the 'Columbae,' commonly known as wild pigeons or 'doves,' are taken out of the game class with the quail, whose sweet call is one of the charms of wild life, the law itself will leave little to be desired. It seems to me that the notion that we in Colorado should go out and shoot ducks because they are migratory, and will be shot at anyway in other states, should be repudiated. Two wrongs do not make a right, and other states and countries have learned that even migratory birds, millions in number, can be rapidly destroyed to extinction. Colorado can set a good example and to induce other states to follow it.

A great deal of education along the lines of bird rights, bird beauty and bird utility has been going on for years in the public schools of the state; the most effective way to create and train public sentiment is to teach it when it is young and impressionable, and train it in the way it should go; when it grows up it will not depart, and in the meantime it takes the lessons home to the grownups.

The school law of Colorado requires twenty minutes each school week to be given to humane education. Special instruction should be furnished the teachers in regard to game animals similar to those about birds. I would suggest that Mr. E. K. Whitehead's book, "A Text Book on Dumb Animals and How to Treat Them," be placed in the hands of every teacher and child in the state, and that he be requested in the next edition to add a more adequate chapter upon the game animals from the standpoints of their conservation for purposes of humanity and attraction to tourist trade.

While the truths taught in the book apply to the wild game as well as to domestic dumb animals, direct instruction with especial reference to the value of wild game—alive—would better help to inculcate the proper humane appreciation of our duties to

them, than if the children were left to think the old thoughts that their chief use for a deer was to shoot it, watch it die and eat it.

I have perceived that very many people need an economic excuse to permit their humane sentiments to operate in practice.

Just why we are ashamed of sentiment is something I never have understood—all human relations are founded upon it, the home—the state—the nation—the earth—Heaven also. Nothing without sentiment is ever worth while.

At the last session of the legislature a strong effort was made by the Humane Education Society to have the deer, elk, antelope, mountain sheep and doves taken out of the game class entirely.

The game committee of house and senate refused to bring the bill out of the committee. This bill included also the provision for feeding the game quadrupeds—the section that later was successfully grafted upon the game bills that were reported, and became the law as has been mentioned.

The campaign to save the dove developed typical phases in game legislation.

There appeared to be most contradictory notions about the dove. The farmers knew him for their friend, but some were willing to appease the sporting blood of their fellows by permitting an open season. Many who were not farmers were sure doves were pests, and were anxious to have them destroyed—sufficiently destroyed—yet not so much as to end all future chances to help the farmer the same way.

Few indeed had knowledge of the reports by the United States government and other bird and agricultural authorities.

Some were intense in their desire to save the dove. Many wanted the season limited to five days. The dove stands for the "poor man's sport." City men, who have not the time and money necessary for deer hunting in remote counties, feel that they ought to be allowed to shoot something. It isn't really fair, they argued, that only the rich may indulge in sport with a gun, and it isn't fair, they think, to have a limit that might exclude their one day off—Sunday.

Others who sympathized with them, even some whose pheasants or other game might be shot by mistake, or whose cattle and horses might be frightened, or whose gardens might be injured, were disposed to trade with him, and the sportsmen from the game counties, and those who proposed to have an open season on deer so that they could go out and kill one, because the residents of game counties violated the law out of season, with and without the knowledge of game wardens, made an opposition too strong to be overcome. Yet the work done must have accomplished something in connection with other good influences and the new and powerful organization of Colorado sportsmen. The Colorado Sportsmen Association, 1,700 strong, and meaning to have a membership of 10,000 by the time the next legislature meets, have definitely determined to take the dove out of the

game class—and to make that an issue in the election—to secure their vote.

Almost every legislature changes the dates on open seasons for game animals. In an attempt to limit still more the season of deer with horns, one legislature made an open season on all kinds of deer, and a long late season. The resulting slaughter was so wanton and horrible, fawns by scores, and does being killed and shipped, that the more decent sportsmen—and there are two distinct classes, the real sportsman and the pothunter—could not stand for it on humane grounds. Their opposition was at bottom due to humane feelings aroused by the atrocities rather than mere cold blooded objection to thus forcing the extinction of the deer, and consequent destruction of next year's sport.

This last legislature promptly and almost unanimously made it legal to hunt and kill only deer having horns.

The five day short early season also carried after much work, when, by a sharp bit of parliamentary practice, reconsideration when the friends of the deer were absent was had in the interest of the pothunter, and a later day set when the deer would be coming down and could be potted from the trail without really hunting them, and the five days were increased to ten.

It seems to me that a proper contempt might be inculcated in the public mind for the kind of men who under the guise of hunting—which is supposed to mean difficulties and dangers overcome—real hunting—finds sport in sitting on an easy trail and watching until the deer come hopefully down from the snow-buried grazing lands for the plenteous promises of food in the lower valleys, and there murdering them by the wholesale.

I should think that a writing bureau might be organized and short, pithy, attractive stories might be furnished to the patent insides of syndicated papers, such as are used in Colorado for weekly papers—for rural communities, and for special interests, such as are published by the Western Newspaper Union here in Denver. I would here ask that such papers or articles be written and sent to it by any who are interested and want to help and can help in that way.

The question of the establishment of national parks is a live one and very much to the point at issue. Their establishment would go a long way toward setting the tide in the right direction, and teaching sooner the untold benefits that will accrue when we not only save our wild game from extinction, but deliberately protect them and breed them and keep them alive as a part of the natural wealth of the state.

Of the proposed White River National Park, in northwestern Colorado, Mr. Edwin A. Brown, of Denver, who is its promoter, says (Denver Republican):

“Nearly all Coloradoans who know the White River National Park proposed reservation unite in saying that it is probably the most picturesque place for natural beauty and grandeur in

picturesque and grand Colorado. Filled with towering peaks, spruce-clad mountain slopes, sprinkled with more than a score of mirror-like mountain lakes (some of them over 100 acres in extent), dazzling, plunging, lace-like water falls (many 75 or 80 feet in height), babbling, torrential mountain streams (laughing and splashing on their way), and hundreds of natural springs make it a place for rest and delight and an ideal camping spot for nature's lovers and one of the few natural game parks in the country. It is proposed to use 30 miles square of 60 acres of forest which contains neither mineral, agricultural nor coal land.

"It is one of the great game preserves; bands of hundreds of elk and deer live there, and mountain lions and bears abound.

"If game were protected there as in other natural parks the antelope on the plains along its boundaries would soon also seek shelter there. In summer the mountain lakes are covered with wild geese, ducks of all species and all other water fowl. In the forest there are all kinds of birds, from the soaring eagle to the modest chickadee.

"It would interfere with the present forestry policy in that it would put a stop to grazing there, although exception could be made for the milch cows of actual settlers, which would be really needed to care for the hundreds of thousands of tourists who would be attracted there, just as they are now to the Yellowstone. Although we could not supply geysers, the great beauty of the country would invite visitors, and as an offset, the expense would be less than the Yellowstone trip for the tourist, the cost would be to the United States, and the benefits to Colorado would be limitless.

"The few milch cows would do no damage, whereas the large herds of cattle grazed by the big cattle companies trample the wild flowers and the springs, break hundreds of young trees, and really hinder the conservation of water."

Mr. Brown believes that to save our wild game from extinction we must have these national parks, and have them soon.

To these ends a bill will be submitted to the coming United States Congress for the establishment by the United States government of the White River National Park. At the instance of Mr. Enos A. Mills a bill will again be introduced this winter in Washington to establish a national park in the Estes Park region.

The state spends thousands of dollars biennially in legislative time to shift the open seasons of game birds and quadrupeds from month to month, from 1924 to 1912, and back again; thousands more in fighting over the adjustment of details of the game laws, such as fees for residents and non-residents; licenses to kill and sell, on baiting traps, and fixing the innumerable legalities and arranging for the practice of punishing of illegal practices in violation of every legal one; searching the bags of sportsmen and fining for the illegal sale of trophies, etc., for instance; and when all is said all are agreed with the Vancouver commissioner who declared people will kill game when they think

they can do so without being caught. *The game law of killing is immoral to the uttermost. It is founded on false premises and can be undone only through effort along the right lines.*

Desirable as it may be to discuss the need of bounties on wolves and panthers, bobcats, coyotes, and what not, and of special schemes to limit licenses to citizens of Colorado, etc., etc., it is far more desirable to infiltrate the consciousness of the people with the law of understanding. How many know, for instance, that Colorado stands second in the list of the states in number of varieties of birds, and that we are scaring them out of our woods and away from our plains where they would sing welcome to the tourist riches if we were but wise enough to forbid forever the hunting of any kind of game at any time with any weapon more dangerous than a camera. Even one shot reverberating through the hills makes birds shy for days. If we were wise enough to leave the tracking and killing of pests like wolves and coyotes to government foresters and government game wardens, armed with the latest scientific destroyers, and spend our time and money in teaching love and kindness and developing our game industry plant, Colorado would soon be as rich as the richest kingdom on earth and have by virtue laid up countless riches in heaven.

Will it not make for better men and women, better citizenship, to teach the children that, to use the words of Wm. F. Findlay, in an address on the "Value of Wild Birds in Field and Forest" lately, "the real wealth of the country as a whole is based upon agriculture and horticulture, and that without the help of the wild birds farming would be impossible; that no farm hands can do the work entrusted to the birds; that the great handicap of bird destruction in our present day, the loss from insect and rodent pests in the United States the past year is estimated at \$80,000,000, etc.," and thus instill a reverence and respect for birds that will refuse to tolerate their wanton destruction by others? In all these years how ignorant we have been, how unspeakably stupid and cruel, and, in the language of one man who saw light, "What a mess we have made of it!" (Our alleged game protection.) "How we have killed the mothers and fathers of golden eggs!"

Only through enlightenment of education can we hope to bring the various parts of the one solution to success.

We must devise means and ways to reach the whole people quickly; books which promote the humane idea; books which inculcate the highest moral motives in game protection; books and articles which instruct in the wonders and beauties of our forests and plains and the wild life that enriches them; entertaining lectures, inciting to activity the staying courage of real friendship for our best friends to future profit; co-operation must be invited and given to good roads associations, for we need good roads to make our mountains passable to the walking, bicycling, motor and horse-going tourists; that means that the

way shall be made easy for sight seekers to look upon our wild game, free and unafraid in all their native splendor; confident in their new-learned trust in mankind and friendly to his presence. We should insist on the state's building great highways that shall traverse the hills and valleys all around and about our extensive domain.

And since this can never be done by labor, in the labor market sense—not in a thousand years—let us see that it be done, and done soon, by convict labor. Thus we will bequeath to the laborers of the succeeding generations values far beyond the opportunity to build a road or two now and then (which is all they would get out of our failure to build them with convict labor); and we will be doing the only sane and sensible thing by the convicts, whose souls and bodies, at our mercy, are more criminally destroyed by the state than their crimes deserved.

Then we can close the chapter of disgrace to Colorado on many counts.

When the beaver, who labors incessantly year after year constructing dams that conserve the water that feeds the forests and protects the farmers from disastrous floods, will again dare to work in the daytime, secured by intelligent public sentiment against the selfish commercial cupidity of the law-breaking beaver trapper, it will be because women have become thinking, humane beings, unalterably opposed to, *actively* opposed to, wearing the stolen garments of this wonderful and precious little animal.

Although we live in an equal suffrage state, and are become thereby the only really remarkably perfect women in the United States, I fear this will require not a little education.

Not to leave the beaver in a hopeless predicament, I will rather prematurely announce that Mr. Mills is undertaking the enlightenment of Colorado—and he hopes the rest of the country, also—in his own way. To stimulate interest he is offering prizes for the best essay on the beaver and the value of the beaver to the state.

What should be done to save the wild game from extinction, then, is to educate the people to want the right kind of game laws, for the game's sake, for the sake of the higher moral development of the men, women and children of the state, and for the reward inevitable—the making of Colorado into the greatest health and happiness resort on the continent, to the unending enrichment of its citizens.

To educate a public sentiment that shall enforce the letter and the spirit of such laws.

When all other sources of aid to such a crusade of education have been enumerated, all of them put together will not equal the unrivaled and mighty power of the daily press.

And what *we* can do to save the wild game of Colorado from extinction is for each member of this conservation commission to use his ceaseless endeavor to persuade the owners, proprietors

and editors of the great daily and weekly papers to kill the stories of at least half of the horrors of petty strife, disgusting slanders and murders that mar their pages and depress the moral tone of their readers, and to fill those welcome vacancies with stories that shall breathe of the pure air of our glorious mountain tops, sing of the sweet voices of the happiest birds on earth, be redolent with the exquisite perfume of cherished wild flowers and woods; that shall let in the greatest sunlight of the world upon a reincarnated commonwealth—a Colorado truly great.

To the magnificent personnel of this Colorado Conservation Commission we present this aspect of the question, confident of its will and of its power.

The chairman of the standing committee on resolution, Hon. T. M. Patterson, reported his inability to make report on a number of resolutions which had been referred to his committee, and returned same, whereupon they were re-referred by the chair to the committee, to be reported upon during the afternoon session.

Recess taken till 1:45 p. m., when the following paper was read:

THE FOREST POLICY AND THE RANGE.

BY J. B. KILLIAN,

President of the Delta County Stock Growers' Association.

Gentlemen—The appointment, organization and maintenance of your commission are indicative of the great interests involved. Indeed, that famous gubernatorial conference which gave birth to your distinguished body marks the approach of a new regime in the management of all our national resources. The spirit which called that meeting savors of a new awakening in the mind of every thoughtful American citizen as to what we have and the methods to be employed in caring for it. It is the true spirit of patriotism as a result of our national development and greatness, and to enjoy it now is to realize that in times past we looked upon the bountiful gifts of nature as surplusage, and unthoughtfully wasted them with impunity. It is different now; and, with more enlightenment and being confronted by an increased demand for every product of earth, sea and sky, we are forced to study more closely the principles of economy. The nation of to-day is almost new in thought and action. The romance of the past is becoming a reality of the present, and the fairyland of our pilgrim fathers is rapidly becoming a garden of plenty, a field of abundance and the substantial abiding place of one of the greatest nations on earth—a nation whose first thought is the establishment of a firm foundation for her institutions and the everlasting principle of paternalism. So, with this spirit pervading every mind, that great conference held in the city of Washington on the 13th day of May, 1908, in taking an inventory of

the nation's resources and noting the need of a wider utilization of them, concluded that it becomes a national duty to establish a broad system of conservation.

In the West our attention is called particularly to the public domain, with all its resources. That the future policy of our national Congress in framing laws for the disposition of our public lands is one of the most important questions affecting the western states there is no doubt; and our national forest system, presenting the only example of government control, its administration as it affects the people is being investigated with more than usual care by every thinking citizen, by our representatives at Washington, and especially by such delegated bodies as this commission. This is particularly true with reference to the grazing resources of the public domain, because the mooted question seems to be between a continuation of the open range policy and the establishment of some wisely arranged law of control. It would seem that the latter is forcing immediate consideration by reasons of conditions which make it a necessity. There was a time in our pioneer days when a limited population could use the grazing resources of our public domain with equanimity, but, with the present stupendous increase in population and the forming of large communities with diversified interests, such a use of the grazing resources is rendered impossible.

MISUSE AND WASTE.

With the excessive misuse and waste of the God-given resources of our public domain there has followed that awful depletion of timber, forage and moisture which makes every available stick of timber, virgin range and every stream of water not only a bone of contention to communities, but a source of national alarm. Those all-wise laws fostering the welfare and growth of the western states in providing the different public land entries for homeseekers have greatly palliated the embarrassments. Yet our public domain is not all agricultural land, and the growing necessity of provisional control of all public lands is so strained that honest, thinking men are agreed that we must look for relief either through some wisely arranged leasehold system or a fee system by permit, as is now in vogue on our forests. Some advocate a law applying the grazing fee system to all our public domain and others a leasehold system, either being made subject to the broad policy of protecting at all times the right of the homeseeker or miner to enter upon, reclaim and appropriate to his own use a certain limited tract, as is now provided by law; still others would approve a cession or sale of all public lands to the states in which they are located, each state to provide some law of use and distribution suited to its own growth and welfare. Of course, there are a limited few who, in their sin of misuse, waste and selfish gain, cry out, in the language of the demon of old, "Let us alone." Be this as it may, we are asked by your commission to review the past and

present range situation in our part of Colorado as it actually was and is.

Our part of Colorado is one of the most exclusively public land territories in the state. Under the privileges allowed by the magnanimous provisions of our public land laws we have acquired title to substantial homes, built up beautiful cities and influential communities, and have become an important part of a commonwealth whose history, viewed from its centennial birth, is wonderful for its exhibition of growth and progress, and a source of pride to the nation. In reviewing this history our attention is first attracted to one fact: that the government of the United States, through its functional power, has always fostered the welfare of the homeseeker, and the home-builder becomes successor to the inert and less progressive aborigines. In 1883 we found ourselves in the midst of a public domain the boundaries of which were made almost indefinite by the addition of the Ute series, and we have embarked in the up-building of the Western slope of Colorado in all the varied forms. Available lands have been continuously converted into agricultural lands, and the residue made beneficial for grazing and timber purposes. This process of farming the deeded lands and grazing the public open range adjacent to it has gone on with marked prosperity until checked by those very conditions heretofore outlined. While the investigation of the timber conditions of the United States, which started in 1876, was continuously going on throughout the West with alarming discoveries our communities were being confronted with many barriers to their prosperity. Live stock speculators and breeders commenced to overstock the most available ranges; lumber dealers and saw mill men commenced to encroach upon the immature timber of the forests, and the farmers themselves began to misuse the forest supplies; and the most obnoxious abuse of all was that commenced by flock masters, who lived in other states and paid their taxes, if at all, in other states, and came into Colorado to graze out the range of the farmers and small stock growers. The continued investigation of the forest conditions of the United States government developed three facts: 1st, the supply of timber throughout the public domain was being ruined; 2d, the forest cover for the maintenance of water for irrigation and other useful purposes was being rapidly demolished; and, 3d, the permanence of the live stock industry was being materially affected by misuse of the range. As we all know, from the reports of the inspector of forestry and all other reports on irrigation and live stock, these conditions grew from bad to worse as our western population increased, until there followed the establishment of forest reserves by act of Congress, and the wise laws for their control.

CO-OPERATION AND PROTECTION.

Together with other forests throughout the West, our system in western Colorado was started by the establishment of the Battlement Mesa forest reserve, and the restrictions placed

upon its use proved so beneficial to all that government prerogative over its affairs has been highly commended by all broad-minded, conservative citizens. Our citizens, who are nearly all stock farmers, feel more and more assured of permanent protection for their forests, water conservatories and profitable places to graze their stock. There is no doubt that the example of control of the grazing resources of the forest reserves in our section is the cause of the complete conversion of our people to the idea of some sort of a wisely arranged control of all public grazing lands.

But what of our experience in grazing the forest reserve lands which produces this estimable sentiment? Ours differs very materially from that of some of the other communities in Colorado. We have grazed under a system of co-operation between our local live stock organizations and the forest service; other communities have not. We have devoted our time, talents and experience to improvements; they have wasted their time and talents opposing, without practical knowledge, the very opportunities which the stockmen have been looking for ever since Abraham's and Lot's cowpunchers fell out over the ranges of Palestine. In this connection we are firmly convinced that amicable relations between miners, the lumber men and the forest service can be established by this same system of co-operation as is now in effect between the stock growers of our districts and the forest service.

In 1905 the agricultural department of our government, through its bureau of forestry, commenced to place restrictions on the use of the resources of the forests, and in 1906 the grazing fee system by permit was inaugurated. The forest supervisors were instructed to take cognizance of every stick of timber cut and every cow, horse or sheep grazed on the reserve under their supervision. The sudden introduction of this entirely new regime was received with considerable misgivings as to its ultimate influence on the livestock business of our community; and no doubt its inauguration would have been vigorously resisted had it not been for the long-established impracticability of the uncontrolled open range system of grazing and the hope of its being auxiliary to a speedy solution of the vexing problems as to how we can continue to graze our public domain with peace, protection and profit. We paid our grazing fee, closed the grazing year under the complete unadvised supervision of the forest supervisor; and, while we disapproved of many of his inconsistencies and suffered many inconveniences at his hands, yet the year's experience revealed to us that a well-advised supervision under that grazing fee system would promote the welfare of our industry. With this feeling we attended, in January, the convention of The American National Live Stock Association at Denver, where were taken up and discussed the questions of interstate commerce, meat inspection, our trade with foreign nations, railroad rates, and last, but not least, the all-important question of grazing on the public domain. Honorable Gifford Pinchot, chief

forester, was asked to appear in the councils of that great association and to explain the policies of the bureau in administering the forest reserve ranges. He spread before them the Use Book, or book of regulations. On the first page of that book was the endorsement of the secretary of agriculture of all therein contained. Its tenets were expounded by the chief forester with an honesty of purpose which no one could question, and it was endorsed by the very father of American agriculture and grazing. All of this was sufficient to recommend, at least, an earnest consideration of the proposition; and when Mr. Pinchot recommended that the stockmen who graze the forests go home and organize local livestock associations and co-operate with the bureau in administering the grazing features of the reserves it impressed us as reasonable, and but the completion of a system which had been tried, with some degree of success, without co-operation on the part of the stock growers. Our community organized The Delta County Live Stock Association. We secured a majority of the users of the forest range as members of this association, and elected, besides the usual corps of officers for such organization, a strong executive board (one member from each section of the range), and from this executive board an advisory board, which, according to forestry regulation No. 45, would have full power of advisement with the department in regard to all range matters.

Now, gentlemen, this rather tedious review brings me to the point of deepest interest to our community, and no doubt of most importance to your commission: our system of co-operation with the forest service in the administration of the range where we graze our cattle, sheep and horses, and the influence of the same upon our industry.

Our association holds its annual meeting in January. The advisory board reports to the executive board all of its actions during the past year, and this is included in the annual report of the executive board. The apportionments of the number of stock to be ranged in each reserve district for the ensuing year, as fixed and agreed upon by the committee and the supervisor, is reported; the increase or decrease of every individual or company herd of stock is reported; the over-accumulation of stock from one portion of the range to another is reported; all delinquents in supplying the legal amount of salt and the legal number of serviceable bulls on the range are reported; all actions in regard to the building of individual corrals and pastures and community drift fences are reported; any intrusion of individuals who graze their stock outside their allotted range and on the allotted range of another is reported; the unusual appearance of poison on any portion of the ranges and the depredations of wild beasts are reported; and, in addition to this, many details are reported and recommendations are made for the necessary changes in the administration of affairs for the ensuing year.

The new advisory board in assuming its duties first arranges its spring advisory meeting with the forest supervisor. This

meeting is fixed for a date early after the time of limitation for receiving applications for grazing permits by the forest supervisor. At this meeting all applications for grazing permits are examined in compliance with rule numbered 45 of the forest regulations, and permits are recommended according to merits fixed by priority, residence and character of the applicant; increases and decreases are made as per scale fixed by rule numbered 46 of the forestry regulations and the merits of these applications, and increases are determined by the advisory board and supervisor. In no case is an excess of stock over the apportionment allowed to graze in a district, except the limited number incidentally applied for by the new settler or homesteader locating in or near the forest during the fiscal year. The delinquent in supplying salt or bulls on the range, according to the state law, is denied a permit to graze further on the reserve until he has reimbursed the association for the cost of the salt furnished his stock, or purchased the legal number of serviceable bulls to put with his herd. Known cattle and horse thieves are denied permits to graze on the reserves, and at the request of the advisory board the supervisor, through the rangers, keeps the closest watch over marauders and thieves. The wishes of the users of the range regarding corrals, gathering pastures and drift fences are considered, and upon recommendation by the advisory board are allowed by the supervisor. Drift fences are permitted to be built anywhere that the stock men wish them, to prevent the drifting of stock from the range or on to known poisonous districts, whenever they are willing to defray one-half or one-third of the expenses, the department doing the balance.

BENEFITS OF CO-OPERATION.

Thus the grazing resources of districts numbered 2, 3 and 5 of the Battlement Mesa Forest Reserve, and districts numbered 1, 2, 3, 4, 5, 6 and 7 of the Uncompahgre Forest Reserve, are administered under careful advisement of the stock men themselves, and with what result? The forage condition of the range is improved and made more uniform each year; our calf crop has increased 30 per cent. in the last three years, and our calves are better and heavier when weaned; our steers are from 100 to 150 pounds heavier at the same age than they were three years ago and show an increased percentage of beef, and our cattle are worthy of exhibition at any show. Horses and sheep are likewise improved.

The most important feature of this system of business co-operation with the service in handling our forest ranges is that certain high degree of stability rendered our industry. We know to-day what we may expect to-morrow. As stated before, we enjoy peace, protection and prosperity, instead of suffering the pangs of friction, bloodshed and criminality. We pay for our grass, and get it; and it seems folly for men to assert that this whole commonwealth is up in arms against what they term "Pinchot's Bureaucracy." We endorse the administration as we

find it. We are an important part of this great state, and are proud of our record in promoting this great cause of conserving our national resources to the benefit of the greatest number, no matter whether in some fit of political paroxysm it is called "Pinchotism" or something else.

Following the Reclamation act of Congress we enjoy the distinction of promoting one of the greatest reclamation projects the world has ever known. We assumed this unparalleled undertaking with all the energies of our being, and I want to say to you, that while engaged in this noble and glorious work of turning a desert waste into beautiful homes and untold wealth for Colorado, we have, also, with the assistance of the forestry regulations, conserved to her people the incalculable resources found in one blade of grass. The one is linked with the other, and while neither may appear in strict conformity with our national Constitution, yet they are in harmony with its spirit; for, in our acts, we are doing the greatest good to the greatest number.

REPORT OF THE SECRETARY ON SPECIAL WORK FROM MAY 15 TO OCTOBER 4, 1909.

There are some matters on which the secretary should report to the commission somewhat in detail, particularly in regard to certain special work imposed at the May meeting. There is also one or two other items which should be mentioned herein.

Immediately after the May meeting the secretary informed such members as were not present of all important acts of the commission at that time, and sent to the several chairmen of the conservation committees a copy of the MacKenzie resolution, instructing them to bring before the October meeting reports bearing on their respective fields of investigation and study.

At the May meeting a resolution was offered and referred to the committee on resolutions disapproving of the exorbitant stumpage prices being charged by the government officials in the national forests for lumber for local use, which seemed to demand investigation; whereupon the secretary communicated the said resolution with the following letter to Mr. Smith Riley, district forester, stationed in Denver, to which letter came the accompanying reply:

Denver, Colorado, June 3, 1909.

Mr. Smith Riley, District Forester United States Forest Service,
630 Majestic Bldg., Denver, Colo.

Dear Sir: Among the numerous resolutions in my hands as secretary of the Colorado Conservation Commission, to be handed over to the committee on resolutions for digestion, and to be reported to the commission at the next meeting for action, I find

the one herewith enclosed and take the liberty of submitting it to you for inspection.

It is very general, indefinite and yet couched in rather strong language. Is there anything you could or would care to say to assist the resolutions committee in disposing of it understandingly?

Advise me, and oblige,

Yours truly,

W. G. M. STONE, Secretary.

REPLY UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE,
DISTRICT 2.

Majestic Building, Denver, Colo., June 10, 1909.

Mr. W. G. M. Stone, Secretary Colorado Conservation Commission, Denver, Colorado.

Dear Mr. Stone: Your letter of June 3d is received. I am very glad indeed to have the opportunity to comment on the following resolution which has been submitted to you as secretary of the Colorado Commission for reference to the committee on resolutions:

"Resolved, That matured timber in the national forests needed for local consumption should be sold to the people at the lowest price consistent with economical administration of the reserves, and we disapprove of the exorbitant prices charged for stumpage under the present system."

In this connection, I wish to call your attention to the act of Congress of June 4, 1897 (30 Statutes, 11), which provides for the administration of the national forests. The following is quoted from this act:

"For the purpose of preserving the living and growing timber and promoting the younger growth on forest reservations, the secretary of the interior, under such rules and regulations as he shall prescribe, may cause to be designated and appraised so much of the dead, matured or large growth of trees found upon such forest reservations as may be compatible with the utilization of the forests thereon, and may sell the same for not less than the appraised value in such quantities to each purchaser as he shall prescribe."

By a more recent act, the authority has, of course, been transferred from the secretary of the interior to the secretary of agriculture.

You will note that the act of Congress requires that timber from the national forests shall not be sold for less than its appraised value. The law, therefore, distinctly limits the discretion

of the forester in establishing stumpage prices for timber sales. Any resolution which contemplates the sale of timber at values which would only meet the expenses of administration of the national forests could not properly be embodied in the regulations for the use of the national forests without congressional action.

I am very glad to state that it is not the present policy of the forest service, and never has been the policy, to charge exorbitant prices for stumpage. The report of the forester for the year 1908 shows that the expenditures for the fiscal year 1908 for the administration and protection of the national forests was \$2,526,098.02. The total receipts from timber sales for the same fiscal year were \$849,027.24. It is evident from these figures that the proceeds from timber sales do not begin to meet the cost of administration of the national forests, and consequently the sense of the resolution is part of the policy already in effect.

The prices obtained for both dead and green saw timber, cut from the national forests in this state, range from about \$1.00 to about \$4.50 per M. feet B. M. The number of sales made at the higher prices are exceedingly few, and include only very choice and easily accessible timber. An estimate of the probable average stumpage price for saw timber, cut from national forests in this state, places that figure at approximately \$2.00 per M. ft. B. M. Your attention is called to stumpage prices given in the biennial report of the State Board of Land Commissioners of Colorado, for 1907-'08, for timber sold from state lands. This report shows that the minimum price received by the state was \$1.00 per M. ft. B. M., and the maximum, \$9.00 per M. ft. B. M., with an average stumpage of \$2.96 per M. I realize, of course, that in general the state's timber land holdings are of better quality than that available upon national forests in the state, for the reason that the state has been able, to a large extent, to select its holdings. However, the figures quoted for state timber are indicative of general stumpage values throughout Colorado.

In only a few sales made from the national forests is any material shipped from the community near which it is cut, and the greater part of the timber is utilized for home consumption. In localities where the present supply of timber is limited, the sale of timber for distant markets is restricted. Insofar as it is within the power of the forest service to regulate stumpage prices, it is the policy to place a reasonable valuation upon timber needed by local industries.

Very truly yours,

(Signed) FRED W. MORRELL,
Acting District Forester.

The foregoing correspondence and resolution were mailed to the chairman of the committee on resolutions.

There is another matter to bring to your notice—one of much importance, one that will show some tangible reason for

the existence of this commission. The resolution adopted at the May meeting making it the duty of the secretary to "report to the proper state, county or municipal officials any unlawful waste or destruction of natural resources of which he may receive trustworthy information," led to the preparation of the following circular letter, to wit:

"THE COLORADO CONSERVATION COMMISSION.

Denver, Colo.,

Dear Sir: At the May meeting of this commission the secretary was directed to *"report to the proper state, county or municipal officials any unlawful waste or destruction of natural resources of which he may receive trustworthy information."*

It is not the purpose to interfere with any legitimate use of our natural resources, but it is proper and necessary for the commission to know if any person, company or corporation is using them unlawfully, or with undue prodigality and waste; hence, in order that the secretary may discharge the duty imposed, he earnestly requests that you will supply him with any information of the sort indicated below which may at any time be in your possession, to wit:

1. Is any one unlawfully taking timber from any of our state lands, or from the public domain?

2. Do you know of any lands the title to which has been acquired by unlawful means? and do you know of any attempts to acquire title to public lands by such means?

3. Are our forestry laws relating to camp-fires, forest fires and their extinguishment being properly enforced?

4. Do you know of any instances of wasteful methods of lumbering where the young growth is unnecessarily destroyed, or where remnants of trees are left to waste that should be more economically utilized, and where slash and debris are left to invite fire?

5. Do any of our birds need better protection? If so, what species in particular?

6. Do our laws relating to forestry, game or birds need amending? If so, make particular mention wherein.

7. Are any species of wild flowers in danger of extinction? If so, what ones, and from what cause?

8. Are any of the old "Cliff Dwellings" within the state being defaced or plundered by tourists and relic hunters?

9. Is any of our natural scenery being defaced?

10. Do you know of any cases of soil erosion as a consequence of deforestation?

11. Do you think of any other matters of vital importance to the public which should be brought to the attention of the commission?

Please carefully consider the above questions and give the commission the benefit of any facts or suggestions you may deem useful. All public-spirited citizens are desired to assist.

Editors and publishers of newspapers are respectfully solicited to give publicity to this work and to make such comments and suggestions, pro and con, as may seem wise and desirable, sending a copy of any issue containing the same to

W. G. STONE, Secretary,
1325 Corona Street.

Report on or before Sept. 22, 1909."

This circular was sent to such of the county superintendents of schools of the mountain counties as were county vice-presidents of the Colorado State Forestry Association, to a large number of the members of the government forest service, and also to various private citizens, which brought many responses. All the questions received attention. Complaints are many and suggestions numerous. Some of the replies give specific information; others are more general, but open the door for further and deeper inquiry. The total mass of responses and suggestions is too great to give in detail. A few items must suffice. The following *resume* will convey some idea of the results of this work:

The acting forest supervisor at La Veta states that there is evidence that timber is being illegally cut from the Las Animas forest reserve and that investigation is being made.

The forest guard at Silverton states that much timber is being cut on Kendall mountain, which is placing the eastern portion of the town in danger from snow slides. He recommends that some action be taken at once for the protection of the people. The matter has been reported to the federal land office by the secretary of the conservation commission.

The informant from Del Norte believes that less timber should be sold from the forests in that vicinity, and advises that steps be taken to prevent further cutting of green timber.

The forest supervisor from Fort Collins makes an extended report, citing cases where title to public lands have been acquired by fraud, where timber is being illegally taken from lands near the Medicine Bow forest reserve, and where there is great waste from lumbering on timbered lands adjoining the reserves. He states that turtle doves, grouse and ptarmigan are in danger of extinction in that section and should be better protected, advising changes in the game laws to afford such protection.

Boulder Falls, in Boulder canon, is being greatly endangered, he says, by a prospector, and advises that the falls should be set aside as a national monument in accordance with the federal laws. He also advises that the laws with reference to water rights in streams should be changed to prevent monopolies.

Rosepha C. Pinfold, superintendent of schools of La Plata county, reports that grouse are becoming very scarce in that county and some means should be found of protecting the bird.

The report advises that the appointment of game wardens be taken out of politics and made only after careful examination.

She suggests that the agricultural department would do well to investigate the cleon, or bee plant, which grows in that section, and affords excellent food for chickens. Other plants are mentioned which are useful and in some danger of extinction. It is advised that the artesian wells of that section are of great interest and should be investigated with reference to their possible use for irrigation purposes.

A "Good Citizen" from the neighborhood of Ward has sent a protest to the commission against the filing of timber and stone claims in the Ward mining district, where, he says, there is no stone or timber of any value.

Birdie E. McConnell, superintendent of schools of Archuleta county, reports careless cutting and trimming of timber, and that there is considerable soil erosion in the county as a consequence of deforestation on the government forest reserve at Reservoir hill, near Pagosa Springs.

Walter J. Morrill, acting forest supervisor at Monte Vista, states that large amounts of land have been obtained in that vicinity through fraud, and offers to furnish specific instances, if requested. Most of these cases with which he is familiar, he says, are in the limits of the Rio Grande forest reserve, patents having been obtained before the reserve was created.

He states that the woodpecker is in some danger of extinction in that vicinity, and should be protected, because of its value in the destruction of harmful worms and grubs. He believes the present system of taxing timber lands is wrong and urges changes. Some species of wild flowers are in danger of extinction in his section of the state, and there is considerable soil erosion starting from wood roads.

Hannah Durward, superintendent of schools in Montezuma county, is informed that tie-cutters have been operating on the east side of Mesa Verde, and that cedar posts are being cut on state land.

Charles G. Poole, forest supervisor at Fraser, believes that the question of diverting water from one watershed to another should be carefully looked into, and, if possible, stopped. He also recommends that greater care be taken to protect doves.

H. N. Wheeler, forest supervisor at Fort Collins, urges cooperation in the establishment of a game preserve in northern Colorado, and calls attention to the efforts that have been made along that line. He also calls attention to the desecration of Boulder Falls, and urges that some steps be taken to put a stop to it.

The deputy forest ranger at Saguache believes that care should be taken in the protection of grouse, particularly from destruction by hawks and coyotes.

A report from Douglas county states that the greatest danger to timber in that section is from the wood beetle. The informant knows of no way to stop this destruction of timber except the cutting of trees as soon as the borer is discovered.

The deputy ranger at Estes Park advises that more careful protection should be afforded all birds in the mountain regions, except magpies and hawks. He advises that there should be no open season on doves, and that squirrels should be more carefully protected. The columbine is in some danger of extinction from being plucked out by the roots, he states.

The assistant ranger at Glenderry believes that the spring season on water fowls should be closed for a few years, until the supply is considerably increased. He also urges greater protection for the gray squirrel and the turtle dove.

The deputy forest ranger at Ward finds but little waste in his neighborhood, except by erosion as a result of timber cutting.

A deputy forest ranger at Masonville believes that the open season on deer should be the last ten days of October, instead of the first ten.

Mary Abernathy, superintendent of schools of Montrose county, finds that all resources are being well protected in her neighborhood, being the only person who has filed a report without a complaint.

Frank A. Powell, assistant forest ranger at Sheephom, advises that there be no open season on grouse for a period of five years, and that the hunting season for all game should be shorter, while a bounty should be placed upon coyotes.

Mark L. Healy, assistant forest ranger at Dyke, says that much land in Archuleta county has been acquired by fraud, and mentions particular cases. He reports that within a mile of the town slash is left on state lands, serving as a fire-trap for forest destruction; and advises strong effort to obtain better roads and more bridges in that part of the state.

The deputy ranger at Chromo finds that a lumber company which recently purchased land from the state near Chromo is not using the proper precaution to protect the small trees.

Among the various matters brought to view you will observe the earnest plea made for the birds and their better protection by statute. Some of our valuable birds are wholly unprotected by law, and others so poorly protected that the open season is a standing bid for their final destruction. When we are told by the secretary of agriculture that the farmers of the nation suffer from insects alone to the amount of hundreds of millions of dollars, annually, we wonder why the killing of insectivorous birds is not made a misdemeanor punishable with fine or imprisonment, or both.

The foregoing mass of information suggests the urgent need of a more thorough investigation than the commission is prepared

to make without more authority of law and legislative provision to assist in carrying forward the work already begun.

The resolution providing for this investigation makes it the duty of the secretary to report to the proper authorities all violations of law relating to the waste or destruction of our natural resources. On the 26th of July several reports were referred to the United States General Land Office, of which Mr. M. D. McNiry, with headquarters in Denver, is chief. July 30th reports four, five and twenty-four were referred to the governor, and also to the attorney general; to the governor, that he might know what the commission was doing and judge of some of the conditions existing, and to the attorney general for the same reasons; also to learn just how far the state laws could operate in regard to some of the reports, in order to know where and to whom certain offenses should be referred; and further, in what cases the arm of state authority is too short.

There has not been time to report in full to the governor's office, and yet the secretary has called on his Excellency and gone over the undigested mass with him, and it is my pleasure to report that what has been done meets with his most hearty approval, and he expresses a wish that the work be preserved for perusal and examination, if at any time it should be wanted.

To proceed with such work effectively it is imperatively necessary that the state shall make this commission a legal body; that it shall clothe it with certain powers of inquiry and investigation; that it shall have authority over any and all violations of law relating to our natural resources, and that it receive such support as will enable it to fulfill the purposes of its existence.

SECRETARY.

REPORT OF COMMITTEE ON RESOLUTIONS.

Hon. T. M. Patterson, chairman of committee on resolutions, reported as follows:

"Your committee on resolutions begs leave to report:

"We met, pursuant to order of commission, at 1:30 to-day. There were present T. M. Patterson, chairman, and Dr. John Grass and Clarence P. Dodge of Colorado Springs. Hon. C. S. Thomas and Hon. I. N. Stevens were necessarily absent from the city. Every resolution that had been referred to the committee was carefully considered, and those we report were adopted by the votes of all. There were resolutions of merit before us that we did not adopt, either because they were merely academic in their nature or contained matters that we could not approve.

"The following are the resolutions unanimously agreed upon for report:

FIRST.

“Resolved, That this commission will heartily co-operate with the state and nation in every proper effort for the conservation of all their natural resources. And we hold that no plan of conservation should be adopted that is not authorized by law nor that does not safeguard against monopoly.

SECOND.

“Recognizing that the chief of the forestry bureau, with other distinguished scientists, after a thorough official consideration of the questions involved, admitted that the boundaries of forest reserves were laid down roughly for the want of topographical and economical surveys, and that it is impossible to establish them scientifically for the want of such surveys:

“And, further, that when the boundaries were established it was with the idea that they would be modified as soon as it was possible to determine accurately what portions were more valuable for the production of minerals and for agriculture and grazing:

“And, further, that lands more valuable for mining, for agriculture and grazing should be taken from the forest reserve as soon as it is practicable, and that that part of the public domain which has been reserved, or which may be reserved, should be accurately surveyed and carefully mapped; be it, therefore,

“Resolved, That in line with the recommendations of the said official and distinguished scientists, we urge upon Congress the enactment of a law that will authorize the president to appoint a commission to be composed of government officials, with two persons not connected with the public service, whose duty it shall be to determine, with the aid of actual surveys and such other examinations as may be found necessary, the boundaries of those parts of the public domain which should be retained permanently by the government as forests, and that upon its recommendation the president should be authorized to open all other lands to entry and sale, and further, that Congress be urged to make adequate appropriations to promptly carry the provisions of such law into effect.

THIRD.

“Resolved, That we hereby indorse the general policy of the government of the United States in control and conservation of the resources of the nation, and urge the various states to co-operate with the federal government in promoting in every legitimate way the conservation and perpetuation of forests within their respective borders.

FOURTH.

“Resolved, We recognize that the water powers of the public domain are of prime necessity to the proper development of the industrial and agricultural resources of the nation. We therefore believe that in disposing of them the government should limit

franchises to a reasonable period and retain this right to prevent monopoly and to regulate charges so that the public shall not be subjected to extortionate or unreasonable rates for the power developed.

FIFTH.

“Resolved, We favor legislation that will render it impossible for those obtaining title to public lands to obtain coal or other valuable mineral lands under the guise of agricultural or other less valuable lands, and we favor reservations in all patents for agricultural, timber, stone or grazing lands that will retain title in the government to all coal or other valuable mineral within them.

SIXTH.

“Resolved, That for the proper conservation of the waters of the public domain we believe that additional legislation should be had, to the end that private enterprises may be encouraged in carrying on the work of reclaiming lands by the process of irrigation. That provision in such legislation should be made for the better protection of parties making bona fide filings and claiming the right to divert waters from the natural streams until the necessary diverting works can be completed and where the claimant or claimants are proceeding with diligence. We further believe that legislation should be had to limit or prevent speculators from making and holding filings on natural streams for irrigation, without doing anything by way of construction, thereby delaying and preventing the building of water systems to put in such works.

SEVENTH.

“Resolved, That we recommend to the legislature the enactment of more stringent regulations against improvident hunting and killing of wild game, and to the executive department of the state the more rigid enforcement of all laws for the protection of the same.

EIGHTH.

“Whereas, The present method of taxing forested lands is on the basis of the assessed value of the standing timber; and

“Whereas, The tendency of such a method of assessment and taxation amounts to a premium on deforestation; therefore,

“Resolved, That it is the sense of this commission that forested land should be taxed only on the basis of its value apart from the forest, and that the forest should be taxed solely on the value of the timber actually cut during the preceding year; and be it further

“Resolved, That whenever the owner of any untimbered land shall plant upon any tract of 160 acres or less not less than one acre nor more than ten acres of forest trees, of varieties approved by the state board of agriculture, with not less than 170 trees to the acre, shall cultivate the same and from year to year renew by planting live trees in place of dead trees, and protect the same

from animals and forest fires, so that there shall be at all times growing on such tract not less than 170 trees per acre of the varieties as above specified, such tract should be exempted from taxation for any purpose for a period of ten years from the time said tract is planted and maintained in good faith.

NINTH.

“Resolved, That we regard the preservation of our forests from fire and lawless depredations of every kind as of the utmost importance to our future well being, and we recommend that our state government shall, by proper laws as well as by reasonable appropriations, co-operate with the general government in the protection of said forests from fire and from lawless depredation of every kind.

TENTH.

“Resolved, That matured timber in the national forests needed for local consumption should be sold to the people at the lowest price consistent with the economical administration of the reserves. (Signed)

“JOHN GRASS,

“CLARENCE P. DODGE,

“T. M. PATTERSON, Chairman.”

The report being read, Mr. Clarence P. Dodge seconded the motion to adopt, whereupon Dr. Grass offered as an amendment the following clause: “That we recognize the right of government control of the public domain and hold that the natural resources of the country belong, first of all, to the whole people,” and moved to make it a part of the report. The motion was seconded by Mr. MacKenzie. Senator Patterson objected to the insertion of the amendment on the ground that the first clause is without limitation. He declared that two schools have sprung up, one advocating the right of the government to engage in all classes of business and the other holding to the doctrine that the government is only a trustee and must ultimately deliver over its trust to the homesteader. For the reason that this clause would cause an endless discussion between these two schools, Senator Patterson advocated its defeat, and it was lost.

The motion to adopt the report carried unanimously.

Mr. Charles W. Franklin was called to the chair and Mr. Goudy placed Col. K. L. Fahnestock in nomination for first vice-president of the commission, which was duly seconded and carried.

There appearing no further business the commission adjourned *sine die*.

Annual meeting first Tuesday in March, 1910.

ANNUAL MEETING, TUESDAY AND WEDNESDAY,
MARCH 1-2, 1910.

FIRST SESSION HELD AT SENATE CHAMBER, STATE
CAPITOL, TUESDAY, MARCH 1, 2:00 P. M.

Commission called to order by the president, Mr. Frank C. Goudy. Before roll call Mr. H. H. Eddy, of Denver, presented his credentials as a member of the commission, appointed by Governor Shafroth, instead of Rev. Robert F. Coyle, resigned.

Present—Alva Adams, E. M. Ammons, J. T. Barnett, D. C. Beaman, Ellsworth Bethel, E. M. Cranston, C. P. Dodge, H. H. Eddy, J. A. Eddy, K. L. Fahnestock, Robert Gauss, F. C. Goudy, John Grass, J. A. Lory, W. J. Morrill, Dexter T. Sapp, W. G. M. Stone.

Minutes of previous meeting read and approved.

Treasurer's report made and accepted.

In the absence of four members of the committee on resolutions, the president appointed as such committee, pro tem., John Grass, H. H. Eddy and Dexter T. Sapp.

Mr. Robert Gauss presented the following paper, which was read by the secretary:

CONSERVATION BY THE STATE AND THE RELATION OF
THE CONSERVATION COMMISSION TO THAT WORK.

BY ROBERT GAUSS, OF DENVER.

Mr. Chairman and Gentlemen of the Colorado Conservation Commission:

The widely prevalent public sentiment in favor of conservation which grew out of the first meeting of the governors, and which in turn gave a stimulus to the cause of conservation, constitutes a great moral fund, of which we as citizens of Colorado may avail ourselves for the public good under the auspices and the direction of our state government. It is all the more important that henceforth conservation be considered from the standpoint of the state, because it is evident that the chief part of the work will have to be done by the states themselves if much of great and enduring value shall be achieved. Federal conservation within the limits of a state is necessarily restricted to federal jurisdiction, and this in turn is confined to the guardianship in some form of federal property. That you may be convinced of this you need but turn your attention to the greatly limited

possibilities of federal conservation in New York, Massachusetts and other states in which the federal government owns no land except a few small tracts acquired by purchase and through cession of state jurisdiction for distinctly federal purposes. In those states the federal government would not entertain a thought of exercising authority over forests, the development of mineral resources or the conservation of water power. In Colorado the scope of federal conservation is greater, but it is solely because the area of federal property is greater. Beyond the limits of that property federal conservation is as powerless here as it is in New York, Pennsylvania or Massachusetts. Hence, if natural resources and other forms of public wealth in our state shall be conserved or wasted depends chiefly upon what the citizens of Colorado themselves may do.

STATE CONSERVATION NEEDED.

As citizens of Colorado we are much given to boasting of the great natural resources of our state—its magnificent scenery, its fertile soil, its rich mines of silver and gold, its extensive deposits of coal, the vast and but little used water power of its natural streams, the wealth which is in those streams for irrigation, the great forests and the broad stretches of native pasturage. In these we wisely recognize the foundation of our existing prosperity and the material for a future development far surpassing anything yet achieved. Viewed from the standpoint of our interest as citizens of Colorado in all these things, conservation does not present itself, as some persons have seemed to think, as a menace to our rights by the federal government, but, on the contrary, commands our approval as wise economy and prudent and faithful guardianship by the people of Colorado themselves of their interests and their property.

LIMITED FEDERAL CONSERVATION ENCOURAGED.

To conserve these resources—or, in other words, to protect these interests, which are the common property of the people—is a duty which we owe primarily, not to the federal government or to the nation, but to ourselves and the future citizenship of our state. It is a duty which should have been more clearly recognized and more faithfully discharged years ago; and it is especially in this connection that we owe a debt of gratitude to Mr. Roosevelt and Mr. Pinchot because of what they have done to arouse us to a sense of this obligation. It is, however, unfortunate that, through failure to understand the attitude of certain federal agents and officials, an erroneous impression has been produced upon the minds of a few persons that the purpose of the federal government is to pursue its course without regard to the wishes of the people. This is most unfortunate, both because it is untrue, and because, in some men, its effect is shown by a lack of sympathy for the cause in place of that lively interest in conservation of every kind which ought to exist. Instead of withholding our sympathy we should give to federal

conservation, within the constitutional limits of federal authority, our most cordial and most earnest support. We have all the more reason to do this, because the lands, the forests and the mineral resources of this state which belong technically to the federal government belong, after all, more distinctly to the citizens of Colorado than to the people of any other state, or, for that matter, the people of all the other states put together. Prompted thus by self-interest as well as by patriotism, we should rejoice at the opportunity to avail ourselves of federal activity in the conservation of those resources which are under the proprietary control or ownership of the federal government, for, financially, the state is hardly able to do all that work; and, so long as the federal government owns the forest and the mineral lands, it may justly be asked to provide them adequate protection.

FEDERAL ENCROACHMENT AND STATE ACTIVITY.

In case, however, any one connected with the federal government should venture to overstep the limits of constitutional authority, it would be our duty as citizens of Colorado to interpose the prerogative of the state. But let the supremely important fact be borne in mind that the most effective way to prevent federal encroachment is to interpose state activity in the field which may be threatened with invasion. I say that it is of supreme importance to recognize that state activity is the most effectual means of preventing federal encroachment, because, in the whole history of this country, there never would have been any federal encroachment if the states had always actively occupied the entire field of their prerogative and had always responded in proper measure to the demands of the people for governmental action. It is the failure of the states to occupy the entire field of their jurisdiction and to exercise all their reserved powers which has made federal conservation both possible and necessary. The weak states have, by their weakness, invited federal encroachment; but it is no less true that the strong states have, by their inactivity, extended the same invitation.

STATE RIGHTS AND STATE DUTIES.

In connection with conservation one hears a great deal about state rights. But it is in vain that men assert the abstract doctrine of state rights when not accompanied by the discharge of state duties and the exercise of state powers. Personally I am a strong believer in the doctrine of state rights. Unfortunately a prejudice has arisen against that doctrine, because, in the opinion of many people, it was invented by John C. Calhoun, or, at least, that it had its origin in South Carolina, the first state to adopt an ordinance of secession. As a matter of history, however, its incorporation into the federal Constitution was demanded by the state of Massachusetts. On the sixth day of February, 1788, after long debate and much hesitation, Massachusetts adopted the federal Constitution; but it coupled its ratification with the

submission of several amendments, one of which, subsequently adopted and now known as the tenth amendment, declares that

"The powers not delegated to the United States by the Constitution nor prohibited by it to the states are reserved to the states respectively, or to the people."

Observe that, while this amendment has been called the cornerstone of the doctrine of state rights, it is not of reserved rights, but entirely of reserved powers, that it speaks. Standing upon this amendment, we may now proclaim, not the old, abstract, academic doctrine of state rights, but the new, living and vitalizing doctrine of state duties. The old doctrine was a doctrine of passive resistance. The new doctrine is a doctrine of aggressive activity. In proclaiming this new, aggressive, practical doctrine of state duties we need have no hesitation about the correctness of our position. The old doctrine has failed because, in the manner in which it most frequently has been presented, it is not merely a doctrine of resistance, but often it has seemed to block the wheels and obstruct the path of progress. It has been a protest against federal encroachment, but it has offered the people nothing in place of federal activity. The American people are distinctly practical in their statesmanship as well as in their politics. They demand much of the government. But long ago they were convinced that, in many cases, it would be idle to appeal to the state governments, which have been inert, nerveless and possessed of little power. The result has been that the people have turned for relief to the federal or national government, and they have found it full of energy, possessing great power, and quick to respond.

STATES MUST RESPOND TO THE PEOPLE.

What the people demand of the government must be granted. The work which they insist upon must and will be done. If it belongs properly to the domain of federal jurisdiction, its prompt performance will be beyond question. If it belongs to the domain of state jurisdiction and the states remain inactive, means will be found for its performance by the federal government. The people will have their way; and the purpose, if beneficent, will in their judgment justify the method, whether state rights are violated or not. To this the doctrine of state duties as distinguished from state rights presents a complete answer. Let the states respond to the demands of the people, let them do the work which public welfare requires, and there will be neither occasion nor opportunity for federal encroachment. This applies especially and particularly to conservation. There would be no national forests, and no active, aggressive forestry service under control of the government in Washington, if Colorado and other far western states had provided adequate systems of timber and forest protection. We should be involved in no dispute with agents of the federal government concerning jurisdiction over non-navigable streams and their undeveloped water power, if the state had fully occupied that field and had conserved with diligence and care its

water power resources. The activity of federal conservation is a natural result of state inactivity. But while the state might well have done all the work now done by the federal government in conserving natural resources, it does not follow from this occupation of part of the field by the federal government that there need be any conflict between the two jurisdictions. Federal conservation, as pointed out in the beginning, is confined to the guardianship of natural resources on federal land. Vigorous state conservation within the domain of state authority would instantly put an end to all thought of further extensions of federal activity. There is not the slightest doubt that if Congress were convinced that the states would do their full duty in the conservation of water power, it would settle the matter by granting them the lands abutting upon water power streams, in order that control of the water and control of the land might be united under one jurisdiction. Hence, it follows that the most effectual way for the state to protect its rights in all such matters is to discharge its duties.

SENATOR ROOT'S APPEAL TO THE STATES.

At the first conference of the governors, desiring to show the need of greater state activity and a broader and fuller exercise of state prerogatives, Senator (then Secretary) Root said:

"The nation can not perform the functions of the state sovereignties. If it were to undertake to perform those functions it would break down. The machinery would not be able to perform the duty. The pressure is already very heavy upon national machinery to do its present work. I feel deeply impressed, however, with the idea that the forty-six sovereign states, in the performance of their duties of government, are lagging behind the stage of development which the other sovereignties of the earth have reached. It is high time that the sovereign states of the union should begin to perform their duties with reference not only to their own local, individual interests, but with reference to the common good. I regard this meeting as marking a new departure, the beginning of an era in which the states of the Union will exercise their reserved sovereign powers upon a higher plane of patriotism and love of country than has ever existed before."

THE CONSERVATION COMMISSION.

I should be glad if Colorado should be the first state to show its appreciation of what Senator Root said upon the occasion just named, and to vindicate the confidence he then expressed in the revival of state activity and a fuller and broader discharge of state duties. To the achievement of this end the commission can give valuable aid. Some of you may tell me that it has no power, but to this I must return an emphatic denial. For its right to exist it has the sanction of Governor Buchtel, who first called it into being, and of Governor Shafroth, who revived it and set it upon its feet. While it has no authority to make laws by legislation, no authority to interpret them by judicial decision, and

no authority to enforce them by executive order, it has the power to awaken, to educate and to mould public sentiment. Bear in mind that it is neither an accomplice of the national commission to strangle the liberties of the people, as some persons might say, nor, as others might contend, a deputy to carry into effect the policies of the national administration. So far as the members of the commission may think it wise, it may co-operate with the national commission; but it does not represent that organization, and it is not bound by anything it may say or do. This commission is distinctively and exclusively a Colorado commission, representing the citizens of Colorado and acting as an arm of the state government for the conservation of those natural resources and other forms of public wealth which are the heritage and the common property of the people of this state. In seeking to stimulate your interest in this work, I appeal to you, not as to men who would ridicule the commission or would smother it in the first stages of its life, but as men who appreciate the importance of conserving, not forests alone nor water power alone, but both these and all other forms of public wealth, and who really desire to make this commission an agent to promote public welfare. If you recognize that as citizens of Colorado you are bound to aid in conserving the natural resources of your state, you must acknowledge that that obligation devolves upon you with special force as members of this commission. Of course, if you did not want to do anything, no power could compel you to act. But no one can make me believe that a commission composed of reputable and intelligent men, earnestly desiring and diligently striving to protect the rights and promote the material interests of their fellow citizens, is utterly powerless to achieve any good.

CONSERVATION OF THE LAW.

As Judge Beaman remarked to me a short time ago, there is not much need of new laws. The whole subject, with the exception of two or three important points, is well covered by existing laws. But I may add that there is urgent need of better law enforcement. Indeed, the highest of all forms of conservation is conservation of the law.

At the meeting of this commission held last May a resolution was adopted instructing the secretary to report to the proper officials any information which might come to him from trustworthy sources of violations of laws enacted to promote conservation. In the brief time between that meeting and the meeting in October he received a mass of information, some of value and some of not much consequence, which he turned over to the governor, and a report of which he made to the commission. That was but an initial step, and the fact that no great results have yet been seen is no reason for discouragement. On the contrary, the fact that he received so many communications supplies the strongest reason for instructing him to continue that work, and

for encouraging the people throughout the state to send him whatever information of the kind suggested they may possess.

NEED OF STATE FORESTRY SERVICE.

One of the matters not adequately covered by legislation is the care of the forests on state land and on federal land outside the limits of national forests. The Constitution of the state commands the legislature to provide protection to these forests, but that body has not complied as fully as it should with the obligation imposed by the constitutional provision in question. Twenty years ago the situation in this particular was better than it is to-day. Mr. Edgar T. Ensign was state forest commissioner. He took great interest in his work, and he made an elaborate report which shows that had the state government complied with all his suggestions and carried out his policy to the fullest extent, there would be no need of a national forestry service in Colorado at the present time. Neglect of the state to do its full duty had the inevitable effect of inviting federal activity in forest conservation. Mr. Ensign's office was abolished, and thereafter work of the kind he had done was neglected. The situation calls now for the re-establishment of a state forestry service. The appointment of a state forester should be authorized by the next legislature; and it should be made his duty to care for the forests and enforce the laws for their protection. In this connection the legislature should avail itself of an offer of the national forestry service by empowering the rangers in the national forests to act as deputy state forest wardens in fighting forest fires on state land. I am indebted to Mr. Stone for the excellent suggestions that an inventory of all school and other state lands should be made, to ascertain their timber contents and the value of all such timber. What can the commission do in this connection? It can study the whole programme of organizing a state forestry service, and having done this, it can prepare a bill to be submitted by the governor to the legislature. If this should be done it would be of great aid to the legislature and probably result in the establishment of the proposed service.

STATE LAND DEPARTMENT.

An opinion frequently expressed by men who have given attention to state land matters is that there is need of a reorganization of that branch of the state government which has to do with those lands. As this kind of state property increases in value it becomes all the more important that it should be carefully conserved, and it would seem that the state land department might better be placed under a board composed of officials who would not be distracted from attention to its affairs by the thought of other duties looked upon by them as more important. This would require an amendment to the Constitution. The commission could consider the subject, calling to its aid the register of the land board, and, after studying it in all its phases, make a report accordingly to the governor.

CONSERVATION OF WATER POWERS.

Conservation of water power has recently risen greatly in public estimation. It belongs especially to the domain of state jurisdiction, because control of the water of non-navigable streams belongs to the state. I am aware that certain federal agents or officials dispute the authority of the state; but the Supreme Court of the United States will have to reverse positions taken by it heretofore, if it denies the state prerogative. The existence of this dispute presents another illustration of how the state has endangered its rights by failure to discharge in full measure its duties. There would be no excuse for the attitude the agents of the federal government have taken in this particular, if the state had provided for the proper care of its water power resources. Presented now, the problem is difficult, and it calls for much careful consideration. Here the commission can render valuable aid. It can work out this problem; and the more diligently it does so, the better will be the attitude of the state before the country, Congress and the courts.

MEASUREMENT OF STREAM FLOW.

A highly important matter is the measurement of streams, especially with reference to the diversion of water for irrigation. The records of the office of the state engineer show that very inadequate information on this subject has been secured. It is a proper matter of inquiry by the commission. The state engineer would undoubtedly respond to a request to prepare a paper on the condition in which this work is at present; and I think I can promise that Mr. Freeman, the Colorado director of the water resources branch of the geological survey, would, upon invitation, cheerfully present a similar paper. There is special need that this matter be considered, because of the struggle already begun to protect the rights of San Luis Valley farmers against the effort of the reclamation service to appropriate a large part of the water of the Rio Grande and store it in a gigantic reservoir to be constructed at Engle, New Mexico. That will have to be fought out in the courts, and the records of stream measurements on the Rio Grande will play an important part. In making these measurements the state should co-operate with the geological survey, and this commission can, by giving attention to the matter, do much toward securing that co-operation.

CONTRACTS WITH NEW MEXICO AND TEXAS.

In connection with the probability that a contest will come with the reclamation service over the use of the waters of the Rio Grande, it may be possible to avail ourselves of a suggestion made by Senator Root in his address at the first conference of the governors. He called attention at that time to the fact, that, while the national Constitution prohibits states from entering into agreements with each other without the consent of Congress, they can make many agreements if the consent of Congress is secured. New Mexico is now a territory, but it probably will become a

state in the near future. When it attains that dignity, it may be practicable for Colorado to negotiate an agreement with it and also with the state of Texas in regard to a fair division of the Rio Grande waters. Were agreements of that kind made between Colorado, New Mexico and Texas, Congress would certainly give its consent, and the reclamation service could drown its sorrows in the Engle reservoir. There are certain constitutional questions involving the right to build the Engle reservoir at all, and consideration of these would help Colorado in negotiating an agreement for a division of the Rio Grande water. It needs no suggestion from me to show that the commission could render valuable service by investigating this matter and suggesting the terms of such a contract.

PUBLIC HEALTH.

Public health in Colorado is closely related to the purity of its water supply. Pollution of streams is therefore a subject calling for consideration. We have a state board of health. How far it has given attention to this subject, I do not know, but it is surely a proper matter of inquiry by the commission.

PROTECTING SCENERY AGAINST DEFACEMENT.

Enforcement of the laws prohibiting the defacement of natural scenery and protection to valuable species of wild flowers and other indigenous plants are subjects worthy of investigation by this commission, with a view to suggestions to the legislative and executive departments and for the purpose of awakening public sentiment. Any one who appreciates the value of the scenic attractions and the beauty of our native vegetation as assets of the state will recognize the urgent need of providing adequate protection of the kind suggested.

GAME AND FISH.

Closely associated with the foregoing is the need of protection to fish and game. Enforcement of game and fish laws may be considered in relation to the inducements which Colorado may offer as a tourist resort; and, in addition, the food value of the fish of our mountain streams presents a view of the subject from an economic standpoint which should not be ignored.

PROPERTY LOSS FROM FIRE.

The enormous loss which this country suffers every year through the destruction of property by fire is a subject of growing interest and commanding importance. It is estimated by the geological survey, as a result of a careful investigation, that this loss amounted in 1907 to almost one-half the cost of new buildings constructed in the country during that year. It is doubtful if the wastefulness and recklessness of the American people are more clearly shown in any other way than in this, and the demand for its consideration becomes all the more urgent and imperative when it is recognized that nearly four-fifths of the loss could be prevented. The drain thus caused upon the forests

and other material resources of the country is enormous, and it presents a phase of the subject which no thoughtful man can ignore. It should be remarked that the loss referred to is exclusive of that caused directly by forest fires and is chiefly shown in the destruction of buildings and their contents. I am unable to say what Colorado's share in this loss is, but in all probability it is in proportion to population, if not greater. Reform lies in the development of a better public sentiment leading to the enactment and enforcement of adequate building and building-inspection laws. I think no one will deny that if the commission were to devote a meeting to the discussion of this subject, the results would amply justify the effort put forth.

STATE EDUCATIONAL INSTITUTIONS.

This evening you will have the pleasure of hearing an address by former Senator Ammons on the work of the State Agricultural college, in connection with forestry. The delivery of this address will be an illustration of what under the auspices of this commission may be done in regard to many other subjects of public interest and closely related to conservation. In this connection I may suggest that the three institutions of higher education maintained by the state, the Agricultural College, the School of Mines and the State University, should be something more than teaching bodies, and I am glad to testify that they are engaged in many scientific investigations of public value. In making investigations of this kind they should be arms of the state government, and they could be especially helpful in connection with conservation. Members of the faculties of those institutions should be subject to the order of the governor at any time to make an investigation concerning the soil, climatic, mineral or hydrographic resources of the state. It would notably strengthen the claims of these institutions upon public favor.

THE COMMISSION'S OPPORTUNITY.

It is needless for me to suggest further illustrations of the way in which the commission can aid the state government in the work of conservation. Having in view the great limitations placed by the Constitution upon the power of the governor, it is evident that investigations conducted by him into the administration of other branches of the state government might be resented. On the other hand, this commission, asserting no authority and seeking only information which would promote the public good, would encounter no such obstacle; and by its development of public sentiment it would secure better enforcement of all state laws. Again, I would remind you that this work of conservation will have to be done. Public sentiment throughout the United States will not permit it to be neglected. If it is not done in one way by Colorado, it will be done in some other way by the federal government; and if the state fails to act, it will have no right to complain if the federal government

occupies the field. Be sure that in this, as in other matters, the path of neglected duty is the path of forfeited right.

SUGGESTIONS FOR FUTURE MEETINGS.

The commission should hold frequent meetings—at least one a month—and the members living in or near Denver should feel under an obligation to attend every meeting. A subject for investigation should be selected a month or more in advance, and then it should be discussed in all its phases. By that means public sentiment could be awakened, public officials stimulated in the discharge of their duties, and reports made to the governor which would be helpful to him and the law-making branch of the state government.

In order to carry out the foregoing ideas and give definite character to the work of the commission, I respectfully suggest that when this commission adjourns, it adjourn to meet in this city on the first Tuesday in April, 1910; that the subject for consideration and discussion at that meeting shall be the water power resources of the state and their conservation.

Instead of its being difficult to find work for this commission, the outlook is for more work than the most energetic member might care to undertake. But as I have said so often, it is work which must be done by some one, and in closing this paper I am prompted to remind those of you who are jealous advocates of state rights that, if it be true that eternal vigilance is the price of liberty, it is no less true that eternal activity is the price of dominion.

The paper was followed by a resolution by Prof. Ellsworth Bethel, to wit:

"Resolved, That, when this commission adjourns, it adjourn to meet in this city on the first Monday in April, 1910; that the subject for consideration and discussion at that meeting shall be, *"The Water Power Resources of the State and Their Conservation"*; that the attorney general and the state engineer, as members of this commission, be especially requested, and Prof. L. G. Carpenter, of the State Agricultural College; Mr. Smith Riley, of the National Forest Service; Mr. W. B. Freeman, of the United States Geological Survey; Mr. A. L. Fellows and Mr. Irving Hale, and such other speakers as the executive committee may see fit to invite, be asked to participate in the discussion, and that the executive committee of this commission be instructed to report at the April meeting a list of dates, subjects and a programme of discussion for subsequent meetings."

The resolution was unanimously adopted.

Judge D. C. Beaman offered a resolution relative to the attitude of the National Conservation Association with respect to lands that contain phosphate, rock, coal, oil or natural gas, which was referred to the resolutions committee.

With Colonel Fahnestock, first vice-president in the chair, Mr. Goudy offered a resolution recommending an amendment to

the Constitution of the state to permit the exemption of taxes against lands solely devoted to the culture of new timber, which was referred to the same committee.

Judge Beaman offered a resolution concerning conservation, which was referred to the committee on resolutions.

Hereupon the commission adjourned to meet at the Albany hotel at 6:30 p. m.

MONDAY EVENING, 6:30, MARCH 1, 1910.

ANNIVERSARY BANQUET, ALBANY HOTEL.

Pursuant to adjournment, the commission participated in a banquet, as per arrangement by the executive committee, at the Albany hotel, to discuss the merits of the Taylor forestry bill in Congress (H. R. 18680), in behalf of the State Agricultural College. President Goudy presided, and addresses were made by Governor Shafroth, Dr. Wm. Slocum, Hon. E. M. Ammons, Dr. Chas. A. Lory, ex-Governor Adams, Prof. Walter J. Morrill, Dr. F. L. Bartlett, Enos A. Mills, and others.

Dr. Slocum paid a glowing tribute to the late Gen. Wm. J. Palmer relative to his efforts in behalf of forestry in Colorado. Dr. Bartlett made a strong plea in favor of the Weeks' bill. The other speakers spent most of the time setting forth the nature and merits of the Taylor bill.

At 10 p. m., on motion of Judge Beaman, the commission adjourned, to meet at the capitol at 10 o'clock the following morning.

WEDNESDAY MORNING SESSION.

The commission met at 10 a. m., March 2, 1910, at the senate chamber at the capitol. The president, Frank C. Goudy, in the chair.

Vice-president K. L. Fahnestock was called to the chair, and Mr. Goudy presented a resolution recognizing the importance of the work of Gen. Wm. J. Palmer relative to forestry; also resolutions touching the following matters, to wit:

1. The submission of an amendment to the Constitution authorizing the exemption from taxation lands devoted to the growth of new timber.

2. Legislation providing for a state forester.

All of which were referred to the standing committee on resolutions.

The president, resuming the chair, called for report of conservation committees, whereupon the forestry committee reported, Prof. W. J. Merrill making a majority report and D. C. Beaman a minority report. A portion of the majority report was adopted, to wit:

"Resolved, That the governor be advised by the Colorado Conservation Commission to recommend to the state legislature that such sum as may be necessary be appropriated to enter into co-operation with the federal forest service or to employ a competent forester for the preparation of a public report, following investigations of present forestry conditions, outlining a practical state policy on all forestry matters in which the state properly can be concerned, together with an estimate of the probable expense in executing such a policy.

The minority report was not adopted.

Hon. E. M. Ammons offered a resolution denying the constitutional right of the general government to charge a water power royalty upon the waters of the state, which was referred to standing committee on waters.

The secretary offered the following resolution, which was adopted, viz.:

"Resolved, That this commission endorses Senate Bill No. 1438, by our senior senator, asking Congress for an annual appropriation of \$5,000 for each agricultural college in the United States, to be devoted to forestry education and experimentation, and earnestly desires the members of our delegation at Washington to help make it a law."

Hon. E. M. Ammons offered the following, which was adopted:

"Resolved, That the Colorado Conservation Commission urges the passage of the bill now before Congress to cede to the Agricultural College a convenient suitable strip of land for instructional and experimental work in forestry, agriculture, horticulture, live stock, irrigation, engineering, road building, and kindred subjects, and for the study of the relationship of forests to the preservation of snow and the water supply."

Professor Morrill offered the following resolution, which was adopted:

"Resolved, That lands devoted to experimental purposes of forestry by any schools should be exempt from all intaxation in so far as the Constitution will permit."

The secretary offered the following endorsement, which, for want of a better knowledge of the bill on the part of some of the members, was put over to the next meeting:

"Resolved, That this commission wishes to express itself as heartily endorsing what is known as the Weeks' bill, or H. B. 11798, believing it to be vital to the people to whom it is directly applicable, and realizing that what helps one part of our common

country helps all, and we hope our senators and congressmen will assist in pushing it through."

REPORT OF COMMITTEE ON RESOLUTIONS.

By Dr. John Grass, Chairman Pro Tem.

Two reports were made—one unanimous and signed by all the members of the committee; the other a majority report, signed by two of the committee.

UNANIMOUS REPORT.

"Resolved, That the Colorado Conservation Commission desires to place on record its recognition of the contribution of the highest interests of the commonwealth which General William J. Palmer has made in the founding of the Colorado School of Forestry, at Colorado College. His gift of one hundred thousand dollars, his present of Manitou Park and the fitting of it up in the manner he did has given a field laboratory to the school which is regarded by the most critical experts as the best in America. The commission takes the greatest pleasure in recognizing all that General Palmer has done by his interest in forestry, and in the practical steps which he took during his lifetime in conserving our Rocky Mountain forests, and in the creation of a school which for all time to come will play a most important part in the training of men in this locality to render service which will be a special benefit to the state of Colorado.

"Whereas, Many citizens of Colorado believe that timber culture should be encouraged to the greatest extent possible in this state; therefore, be it

"Resolved, That it is the sense of the Colorado Conservation Commission that the governor and legislators should submit to the people at as early a date as possible an amendment to the Constitution, exempting from taxation lands devoted solely to the growth and culture of new timber, and if such amendment is adopted, the same to be followed by suitable legislation.

"Resolved, That in any event legislative provision should be made for a state forester, and an adequate system of forestry laws should be enacted.

"Resolved, That the Colorado Conservation Commission favors the admission, free of duty, of all commodities produced in this country, the natural source of which may be threatened with exhaustion.

"Resolved, That when this commission adjourns it adjourn to meet in this city on the first Monday in April, 1910; that the subject for consideration and discussion at that meeting shall be the 'Water Power Resources of the State, and Their Conservation;' that the attorney general and state engineer, as members of this commission, be especially requested to attend, and that

Professor L. G. Carpenter, of the State Agricultural College; Mr. Smith Riley, of the National Forest Service; Mr. W. B. Freeman, of the United States Geological Survey; Mr. A. L. Fellows and Mr. Irving Hale, and such other speakers as the executive committee may see fit to invite, be asked to participate in the discussion; and the executive committee of this commission be instructed to report at the April meeting a list of dates, subjects and programme of discussion, for subsequent meetings.

"Resolved, That the governor be advised by the Colorado Conservation Commission to recommend to the state legislature that such sum as may be necessary be appropriated to enter into co-operation with the Federal Forest Service or to employ a competent forester for the preparation of a public report, following investigations of present forestry conditions, outlining a practical state policy on all forestry matters in which the state properly can be concerned, together with an estimate of the probable expense in executing such a policy.

"(Signed JOHN GRASS,
"H. H. EDDY,
"DEXTER T. SAPP."

REPORT SIGNED BY TWO ONLY.

"Resolved, That we heartily endorse the bills introduced in Congress by the request of Secretary Ballinger for the control and disposition of our coal, oil and timber lands, and we call upon our senators and representatives in Congress to give them their earnest support.

"Resolved, (1) That a limited control should be kept over all water powers by the state or federal government, in accordance with their respective jurisdictions.

"(2) That franchises should be granted for the use of these water powers for a period not to exceed forty years, to be renewed at the end of that time upon such terms as may be necessary to meet any new conditions.

"(3) The company or individual receiving such a franchise shall pay not less than 65 cents per annum for each horse power developed.

"(4) That those receiving franchises should be required to complete development in a specified time, and shall be subject to such regulations as will prevent a monopoly in the use of said power.

"(Signed) "JOHN GRASS,
"H. H. EDDY."

The Unanimous Report was adopted without debate.

The report signed by two members only was taken up item by item, each acted on separately.

First: The endorsement of the Ballinger bills carried by three majority, on a vote of 9 to 6.

Second Resolution: *First item* carried by four majority, on a vote of 9 to 5, the secretary not voting.

Second item, as to the length of period of the grant, carried by a majority of four, on a vote of 9 to 5.

Third item, as to price per horse power, was lost on a tie vote of 7 to 7, the secretary present and not voting.

Fourth item, as to obligation on completion, carried by a majority of four, on a vote of 9 to 5, the secretary not voting.

The hour for the election of officers having arrived, the following persons were elected, to wit:

President—Frank C. Goudy.

First Vice-President—K. L. Fahnestock.

Second Vice-President—Alva Adams.

Third Vice-President—John Grass.

Secretary-Treasurer—W. G. M. Stone.

FOREST EXTENSION WORK IN COLORADO.

AN ADDRESS BY MR. SMITH RILEY, U. S. DISTRICT FORESTER.

Forest extension may be given two distinct meanings: First, increasing the extent of the present forest areas by making new areas bear forests; and, second, increasing the productiveness of the present stands of timber by applying practical and scientific forestry principles to the harvesting of the forest crop. Both these means of extension can be accomplished by the federal government on national forests, by the state government on state lands, or by private individuals on private lands. Unfortunately, no one of these parties has done much, within the state of Colorado, in the way of increasing the extent of the forested areas, which is the phase of forest extension that this paper will discuss. The forest service has done most of what has been accomplished in this direction.

Experimental planting of forest trees has been carried on by the forest service in a limited way on the Pike National Forest since 1905. From then until last spring approximately 130,000 trees have been planted. It is estimated that not over 20,000 of these trees are now living, indicating that past results have not been satisfactory. However, the results during the past season with a small quantity of seedlings are more promising than previous results since on December 1st seventy per cent. of the trees planted were alive.

It must be borne in mind, however, that the planting which has been done in Colorado by the forest service has been largely

experimental, with the idea of determining the kind of trees best suited to the region, the best method of planting, and the cost of the various operations connected with the formation of plantation.

The Colorado state government has done little, so far as I know of, to extend or even encourage the extension of forests within the state. To be sure, some legislation has been passed, but lack of adequate appropriation has prevented any active work being done. The only actual work along this line has been through the State Forestry Association, which at best has only been able to do propaganda work in increasing an interest in matters of forestry. Such work is always necessary, and I am quite sure if the source of any movement along forestry lines which was started previous to the appointment of the Colorado Conservation Commission was actually known, it would, in practically every instance, be traceable to the Colorado Forestry Association. Planting by private individuals has been very limited indeed, and confined primarily to shade trees and wind break planting, no great effort having been made to establish wood-lots for a future supply of timber. It will be as well, first as last, to acknowledge that forest extension by the federal and state government and by private parties in Colorado has not been given the attention in the past it should have had, and it therefore remains for us to consider in a general way what are the future possibilities of forest extension in Colorado.

Owing to the large areas of national forests within the state, it is clearly evident that the federal government should lead in the work of forest extension. Reforestation, either by planting trees or sowing seed, is greatly needed upon practically every forest throughout the state. The restoring of the forest cover on burned over mountain slopes is exceedingly important, since the conservation of moisture and the regulation of stream flow can not be overestimated. The work is exceedingly difficult, since such a large per cent. of the Colorado forests are at high altitudes, the soil is shallow, the growing season short, and hence tree growth is very slow. Therefore, it must not be forgotten that it will require a good many years before the effect of reforestation can in any measure be realized.

The lines along which the federal government must carry on extension in Colorado are, first, restocking of cut over land in national forests; second, restocking of burned over areas, and, third, improving the productiveness of the present forest areas by wise and careful management in harvesting the timber crops.

In the table compiled by the National Conservation Commission of forest planting, the statement is made that within the national forests of Colorado there are 932,000 acres of cut over land which is not restocking. If we are to add to this area the enormous acreage of land which has been denuded in the past by forest fires, the total acreage which is in need of reforestation

would be enormous. In a recent report on the planting possibilities on the Pike forest, it is estimated that there are 85,000 acres of denuded land within that forest which is in need of reforestation. Similar conditions exist on the Leadville forest. I am sure that the above statements will serve to indicate, in a general way at least, the magnitude of the extension problem that is before the forest service in Colorado.

How this problem is to be handled is now being worked out, but it will require a number of years to thoroughly determine the most practical methods along which this work can be conducted. It can be very readily seen that to attempt to actually plant up the denuded land within the forests would be a practically endless task. For this reason the forest service has undertaken, for the last two years, to determine by experiments the practicability of restocking burned over and otherwise denuded areas in Colorado forests, as well as other forests throughout the United States, by sowing seed direct. This work was conducted on a very small basis until after the district organization was put into effect, but during the past season broadcast seeding experiments have been conducted on twenty forests in Colorado, and 378 pounds of seed have been utilized for this purpose. The success of this work has been variable, since in some instances total failure resulted, while in others stands ranging from 100 to 20,000 seedlings per acre were secured. The results accomplished to date on the Pike National Forest, which will serve as an example to show just what work is being done on many of the eighteen forests in this state, may be briefly summed up as follows:

May, 1907, Douglas fir seed broadcasted on bare ground and seed harrowed in after sowing; 9,000 seedlings per acre were secured.

March, 1908, Douglas fir broadcasted on snow; 3,000 seedlings per acre were secured.

November, 1908, Douglas fir broadcasted and raked in after sowing; 1,000 seedlings per acre were secured.

November, 1908, Douglas fir and yellow pine broadcasted on snow. No seedlings were secured.

November, 1908, yellow pine broadcasted, raked in after sowing; 1,500 seedlings per acre were secured.

It is clear, then, that the results of broadcast sowing of tree seed as a method of reforestation has not yet been proven an unqualified success. However, the degree of success that has been attained, taken in connection with the much smaller cost of this method compared to planting, has induced the forest service to plan much more extensive work in the future along this line.

The hope which the forest service has for the ultimate success of broadcast sowing in Colorado is greatly strengthened by the results of similar work on the Black Hills forest in South Dakota. It is true that the Black Hills enjoy more favorable conditions of rainfall than does Colorado, but the yellow pine of that region

is the same species that occurs under Colorado conditions. As in Colorado, the results of experiments have been variable, but some degree of success was obtained on all of several very carefully conducted experiments made in 1909. The poorest results in this case showed a stand of seedlings on the ground sown equivalent to one tree every 9 x 9 feet; the best results showed a tree every 4 x 4 feet.

I do not want you to conclude, from the figures I have given you, that broadcast sowing is considered by the forest service as an infallible method of producing a stand of trees on any area that has been denuded. As a matter of fact, there are probably many acres which can only be reforested by actually planting young trees. But the bulk of the treeless area within the national forests of this state certainly appear to be susceptible of reforestation through broadcast sowing. There is yet much to be learned regarding the most practicable methods and seasons for conducting the sowing, and the possibilities of securing certain results through some economical and practicable method of preparing the ground for the seed. It is the firm belief of Secretary Wilson that extensive reforestation can be achieved only by devising methods to satisfactorily overcome the difficulties which as yet stand in the way of absolute success with broadcast sowing.

It has been the policy of the forest service to grow about 300,000 trees annually at the Monument nursery, located near Palmer lake on the Pike national forest, but even if this amount is produced, the annual planting at the rate of 2,000 trees per acre would only amount to 150 acres per year, a rather insignificant acreage, compared with the total area to be reforested in Colorado. There is a popular, but erroneous, impression that decided results in reforestation can be brought about in a comparatively few years.

I am glad to state that it has been decided recently to increase the annual production of the Monument nursery to 1,000,000 trees, and instructions have been issued to the supervisor of the Pike forest to that effect. With this output it will be possible to reforest 500 acres annually.

The extent to which forest planting can be conducted in any locality depends upon the labor supply and this is considered one of the biggest problems that confront extensive reforestation in Colorado, as well as the other Rocky Mountain states. Add to this the high prices for the limited amount of labor, and we confront the difficulty in economic forestry that will be very hard to overcome, and for this reason we can never hope, under the present cost of labor, to approach what has been done in Europe along these lines.

The following petition, prepared by Hon. Alva Adams, asking for the cession of the public domain to the several states, was presented and acted upon, to wit:

"We believe the time has come when the national government should go out of the land business.

"Very soon, if not now, the administration of the widely scattered public domain and the proper care of the native resources therein will be an embarrassing and expensive problem to the nation.

"The ceding of this domain to the states will relieve the general government of a prospective, if not a present, burden and place the land affairs of the country where they will be managed for the general good. Such a change of control will give each state *home rule* over its entire territory and exempt the citizen of Colorado, for instance, from the liability of being a trespasser when he sets foot upon any part of full three-quarters of the area within the lines of the state.

"All danger of a conflict between divided authority will be evaded; no Pinchot-Ballinger-Wilson controversy can arise.

"The forests, waters and all resources will be better conserved, as each state will use the sagacity and wisdom that comes with ownership. Self-interest will prove, in a state as with an individual, to be the best manager of an estate. Settlers and home-seekers will receive a more discriminating consideration from a local than from the general government.

"As illustrated in the case of our public school system, the nearer the care and responsibility of public business can be brought to the people the less extravagance, waste and scandal. Selfish schemers and Quixotic theories do not like close inspection.

"Political conspirators, monopolists of the country's natural resources, find this indefinite, far-off interest of wasting easier of conquest than the local personal guardianship of the state capitol.

"The proceeds and increment of lands under state control will build schools, colleges, experimental and practical universities, institutions, roads, and in all ways raise the standard of citizenship and widen the greatness of the nation.

"Under laws such as those of Colorado the fear of a water-power trust will be a harmless phantom. State control will preclude a change of policy with each administration and place the development and conservation of our resources in the hands of those directly interested.

"All in all, such a transfer will insure internal tranquillity, strengthen the nation, promote the dignity of the states and advance the welfare of all the people.

"For these reasons we petition the Congress of the United States to initiate such legislation as will transfer the title of the public domain and all of the resources therein contained to the states wherein said domain is situated."

The motion to adopt was lost by a vote of 6 to 9.

Yeas—Adams, Ammons, Beaman, Eddy (J. A), Gauss, Sapp.

Nays—Bethel, Cranston, Dodge, Eddy (H. H.), Fahnestock, Goudy, Grass, Morrill, Stone.

Professor Bethel presented the following resolution, which was adopted, viz.:

“Resolved, That a committee of three be appointed, of which the secretary shall be one, to formulate a public statement of the meaning, purpose and aim of this commission and report the same at the next session for consideration, and if found satisfactory, that the executive committee be and is hereby instructed to have the same published for general distribution as a means of public education and the awakening of an intelligent interest in the subject.”

The president appointed Messrs. Bethel, Gauss and the secretary.

The secretary offered the following resolution, which was adopted, viz.:

“Resolved, That this commission endorses Senate Bill No. 1438, by our senior senator, asking Congress for an annual appropriation of \$5,000 for each agricultural college in the United States, to be devoted to forestry education and experimentation, and earnestly desires the members of our delegation at Washington to help make it a law.”

No further business appearing, the commission adjourned to meet in Denver April 4, 1910, to discuss the water power resources of the state and their conservation.

APRIL MEETING, 1910.

By order of the executive committee the time for holding the April meeting was changed from April 4 to April 18-19, on which date the commission met in Denver, Monday the 18th, at 10 a. m., in the senate chamber in the capitol.

Mr. Frank C. Goudy, the president, being absent from the state, Col. K. L. Fahnestock, first vice-president, called the meeting to order and presided.

At roll call Hon. Edward C. Stimson of Denver appeared, bearing credentials of appointment by the governor of Colorado, John F. Shafroth, as a member of the commission to fill the vacancy caused by the resignation of Hon. M. A. Leddy of Manitou; also appeared Mr. Warren R. Given of Denver, bearing like credentials to fill the vacancy caused by the resignation of Mr. Robert J. Cary of Denver, whereupon the said Edward C. Stimson and Warren R. Given were recognized as members of this commission.

Present—Ammons, Barnett, Bethel, Comstock, Dodge, Eddy (H. H.), Eddy (J. A.), Fahnestock, Franklin, Gauss, Given,

Grass, Jefferson, Lory, MacKenzie, Morrill, Sapp, Stimson, Stone, Thomas.

Reading of communications bearing upon the subject of water power and its conservation, by prominent persons invited by the executive committee to participate in the discussion.

Letter to President Frank C. Gandy by Dr. W. J. McGee, member of the United States Inland Waterways Commission:

“Washington, D. C., March 19, 1910.

“My Dear Sir: It is a special pleasure to acknowledge receipt of your invitation to address the Colorado Conservation Commission on April 18—an invitation for which I am no doubt indebted to your own courtesy and thoughtfulness. While appreciative both of the honor and the opportunity, I regret to say that a previous engagement bars me from accepting your invitation.

“Allow me to congratulate you and your fellow citizens on your activity in connection with so important a subject as that of the proper development and utilization of the water power of your state. As you are aware, I have been for some years urging a due attention to our water resources, and their availability for power, no less than for domestic supply, irrigation and navigation. You may recall my pointing out that the water power of the United States available at a cost comparable with that of steam installation exceeds the aggregate mechanical power now in use, and also that engineers and hydro-electricians were generally skeptical; and of course you have followed the development of thought closely enough to know that our best informed engineers have come to accept the estimates.

“More than once Colorado has been called the Switzerland of America; and now that Switzerland has learned that her chief resource lies in the waters collected in her mountains, another reason for the comparison will arise as you follow her example. As every irrigator understands, Colorado's waters are worth more than her lands; and I have no hesitation in saying that her water powers are worth more than her mines. And in saying this I do not in the slightest disparage her magnificent mineral resources, but merely emphasize that other resource to which she is now awakening.

“Trusting that your convention will prove successful in every way, I remain,

“Yours cordially,

“(Signed) W. J. MCGEE.

The following four letters were directed to Mr. Robert Ganss, a member of the executive committee, to wit:

By U. S. Senator Thos. H. Carter, of Montana.

“Washington, D. C., April 5, 1910.

“My Dear Sir: Your esteemed favor of the 1st instant, enclosing a copy of your address to the Colorado Conservation

Commission, is at hand, and I have read your statements with much interest and profit.

"It is the clear duty of the several states to give timely and appropriate attention to the conservation of natural resources within their borders. The failure of the states in this behalf has induced many who respect the Constitution and the law to seek to justify the federal government in assuming to exercise jurisdiction over matter and subjects not committed to the general government by either express or implied constitutional grants of authority. The people of the states are not in a good position to complain of federal encroachment into fields wherein the states are neglecting their plain duty. The agitation which has been in progress for some years has fortunately awakened the states to a sense of duty and responsibility, thereby removing plausible arguments persistently urged in favor of encroachments by the federal government upon the domain of state activity. The general government can do much, but the laboring oar in this conservation movement is with the states. I am much gratified to see the enterprising people of Colorado leading the way.

"Very truly yours,

"THOS. H. CARTER."

By Hon. F. W. Mondell, Congressman from Wyoming.

"Washington, D. C., April 11, 1910.

"My Dear Mr. Gannus: I have read with a great deal of interest your editorial in the Republican with regard to power sites, also your address to the Conservation Commission, and I found much to commend in your arguments.

"The question of legislation with regard to power sites is a very difficult one in view of the wide differences of opinion on the subject. I have been of the opinion, as expressed in my speech of December 20 last, copy of which I am enclosing, that the control of the western states, where the doctrine of riparian rights has been abrogated, over all uses of water, including the generation of power, is so complete that the states are in a position to prevent monopolies and to regulate power development in all needful ways; and that amendment of the Right of Way Acts, so as to clearly acknowledge the power of the state in its control, would meet the demands of the situation. I am enclosing copy of a bill which I introduced on the subject carrying out that idea.

"The demand in certain quarters for withdrawals of lands upon which it may be possible, at some time, to develop water power; presents, however, a situation which, while intended to protest against the claim that water powers may be monopolized if not surrounded with additional safeguards, results in withdrawing from other uses areas that may not be required or utilized for power purposes for many years to come, if ever. The proposition to turn over to the states lands thus withdrawn

does not help the matter unless it is done under a provision whereby the state may allow the land to be utilized for any needful purpose—and this is not easy of accomplishment in federal legislation.

“My present view is that if it shall be held to be necessary to continue to exercise control over lands upon which water power may sometime be developed without at the same time preventing the use of the lands for other purposes, the result might be accomplished by the enactment of such a law as the bill enclosed, for cases where water power rights of way are sought on the public lands, adding to the bill a provision that lands which have been withdrawn and designated as possible of utilization for water power development might be disposed of when applied for under the laws applicable thereto, with the reservation that they could not be used for water power development except on application to the state. Some such provision as this would not necessitate retaining so-called water power sites in withdrawal if they were required for other purposes prior to the time when they might be sought for water power purposes, and at the same time would leave the state fully in control of the situation.

“Clearly the federal government has no right to interfere with the control of the state over its non-navigable waters, and I have such confidence in the complete authority and control of the western states over all uses of water within their borders that I would regret very much any action that would permanently reserve lands from other uses until such time as some one might desire to use them for power purposes. But if it is deemed necessary that the federal government, in passing title to lands which sometime might be utilized for power development should reserve for the benefit of the state as complete control over the use of the land as it may have over the use of the water, that can be accomplished, in my opinion, as I have suggested, without holding any lands in reserve. I have typewritten at the end of my bill a section which embodies my ideas in this regard.

“I am frank to say, however, that I still hold to the view that, inasmuch as the irrigation states absolutely control, in all respects, the use of their non-navigable waters, they can, and will, protect the people against all improper charges and dangerous combinations without the reservation of the rights proposed, but such reservation, in passing title to the lands designated as being possible of utilization for power development, might meet the views of those who held differently, without withholding any lands from development and settlement.

“Very truly yours,

“(Signed) F. W. MONDELL.”

“Postscript:

“The real difficulty in the present situation lies in the fact that land lying along streams where power development may be possible, but where no one at present or in the immediate future

desires to utilize it for power purposes, is, by reason of withdrawal, withheld from other uses. For instance, an applicant for right of way for irrigation over such lands is denied his right of way for fear he may in some way utilize it for power development. A homesteader might desire to utilize such lands and frequently does. Such lands may be needed for a variety of purposes, and yet the withdrawal for power purposes withholds them from use for other purposes.

"We have a concrete example right here near Washington of an opportunity for great power development that has never been utilized—the Great Falls of the Potomac, ten miles above Washington, the rapids of which extend almost to the city limits, and having, I am told, a combined possible power development of 35,000 horsepower. And yet, no one has seen fit to utilize this power up to this time. Under the withdrawal system the lands on both sides of this stream opposite the falls and rapids would have been withdrawn, and, if the policy had been in operation in the past, would have been withdrawn from all uses in order to prevent, as the extreme 'conservationists' put it, water power monopoly.

"Now these water power withdrawals in the West put us in the same position as a withdrawal such as I have referred to would have placed the people along the Potomac had the withdrawal policy been in force heretofore. Therefore, the question is not simply one of what it is necessary to do in order to satisfy those who fear water power monopoly, *but what it is necessary to do in order to continue the utilization of the lands along streams for other purposes—irrigation development, etc.—until someone may desire to use the land for power purposes.* It seems to me that some such provision as the section 9, which I have typewritten into my bill, is necessary to cover this phase of the situation. That being covered, the bill then provides for an orderly procedure for the right of way where the applicant for the right of way *is the first applicant for the land*, and the added section 9 provides the method whereby withdrawals and designations of power site land will not interfere with other forms of use and development, *but will clearly recognize the right of the state and assert its control whenever the land is used for power purposes.*

"In discussing this matter with a certain individual, he said:

"Why not pass your right of way bill and then provide for a reservation in *all* future patents of the privilege of developing water power and generating electricity?"

"My answer to that was that it would be entirely unnecessary and cumbersome to load *all* patents with such a reservation, but that if the patents to lands which the department believes *might* some day be utilized for power development are limited by such a reservation to the state, the matter is much simplified.

"Remember that, as far as I am concerned, I do not believe that such reservation is necessary. I still reiterate my belief

in the full authority of the irrigation states to control power development in every way and to prevent monopolies and excessive charges, but I am earnestly seeking a way whereby, without surrendering any of the authority of the state, we may meet the views of those who feel that under present conditions water power monopoly is likely to be established.

“(Signed) F. W. MONDELL.”

By Hon. Philip P. Wells, counsel for the National Conservation Association. Written in Mr. Pinchot's absence abroad, as expressing his views:

Washington, D. C., April 9, 1910.

Dear Sir—Your letter of March 22, addressed to Mr. Pinchot at his residence, has been referred to me for reply in his absence. Unfortunately, it did not reach me until April 4, too late to be forwarded to Europe in time for you to get a reply from Mr. Pinchot before the conservation meeting in Denver on April 18, and indeed too late to reach him before his departure from Copenhagen to meet Colonel Roosevelt at Genoa. I regret this deeply, because the need of state activity in conservation matters, complementing and supplementing federal activity, cannot well be overestimated.

I know, from my long association with Mr. Pinchot in personal and official relations, that he will keenly regret the loss of this opportunity to preach the gospel of state and federal co-operation for the public welfare, in place of the old heresy of state and federal antagonism for the profit of the special interests.

In Mr. Pinchot's absence I do not hesitate to speak for him in this matter: first, because I served under him for four years and was until January 31, 1910, in charge of all the legal work of the forest service and of the issue of all permits for the use of national forest land for water power purposes. In both lines of work I was responsible directly to him, and it was the chief part of my duty to advise upon lawful and effective means for carrying out his policies in matters where state and federal relations were involved. This experience, and a personal friendship dating back twenty-five years, makes me confident that I know his mind in this matter. Secondly, his official record discloses continuous and effective application of the co-operative principle in both the investigative and administrative work of the forest service, in legislation and executive orders proposed by him or adopted under his influence, and in his daily conduct of forest service business. I cite below from memory (the official records are not now accessible to me) numerous instances of such action on his part, which happened to come within my knowledge, and I assure you that these instances merely illustrate the point of view from which he always looked upon the conservation problem. I have, moreover, submitted this letter to Mr. Overton W. Price, who, as associate forester, was Mr. Pinchot's chief

assistant in the forest service, had intimate knowledge of and responsibility for the work of the service in all its details, and the most weighty voice next to Mr. Pinchot himself in the formation and application of forest service policies. I am authorized to say that Mr. Price vouches for this letter in all its parts. You may, therefore, accept this letter with confidence as in substance the statement which Mr. Pinchot would have made in far better form over his own signature, if your request had reached him in time.

All true friends of conservation should look with suspicion upon all attempts to stir up strife between the nation and the states. From this profit can accrue only to private interests seeking or holding unjust special privileges. As Mr. Bryan said at the Conservation Conference of State Governors in May, 1908:

"It is just as imperative that the general government shall discharge the duties delegated to it, as it is that the states shall exercise the powers reserved to them. *There is no twilight zone between the nation and the state, in which exploiting interests can take refuge from both*, and my observation is that most—not all, but most—of the contentions between nation and state are traceable to predatory corporations which are trying to shield themselves from deserved punishment, or endeavoring to prevent needed restraining legislation."

President Roosevelt expressed the same thought in his message of January 15, 1909, vetoing a bill to license a dam in James river, Missouri, by the following words:

"The great corporations are acting with foresight, singleness of purpose and vigor to control the water powers of the country. They pay no attention to state boundaries and are not interested in the constitutional law affecting navigable streams except as it affords what has been aptly called a 'twilight zone,' where they may find a convenient refuge from any regulation whatever by the public, whether through the national or the state governments. It is significant that they are opposing the control of water power on the Desplaines river by the state of Illinois with equal vigor and with like arguments to those with which they oppose the national government pursuing the policy I advocate."

The bitterness with which state control of water power has been and is opposed in Wisconsin is another illustration of the same truth.

I agree most heartily with your statement that the conservation movement, if it is to be effective, must have the support of the people. Languid acquiescence will not be enough. Energetic approval and co-operation are essential, because what is called "conservation" involves nothing less than the intelligent control of the physical sources of wealth, whether in public or in private ownership, for the benefit of all the people and against unregulated monopoly by the few. This programme excites the vehement hostility of every special interest that seeks unfair profits at the public expense. It must rely for its success solely

on the public conscience and the intelligent interest of the people, on the public conscience and the intelligent interest of the people whose rights and welfare it seeks to secure. Hence fair and full publicity is its very breath of life. Hence Mr. Pinchot always insisted that the business of the forest service is the people's business, of which they have a right to be fully and constantly informed through the most available channel of information open to them—the newspapers. I need only remind you of the repeated and virulent attacks upon him for this policy, and their futile ending in an express authorization from Congress for its continuance and in the full and formal approbation of the attorney general for the method of its execution.

In your letter and the accompanying copy of your paper read before the Colorado Conservation Commission at Denver on March 1st you have stated strongly, but not too strongly, the duty of the states to pursue a vigorous conservation policy. The federal government can act directly only upon the matters committed to its jurisdiction by the Constitution. In relation to the conservation problem, the most important of these matters are the lands owned by the nation, chiefly in the western states, and the navigable rivers, chiefly in the eastern states. In matters where direct jurisdiction is not given federal activity is restricted to scientific investigation, expert advice and the dissemination of useful information in co-operation with the states. The states are subject to no such restrictions. Their jurisdiction covers the vast field of private property and the public welfare. Without state action little can be done for the prevention of waste and monopoly except as to lands owned or navigable waters controlled by the federal government. Without the vigorous co-operation of the states the federal government can not fully protect the public, even within the sphere of the constitutional powers.

No better field for such co-operation need be sought than the present and prospective development of water power on the lands owned by the national government in the western states. Such development is of vital importance to those states, and ought to be given every reasonable encouragement; but just because of its vital importance, that development should be at all times subject to reasonable control by the public. The method of control devised by the forest service in administering the act of Congress approved February 15, 1901, involves no genuine question of the constitutional rights of the states. Nobody doubts the right of the states to regulate the hydro-electric companies by the exercise of the "police power." The vigorous exercise of that right by the states is essential to the full protection of the public. The state, as sovereign, and the nation, as land owner, should co-operate to secure such full protection. The right of the states to control waters on the public lands, whatever its source or limits, is but another reason for such co-operation. If the states will not co-operate, the protection afforded to the public by the nation as land owner must be in some respects inadequate.

Vigorous state action for conservation and the hearty co-operation of the nation with the states has been a plank in the platform of the conservation leaders from the first. It was expressed in President Roosevelt's opening address to the conservation conference of state governors at the White House in May, 1908. Two decisions of the highest state and federal courts had then recently declared, in the most emphatic terms, the powers of the states for the conservation of forests and waters. For that reason they were quoted by President Roosevelt on that occasion to rouse the states to a sense of their duty in this matter. It is within my own knowledge that these two decisions were brought to the president's attention at that time, and for that purpose, by Mr. Pinchot.

The same principle had been advocated in the preceding year by the preliminary report of the Inland Waterways Commission, of which Mr. Pinchot was a member, and was again strongly urged in the following year, especially with reference to forests and waters, by the report of the National Conservation Commission, of which Mr. Pinchot was chairman. It was applied to practical legislation by the Newland's Inland Waterways Bill (S. 500), which failed of enactment in the Sixtieth Congress, notwithstanding strong reports in its favor from Mr. Taft, then secretary of war, and from the Inland Waterways Commission. Several years before this Mr. Pinchot had secured the enactment of a statute requiring national forest officers to aid in the enforcement of state laws concerning forest fires, live stock and game. On his initiative, an executive order issued by President Grant, which forbade federal officers to hold state offices, with certain exceptions, was modified so as to permit the employes and experts of the forest service and biological survey, subject to the approval of the secretary of agriculture, to hold state offices where the state laws did not forbid it. In pursuance of the authority thus given, very many national forest rangers are state game and fire wardens, and some of the higher officers of the forest service became members of state forestry commissions.

Mr. Pinchot, as forester, carried out or initiated systematic field studies of the forest conditions of the following states, in co-operation with the state governments: Alabama, California, Delaware, Florida, Illinois, Kentucky, Louisiana, Maine, Maryland, Mississippi, Missouri, New Hampshire, New Jersey, North Carolina, South Carolina, Virginia and Wisconsin. Such studies usually resulted in a draft by the forest service of state legislation adapted to the local needs of each state. This was the origin of the vigorous forest departments of California, Wisconsin, Maryland and other states with which the national forest service has always worked in entire harmony, and to which it has supplied some of its best trained men. I hope your plea for a state forest service in Colorado will bear fruit. When it does, the national forest service will, I am sure, be ready for the fullest co-operation.

You urge the necessity of forest conservation on state lands. Three years ago Mr. Pinchot submitted to all the governors of western states where national forests exist a proposal that the state's right of indemnity selection for state lands in national forests be enlarged at each state's option so that selection could be made of land in national forests substantially equal in area and value to the present state holdings, the lands thus selected to be held and managed as state forests. This proposal was welcomed by South Dakota only. No reply at all was received from most of the states concerned, and therefore the bill now before Congress was drafted in the forest service, omitting this provision for state forests.

Under Mr. Pinchot's leadership the forest service undertook co-operative contracts with the states of Utah and South Dakota for the management of state lands in national forests by the forest service at cost, the net proceeds going to the states. A similar contract was agreed upon with Colorado, but was repudiated by the state land board either after a brief trial or before any trial at all. I do not clearly remember which.

In southern California Mr. Pinchot undertook a thorough system of fire protection for the safeguarding of water-sheds, in co-operation with the state and the tri-counties reforestation committee. In Idaho and other northwestern states a system of co-operative fire patrol has been established, with the assistance of timber land owners acting under the local laws. Minnesota and Wyoming have created state game preserves in national forest lands which are protected by national forest rangers. In all states noxious animals are systematically destroyed by hunters compensated in part by a salary from the forest service and in part by state bounties.

In the matter of water power, the forest service requires all applicants to comply with the state laws of water appropriation and of dam construction. In California Mr. Pinchot exercised the full powers of his office as forester and his personal influence to aid the cities of Los Angeles and San Francisco in their projects for municipal water supplies and to protect them from private power and water companies. He established the principle that the public, as represented by a state or a city, was to be preferred to a corporation operated for private profit in every case where the law gave the forester discretion to make such preference.

I will conclude this hastily written list by citing the agreements made by the forest service with four state agricultural colleges in the West for such instruction of national forest rangers as was found to be "necessary to protect, administer and improve the national forests," and thus authorized by the act of Congress appropriating money for the general expenses of the forest service.

In view of this record you may be sure that Mr. Pinchot will join most heartily with you in urging vigorous action by the

state of Colorado for the conservation of her natural resources, especially her forests and her waters, by protecting them from waste and from monopoly.

Very sincerely yours,

PHILIP P. WELLS.

By Hon. Richard A. Ballinger, secretary of the interior.

Washington, April 6, 1910.

My Dear Mr. Gauss: I am in receipt of your letter of April 2, 1910, enclosing copy of your address before the Colorado Conservation Commission March 1, 1910, and in response to your request for a brief expression from me upon the subject of national and state conservation and the control and development of water powers, I direct your attention to my annual report to the president November 10, 1909, copy enclosed, and to the enclosed copies of "conservation" bills prepared by me and submitted to the consideration of Congress.

As secretary of the interior, charged with the administration of the public land laws, I am especially interested in the wise use and disposition of the public lands of the United States and the conservation of the resources in the national domain. It is important that wherever necessary our public land laws, some of which have become antiquated, should be so amended as to provide against monopoly, improvident disposition or waste in the utilization of resources. Aside from the conservation of natural resources in the public domain by the federal government, it is important that the states should be aroused to the importance of protecting and conserving the natural resources in lands within their borders which have passed from federal control and that the people should be educated to make the most of existing opportunities by improved methods of mining, utilization of the timber, caring for and replenishing the soils and better cultivation. The legislation recommended for the conservation of the resources of the public domain should have a beneficial effect over the states in which such resources are situated in stimulating the state legislatures to enact similar legislation for lands heretofore disposed of or belonging to the states, and in directing such legislation along uniform lines. When the states interested enact laws which will completely regulate and control public utilities and the natural resources, it may then be a question whether the federal government can not properly leave the question to the control of the states in so far as it does not involve necessary federal regulation.

At present, however, in view of the national interest in these resources, I believe it to be incumbent upon Congress to give to the executive branch of the government sufficient authority to prevent the waste and reckless disposition of the public domain. But I do not think the whole burden of conservation should be imposed upon the general government. It should be worked out by the states, counties and municipalities, except in so far as

national interference is necessary to protect national interests. The national government can, however, and should, do much in its own proper sphere in controlling public utilities and in the care for and wise use of resources of the public domain.

In the latter particular, however, the efforts of the general government should, in my opinion, be directed to enlarging the possibilities for the establishment of homes upon the public domain by our people and encouraging the individual development and improvement of the public lands by the homeseeker and the individual citizen, thereby adding to the wealth and material welfare of our country, promoting the prosperity of the states, counties and municipalities, and maintaining the sturdy independence, industry and individual liberty which has contributed so greatly to our national welfare.

The expressed views of this department with reference to the development, use and control of water power upon the public domain are contained in my annual report and in the bill presented to Congress for consideration and now pending before that body (Senate Bill 5486). If, however, Congress, because of the question as to the right of the respective states to control the use and disposition of the waters within their borders, or for other reasons sufficient in its opinion, should decide that the water power sites in the public lands of the United States ought to be granted to the states wherein they lie, in order that they may be developed and used under proper state laws, rules and regulations, it should be done under a law which will authorize the grant of such sites to the states for the sole use and development of the water power, upon condition that the states will fix reasonable rates to be charged the public for the supply and distribution of the power developed, prohibit combination and restraint of the development, distribution or sale of power, and provide for the forfeiture to the United States of the lands granted in the event of the failure by the states to require the lands to be devoted to the use for which granted.

Very respectfully,

R. A. BALLINGER,

Secretary.

After the reading of communications Governor Shafroth was introduced and spoke impromptu on the subject of water power; whereupon the commission adjourned to meet at 2:00 p. m.

At 2:00 p. m. the commission met and listened to the following papers:

WATER POWER FROM THE STANDPOINT OF THE IRRIGATOR.

BY HON. CLAS. W. COMSTOCK, STATE ENGINEER.

The conservation movement which has become so widespread, attracted such general attention and been applied to almost every

conceivable thing, had its origin in the fear that the timber supply not only of this country, but of the world, would soon be exhausted. It was thought that steps should be taken to prevent all forms of waste in the cutting and use of timber, and to encourage reforestation at a rate that should keep pace with the consumption.

In this, conservation is on the right track. The prevention of waste and the regeneration of the supply, whenever possible, are commendable and desirable. "Conservation of natural resources" has, however, become a kind of catch phrase, something to conjure with, and has more often been applied improperly than properly. From timber the idea spread to coal, then to other minerals, to lands and to water. These other resources are, however, fundamentally different from timber. We know how the timber supply can be renewed. It is known with considerable accuracy how much time is required under different conditions for trees to grow to a size suitable for industrial purposes. All that is needed is a practicable system for putting this knowledge into use.

With coal it is a different matter. We know of no means of reproducing it. The one thing that can be done is to minimize the waste in its production. This has been for many years the constant aim of those engaged in coal mining. I know of no coal company which does not direct its efforts toward the utilization of the largest percentage of the coal in the ground. The purpose is undoubtedly self interest rather than a feeling of broad patriotism, but the result is the same. It is not clear to me how any commission, whether state or federal, whether voluntary or paid, can add anything to what has been and is being done by those whose entire capital and time are devoted to the production of coal. What has been said of coal is equally true of other minerals.

In land and water we face an entirely different condition of affairs. The quantity of land is well known; it cannot be increased. There is no question of waste involved, as land is not consumed, no matter to what use it may be put. The only question here is one of administration. This does not seem to me to have anything in common with the conservation of consumable materials.

The use of water is closely connected with the use of land. In states far removed from navigable streams almost the sole use of water has been as an aid in the mining and agricultural industries. From time immemorial the use of falling water for the generation of power has been known. Until the development of the system of power transmission by electricity, this use of water was of little importance. Only those water powers could be used which were so located as to be readily accessible and capable of direct utilization. During the past quarter of a century great strides have been made in the electrical transmission of electrical energy, and water power has, therefore, been sought even in re-

note mountain gorges. The most enthusiastic conservationists are now endeavoring to include water power in the list of things which are to be guarded from waste and extravagant use. What is expected to be accomplished in this way I am unable to see. Falling water is a source of power; we have always known this. The law of gravitation has been in operation as far back as my memory runs. In accordance with it water has always run down hill. I have no doubt it will continue to run down hill—even after the present generation has passed away. There is no more water power available to-day than there was fifty years ago. There will be as much available fifty years hence, if we make use of it to-day, as there will be if we continue to allow the water to run down hill unharnessed. What are we to conserve? What is in danger of exhaustion?

In the effort which has been and is being made to include every possible source of wealth within the control of some board or commission which may hamper with impossible conditions the development of land and the utilization of water, a certain amount of antagonism against water power on the part of those who use water for irrigation purposes has been aroused. It has been suggested that the rights of irrigators would be interfered with and that the amount of water available for application to the land would be lessened.

Just here it is well to call to mind a few elementary facts with regard to power development. One cubic foot of water per second falling 100 feet may be relied upon to give about 8 H. P., allowing an over-all efficiency of 70% from pen stock to transmission line. If this same water could fall 1,000 feet, 80 H. P. could be delivered. If it can fall only 50 feet, then only 4 H. P. It is obvious that to generate any considerable amount of power we must have one of two things, either a very large quantity of water available at a moderate head, or a moderate quantity of water at a very high head. The latter condition is the one which most prevails in Colorado and in mountainous countries in general. There are few streams which can be relied upon to furnish large quantities of water the year round. If we had available 1,000 cubic feet of water per second, and a head of 100 feet, we should be able to deliver 8,000 H. P. This is by no means a large plant. There is not a stream in the state of Colorado which can be relied upon to deliver 1,000 cubic feet of water per second throughout the year, and storage of water in such volume is nearly impossible. We then find ourselves practically confined to the other alternative, the moderate quantity of water and a very high head. These high heads are only to be found in the heart of the mountains and in places which are more or less inaccessible. In nearly all such cases the water is taken into the pipe line, passed through the wheels and discharged through the tailrace far above the headgate of any irrigation system. The power plant does not consume any water and does not in any way change its fitness for other and subsequent uses. As illustrative of this point let us

examine the existing water power plants in Colorado. The United Hydro-Electric Company operates a small plant on the head waters of Clear creek, in Clear Creek county. Its entire operations are confined to a stretch of country so far above any irrigable land that it is a question whether any of the ditch operators of the lower Clear Creek valley know of its existence. The Boulder plant of The Central Colorado Power Company is not yet in operation, but probably will be during this year. Both its reservoirs, about fourteen miles of pipe line, and its power house, are all located above the head gate of the highest irrigation ditch on Middle Boulder creek.

The Pike's Peak Hydro-Electric Company, operating under what is probably the highest head of any water power plant in the world (about 2,300 feet), is located just at the base of Pike's Peak, and the water, after passing through the power plant, is used for the domestic supply of the city of Colorado Springs. Any other possible use which might be made of it could only be made far below the present power house. The power plant of The Pueblo and Suburban Lighting and Traction Company, located on Beaver creek, in the southern part of Teller county, operates under a head of about 1,200 feet, and is so far above any possible irrigation or domestic uses that the company has found it possible to locate another plant which shall utilize the tail water from the first under a head of from 1,200 to 1,500 feet. The two plants of the Telluride Power Company, operating under heads between 900 and 1,200 feet, are located so far above any possible irrigation or domestic uses of the water that the state water commissioner, charged with the distribution of water to ditches in District No. 60, never has occasion to consider this company in the discharge of his duties.

The plant of the Animas Light and Power Company at Rockwood, on the Animas river, lies in a deep, narrow canon about half way between Durango and Silverton and discharges its water back into the river many miles above any possible irrigation use. The only plant in the state which uses any considerable amount of water under a moderate head is the Shoshone plant of the Central Colorado Power Company, on the Grand river, near Glenwood Springs. This plant operates under a head of about 160 feet, and is capable of utilizing about 1,250 cubic feet of water per second. The intake and discharge of this plant are located only about $2\frac{1}{2}$ miles apart, and far above any possible point of diversion for any irrigation canal. The fact that many of these plants have been in operation for years practically unknown by the managers of irrigation systems, and so located as to cause no concern to the water commissioners charged with the distribution of water of the streams, is a sufficient demonstration that there is no ground for the fear that water power plants will so divert the water from the ordinary channels as to render it unavailable for irrigation uses.

There is, however, one respect in which certain irrigation projects may be affected by the installation of these plants. The plant which pretends to utilize more than a small percentage of the total power available in the stream must be provided with ample storage capacity to take care of the water in excess of that needed for immediate use, and afterwards supply it to the wheels at such times as the flow of the stream may be insufficient to meet requirements. The plant utilizing nearly, if not quite, all of the available power of a stream and delivering it at practically a continuous rate, also delivers water from its tailrace at a nearly uniform rate. The effect of this is to render the flow of the stream practically uniform, taking the peaks off the floods and filling in the low-water portions of the discharge curve.

This is an ideal condition of affairs for those appropriators of water whose priorities are of sufficiently early date to entitle them to water at moderate stages of the stream. The later appropriators, however, who might really get a little water at flood stages, would be entirely cut off by the regulation of the stream to an all-the-year-round average. It might be argued also that the storage reservoirs retain water which might be available during the irrigation season and discharge it into the stream through the winter months when it is useless for irrigation purposes. This condition of affairs might be brought about on some of the smaller streams, and if it should be, some readjustment of decrees and some rearrangement of irrigation systems might be necessary. This same difficulty may, however, be encountered in the construction of storage reservoirs for irrigation as well as for other purposes. In fact, it is more to be feared in such cases, since reservoirs for irrigation uses generally have greater capacities than the storage reservoirs of even very large power plants. The Barker Meadows Reservoir of the Central Colorado Power Company, on Boulder creek, has a capacity of 12,000 acre feet. I might readily name a dozen either built or building to store water for irrigation purposes, each of which has more than twice this capacity.

For the reasons above outlined I do not believe that the present users of water for domestic and irrigation purposes have any reason to be alarmed at the prospective growth of the water power industry.

Query: Who is injured, or who is likely to be injured, or what natural resource is threatened with destruction by the construction of water power plants and the utilization of the energy of flowing streams? I confess my inability to see the threatened danger which has been so much discussed.

The National Conservation Association proposes to put all the water powers of the country which have not already been acquired by private parties into the hands of the federal government. It is well known that the federal government does not control the non-navigable streams of the United States and that it can not acquire direct control of them by any act of Congress.

In the absence of this direct control it is proposed to acquire it indirectly by the dog-in-the-manger policy of refusing to grant rights of way over public lands for reservoirs, canals, pipe lines or other accessories of the water power plant, except upon terms dictated by the interior department. There is very grave doubt whether the interior department has the right to refuse rights of way for public utilities or whether Congress can confer that right upon any executive department. The United States courts have time and again declared that the states have the power of eminent domain over public as well as private lands, and this principle has been put in concrete form in at least one instance by the refusal of the court to grant an injunction upon application of the United States restraining a railroad company from crossing public lands. In the United States vs. Railroad Bridge Company, 6th McLean, 517, Mr. Justice McLean of the United States Supreme Court, sitting as circuit judge for the northern district of Illinois upon application of the United States for injunction to restrain the railroad company from occupying the island of Rock Island for a bridge and railroad track, found that the land in question was held by the United States as proprietor only, although it had not been open to public occupation and sale, and declared that all such lands were subject to the power of eminent domain of the state of Illinois, whether exercised by the state or by a corporation chartered by it for the purpose. The United States did not see fit to appeal this case to the Supreme Court.

I do not assume to be a lawyer, and am not able to prepare a brief on this subject, even though this were the proper place to present it and the time were available. It would seem, however, that the principle announced by the United States Circuit Court in the case above cited is the only one which is compatible with the administrative integrity of the state government. If it were otherwise, the interior department of the United States could render it practically impossible for the government of a state like Colorado, for example, to administer its affairs by refusal to grant it a right of way across the forest reserves which form a nearly continuous belt from north to south through the state, for roads, railroads, telegraph or telephone lines, or any other means of communication or access. There may be no way of getting the interior department into the courts to force it to grant rights of way, but perhaps a procedure may be established by which it will be possible to have such matters determined in strict accordance with the law and the Constitution.

At the hearing before the United States senate committee on public lands on January 25, 1910, Hon. James R. Garfield expressed the fear that unless the public lands were carefully classified and the greatest care used to determine the purpose for which an entryman wished to acquire land, some one might acquire a valuable water power site by means of a homestead entry. For my part I do not see what difference it makes if he does, since if

a water right thus passes into private hands it will soon be developed, the power applied to some productive purpose, and a substantial addition made to the wealth of the state and the nation. However, the cases in which this would occur are so few and far between that they might be properly ignored in the consideration of the general question. The facilities necessary to develop a power plant of from 5,000 to 20,000 H. P. are not found concentrated in any quarter section, or for that matter in one township, very often.

In the days when a riparian owner undertook to develop such power as he could utilize on his own land, seldom exceeding thirty or forty H. P., each little water fall was a natural power site. There were various well-known types of crude hydraulic motors which might be set up at convenient places and which delivered the required power at the end of the revolving axle. These devices utilize only an extremely small percentage of the total power available in the stream. They don't cost much and they don't produce much. The modern power plant, in order to be a commercial success, must utilize all of the power in the stream on which it is located. This requires expensive storage systems. In order to take advantage of the largest possible fall of the stream, long canal systems are necessary. These power developing plants spread over a great deal of ground and require rights of way not across one or two quarter sections, but sometimes across several townships. The Shoshone plant of The Central Colorado Power Company is one of the smallest in the state from the standpoint of area covered. It is about two and one-half miles in length.

The plant of the Animas Light and Power Company strings out over about six miles. The system of the Telluride Power Company covers a length of eight or nine miles. The Beaver creek plant of the Pueblo and Suburban Lighting and Traction Company covers about the same distance. The total length of the Boulder plant of The Central Colorado Power Company is not far from twenty miles. If the lands in any of these cases had been open to entry under the homestead law no one could have acquired a control of these power sites by any entry he might have selected. In rare instances, as for example, at Snoqualmie falls, in Washington, the whole plant is contained within an extremely small area. Opportunities of this kind are, however, extremely rare.

In any case, why is it necessary to prevent these power sites from falling into private hands? If the same effort had been made to prevent the public lands of the United States from falling into private hands a great portion of the country west of the Missouri river would still be a howling wilderness. There seems to be a fear that if individuals or corporations get possession of these power sites they may make some money out of them. If they could not the power sites would of course be of no use. With as much reason individuals might have been prevented from acquiring public lands for agricultural purposes on the ground

that a well cultivated farm in a favorable locality might make the farmer rich.

It is claimed by many persons that since the operation of water power plants may be made to yield a profit, the United States government should derive a perpetual revenue from them; that the plants should be operated only under lease and for limited periods. I do not see why the same argument does not apply to homestead and desert land entries. The persons who make these entries undertake to cultivate the land and expect to reap a profit. It is right that they should. Not all settlers on public lands, however, see their hopes realized. The same may be said of the power companies; they hope to make a profit; many of them fail.

A bill introduced in the senate of the United States on January 18, 1910, by Senator Nelson of Minnesota, provides that an applicant may receive a lease to the land necessary for a power site, provided he gives evidence that he has acquired the necessary water rights for the development, and on condition that all the water rights acquired by the applicant shall be made appurtenant to the lands, and that the applicant shall convey to the United States the necessary rights of way over private lands. This appears to be an attempt to force an applicant for a power site to convey to the United States what the United States cannot acquire directly, namely, the control of the water necessary to the development of the power. Should this bill become a law it would practically do away with any attempt to develop a water power.

So far as the State of Colorado is concerned no man can acquire a water right unless he has constructed his works and applied the water to some beneficial use. These constructions must be preceded by the acquisition of the right of way which, under the bill, will not be granted until the water rights have been acquired. The bill further provides for an annual rental, of which one-third is to be paid to the state or territory and two-thirds into the general fund of the United States.

There are a number of these bills which have been considered by the senate committee on public lands, a few of which I have had the opportunity to read, but to none of which I have been able to give the study they should have. All that I have seen contain decidedly objectionable features, many of them in the shape of annual rentals, others in the shape of conditions which are practically prohibitive. Some of them, and I think the one introduced by Senator Smoot of Utah, is one of these, require that the state should satisfy the interior department that it has laws sufficient to prevent formation of monopolies and combinations to destroy competition. In view of the fact that the legislative and executive departments of the United States government have been struggling with this problem for a good many years and have not yet evolved a practicable and satisfactory method of accomplishing the desired result, it seems a great deal to ask that any state should produce such a system of laws on

demand. If our water power is to remain undeveloped until we have solved the question of monopoly and corporation control those of us now living had better forget that there is any such thing as water power.

A hundred years ago it was written, "A man must serve his time to every trade save censure—critics all are ready-made."

I have been free with my criticism of the measures proposed by others. Now I have something of a constructive nature to offer instead. I have not prepared my suggestions in the form of a bill, but have prepared an outline of the procedure, which outline might readily be put in the form of a bill for presentation to Congress by some one skilled in this work.

I propose, in the first place, that Congress should pass an act ceding to each of the states in which public lands are located all of the lands and the materials on any public lands, such as stone, timber, etc., necessary for the development of any water power, without any attempt to survey, locate or classify any of these lands. No one knows how many such sites there are in Colorado, nor is any one ever likely to know, except as they may be, from time to time, developed. If any individual or corporation wishes to acquire a power site let him make application to the state land board or to the officials or boards having equivalent authority in the several states, for the segregation of the lands necessary for the power development in question, this application to be accompanied by such maps, reports, plans and specifications as are necessary to fully describe the proposed development. The state land board may then refer all the technical data to the state engineer's office for examination and criticism. If the report of the state engineer is favorable the land board will then forward the application and other necessary documents to the interior department, who will then cause the lands applied for to be patented to the state. The individual or company requesting this segregation of lands will then enter into a contract with the state, through its state land board, for the construction of the necessary works and the transmission and sale of the power on such terms as may be agreed upon between the state and the applicant.

In this, mention is made only of the public lands necessary for the development. Private property may be obtained, if required, by direct purchase or by condemnation. The procedure for the acquisition of water rights is already established in most if not all, of the western states. This proposition puts the control of water power entirely in the hands of the state, where I believe it should be. It is entirely an internal affair and has nothing of an interstate character about it. It is free from an objectionable degree of bureaucratic control and leaves to the proper state officials latitude in the construction of the contract sufficient to cover the almost infinite variety of forms in which water power propositions are certain to be presented.

This is my contribution toward the solution of a vexed question.

THE WATER POWER RESOURCES OF COLORADO, WITH SPECIAL REFERENCE TO STREAM FLOW.

BY MR. W. B. FREEMAN, DISTRICT ENGINEER OF THE UNITED STATES
GEOLOGICAL SURVEY.

To make an intelligent discussion of the conservation of the water resources of Colorado it is quite important to know the amount and value of these resources. In this paper I will attempt to show, first, the total run-off or flow of our streams and rivers; and, secondly, the amount of water power which it will be possible to derive from them. The state has been divided into the following drainage basins, which include the streams named and their tributaries in Colorado: The Arkansas river, the South Platte river, the North Platte, Republican, the Rio Grande, the Green river, which embraces the White and the Grand river, which includes the Dolores, Gunnison and San Juan rivers.

RUN-OFF OF COLORADO STREAMS.

Records of stream flow, extending over periods of from one to twenty years, have been obtained on some of the streams in each of the drainage basins outlined above, from which it is possible to make estimates of the total flow. Some time ago I made a study of this total run-off, with a view to determining the amount of run-off water which actually reached our streams. In this study I made the assumption that natural conditions existed; that is, the conditions which obtained before the settlement of the country and the construction of irrigation and other hydraulic works. Neglecting possible changes which may have been made in the average rate of run-off by cultivation, grazing and deforestation, the average run-off should be the same now as it was at that time. These figures do not exactly represent the amount of water which would actually leave the state, if no water were used, because no allowance has been made for evaporation and other losses. In a great many cases they are very approximate, because of the inadequacy of stream measurements. I think, however, they are of considerable value as showing the relative size of our stream systems:

ESTIMATED MEAN ANNUAL RUN-OFF OF RIVERS IN COLORADO.

Stream System—	Annual Run-off Acre-feet.
Arkansas river and tributaries in Colorado. . . .	1,600,000
Cimarron and tributaries in southeastern Colorado	10,000
Grand river, including Dolores and Gunnison in Colorado	6,500,000
Green river drainage in Colorado.	2,000,000
North Platte and tributaries in Colorado. . . .	600,000
Republican river and tributaries in Colorado. .	30,000
Rio Grande river and tributaries in Colorado. .	1,100,000
San Juan river and tributaries in Colorado. . .	2,400,000
South Platte river and tributaries in Colorado. .	1,400,000
Total in Colorado.	15,640,000

It will be noted that of this total average of 15,640,000 acre-feet per annum, the Eastern Slope with a drainage area of 65,000 square miles, or 63 per cent. of the total area of the state, yields but 4,750,000 acre-feet, or 30 per cent. of the total; while the Western Slope with an area of 38,700 square miles, yields 10,900,000 acre-feet, or 70 per cent. of the total. The average rate of run-off for the state is 150-acre feet per square mile per annum, equivalent to a depth of three inches over the entire surface. The rate for the Western Slope is 280 acre-feet per square mile per annum, equivalent to a depth of five and one-third inches; and for the Eastern Slope it is 73 acre-feet per square mile per annum, or a little over one and one-third inches. This large difference between the rates of run-off on the two sides of the Continental Divide is easily accounted for when it is considered that there is very little area on the Western Slope below an elevation of 6,000 feet, and a great deal of it is between 10,000 and 14,000 feet high, while fully one-half of the eastern drainage area is at an elevation of 5,000 feet or less. Moreover, in the high mountains the run-off is usually greater for the Western than for the Eastern Slope.

There is a very large drainage area in eastern Colorado, which is practically non-productive, so that the average depth of run-off over the area on the eastern side of the mountains is probably more nearly two inches for the portion which is productive of run-off. The following table gives the area of water shed and the average annual depth of run-off in inches for the various water sheds in Colorado. An inch in depth is equivalent to a rate of about fifty-three acre-feet per square mile per annum:

Drainage Basin.	Drainage Area.	Depth of Run-off Annually.
Arkansas	25,000 sq. mi.	1.2 inches
Cimarron	3,000 " "	0.06 "
Grand	22,000 " "	5.6 "
Green	11,000 " "	3.4 "
North Platte	1,900 " "	6.0 "
Republican	8,000 " "	0.07 "
Rio Grande	7,700 " "	2.7 "
San Juan	5,700 " "	8.0 "
South Platte	19,400 " "	1.4 "

An average annual run-off as great as thirty inches and over has been recorded in the high mountains, particularly at the headwaters of the San Juan river. On the other hand, there are large areas where it is less than one-half inch, and where it would require forty square miles of drainage area to produce enough water to irrigate one section of land. If this fact were more generally known it might serve to check some of the numerous "wildcat" irrigation schemes in this state, which have no basis whatever for existence. There are too many opportunities for legitimate irrigation development.

About 2,000,000 acres of land are now being irrigated in Colorado on the eastern side of the Continental Divide. With proper conservation of the water supply this acreage should be nearly doubled. On the Western Slope there are probably less than 500,000 acres of irrigated land, while there is water enough to irrigate 7,000,000 acres. A very considerable percentage of this acreage is available for irrigation, though it will never be possible to utilize all of the waters of the Grand river proper, or a very large percentage of the waters of the San Juan, to irrigate Colorado land. It is believed that at least 8,000,000 acres of land should eventually be irrigated in this state, or three times the amount that is now under irrigation.

POWER RESOURCES OF COLORADO.

In connection with the report to the Conservation Commission in 1908, the United States Geological Survey compiled figures on the water power possibilities of this state, under existing conditions with reference to irrigation. Use was made of the best maps and data available, and the figures are considered fairly accurate. In this compilation the average low water flow during the six high months of the year was taken as the basis, and the amount of power which the different streams could develop with this minimum was determined. In other words, a water power plant could operate with a maximum capacity equal to this minimum for six months each year. Then, if there were no storage for the equalization of the flow, the plant would either have to shut down or operate at a capacity less than the maximum for the remaining six months.

The storage facilities along the various streams were also investigated, and an estimate made of the amount of power which it would be possible to develop from storage during a six months' period over and above the amount derived from the minimum flow during the six high months. The stored waters could be released as needed, and it is fair to assume that they would be used to augment the natural flow during the six low-water months; thus, in many cases, making the average for that period as much or more than the minimum for the six high months.

The minimum flow of a stream during the year determines the minimum power, or primary power, which can be developed, and a power plant can furnish this amount of power continuously without storage. In the tabulation below the minimum power considered is the average minimum for a seven-year period, and the minimum for a year was computed from the average flow for the lowest fourteen-day period during that year. This table shows the power possibilities of the state divided into the drainage areas outlined at the beginning of the paper. The horse power computations were made on the assumption that 90 per cent. of the total fall could be utilized, and that the efficiency of the water wheels would be 80 per cent.

Estimated Horse Power of Rivers in Colorado.

	H. P. from storage dur- ing a Min. H. P. period of Min. H. P. 6 high mos. 6 mos.		
Arkansas river and tributaries in Colorado	102,800	176,000	312,600
Cimarron and tributaries in Colorado	0	0	0
Grand river—including Dolores and Gunnison in Colorado....	456,000	857,000	1,274,000
Green river drainage in Colorado.	75,700	205,500	455,000
North Platte river and tributaries in Colorado	5,200	13,900	12,800
Republican and tributaries in Colorado	0	0	0
Rio Grande river and tributaries in Colorado	46,700	75,500	55,500
San Juan and tributaries in Colorado	54,600	113,500	115,200
South Platte river and tributaries in Colorado	87,400	231,700	335,100
Total in Colorado.....	828,400	1,673,100	2,560,200

The total minimum, or primary, horse power is 828,400, of which 586,300, or 70 per cent., is on the Western Slope; the mini-

min for the six high months is 1,673,400, 70 per cent. of which is on the Western Slope; and the horse power from storage during the six months period is 2,560,200, 72 per cent. of which is on the Western Slope. It is rather a noteworthy fact that the Western Slope can furnish the same percentage of the total power as it does of the total stream flow of the state, but, of conse, irrigation has not interfered with possibilities for power development on that slope to the same extent as it has on the Eastern Slope. It will be noted that just about 50 per cent. of the water horse power available in the state is to be found in the Grand river system.

Combining the minimum horse power for the six high months with the horse power from storage during a six months' period, we obtain 2,117,000 horse power as the average continuously available. It is believed that it will be possible eventually to utilize 1,000,000 horse power by harnessing the streams of this state without interfering with the use of water for irrigation purposes. On the assumption that 20 tons of coal per year are required to produce 1 horse power, the development of this amount of water power will some day mean a saving of 20,000,000 tons of coal annually, or twice the amount which was mined in the state in 1908. At the present time it is likely that it will be practicable to save 3,000,000 tons per year, with the value at the mines of over \$4,000,000, by the use of water power. It is not known what the relative advantage of water is over steam power in this state. On the assumption that it is only \$10.00 per horse power per annum, there should be a saving of at least \$2,000,000 a year if water power were used to the extent that it should be.

The census of 1908 shows that there were 353 water wheels in the state, with a total capacity of 78,878 horse power. The figures of the United States Geological Survey, compiled in the same year, show that there were probably less than 50 plants in the state with a capacity of 50 horse power or over, and that the total actual water power development amounted to about 50,000 horse power. Since then a few plants have been completed, most notably, the Shoshone plant of the Central Colorado Power Company. It is safe to say that the total is still less than 100,000 horse power, which is 10 per cent. of the total possible.

Resume. When the irrigated area of the state can be increased three times, and ten times the present water power development is possible, Colorado still has some chance to conserve her water power—her greatest natural resource. There seems to be abundant opportunity for beneficial legislation, both state and national.

After the reading of the preceding papers and the attending discussions, the commission adjourned to meet at 8:00 p. m.

MONDAY EVENING, APRIL 18, 1910.

The commission met at 8:00 p. m. and was called to order by Vice-President Fahnestock, who introduced the speaker of the evening, the Hon. James R. Garfield, ex-secretary of the interior, who spoke on "Water Power, from the Standpoint of the National Conservation Commission," as follows:

Members of the Commission, Ladies and Gentlemen:

I see that there are some members of the legislative body sitting in front of me, and I have no doubt but their minds revert to the times and occasions which were not as festive as now. In fact, from some of the stories I have heard from members of the legislature, I imagine this hall, and its counterpart in the other part of the building, have been witnesses to scenes that are not as free from conflict and bitterness as they might have been. I trust this meeting of this association is not going to be of that character. I am confident that when we consider the questions of conservation we will find that instead of their being conceived, in a narrow sense, that such is not the case. That in dealing with these problems, we are dealing with them as a nation, or as a state, and not as a part of a nation, or a part of a state, and that we do not divide them by political lines, but that our differences of opinion are caused by the differences of conception that we have of our obligations, of our liberties, and of the theories we entertain regarding the function of government; its relation to business, and its relation to the people—those for whom the government acts.

Your Conservation Commission has been considering all the questions which have to do with reference to your natural resources, and I was very much pleased to be given the opportunity to come and discuss with you the one special problem of water power. I believe that to be the most immediate and one of the most important of the questions covered by the general term "conservation." It is important because in every state and territory where it is possible to develop water power the question is agitated as to how best the water powers may be developed, and under what restrictions and regulations they should be developed. It is of importance for the reason that there has been within the last few years a tremendous increase of the possibilities of water power. Furthermore, wherever we can develop horse power by water, we are saving our other forms of fuel, timber, gas, oil and coal. Therefore we approach the question of dealing with water with two ideas: How to develop the water power and how at the same time to conserve the water and the other fuels that water may take the place of.

Now, as we have heard from the discussions this afternoon and this morning, this question is by no means free from doubt

and difficulty. I listened with a great deal of pleasure to the address given by your governor this morning. He and I have met before, fortunately, we have met before and most delightfully. I am confident that if he and I had questions of this kind to settle, we would find some common grounds upon which to discuss many of these particular problems. It is true that while we discuss these things in a friendly way we must recognize that there is an acute condition in many places in the country. We cannot fail to understand that there is a real conflict, a real fight on this question of water, and when we analyze the various elements of that question we will agree that it is not a question really between states and nations, between localities, or between parties, but is in fact this: Shall the great interests that are developing water power, shall they control the use and the development of water, or shall some jurisdiction, some governmental jurisdiction, govern and control the development and use of water? That is the real conflict: the conflict between private interest and private development on the one side, and public interest and public regulation and control on the other. It is certain that an intolerable water monopoly will be fastened upon our people unless the public, in both nation and states, assert its authority and control the use of water.

The use of water for the development of power, for storage and for irrigation means, of necessity, exclusive use in particular places, and such exclusive use is readily turned into oppressive monopoly, unless regulated by the public. The combination of various interests in particular water sheds is inevitable, unless restrained or regulated by law.

It is not enough to deny that a water power trust exists to-day; all the elements that go to make up such a trust are in existence, and the tendency towards such centralization grows stronger day by day.

Now why is it that there should be this conflict? I think the reason is this: Water is not a species of property subject to ownership as the other characters of property. That it is not personal property like a plant or machinery. When it comes to the question of water, the people of this country have very wisely decided that water is not capable of individual ownership as are the other forms of property as we understand it, but that water, being one of the necessities of life, like air, must be free to all the people.

The reason for the fight against a water monopoly is apparent. Water is one of the necessities of life; there must not be the same kind of ownership in water as there is in other property. Individual rights in flowing water must be limited to use of that water in accordance with the needs of the public, and the order of use must be fixed by public authority.

Now the conservation problem, as applied to water, applies to all of its uses. I take it there is a misunderstanding in this

state. I noticed the state engineer this afternoon referred to the question of the conservation of water—the creation of reservoirs—saying that it would be absurd to say that the water was injured, because the use of water does not injure its capacity or reduce its amount. The problem is by no means limited to the power, but it covers all the uses of water, from the source of supply down to navigation, which is the last and ultimate use of water. When we consider the conservation problem as a whole, we must start at the source of the stream, and must study all the conditions or uses, all the conditions and diverse and conflicting uses that occur from the source of the stream down through the lakes and streams to its final end, the ocean.

The very nature of water prevents it from being a localized subject. As I have indicated, beginning with the head waters and going down to the ocean, any one of these streams passes through many jurisdictions. It may have risen hundreds of miles away and come through many states, being interstate, being international in many cases. In dealing with its uses in these various water sheds, we must consider all these various jurisdictions. In order to develop the uses of water to their highest efficiency, a water shed must be treated as a unit, and all the interests in that water shed must be considered in determining what ought to be permitted at any particular point; for example, storage reservoirs at the head waters of a stream are of direct benefit, not only to those who may develop water at that particular point, but as well to those who wish to use the water many miles below for irrigation, domestic supply and navigation.

I have sometimes, in speaking of this question, referred to the fact that these state lines are purely accidental, geographic divisions. For example, if the state line of Colorado, instead of being where it is, should have been drawn up close to the mountains, what would have happened to this great agricultural area which lies to the east of the Rockies? Instead of being in the state that likewise had the mountain region, it would have been outside of it by a mere accident in drawing that state line. Had that been the case, could it have been justly contended that because of the drawing of the state line, the water flowing from these mountain sides could not be used by the people on the plains as it is used to-day? Could accidental drawing of the line cut off the people now living on these plains from the use of the water which had risen in the mountains above? Now, in the same way, as you follow down any one of the great water courses that pass from one state to another—the people all along the line are in need of this necessity of life, some for domestic use, some for irrigation, and some wishing to convert the water into power, and finally for navigation. Therefore, it is apparent that the uses of water must be completely turned over to one jurisdiction, the state, and the federal government abandon all the authority it has to deal with the question.

The doctrine of the highest use is the outgrowth of the needs of the people in the use of water. This use can not safely be left to the selfish private interest of the individual users, but must be under the control of public authority whose jurisdiction is co-extensive with the watershed, otherwise we would have an anomalous situation of the people at one part of a stream being able to deny to all of those below them the beneficial use to which they are entitled. Therefore, federal rights in public lands and navigable streams should not be surrendered. The very moment we take that narrow view, that very moment we stand in the way of the highest development of all the uses of water, because they always intermingle—for example, in dealing with irrigation, whenever you create a reservoir you thereby create the possibility of development of power; every fall of water means possible development of power. If water is impounded for irrigation it means increased possibility of power. The creation of reservoirs at the heads of many large streams adds to the usefulness of your streams. It does not matter so much in your state, where you have no problems of navigation, but in our streams it does; the impounding of the waters of the Monongahela and the Allegheny is of tremendous importance to Ohio, and ultimately to the people of the Mississippi valley. I have heard it said by many gentlemen that we citizens of the East have nothing to do with conservation, because we have no public lands. Of course, this idea is erroneous, because we are vitally interested in these questions of conservation even if we have, unfortunately, disposed of the public lands.

During recent years the federal government has recognized the duty it owes the people of the country in relation to the use of water and has taken the first steps toward the fulfillment of that duty * * *. The success of the reclamation projects which have thus far been constructed has proved the wisdom of the men who enacted the reclamation law. The fears of those who opposed that measure, based upon the idea that it would interfere with individual or state activity, have proved groundless; the very opposite has resulted. The success of the federal projects has induced the extension of private irrigation and construction under the Carey act. The federal government, in each instance, has complied with the state laws and there is no friction between the two jurisdictions.

On this question of navigation the federal government has the right to go up stream, build dams, superintend the structures, and go further than suggested by the governor this morning. It is not a mere negative power that the federal government exercises over the navigable streams. In the creation of new navigation, or the improvement of navigation, building reservoirs, the construction of dams, and the doing of all things necessary to directly improve navigation, the federal government has the right to take, and does take, affirmative action.

In dealing with this problem the federal government during the last few years has developed a clear-cut, decided policy both

as to navigable and non-navigable streams. As to the navigable streams, President Roosevelt, in his message relating to vetoing the James river dam bill, outlined as clearly as could be the policy that should be pursued in dealing with navigable streams, and five or six conditions he thought necessary to be imposed are these:

First. There should be a limited or carefully guarded grant in the nature of an option or opportunity afforded within reasonable time for development of plans and for execution of the project.

Second. Such a grant or concession should be accompanied in the act making the grant by a provision expressly making it the duty of a designated official to annul the grant if the work is not begun or plans are not carried out in accordance with the authority granted.

Third. It should also be the duty of some designated official to see to it that in approving the plans the maximum development of the navigation and power is assured, or at least that in making the plans these may not be so developed as ultimately to interfere with the better utilization of the water or complete development of the power.

Fourth. There should be a license fee or charge which, though small or nominal at the outset, can in the future be adjusted so as to secure a control in the interest of the public.

Fifth. Provision should be made for the termination of the grant or privilege at a definite time, leaving to future generations the power or authority to renew or extend the concession in accordance with the conditions which may prevail at that time.

Sixth. The license should be forfeited upon proof that the licensee has joined in any conspiracy or unlawful combination in restraint of trade.

In dealing with the use of non-navigable streams in the territories under the jurisdiction of the federal government, and with the use of the portion of the public domain adapted to water power development, a policy of government control and regulation was adopted by President Roosevelt.

In the national forests the secretary of agriculture granted permits to private interests developing water power. Under that system, approved as it was by the president and the attorney general, the public interests and the common good were properly safe-guarded. Permits were limited in time and compensation required.

The first steps were taken to impose similar conditions upon the use of the public domain, outside the national forests, adapted to water power development. Investigations of outstanding permits were made and large areas of land were withdrawn from entry for the purpose of examination and in order to prevent its illegal acquisition by water power or allied interests. It is around this policy and these acts of the Roosevelt administration

that the present acute controversy has arisen. This policy has been attacked on the ground that it is illegal or is an unwarranted extension of executive authority; and the ghost of states rights has been called forth to frighten the people.

Why were these conditions imposed? They were imposed because, from the earliest development of our navigable streams the federal government found out that unless its jurisdiction was asserted that there was danger of the rights of the people being imposed upon by those interests that were seeking to obstruct navigation or to monopolize stretches of the navigable streams for private gain and private benefit without regard to public rights. Now it is asked under what authority was that policy adopted. Under the general authority of the federal government derived by the Constitution to deal with questions of navigation, and under the further right to deal with questions of interstate commerce. It is asked by what authority could any charge be imposed? The answer is, that authority was given to Congress to impose conditions and regulations in carrying out the duties imposed upon it by the Constitution. And a further answer is that the Supreme Court year in and year out has sustained the actions of Congress and the chief executive in imposing conditions of that character. It is as much a condition imposing compensation to provide that a railroad must carry passengers free over a bridge that it constructs, as it is to impose a fixed charge in accordance with the number of wheels that run over that bridge. It is compensation to provide that federal troops shall be carried free; that the mail shall be carried free over such a structure. It is compensation to say that those who construct a dam shall likewise construct various devices, such as locks, fishways, etc. It is compensation to require that the same company should pay to the federal government something for the use of that water and that dam.

Now, there may be splitting of hairs as to what jurisdiction controls the water that passes over that dam. The federal government has the right to say whether or not the dam shall be constructed at a certain point. It gives the privilege to me or to you, and for that privilege, granted by all the people to the one individual who uses it, the government says to that individual, You must pay to the public for that which you get from the public. Whether you call it a franchise, permit or privilege, or whatever you call it, the proposition is, simply, that one person is given an exclusive and valuable right to use for his own benefit something that belongs to all the people. Instead of asking, why should a charge be made, the natural question is, What good reason is there for not making a charge commensurate with the special benefit given?

The next step deals with the question of those stretches of the streams that are not within the lines of navigation. There is nothing in the Constitution, there is nothing in the laws, to describe or limit the place where Congress must stop in dealing

with navigation. It is within the wisdom of Congress to determine where it shall stop; it is within its province to determine that a reservoir site 100 miles above a navigable portion of a stream is necessary to navigation. Congress may then construct a reservoir at that point in aid of navigation below. If it constructs that reservoir then it has the right to provide that you or I, if we want to develop power from that reservoir, may do so upon condition that the privilege shall not be in perpetuity, and that we shall pay something to the government. There is certainly nothing reactionary in that; nothing that could be construed as an infringement upon the power of the state. It is simply an exercise of that wise discretion vested in Congress under the Constitution to deal with the question of navigation.

Let us take the next step, and that is one that bears upon the question of dealing with power sites, reservoir sites and rights of way of the public domain. The national government owns large sections of the country not confined by any means to the western states. They stretch all the way from the Pacific to the Atlantic. In Florida, in every one of the southern states, they have within their borders tracts of public lands. In the southern states it is nearly all swamp land, and the question is one of drainage and not reclamation. The federal government in dealing with this property deals with it under the Constitution. The Constitution provides that Congress shall have full authority and control over the territory of the United States, and the Supreme Court of the United States has held many times that "territory" does not mean a political division, but means actual property,—the real estate of the United States,—and Congress has full authority to deal with the territory of the United States as with other property of the United States. In dealing with the other property of the United States, Congress has seen fit to do a great many things. It has provided methods of acquisition of this public domain, this property. It has provided that certain kinds of lands might be taken as homesteads, others as timber and stone, others mineral, other coal, others go to the railroads as land grants and others to the states for educational purposes and schools. The power to dispose of the public domain is given absolutely to Congress, and that power of disposition is without limitations. Congress may sell, may lease, may give away, may refuse to dispose of it, and the Supreme Court of the United States has decided these points as clearly as it is possible for a court to decide. There is no limitation in the right of the federal government to dispose of its property in any fashion, in any manner, that Congress may determine.

In dealing with the question of rights of way and reservoirs Congress has determined that instead of permitting you and me to gain title to the land adapted to that character of use, it will permit us only to obtain a right of way, the temporary use of such land. Whether Congress is right or wrong is not the question. Congress has determined this method for the use of those

portions of the public domain capable of being developed for water power, rights of way, reservoirs and dam sites.

It is claimed on the part of many that that law is unconstitutional. If that is true, why has it not been so decided by courts? The courts are open to every citizen. The government of the United States is as much subject to the courts of the United States as is the humblest citizen. If it is true Congress has gone over the powers granted under the Constitution, then it is possible for any citizen of any state to raise that question in the courts of the United States.

Let us first understand what the duties of the federal government are in connection with the public domain, and what its powers are, and how it may exercise them.

The Constitution provides:

"The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States.

"The executive power shall be vested in a president of the United States of America.

"He shall take care that the laws be faithfully executed."

There is but little limitation to the executive power. The executive power is given the president of the United States, and he is charged with the faithful execution of the laws of the United States.

Congress, in dealing with the public domain, passed these laws:

"The secretary of the interior is charged with the supervision of public business relating to the public lands, including mines."

"The commissioner of the general land office shall perform, under the direction of the secretary of the interior, all executive duties appertaining to the surveys and sale of the public lands of the United States, or in anywise respecting such public lands."

"The commissioner of the general land office, under the direction of the secretary of the interior, is authorized to enforce and carry into execution by appropriate regulations every part of the provisions of this title (the public land laws), not otherwise specifically provided for."

The chief executive has the care of the public domain belonging to the people of the United States under these constitutional and statutory provisions.

In connection with this question, it is well to here discuss the character and extent of the powers and duties of the Congress and the executive.

The chief executive has been granted these powers—not for the mere purpose of doing nothing, but for the purpose of doing something with the property committed to his care. Congress is the body that has provided the laws. The chief executive is the instrument created by the Constitution to carry into effect

these laws of Congress, and he has been clothed with great powers for the purpose of doing something for the public welfare of this great country of ours.

We must remember the "welfare clause" means something. It is not simply in the preamble, but in the Constitution as well. The public welfare is something the people of this country very often have neglected.

One of the chief objects stated in the Constitution was the promotion of the public welfare, and what public welfare is changes from year to year. What was needed fifty years ago is wholly inadequate to our conditions to-day. The conditions which existed seventy-five years ago we would consider archaic to-day, and a man of that time had no conception of what would be the general welfare of to-day. The framers of the Constitution did not make the mistake of defining the general welfare, but left to each generation the interpretation of that expression, in accordance with the spirit or genius of the age. The general welfare cannot be absolute. The needs of the people change with the development of social, industrial and political conditions. That which formerly provided for the public welfare may soon become wholly inadequate.

Fortunately, the master-mind of the great chief justice guided the formative period of our national life. Marshall was as wise a statesman as he was a profound jurist. To him the Constitution was an instrument for action, not a mere act of directory or prohibitive regulations. His classic utterance in *McCullough vs. Maryland*, 4 Wheaton, 315, is the foundation of constitutional interpretation.

"Let the end be legitimate, let it be within the scope of the Constitution, and all means which are appropriate, which are plainly adapted to that end, which are not prohibited, but consistent with the letter and spirit of the Constitution, are constitutional."

Another sentence, in the same opinion, by Marshall, provided us with a standard for judging existing or proposed laws. He said:

"But where the law is not prohibited, and is really calculated to effect any of the objects entrusted to the government, to undertake here to inquire into the degree of its necessity would be to pass the line which circumscribes the judicial department and tread on legislative ground. This court disclaims all pretensions to such a power."

An interesting and striking example of the application of this wise interpretation of the Constitution is shown in connection with what we have done in the Philippine islands. The war with Spain imposed upon us obligations which could not have been within the contemplation of the founders of the Republic. Yet we have found no insuperable difficulty in fulfilling those obligations.

President Taft, when discussing our work in the Philippines, spoke as follows:

"It is said that there is nothing in the Constitution of the United States that authorizes national altruism of that sort. Well, of course there is not; but there is nothing in the Constitution of the United States that forbids it. What there is in the Constitution of the United States is a breathing spirit that we are a nation with all the responsibilities that any nation ever had; and, therefore, when it becomes the Christian duty of a nation to assist another nation, the Constitution authorizes it, because it is part of national well-being."

Primarily, the Congress is responsible for the activities of government. Upon Congress rests the burden of affirmatively providing for the doing of things necessary for the security and stability of the nation.

Because of Marshall's interpretation we have been able to act upon many novel questions that have arisen in administrative affairs and deal directly with the most difficult industrial and political problems. Vigorous action by the federal government has been possible because Marshall's interpretation of the Constitution prevailed. An opposite interpretation would have shorn the nation of its greatest powers and subjected it to the weaknesses and dangers of the old confederation.

Marshall gave life and vigor to the young nation; he was not afraid of great power and great responsibility. Those who opposed his views were the timid folk, who would tie the hands of government for fear lest some power might be badly exercised, and who, thus, in their zeal to prevent usurpation of power by their judges, legislators and executives, would make it impossible for those officers to protect all the people against aggression by some of the people.

Marshall's interpretation made it possible to act for the public welfare in the broadest manner, and to successfully combat that narrow construction of power which almost always gives special interest unfair advantages.

The great danger which threatens our federal and state governments to-day is that special interests, private interests, property interests, may unduly and unfairly dominate legislative action. It is not just to merely arraign individual or special interests for this condition. We must likewise condemn the indifference of our citizens. We, as a people, have been too busy making money to give proper heed and attention to the actions of our legislative representatives. We have been willing to calmly sit by and see great property rights, great special privileges, granted to individuals and private interests without regard to the public welfare.

Fortunately, during the last few years there has been an awakening of the public mind. We are beginning to realize that such indifference, such failure to care for the public interest,

can not longer be tolerated; that if we are to continue to be a great and efficient nation it can only be accomplished by electing members to the legislative bodies who will never forget that the public welfare is of the first and greatest consideration in every proposed bit of legislation and that their duty is not fulfilled unless they recognize that in any conflict between private interest and public welfare the public welfare must prevail.

Special and private interests are ever present, ever ready to push and care for their own advantage, too often regardless of the effect that their requests or demands may have upon other interests or the public. Some special privileges are obtained by dishonesty and corruption, but by no means all of them. Indifference on the part of the public is inevitably reflected in the actions of their representatives. If private individuals are too interested in their own affairs, too busy making money to pay attention to public affairs, they can't expect their representatives to be more careful than they are themselves. Thus, it happens that the public interest and the public welfare are too often not considered. The old adage of "What is everybody's business is nobody's business" particularly applies to the consideration of the public welfare in legislative bodies, and usually the burden of fighting for the common good is borne by but a handful of men in a legislative body who must assume the difficult task of combating the unjust demands, the improper aggression, of private interest.

Fortunately, the great majority of our legislators are right-minded, patriotic men; yet, if the people's battles are to be won in legislative halls their representatives must not be in a disorganized crowd, but a well trained, effective body of men, with leaders whose sole purpose is to safeguard and promote public welfare. In order to keep them efficient guardians of the public interest they need as loyal support from their constituents, the public, as is given by special interests to those legislative representatives who have abandoned the public and represent really the special interests.

The executive branch of government has peculiar responsibilities and opportunities for promoting the general welfare. The executive power, granted under the Constitution, is subject to but few limitations and prohibitions. The chief executive is, in a peculiar sense, the representative of all the people and steward of their rights, property and interests.

The founders of our Republic understood the vital need of vesting ample power in the chief executive. Their interpretation Hamilton well expresses, as follows:

"Energy in the executive is a leading character in the definition of good government. It is essential to the protection of the community against foreign attacks; it is not less essential to the steady administration of the laws; to the protection of property against those irregular and high-handed combinations which sometimes interrupt the ordinary course of justice; to the security

of liberty against the enterprises and assaults of ambition, of faction, and of anarchy.

"There can be no need, however, to multiply arguments or examples on this head. A feeble executive implies a feeble execution of the government. A feeble execution is but another phase for a bad execution, and a government illy executed, whatever it may be in theory, must be, in practice, a bad government."

The executive speaks and acts through the heads of departments. In the early days the Supreme Court clearly indicated its view of executive power.

United States vs. Macdaniel (7 Peters, page 1).

"A practical knowledge of the action of any one of the great departments of the government must convince every person that the head of a department, in the distribution of its duties and responsibilities, is often compelled to exercise his discretion. He is limited in the exercise of his powers by the law; but it does not follow that he must show a statutory provision for everything he does. No government could be administered on such principles. To attempt to regulate by law the minute movements of every part of the complicated machinery of government would evince a most unpardonable ignorance on the subject. Whilst the great outlines of its movements may be marked out, and limitations imposed on the exercise of its powers, there are numberless things which must be done that can neither be anticipated nor defined and which are essential to the proper action of the government."

Marshall's interpretation of the constitutional powers of Congress is equally applicable to the constitutional powers of the executive. An opposite interpretation of executive power restricts the opportunities of the executive to safeguard the public interest, and necessarily leads to inaction. Under the narrow interpretation the tendency is to find a reason for not acting, while under the broad interpretation, whenever the public interest requires, action is taken, unless it is found prohibited by the Constitution or laws. It is, of course, fundamental that under any theory of executive power the executive must keep within the law, but there is a great latitude for action within the law. An executive may be within the law and do nothing, or he may do much. It is a part of the executive duty to keep within the law. It is his further and equally great duty to make the law an instrument to promote the public good rather than an excuse for inaction.

During those periods when the chief executive acted upon the broad conception of their power, the people's interests and the public welfare have been better safeguarded and promoted than during the periods when the opposite view prevailed. The narrow interpretation is the one that private interest and special privilege find best suited to their purposes.

The acts of President Roosevelt in relation to the public domain and the conservation of natural resources were in accordance with the broad interpretation of executive power. It has been charged many times that he and those under him acted illegally and outside of the law, but such is not the fact. There has yet to be shown any instance to support such a charge. The constitutional and statutory provisions to which I have referred show the general authority under which the executive as steward of the public domain can and should protect the people's interests. By the wise exercise of executive power and the enforcement of law, President Roosevelt stopped the stealing of the public domain and the waste of natural resources. The withdrawals of public lands were not contrary to law, but for the very purpose of making the enforcement of law possible. Congress has provided by law for the disposition of the public domain. The executive cannot dispose of a single acre of land, except in accordance with those laws, but he will grossly neglect his duty if he permits lands to be acquired contrary to law. The underlying purpose of the withdrawals was to prevent the acquisition of land, except in strict conformity with the laws applicable thereto.

The reasons for and the result of such withdrawals are clearly shown in the case of the lands withdrawn to protect water power sites. By the right of way acts, and particularly the act of February 15, 1901, Congress provided that lands capable of being used for reservoir sites, rights of way, etc., shall not be entered and reduced to private ownership, but shall be merely used under a permit to be issued by an executive officer. It is thus apparent that if the executive permits lands adapted to these uses to be entered and acquired under other laws, he would be permitting a fraudulent or illegal transaction. It was therefore the part of wisdom to segregate and withdraw the areas of land supposed to contain such locations, and to permit their use only in accordance with the statute.

Until recently, the power of the executive to thus withdraw lands has not been seriously questioned by executive officers. The matter is now before Congress, and the senate committee on public lands has reported that while the power so to withdraw is in the president, and has been always exercised, yet, because the question is raised, the committee recommends the passage of a bill which simply declares what the existing law is, and requires the secretary of the interior to make a report of all withdrawals to Congress. It is to be hoped this measure will pass, for it will put at rest the contention of those who sought to embarrass the action of the executive by questioning the exercise of this power.

The immediate question regarding water power sites upon the public domain is—What shall be the future course of the federal government? Shall the policy adopted by President Roosevelt, and approved by President Taft, be carried out? That policy means that the federal government should retain the owner-

ship of such lands and permit their use only under a system of lease by which all interests can be properly safeguarded.

Those in opposition to this policy use as their chief recommendation against it the claim that it is an infringement upon the rights of the states, for the reason that the states, as they claim, should have complete jurisdiction over the use of water, and that any attempt by the federal government to impose restrictions upon the use of the lands which it owns and which are available for water power development, is in fact a restriction upon the use of the water. Those of us who believe that the federal government not only has the right, but as well the duty, to deal with this problem base our belief on the following propositions:

A. THE RIGHT TO OCCUPY AND USE LANDS OF THE UNITED STATES FOR HYDRAULIC AND ELECTRIC WORKS TO GENERATE AND DISTRIBUTE POWER IS ENTIRELY DISTINCT FROM AND INDEPENDENT OF THE RIGHT TO APPROPRIATE FOR THE SAME PURPOSES WATERS FLOWING THROUGH AND UPON THE LANDS OF THE UNITED STATES.

1. The United States originally had a property right in the public lands and the waters thereon.

2. The consent of the United States is necessary to dispose of any part of its property right. In this respect it is unlike a private owner.

3. So long as the United States retains any part of its property right the federal jurisdiction over that property (as distinguished from political sovereignty over persons residing or being on such property) is exclusive and inalienable.

4. Among the property rights of the United States were, originally:

(a) Riparian or bank rights, which were appurtenant to the fee.

(b) Rights of occupancy and use for specific purposes, including hydraulic or electric works, which rights were part of the fee.

(c) All other property rights which were the balance of the fee.

5. Whether or not the riparian right has been sold or given away by the government, the right of occupancy and use for all purposes, including (a) hydraulic and electric works, remains in the government, because:

1. The alleged disposal of the riparian rights puts the government, at the worst, in the same position as a private owner.

2. Such private owner retains the fee, including (b) all rights of occupancy and use for hydraulic and electric works. These could only pass from him by his consent (sale, gift, lease,

license, etc.) or by the compulsion of the sovereign (the state) having jurisdiction over him and his property.

3. In like manner the nation, at the worst, retains (b) all right to occupancy and use for hydraulic and electric works. They can only pass from it by its consent (sale, grant, lease, license, etc.).

6. The consent of the nation to the occupancy and use of its lands by private persons for hydraulic and electric works was not necessarily incident to the consent given by the nation to the appropriation of water rights under local laws. On the contrary, in the act of 1866 (Rev. Stat., section 2339), after consenting, by suitable words, to the appropriation of water rights, it was necessary to separately and expressly grant rights of way for hydraulic works to utilize the water. For this purpose the following words were used in that act: "And the right of way for the construction of ditches and canals for the purpose herein specified is acknowledged and confirmed."

7. Subsequent statutes have emphasized the distinction between the water right and the right of occupancy and use of public lands for hydraulic and electric works—

1. By expressly reserving a right of way for ditches and canals in the patents conveying the fee to entrymen.

Act August 30, 1890 (26 Stat., 391).

2. By changing the terms of the act of 1866 as to grant of rights of way for ditches and canals, imposing new and more onerous conditions, subjecting each grant to the approval of the secretary of the interior; also subjecting it to regulation by him on unreserved lands, and to his absolute discretion as to reservations, etc. The right to occupy and use lands of the United States for reservoirs and other kindred purposes were added to the grant.

Act March 3, 1891, sections 18-21 (26 Stat., 1101).

Act May 11, 1898, section 2 (30 Stat., 404).

Act February 15, 1901 (31 Stat., 790).

Act February 1, 1905, section 4 (33 Stat., 628).

Act May 1, 1906, sections 1 and 8 (34 Stat., 163).

B. THIS RIGHT OF THE UNITED STATES TO DISPOSE OF THE RIGHT TO OCCUPY AND USE ITS LANDS FOR HYDRAULIC WORKS DOES NOT INTERFERE WITH STATE CONTROL OF WATER APPROPRIATION. ON THE CONTRARY, IT AFFORDS A BASIS FOR CO-OPERATION OF STATE AND NATION.

1. This is clearly shown by the provisions of the reclamation act, which requires the United States to proceed under the local laws in the appropriation of water for its irrigation projects.

2. This harmony between federal control of hydraulic works on the public lands and state control of water appropriation is further illustrated by the national forest administration act:

"All waters on such reservations may be used for domestic, mining, milling or irrigation purposes under the laws of the state wherein such forest reservation are situated or under the laws of the United States and the rules and regulations established thereunder."

Act of June 4, 1897 (30 Stat., 35).

Also, by the regulations of the secretary of agriculture and the practice of the forest service under the statute last cited, concerning applications for hydraulic power permits:

"If the use of water is involved the application must be accompanied by certified evidence, in duplicate, of water right appropriation under the local laws."

Reg. 16, issued July 1, 1908, in "Forest Service Use Book," page 66.

C. UNDER THE EXISTING LAW THE PROPER ADMINISTRATIVE OFFICER OF THE GOVERNMENT IS FULLY AUTHORIZED TO GRANT THE OCCUPANCY AND USE OF ITS LANDS FOR THE DEVELOPMENT OF WATER POWER; BUT SUCH GRANT IS, BY THE STATUTE, EXPRESSLY MADE REVOCABLE BY HIM OR HIS SUCCESSOR, IN HIS DISCRETION.

1. The act of February 15, 1901 (31 Stat., 790), authorized the secretary of the interior to permit the use of "rights of way" through the public lands, national forests, military, Indian and other reservations of the United States and three enumerated national parks for "electrical plants, poles and lines for the generation and distribution of electric power * * * and for canals, ditches, pipes, pipe lines, flumes, tunnels or other conduits for water plants, dams and reservoirs." As to national forests this authority was transferred to the department of agriculture by act of February 1, 1905, section 1 (33 Stat., 628). As to the other lands enumerated it remains in the secretary of the interior.

2. Forest service permits, under this statute, require the permittee to pay an annual rental, to take certain measures for the protection of the forests and to submit to conditions designed to prevent the evils of monopoly. These permits, which are uniform in tenor, are the result of five years' study and practical experience of the problem of water power control. The department of agriculture has full power to issue them under

the acts of 1901 and 1905, above cited, and the charge thereby imposed is lawful.

25 O. Att. Gen., 421.

Order of Judge Lewis, of U. S. Circuit Court of Colorado, dated August 3, 1908, requiring receivers appointed by his court to sign forest service permit and pay the charge.

3. The rights of the United States to reserve and rent the public lands is settled beyond question by the decision of the Supreme Court.

Gratiot vs. United States, 14 Pet., 526.

Believing that the power is in the federal government, and the duty upon the federal government, to deal with the water power problem, the conservation association has urged upon Congress the needs of so amending the existing laws as to authorize permits, irrevocable for fifty years except for breach of conditions. Such an amendment was proposed by Mr. Pinchot in 1907, but was defeated by friends of the power companies. In this way it will be possible for the great watersheds to be utilized as entirety. There will be no difficulty in arranging a co-operative plan, regulating the use of water, which can be enforced, while, at the same time, the laws of the United States relating to the use of its property can also be enforced.

It is proposed by some bills now pending in Congress to practically transfer to the states all of the lands now owned by the federal government and capable of use for water power development. The adoption of such a measure is a complete abandonment of the power of the federal government to protect the people's interest, and is a betrayal of the obligation which rests upon the federal government. It is idle to urge that the states will protect the people against the unjust aggression of private interest. The provisions proposed in these bills are not sufficient to ensure such protection; nor is there any reason to believe from state legislation that all of the states will immediately take the necessary measure to protect the people's interest. Some will, others will not, and the result will be a still greater lack of harmony, still greater confusion in the laws affecting the use of water.

I wish to speak a word to this state commission for the man who is at the head of the conservation movement—Gifford Pinchot. (Applause.) I thank you for him. He is a man you can not applaud too much. He is no longer in official position, but he is at the head of national conservation association. Those with him recognize that we are just beginning the fight. The fight isn't ended because we are out of office. We will carry on this fight whether out of office or in office. It is a fight for the promotion of the greatest efficiency and permanent welfare of all of the people of our country. It is not merely utilitarian. It is

that, but more than that—it is ethical and moral. It involves fundamental principles of conduct. It is a strife for equality of opportunity, not the equality of reward. It is not an assault upon a legitimate private enterprise, but an endeavor to help the legitimate enterprise get a better and fairer showing than it ever had before. It recognizes that, if we are to continue as a great nation, we must be individually more efficient.

In the work there should be no conflict between state and nation. There will be organized in every state a state commission such as you have here. State problems such commissions will take hold of, while the national commission will deal with problems of national concern.

I was interested in an article on conservation recently written by a Colorado man, Mr. Knapp. At the end of that article, in which he opposes conservation, he says that he wishes to hand down to his children liberty, equality of opportunity, and freedom from interference by the government, so that they will live without being permitted to live by some one else. We agree with all of that proposition, with the single exception—that of the inference that the government is taking away liberty and denying equality of opportunity. Instead of the government being at fault, it is the special private interests who are to be criticised. The fact is that liberty and equality of opportunity will be lost if we permit the great corporations and the rich men to control the political life of our country. Either the big interests will control government or the government will control business. It is clear that the citizens of this country must always control—the state within its jurisdiction, and the federal government within its jurisdiction. If that be done we have no need to fear that liberty and equality of opportunity will not be assured.

After Mr. Garfield's address the following discussion took place, participated in by Hon. D. T. Sapp, ex-Governor C. S. Thomas and Attorney General John T. Barnett:

(By Hon. D. T. Sapp.)

It seems to me rather presumptuous of me to assume for a moment even that I can successfully present the views of the people of this state, as I believe that I represent them—I mean the most of them,—but in looking around I find many men, members of the conservation commission, men whom we look to as leaders, have gone away. It may be, Mr. President, some of them put their ears close down to the ground and found it was no place for them.

There are those who have come a long distance—almost as far as our distinguished guest has come—to be here and talk with our co-laborers on this question. I hardly know how to say to you, Mr. President, that in some things, perhaps in many things, we do not agree with Secretary Garfield. He knows nothing, as we believe, of forest reserves, excepting as he has surveyed them from time to time in a Pullman car. We who live, Mr.

President, in this new country of ours, where we live, not only myself, but others, my friends, can not go away from our homes without crossing the forest reserves and seeing water power going to waste, and we don't entirely agree that the administration is represented, that he represents us. He has told us all these things they propose to do, and it seems to me that because we live at home, and we love our state, and we love our country that we live in, and love our state even more, because we are building that up, and there are others who are building up the balance of the nation, that they can not come out here and do what we are doing, as we have the right to do; because the people of the nation have come to the conclusion ever since the beginning of time that the national resources of this great nation were for all the people, which seems to be your slogan, Mr. Secretary. The national resources are for all the people, and all the people have the right to get them. Not only back in New England will they demand their share, Mr. Secretary, and we would like to have them come out here and help us get it. You want us to divide our water power that we have to give away perhaps with some fellow like John D. Rockefeller or John P. Morgan, who have more than their share. Look what has been done in the last four years with the national forest in the State of Colorado to retard the growth of this state since the administration of the secretary, Mr. Garfield, and your chief. Is it fair to the people who have come out here, Mr. President, as you have, and as most of us, to upbuild this country, to do something with it, to have at this late date, after over one hundred and forty years of earnest endeavor, to take these resources from us and utilize them, instead of helping us to upbuild our nation, and making it what it is, the greatest nation on God's footstool? And now come in here and under the guise of giving to all the people all the natural resources, take from them—from the western states our resources and appropriate them to some one else?

Now, I have no anticipation that I can answer, that I can expect to answer, a gentleman all the way from Ohio, and perhaps from Washington, but I want to answer for the men in Colorado, the conservative men who are trying to stand up and fight for the right of the people of Colorado. If that be a crime I want to know it. That we are in the minority there can be no question. If we people, educated by the magazines throughout the country, the national government of which is paying for this magazine work, are not in sympathy with such men as I might name in this commission, feel that these resources should not be turned over, but should be used, should be utilized, should be handled, should be controlled by any national government for the benefit of New England, but should be utilized, should be granted to the people of Colorado, for the benefits of its own citizens and the people who come here to help build it up, then this is a great movement.

We were told that there is no desire on the part of the national administration, on the part of the National Conservation

Commission, of which we are not yet a part, to in any way retard the growth of this state of ours, and yet it may not so appeal to our distinguished guest, and yet the statement is correct, although in order to build it up, we have to forfeit about three-fourths of the public domain of this state where we live, that doesn't even belong to the people of the State of Colorado. We only own about one acre in four; isn't that correct, Senator Ammons? Am I correct,—one-fourth? (Senator Ammons: Yes.)

Only one-fourth of this state, so much that we have to upbuild. The national government owns the other three-fourths. Mark you, one-fourth of this state, that represents our holdings in the entire state, and they come out here and tell us what is needed, not with any portion of the other three-fourths, but that it shall remain in the government of the United States, and that Ohio, where there isn't an acre of land that belongs to the government of the United States, Mr. President, is in the same category as ourselves. And yet they say they have no desire to in any way retard our progress, and yet, here is a resolution that I would like to offer. I have offered it time and time again, and yet have never been able to have it passed. And if there is any man, woman or child within the sound of my voice that says that this resolution is not just to the people of this state, is not right as a conservation measure, then I will agree to give my resignation to the governor of this state, and I believe he will accept it.

“Resolved, That while this commission is in full accord with the general idea of conserving the national resources of the United States in order that future generations must ultimately get the full and proper benefit therefor, yet that it is opposed to any plan of procedure to that end that will in any way retard the immediate growth or prosperity of any part of our country.”

Are you surprised, Mr. Secretary, with the applause that you have received here in this audience when a resolution of that kind would not pass? I am not, sir, nor, Mr. President, am I surprised that the applause I get is of a negative character.

Now, Mr. President, I have not the physical ability, nor have I the desire, to attempt here to-night to reply to the eloquent and able address of Mr. Secretary. I wish that I had. There are men here within the sound of my voice, whom I did not know were in the room, and I hope they will take the opportunity to reply. But, Mr. President, there is no feeling, nor should there be, of politics. I thank the gentleman, I thank him from the bottom of my heart for the tribute he paid me when he referred to the button I wear on the lapel of my coat. I am proud that I wear it. I took the opportunity when I didn't know much better, and thought I was right, to work for my country the best I knew how. I learned to believe that this country of ours was greater than anything else, greater than any part of, because without a country we are not a nation, we are without a home. But there are other things beside a

nation, other things beside a home. I learned that when a man left that home, perhaps the home of his birth, that this home, and he owed to that West, that western state, that western part of this world, just as great an allegiance as he owes to his nation. I learned that I owed Colorado faithful work and allegiance, and that it was my duty to fight and protect Colorado, and the Colorado people, its citizens. I learned again, as I believe now, that Colorado to Coloradoans is greater than all; that when you take from Colorado and give it to some one else three-fourths of all its area, and all its water power, you deprive Colorado of nearly everything, and you make it almost a postoffice on the government map. Why don't you applaud? It is not absolutely because you agree with me, and haven't the courage to say no. I shouldn't have been afraid, knowing these things, that I owed it to the people that I love and that I know left their homes to protect Colorado.

The only difference between the National Conservation Commission—one difference between the general government and most of the people of Colorado and all the people of Colorado under the Constitution—is the difference between the national government controlling Colorado and the people of Colorado controlling it themselves.

We ask, and we believe we have a right to ask, every right, morally, legally, politically, religiously or in any other way. We want these national resources to help upbuild this national state of ours, and just as sure as you don't fight for it, just as sure as politics interfere, and we don't fight for our just rights, just so sure as this three-fourths of this magnificent domain of ours will be retained by this country by the centralized government, where will our rights be bye and bye? Because he seems to be all right on some questions—I feel away down in the bottom of my heart that if you people of this state realized that we must fight for ourselves, we must fight for our homes, for our children, and our children's children; if we don't, all that we have will go back there, and we won't get our share, and it will be handled under nine hundred and ninety-nine provisions.

Mr. Chairman, I thank you, and I hope some day we will discuss it together again.

(By Ex-Governor Chas. S. Thomas.)

I have listened with a great deal of pleasure, and have been greatly instructed as to many phases of this very important matter and the all-pervading question of conservation of our natural resources by the distinguished ex-secretary of the interior, and I feel personally that I am indebted to him for a discussion of many phases of national conservation which my limited opportunities up to this time have made it impossible for me to fully comprehend.

That I am in sympathy with the general movement which has crystallized in this and similar organizations within the past few years, will perhaps go without saying. That the menace to monopoly is quite as apparent and insistent as was pictured this evening, there can be no question. But there is one phase of the question of the development of water power and water facilities, if I may use that expression, which it seems to me is entitled to a little further consideration before we adjourn to-night. If it were not for that particular phase of the discussion, I should not attempt to detain this audience at this late hour.

The matter which I have in mind relates to the attitude of the states, and particularly states like ours, to the general question, in view of the ownership by the former of the areas within its domain, and the ownership of the latter of much of the land where that water is found, and the effect of that dual ownership upon the question of national conservation of water power. That it was the thing for the government, which owns absolutely no part of the land to be conserved, to make all proper and needful regulations, statutory and otherwise, for that conservation, and it is a far more complicated thing when two governments, to know which one of a portion of the entire part to be conserved, shall reach some method by means of which this dual ownership can be brought together and harmonized under the same general scheme of conservation. Now, it is admitted, I think, by all who have given any sort of consideration to the question of water conservation, that the ownership by the states of the running waters or waters of running streams within their jurisdiction necessarily requires the action of the state through its legislature, or otherwise, in order to prevent any method by means of which the general purpose of this and similar commissions are to be carried out.

The case of *Kansas vs. Colorado* was the most far-reaching and important controversy which ever sought judicial determination. It grew out of the claim of Kansas to the waters, or some of them, within the Arkansas river and its tributaries, and to the use of these waters within the state of Colorado. The state of Kansas insisted that it was entitled to the entire flow of that river without reference to the use of the waters tributary to it and forming above it in the state of Colorado, and while the people of the state of Colorado had a right to the use of these waters, they must, nevertheless, following the old doctrine of riparian rights, revert those waters to the river so that they would come within the state of Kansas unimpaired, and in the identical quantity that would exist.

So it involved not only a conflict between the claims of states, but also involved the question of authority of the general government over those claiming water distribution and over the waters themselves. Consequently the United States, as a nation, as a government, finally had to intervene in that litigation and asserted its right of jurisdiction and of sovereignty over the principal question involved.

The case was one in which a vast amount of testimony was taken, and the Supreme Court of the United States, among other things, conclusively determined one or two very important propositions. First, that the waters of the running streams of the state belong to the state; and, second, that the government of the United States had no power to interfere with the disposition of those waters, or with their control, except in so far as such control was necessary to provide against injury to the streams as navigable waters. In other words, that except as the United States was interested in navigation, it had no interest in or control over the questions involved in that celebrated controversy; and in that case the Supreme Court of the United States also expressed the gravest doubt of the power of the nation to carry on any scheme of reclamation whatsoever, but fortunately, without deciding that proposition, it determined those very questions as conclusive of the case in view of the fact that it also found that Kansas had not been at all injured. The Supreme Court also declared the sovereignty was exactly that of the Mississippi, or any other original water course, and this sovereignty was neither more nor less than that of any state of the United States, and that it had this ownership of waters with its dominion over the water supply subject to appropriation under its laws by its own citizens—that it was practically complete.

Now, that being the case, the question, and it seems to me the fundamental question, in the secretary's scheme of national conservation is as to how the government can control and dispose of these water power interests and water power privileges without the direct co-operation of the state, or the surrender by the state to the general government of its ownership and control over these various water supplies, for I think that it is a mistake to say, and in that I am compelled to disagree with our distinguished guest, that while the government may have parted with the irrigable use of the water, and that at the same time, with the use of the water, it never retained and could not dispose of water when the use, the only use, was for power purposes.

Such is not the decision of the Supreme Court of the United States, neither has it been the policy nor the practice with reference to the disposition of waters in the state. For our Constitution, as the secretary said, not only provides for the appropriation of the water, but also provides the manner in which the use shall be limited, the domestic use coming first, agricultural second, and manufacturing or power use third. But all these uses can be secured by appropriation through the set laws, and because of the state ownership, or public ownership through the state which is the source of the water supply.

Now it is quite true that in many cases, perhaps in most cases, the government is the owner of the land adjacent to these streams and on both sides of them which are necessary for the operation or for the enjoyment of the power privileges which may be obtained by appropriation of the water. We

therefore have a situation quite similar to that of an ownership: The land claimed by Mr. Falmestock, and the ownership of the supply necessary to work it by Mr. Garfield; if Mr. Garfield refuses to work except on the terms agreeable to himself, and Mr. Falmestock refuses to accept those terms—in other words, objects to using it except on terms which suit himself—the water supply may be clearly worthless; but if, as partners, they may associate these two elements, a productive and valuable property is the consequence of such an association.

To my mind the solution of this question, this conservation of water for power purposes in states like Colorado, makes it necessary for us to consider very seriously whether it is possible to do so, and especially in view of the temper of a great portion of our people upon the general question of national conservation; whether it is possible to acquire and to form—to acquire the principle and form the policy; whether it is not necessary for the government to convey to the state, or to lease, if you please, to the states, under terms and conditions to be imposed by itself, this power of the states which are the United States: To make effective this power that is involved in and is carried by our mountain streams.

For my part, although affiliated with the Old State's Rights party, so-called, I am not much of a state's rights man. The civil war pretty effectually settled the question of state's rights, or at least for a time (applause and laughter) the government has been the arbiter upon any subject when a dispute has arisen.

And, if I have read political history aright, both of the great political parties, from the time of the organization of our government, have been in favor of or against state's rights just as their own selfish interest prompted them. They are in the position of standing up for something which may be enjoyed by either party. But there is a difference between state's rights and the power which should be exercised by the local sovereign, and I believe conservation may be better effective where possible for the state to control or co-operate with the national government than for the national government itself to assume that burden.

We all know we are more concerned in our own localities than in any other part of the country at least. We are more concerned and more directly interested in good city government than we are in good state government; and we are more interested in good state government than we are in good national government, in so far as it affects the ordinary transactions of everyday life. As conservation is centered in a community and localized, just to that extent, in my humble judgment, would it be more effective, provided the general principle of conservation can be always kept in mind, and the general good and public welfare so felicitously defined by our distinguished guest is kept in view and also conserved. It has been insisted that is the principal objection. It has also been urged that state

conservation be transferred or surrendered from the general government to the state—any conservation of any properties would result in permitting the naturally selfish interest of any particular community to flourish at the expense of the nation.

This is true to a very great degree, and yet, as each of the states progresses and develops in prestige and power, so does the entire nation progress, and is lifted from one to another higher plane of progress and civilization. In other words, can the individual progress and expand and grow without its effect, and its good effect in a small way, upon the entire nation? Consequently, I can not agree that state conservation, where the state is the owner of one of the essential elements to be conserved, is going to have the effect of interfering with or denying to the other states the rights and privileges to which they are entitled. But if that be so, why can not the government convey to the state of Colorado the power sites which it owns upon our streams, the water which belongs to us, and by imposing upon the state precisely the same conditions that it will impose upon a lessee directly from the government, and hold the state to the performance of those conditions upon penalty of forfeiture back to the government, in the event it disregards its obligations? In other words, why can not the government, in regard to the matter of this reservoir property, being its own problem, deal with it, the government transferring to it precisely as it can make leases, and upon the same terms that it may make leases, or extend a temporary privilege to local corporations or individuals? I can not conceive why the Congress of the United States may not enact a law to-morrow giving the state of Colorado, in perpetuity, if you please, or leasing for a term of one hundred years, if you please, some of these power sites, under state control, state legislation, state inspection, of all the water power to be found within its borders, and by that means act in the interest of all parties. I do not believe that would be unfair to Wyoming, Kansas or any other state, and it certainly will not if precisely the same conditions exist in those states, making a similar policy necessary.

Now you cannot force any scheme, I care not how benevolent it may be, upon an unwilling and reluctant people. In other words, you cannot possibly enforce a law against public opinion. That is human experience everywhere. That there is an element that is absolutely opposed to the very idea of conservation, and that there is a large element, while not in favor of it, are not in favor of a system of espionage, there is no question. It has the effect upon the average man that the old principle of taxation without representation had upon our forefathers. I am not defending it; I am not championing it; I am simply stating what I think is a fact in my experience, at least in this state, and that circumstances must be considered in any well regulated scheme of conservation, is the sentiment of the people.

Now I believe that I am within bounds when I say that the majority of the people of the state of Colorado believe wisely and heartily in the broad doctrine of conservation that was announced to-night by our distinguished guest, and they also believe that it should be localized under some broad principle as is evidenced by the canal zone, a governmental institution, and that wherever a state can be entrusted with, and has the authority to carry out and effectuate, this principle of conservation, the state and not the nation should be the agency for the purpose of carrying the same into effect. Not in hostility to the government of the United States; not in opposition, but absolutely in harmony with that policy. It is true a great many states in this nation are corporation ridden, I do not think we can stand up and plead "not guilty," but unfortunately the canal region is pretty badly tarred with the same stick as the recent Payne-Aldrich controversy in which our president has been concerned. I believe the government is better qualified, but I also believe that optimism, integrity, virtue and a desire for the welfare of posterity out here in the Centennial commonwealth is sufficiently great to enable our people to faithfully discharge that trust to aid any plan of conservation which the government of the United States may see fit to impose upon us. I want to say, before taking my seat, that unless the general government will by some means confer upon the western states either a title to all the lands held by the United States along these power sites that are so necessary for development of the water power, the water belonging to and being controlled by the people, the power in our running streams, the result will simply be an idle dream. In other words, that unless the states are given the authority through their ownership, some form of lease or control of these power sites which they have, and the control of the water which is absolutely necessary for the purpose of water conservation, it will cause them not only to hesitate, but ultimately to refuse in many instances to go into this general scheme of water conservation. On the other hand, they will welcome the opportunity to be identified with it, if through ownership or control of the states of all the water which they own for the purpose of carrying out and effectuating this great public purpose, and I am sure that if the general government shall give to us upon any terms that it may see fit to impose the right to deal with this great question as a western commonwealth, the nation will have no cause to complain of the manner in which the people of Colorado will discharge the trust then committed to their keeping.

(By John T. Barnett, Attorney General.)

I was invited to formally address this commission upon the subject that is now before the commission for discussion, but unfortunately I have not had the time to do so. It is not my purpose this evening to indulge in any of the discussions which have come up, or which have been discussed by our distinguished guest.

However, there are one or two matters touched upon by the ex-secretary that I feel it my duty to speak of before this commission adjourns. The word "Conservation," Mr. Chairman, has some magic about it that seems to draw people to its consideration. There is everything about it that appeals to the citizens, and there is no one who would have the temerity to say that he does not believe in conservation in every line and about everything; but, Mr. President, there are many things that can be done in the name of conservation that ought not to be done.

Now the distinguished ex-secretary is a man who has been prominent in the work of the nation's conservation for many years. He is recognized as a leader of that movement. He was invited to speak on it, and authorized to speak for those who have been present everywhere the national conservation movement is carried on, and who will find expression through Mr. Pinchot, and perhaps in a law by Congress.

The speaker in closing his address made the statement which I think accurately represents the sentiment and ideas that are held by him, and by the gentleman, who, as I say, is at the head of the conservation movement of this country, and for fear that I may misquote, or not accurately use his language, I will ask the secretary to permit me to have the use of his manuscript.

Mr. Garfield: In regard to what?

Mr. Barnett: The control of the public lands going outside of the federal government.

Mr. Garfield: I know of nothing of that kind in the manuscript.

Mr. Barnett: The remark that was made was this, that in the future we will give nothing away; we will hold it for us to regulate and control.

There is within the state of Colorado some sixteen million acres of land within the forest reserves. Outside of that there is a great deal of public land, and it is all to be held, according to the statement of the secretary; none of it to be given away, but all of it to be held and used and controlled for the use of the federal government.

I have never heard defined the word "national resources." I have never had given to me a comprehensive definition of the words "national resources," or "natural resources," but I may take it from the discussion of the secretary and others in the conservation movement, that the words "natural" and "national" resources comprehend only certain lands, at least a certain portion of the public lands of the United States. I take that for granted, because of the fact that the power sites, so-called, consist of lands. The secretary has stated to us that the government does not maintain ownership over the water contained in the streams, but the ownership and control over the lands upon which the power houses may be built. If it has the right to withdraw certain lands from settlement, from sale, then it has

the right within itself to withdraw from settlement and sale all of the public lands that still remain within our state. If it has the right to withdraw and say that it shall refuse, and will refuse, to dispose of the lands upon which the power sites may be built, it has the right to say that it shall withdraw and withhold from settlement and sale the lands upon which farmers may raise crops, and upon which water may be used, unless the farmer or the settler will do as the builder of the power plant—will give a certain portion of the earnings of that piece of land to the national government by way of revenue before the farmer or settler can go upon these lands. I think this, Mr. Chairman, and I say to the secretary, that it is my understanding from what has taken place recently in Washington, and from the expressions of the gentlemen at the head of the conservation movement, either the ultimate purpose is to take the balance of the public domain, the mineral domain, the agricultural domain, the power site domain, and make it for the rest of the time a source of producing revenue for the United States government. Am I not right, Mr. Secretary.

Mr. Garfield: Decidedly wrong; it has never been advocated.

Mr. Barnett: Mr. Secretary, were you not asked recently, in an investigation, whether it was not the ultimate purpose in this conservation movement to derive a revenue from these lands?

Mr. Garfield: That has been discussed a great many times.

Mr. Barnett: Your answer was, yes.

Mr. Garfield: No, it was not.

Mr. Barnett: I had the right to believe that no more land or property belonging to the government would be given away, but that it should be held for regulation and control. You stated in your address that it had a perfectly proper right (it may not be in just those words), that a certain amount of revenue should be derived from this land you now hold would go into the coffers of the federal government to help run the national affairs. I say that when the state of Colorado was carved out of the nation that it came in as a state with all the powers and all the implied obligations on the part of the people that went to the people of every one of the older states. I say that the government has no more right to expect legally or morally to derive a revenue from the public lands within the purports of rights of the state of Colorado than it has a right to derive a tariff from the state of Kansas, Nebraska and Ohio.

These lands, while they are the property of the federal government, and over these lands, while you own them you have the right to regulate and control, but you do not hold them, but you did not hold them at the time Colorado came into the Union, for the purpose of deriving in perpetuity a revenue to run the whole national government. They gave to this government the power of state sovereignty, and with it they gave to the people the right to expect that these public lands would be disposed of to the people of the United States and the people of Colorado

for the future upbuilding of this state, and for its own individual revenue, the same as the lands that were disposed of in the older states within the Union. That was the implied obligation, a legal obligation and a moral obligation, that when that state sovereignty that was granted the people of the state of Colorado, when this state came into the Union.

Now, Mr. Chairman, we have a great country here to-day that has been builded up on the policy that the lands of this country could go into the hands of the settler in perpetuity, if you please, but perpetuity does not live forever, but it passes on to his children. The same is true of Colorado. These lands belong to the people to take up and settle, and the government has no right to expect a revenue from these lands.

By deriving a revenue from these lands in our states it is getting something that it does not derive from any other state in the Union.

I am willing to agree with the secretary in a great many things he has said. I am not prepared to say that the public lands within the borders of the state of Colorado ought to be turned over to the state of Colorado. I am not prepared to say that that ought to be done. I am inclined to say that it ought not to be done, because I am inclined to believe that, under the federal jurisdiction of federal lands, we can secure a quicker and better settlement of these public lands and the state of Colorado will derive greater benefit under the federal laws than if we had the right to settle them ourselves. Why? Because the settlers come from every portion of the United States, and those settlers that have lived in the far eastern states, in the middle states—who come and get title to these lands through and under and by some method of federal laws—believe that these laws give greater assurance and protection than lands opened for settlement under control and regulation of state laws. But I hold, Mr. Chairman, that, while this is true, the federal government has no right to take and hold these lands for the purpose of deriving a revenue from them.

Take the question of tariff, so far as power sites is concerned, and I know it is the ultimate purpose so far as the mineral land is concerned. Take the rest of the public lands: unless they derive a certain amount of revenue they are doing that in violation of the obligation that was implied on the part of this government when Colorado came into the Union. If they do, they are not treating the people of this state as they treated the people of the older states. As the secretary says, a policy that was good fifty years ago will not apply to-day. There are newer conditions and newer laws; but there are some fundamental principles of government that are as eternal as the government, that can not be changed in twenty years or in fifty years; and one of the fundamental principles of good government, as we believe, is to part with these titles to the individual and to permit these lands to be settled up under ownership of

the people, and any contrary policy would not be the part of wisdom, and has been detrimental to every country that ever tried it.

The word "conservation" implies a great deal. I am conservative; I don't believe in waste or extravagance, and believe in conserving our resources here. They ought to be conserved and made to produce the greatest amount. But I don't believe, under the guise of conservation, that we ought to permit—in fact, we ought to protest against—the government taking any of these lands that were dedicated to certain purposes and using them for the purpose of deriving a revenue and maintenance of the government to the extent as outlined by our distinguished secretary.

But as to a great many other matters I agree with him. This is a vital matter. It is fundamental. It runs back to the very beginning of our government. It runs back to the very beginning upon which the nation was builded. You destroy that, and you destroy one of the elements that was fundamental and vital in the history and formation of this government, and you build up a new system, which, when added to the law, will drive us backward; and, perhaps, in the course of time, drive us backward and destroy the prosperity which was builded up on different fundamental principles.

Mr. Garfield's reply:

I evidently failed to make myself well understood. It is certainly not true, and I am not aware of any statement I made that could give the impression, that we do not believe in the settlement by the homesteader of every acre of ground that is capable of homestead entry. It was one of the fundamental principles of the last administration that land capable of homesteading should always be so used, whether within or without the national forests, and that no charge should be made, except that required by the general homestead act.

As to the question of revenue, I have said over and over again that the question of revenue is one of minor importance. I have been asked that question many times. Let us see what revenue means, as applied first to the coal lands. Under existing law, the price of Alaska coal is fixed at ten dollars an acre. Mainland coal is classified by the secretary of the interior at not less than ten to twenty dollars an acre. Supposing such coal land in the market is worth fifty dollars an acre, and private land selling for that price, who is benefited, if the public land is sold at the minimum of ten dollars an acre? Nobody but the man who gets the land at ten dollars an acre. The public is not benefited, the consumer of coal is not benefited, but the man who buys that coal land from the government at ten dollars and develops it pockets the difference between the price paid to the government and the price the land is worth in the open market. Therefore, it is good business sense for the government to put upon its property a

price approximately equal to other property similarly situated. If you don't do that, you give to the man who buys the public land a profit to which he is not entitled. Therefore, we have urged that the coal lands be reclassified and valued at a price approximately equal to private coal lands. We did it for the purpose that I have indicated—not to make more revenue, but to require the men who got these lands to pay a fair value for them, and subject the lands to regulations that would prevent monopoly and protect the consumer.

As to the revenue in the national forests, the question is simple. Will you sell timber for very much less than it is worth, and let the man who buys it put the entire profit in his pocket, or shall the people who own the timber get its fair market value? The last administration wisely determined to act in favor of all the people.

The question of compensation for water power and for the use of the public domain for developing power is similar to the other instances. Compensation is a method of regulation and control. When private interests obtain grants, franchises or privileges from the public, the public should receive adequate return, that is compensation. It may be in money or service, but in whatever form, it should be fair.

Hereupon the commission adjourned to meet at 10:00 a. m. to following day.

TUESDAY, 10 A. M., APRIL 19, 1910.

Commission met with vice-president in the chair, when the following paper on Hydro-Electric Power and Conservation was read:

BY GENERAL IRVING HALE, MANAGER OF THE GENERAL ELECTRIC CO.

With the development of electric power during the past quarter-century the electrical utilization and transmission of water power to supply light, power and transportation has been an attractive dream, and to a considerable extent a practical reality.

Progress in this direction has been slower than anticipated, for two reasons:

First. The direct-current moderate-voltage system required such an excessive quantity of wire to transmit power any considerable distance as to make the cost commercially prohibitive.

Second. Since the introduction of the alternating-current high-voltage system, which permits transmission to long distances with reasonable expenditure for copper, the principal obstacle has been the high cost of water power itself.

The common expression, "cheap and unlimited water power of our mountain streams," is a popular fallacy, based on the ap-

parently irresistible rush of these torrents during the flood season. In fall and winter these rivers dwindle to one-twentieth, or sometimes less than one-fiftieth, of their maximum flow; and a stream which in early summer would operate the entire street car or lighting system of Denver could, in winter, hardly run the Montclair line or light a single business block. A hydro-electric plant must give an approximately steady load throughout the year. This necessitates immense reservoir capacity to store the floodwaters and let them out during low-water period. In our steep and narrow canons the high masonry dams required to store sufficient water, and long pipes and tunnels to obtain the required head, are enormously expensive. To this must be added powerhouse, water-wheels and electric generators, switchboard, transformers, long transmission lines through difficult country, rotary converters and motors for reconverting the electrical into mechanical energy.

So hydro-electric installations, instead of being cheap, usually cost three to five times as much per horse power as steam plants. Their operating expenses are less, as they save coal and firemen. The problem is therefore a comparison of interest, taxes and depreciation on the higher cost of the hydro-electric plant, against fuel and extra labor in the steam plant. The advantage is generally on the side of water and electricity where coal is rather expensive, and on the side of steam, where it is very cheap, while there is an intermediate price of fuel at which the two plans meet on the same ultimate operating expense. Just where this falls depends on the cost of the water power, distance of transmission and other conditions.

As Colorado's water powers are usually expensive, and her coal deposits are numerous and widely distributed, it is a serious question as to which of these resources will be the more extensively utilized.

These considerations account for the difficulty experienced during the past twenty years in enlisting capital to develop our water powers. They also explain the fact that of the dozen hydro-electric plants which sell power, and the numerous private installations, all but two depend principally upon the mining districts, and only one has delivered electric current to the metropolis of the state. Nevertheless, much has been and much more will be accomplished in utilizing these mountain streams; and the time will come when most of our mines, and numerous other industries, and the lighting and transportation of many cities and towns, will be operated by hydro-electric energy.

CONSERVATION.

Much has been said and general sentiment is growing in favor of the conservation of natural resources. While there should be no difference of opinion as to the importance of avoiding unnecessary waste, there is room for honest argument as to what extent present reasonable needs should be hampered for

the benefit of far-off posterity. This discussion, however, does not affect the development of water power, which differs diametrically from other resources. Timber, coal and other materials are conserved by not using them, or better by using them moderately and economically. Water power is conserved only by using it, and its non-use wastes it absolutely and beyond recall. Every second-foot of water that runs unharnessed from timber line to plain wastes continually and irretrievably over 500 horse power that could be converted into electric energy and furnish the light and power of a town of 10,000 population. A stream carrying 100 cubic feet of water per second under 2,000 feet head will develop 18,000 H. P., which would burn, in the average steam plants, over 400,000 tons of coal per year. This saving, by passing the water through wheels, is effected without the slightest waste or deterioration to the water itself for either domestic use, irrigation or navigation. Moreover, water power competition stimulates the development of more efficient steam and gas machinery, still further economizing the consumption of fuel. Cheaper power and electro chemistry and metallurgy encourage all lines of manufacture, production of chemicals from natural compounds and reduction of low grade ores that would be unmined or thrown over the dump.

The utilization of water power inspires industries and resources that would otherwise be unprofitable or remain undeveloped, conserves vast energies that have been running to waste, and saves quantities of fuel for our beloved descendants in the distant centuries or millennia.

GOVERNMENTAL RESTRICTIONS.

In view of the great benefits to be derived from water power, and the natural obstacles in the way of its development, it is unfortunate to have this desirable enterprise further hampered by unjust artificial restrictions and impositions.

First comes the forest service demanding a perpetual fee, not for the water which it admittedly does not control, but for its use and conservation, on the following excuses:

First. The source of flow of water in or through the national forests, and the declivity of the stream therein.

Second. The regulation of flow as influenced by the forest.

The forest service can hardly claim credit for the scheme of creation in which our mountains were warped up and the streams made to run down hill.

Their theory that land governs the use of water that runs through and below it is an extreme application of the old rule of riparian rights, which was long ago abandoned as unfair and disastrous to the development of the great West. Water is the salvation of this country, and should not be controlled by the owners of land bordering upon its headwaters. A few men could take up comparatively worthless mountain ranches near the heads of streams, and thereby dictate terms and levy tribute from

all the farms of the fertile plains and industries of the cities who can utilize the water for irrigation and power. Such domination is as unjust and undesirable by the government as by individuals. The law that the use of water belongs to the people who appropriate and actually develop and utilize it has worked well for years and needs no radical change.

Admitting that forests regulate water flow (although some able authorities deny this), water powers derive comparatively little, if any, benefit from this action. Forests hold back the snow and water in spring flood season, letting it down later when needed for irrigation. They retain the snow and, therefore, decrease the run-off in winter, when the power plant suffers its greatest shortage anyway, and is in most need of increased flow. To maintain the required steady flow throughout the year the power company must build great reservoirs to store all the water of the stream. Having incurred this enormous expense, it cares little as to just when the water comes down or the minor regulation effected by the forest. In fact, it might prefer a heavy run-off in spring, when it can be stored, and less in summer, when the entire flow of the stream must be let down for irrigation.

This condition, that the power plant wants to store water in spring and summer and maintain an approximately steady flow throughout the year, while the irrigator wishes to use as much water as possible in the summer and store during the remainder of the year, might suggest a conflict of interests in that respect. This, however, is more apparent than real, and can be readily harmonized. Reservoirs for irrigation are usually basins in the plains, and are filled through canals from the streams. These canals are not large enough to carry the entire spring and summer floods, or, if made large enough, would be extremely expensive. Power reservoirs, which are in the mountains and catch all the floods, act as regulators, and give a steady flow, through moderate-sized canals, to the irrigating reservoirs, which in turn can deliver the water when and as required to the farms. These enterprises can, therefore, co-operate to store the entire flow of the streams, and utilize it to the fullest degree for both power and irrigation.

As the national forest is of little or no value to the power plant, as compared with its benefits to the irrigation, timber and grazing industries, its fee, if allowable at all, should be a small proportion of the expense of administering the service. On the other hand, this charge, which rapidly increases, would average many times the total cost of maintenance of the forest reserve included in its watershed. The injustice of this is evident.

FEDERAL CONTROL.

Now comes the National Conservation Commission, and others, urging federal control, and using public land needed for

water power sites as a lever to persuade or force the states to surrender their water rights to the general government.

It is held by lawyers familiar with the subject, and even admitted by the advocates of federal supervision, that the waters of streams belong to the people of the states, and the United States has no ownership nor control over them, except in regard to matters affecting interstate navigation. A parcel of government land, worth practically nothing except for its proximity to a stream owned by the state, is no just ground for compelling the state to give up its rights or charging an annual fee many times the total actual value of the land. This is riparian rights with a vengeance. It would be as reasonable for the owner of a little, worthless rocky ranch in a canon which controls the key to the passage of a railroad that has acquired rights of way for hundreds of miles, and will cost millions to build, to demand an interest in the road or an annual percentage of its earnings. Such a dog in the manger would be promptly knocked out by condemnation proceedings.

Mr. Garfield, in his address last night, said that the government owns this land; is not obliged to sell it unless it desires; can demand whatever price it chooses, and can make this charge in the form of an annual fee, measured by the flow of water which he admits belongs to the states. Such a spirit, which would not be tolerated in an individual owner, is still less excusable in the government, which does not really own the land for the gain that can be gotten out of it, but holds it in trust for the use of the people. If this policy had been applied to agricultural land and to land necessary for the construction of irrigation works, this productive western country would have remained the desert waste that the statesmen of a hundred years ago pictured it. The same policy will exercise a similar paralyzing influence on the development of our power resources.

The states certainly do not need federal assistance in the management of these powers, as they have demonstrated their ability to administer similar enterprises in the line of irrigation. The government seems to offer no valuable consideration for the privilege of administering and deriving a perpetual revenue from this valuable asset. Why, then, should the state be expected to give away its birthright without even the traditional mess of pottage?

The chief plea for federal control is to preserve these water powers for the people. What people? The people of governmental bureaus, who need the fees for the administration of their departments, or the people of the East, who long since acquired and utilized their lands and streams and now want a share of western resources, or the people whose courage and energy settled and are developing this western country? Under present state laws these water powers are and have been open to all the people—western or eastern—who want to appropriate,

develop and utilize them. How will these people be benefited by annoying restrictions and fees administered, whether directly to the individual, or hypodermically through a power company? These fees increase the cost, and consequently the charge, for power, and eventually fall upon the users, or the very people whom they are so concerned in protecting against the rapacity of an imaginary monopoly.

In order to popularize the illegality of withdrawing water power sites for rangers' cabins or other pretexts, charging fees for the use of water which does not belong to the government, and to tempt the people of the states to assign their rights to the federal government, it was considered politic to set up a bogey in the form of the "water power trust." No such trust or monopoly exists or is contemplated or could be practicable under existing laws. Water powers can not be cornered and held like land, or coal, or grain, or railroads, but can be retained only by developing and utilizing them. No corporation, however predatory, would spend millions to build plants for which there is no power market merely to corral the water; but, if it did, its efforts to sell its product would give cheap and abundant power, and the people would get the benefit. If, on the other hand, the companies charge excessive rates, other powers will be developed and enter the field, unless deterred by harassing government fees and restrictions. Even if they all combine, their prices must be moderate to meet competition with steam generated by cheap coal at the mines. And, as a last resort, the state can step in and insist upon reasonable charges to give a fair return on the investment. When there is any real sign of abuse or attempt to monopolize these resources it will be time enough to change the present policy, which has worked so beneficently in building up the country.

For the last fifteen years, when long-distance transmission has been commercially practicable, these water powers have been free to the public, and their torrents have gone thundering down our canons and promoters thundering over the country clamoring for their development. The trouble has been, not to protect these powers against the greed of capitalists, but to induce them, or the common people, or anybody, to invest their money in these somewhat dubious undertakings. Now that capital is beginning to take some interest in such projects, no undue obstacle should be thrown in the way of these enterprises, which will utilize this vast dormant asset, conserve our fuel, operate otherwise unworkable mines, make low-grade ores profitable, stimulate manufactures, reduce the smoke evil in cities, furnish cheaper and more abundant light and power to all the people, and do more than any other single influence to develop this great western empire.

After an extended discussion of the preceding paper, the following resolution was presented by Mr. Warren R. Given, viz.:

"Resolved, That the water of this state, being the property of the state, the water powers developed by such water should remain forever under the control of the state and that all legislation tending to abridge or restrict the same be discouraged."

After much debate the commission adjourned to meet at 2 p. m.

At 2 p. m. the commission met, with Vice-President Fahnestock in the chair. The Given resolution was taken up and after further debate passed.

Mr. Gauss offered two resolutions, one favoring the granting to the states all water power sites on all public lands under such restrictions as would guard against monopoly; and another favoring state legislation for the regulation and control of water power development.

Both resolutions were referred to the committee on resolutions.

THE WATER POWER RESOURCES OF THE STATE IN RELATION TO CONSERVATION.

BY PROF. L. G. CARPENTER,

Director of the State Agricultural Experiment Station.

In the papers that have gone before various phases of the water power question have been discussed, and it is not necessary to cover the same ground. The whole discussion arises from its relation to the conservation movement, and the conclusion that one may reach is largely dependent upon what he understands by conservation. The discussions of the past few years have been of great value in giving an arrest of thought and attention to various tendencies which needed correction. I have given interested attention to the various discussions and have been struck with the vague or varying ideas included in the word "conservation." If we agree upon what we mean by this term, or if we preserve the same meaning during a single discussion, there would be much greater unanimity in the conclusions. At the same time the discussions lead to a crystallization of sentiment and to an elimination of the unnecessary and the inapplicable. Conservation has been a popular word to conjure with and has been, many times, applied to the absolute tying up of resources indefinitely for the future, to greater economy of all kinds of operations, to all kinds of problems, to greater utilization, to the control of trusts and the prevention of all sorts of abuses. These purposes may be commendable enough, but they undoubtedly confuse a discussion of the question.

Does conservation mean a tying up of resources for future use, or does it mean a utilization of them? Much of the discus-

sion has been apparently based on the former idea, but seems now to be taking the position that utilization is the purpose sought for. When confronted with the bald question, I think one would agree that there is no virtue in preservation in itself. Economy is wise, but when it becomes extreme it becomes hoarding, and maybe miserly. Preservation may be as unnecessary as waste. There may be wanton preservation just as much as wanton waste, and one should be condemned as much as the other. Conservation, therefore, in my view, is not non-use, but the highest use. It should be utilization rather than preservation. The justification in conservation as often described is that it promotes utilization. It should result in the lessening of waste. It should be remembered, however, that waste is an economic question. There is always a balance of opposing demand. There may be conservation of the material, but on the other hand there is conservation of time or effort or energy, and the saving of this may be more important than the saving of material. This is the human element. Much is bound to be wasted in every process, and in every economic process it can not be otherwise. At the point when the waste of time or of energy required to prevent waste is greater than the waste itself, then it becomes wise to waste the material in order to conserve human energy. *We must not lose sight of the fact that it pays to waste under some conditions, and always will,* though what this limit is varies with the conditions and almost from day to day.

When it comes to the consideration of water power sight is sometimes lost of the fact that this stands on a different basis from some other natural resources, like coal. The failure to use coal to-day or restrictions in its use means a saving up of coal for the future. This is not so of water. What is not used to-day remains forever unused. Its energy is passing. The failure to use to-day whatever is economically possible is a waste in the highest degree and a waste that we never can make good. The highest degree of conservation of our natural resources means that we should use this power which is not now used. It ought to be put to the service of man, to promote human welfare by manufactories or other uses which are economically possible. The postponement of such use for one, or ten or a hundred years does not mean that the power is any less than it is now, but in the meantime human service loses the use for one, or ten or a hundred years, or for as many years as the use is postponed. It is a current income, which is lost if not spent. Instead of being economy to prevent its use it is waste, in the highest degree. Thus, it seems to me that the application of the principles of conservation may be entirely different in the case of water from that of coal, for the development of the same principles of conservation might lead to use in one case and hoarding in the other.

Colorado is richly blessed with water power and its problem, as it is with the other states, is not the prevention of its use, but the encouragement of use, for, as I have stated, the greatest

degree of waste is in its non-use. We may differ in the expediency of steps to be taken, but there ought to be no disagreement in the conclusion that the sooner these powers can be used under economic conditions, the better it is for this and our other commonwealths. Such use can not be made, or at least it is not a wise use, until it is economically possible. The test is whether the cost is justified by the benefit or to measure in modern terms whether the development will pay. It is an economic loss to invest capital before that be the case.

A good deal of fear has been expressed that there would be power monopoly and that the only way to prevent it is to restrict the use of power sites, to make it more difficult for them to be taken up. If there be a tendency of this kind it does not seem to me to arise from this source. With the hundreds of streams in this state of great fall, there is nothing to prevent the repeated utilization of the power in a stream or the building of one power plant below another. The charges placed upon power must necessarily be paid by the consumer, and thus the effect of a charge would be to increase the cost to the consumer to lessen the economic possibility and to restrict the use. Whether the restrictions which the government proposes to make will have the effect desired is doubtful. The government does not have control of all power sites, and the first effect is to cause development to proceed on sites outside the government control. It is notorious that power companies are avoiding government lands just as far as possible and developing sites not so good economically because of the conditions established by the government. This is economic waste, and is anything but conservation.

There is no doubt there is, and has been, a tendency to concentration and combination. It is noticed in cattle companies as well as in railroads. The tendency is irresistible. The likelihood of monopoly in power does not seem to me to come from the question of power sites or from any control that may be exercised over them. The limitation comes from the fact that when a power plant is built it must dispose of its power; this is true, no matter how inexpensive or costly the plant may be. The power is, therefore, almost absolutely bound to go to the centers of population, where there is use for it. Otherwise it must be used in the building up of new industries. A city can not permit an indefinite number of companies to use its streets, hence it means that the companies producing the power are controlled by the distributing agencies. The most notorious trust has been that of the Standard Oil, and this has come, as is well known, not by the construction and operation of oil wells or the ownership of the means of production, but through the control of distribution. The distributing machinery has enabled them to force terms with the producer. There has been no limit upon the sinking of wells. This has been done by private parties. To prevent sinking of wells would not have had any effect upon that trust unless it would have been to make the prices still higher to the consumer.

So with power plants, rendering it difficult to build plants is not the place where a power trust might be affected. It must lie in the control of the means of distribution, and this lies within the powers of the state, and it is the duty of the state, whether exercised or not. However we may agree in the general purpose of the government, as stated, concerning their restrictions, the effect is directly contrary to their expressed purpose, and will aid rather than prevent monopoly, and certainly does not reach the condition which renders monopoly possible.

We often forget, because water itself costs nothing, that water power and electric power is of necessity costly. Our streams vary much during the season; in low water they do not furnish power enough to justify their development. In order to equalize the flow of the streams storage reservoirs of some type become necessary. The plants are costly. The power lines are long and expensive; hence it does not follow that a good power site suitable for the generation of power is suitable for development. The difficulty is to show capital or investors that they will have even a fair chance to get interest on their investment without any large return.

Thus, while I am in full sympathy with proper "conservation," I can not agree with the wild ideas often included. The steps proposed are often unwise and do not reach the object for which they are said to be intended; nor can I disassociate the power question from the other questions concerning the uses of water in this state. The wisdom of the early settlers in Colorado and the clearness with which they grasped the fundamental questions will be recognized more in the future than credit has been given them to the present time. A new idea is slow of development. The recognition in our Constitution of the right to use water and the abolition of riparian rights is a new step in the history of jurisprudence, and the more I know of the slow development of ideas the more do I feel that the writers of our Constitution should be honored for what they did in that one particular, irrespective of any other. It was a milestone in the development of commonwealths, and it is that more than any other that has enabled this western country to develop. It was the wisdom of men in contact with certain conditions and not unduly bound by precedents. It recognizes what is the highest idea in conservation,—that the highest right comes from use; that the right is founded upon use, and continues with use. It implies, though the legislature has never carried out the idea, that the right may be forfeited for non-use. In this case, as in the case of power, the postponement of use means waste. Development has come by the free use of water. Some have profited, but for every dollar of profit by those who took risks, the community has gained hundreds. We have had here attempts to restrict the development of the state. Development has been hampered and prevented; reservoirs and rights of way have been refused or held up until the applicant has been disheartened or worn out.

In this, as in the other questions, the question is a broader one, and that is the power of the state to develop. We have had on the Rio Grande refusals to permit land for reservoir sites on the claim that such use might interfere with a proposed reservoir hundreds of miles below. We have had similar cases on the Grand river, where a reservoir site has been refused in Colorado because it was claimed that that water might be needed in southern California. Such a claim seemed so preposterous that when I heard of it I took pains to look up the entire correspondence and the orders of the department of the interior. It was long ago pointed out by Major Powell, director of the geological survey, that within certain limits at least the greatest use would come by the utilization of the water near the headwaters. We have seen that effect in Colorado. Fortunately, the first ditches were near the foothills, and their waste and the seepage therefrom have rendered it possible to develop the lower valleys, so that the Platte valley to-day is an example of a wealthy country that would not have been possible had development proceeded from the other end. In these cases attention has been so strongly fixed on the perennial streams from the mountains that the supply below has been entirely lost sight of. Aside from the legality of the attempted restriction of the government, which I do not care to discuss, is the question of the fairness and good faith as well as whether it accomplishes the purpose for which it was intended.

Beyond the particular questions of water for power or for irrigation, is the other question arising from the condition, and that is the respective powers of the state and general government. We can not attempt to discuss these questions without coming back to the theory of our government and to the question propounded by Elihu Root at the Pennsylvania dinner in 1906: "What is to be the future of the states of the Union under our dual system of constitutional government?" This address was sometimes considered to be a threat to prod the states in action. I have reason, however, to think that it was not intended as a threat, but the result of a constitutional study and calling attention to certain tendencies and a warning to the states to cause "an awakening on the part of the states to the realization of their own duties to the country at large." He calls attention to the development of the powers of the general government and the fact that power, regulation and control is gradually passing into the hands of the national government. He and others who believe in the dual system of government have felt as a patriot that that was undesirable. And yet, manifestly, unless recognition is given to this fact by the states, the continued growth of federal encroachment and the shouldering out of state authority is bound to proceed.

This is not the time or place to discuss this at length, but I might suggest that the fundamental point of weakness in the powers of the state in comparison with those of the nation is in the lack of revenue of the state as compared with the revenue

of the general government. The general government was wise in retaining the indirect means of taxation. While this state finds it difficult to raise three dollars per capita for all state purposes, the national government raises from this same population at least five times as much, and does it easily and without our realization. The result is that if anything is to be done it is much easier to go to the general government and get means from them than it is from our own state. This is the essence of the weakness of the states and the cause of their inefficiency which is urged as a reason why they should not take charge of water powers or other things to supervise.

Mr. Gauss moved that the president appoint a special committee of three to draft a bill to be submitted to the next session of the legislature legalizing the Colorado Conservation Commission, and that this committee report the draft at the next meeting, to be held on the second Monday in June, 1910, for the purpose of considering the subject of legislation relating to conservation.

No further business appearing, the commission adjourned to meet June 13, 1910.

STANDING COMMITTEES.

Standing committees appointed since the annual meeting:

LANDS:

W. M. Wiley, Murdo MacKenzie, B. L. Jefferson, J. A. Eddy,
Robert Speer.

WATERS:

Irrigation District No. 1, Chas. W. Comstock.

Irrigation District No. 2, Wm. L. Hartman.

Irrigation District No. 3, F. C. Goudy.

Irrigation District No. 4, Bulkeley Wells.

Irrigation District No. 5, B. T. Napier.

MINERALS:

K. L. Fahnestock, John Grass, Bulkeley Wells, T. M. Patterson,
C. W. Franklin.

FORESTRY:

Philip T. Coolidge, Ellsworth Bethel, Warren R. Given, C. S.
Thomas, W. G. M. Stone.

NATURAL HISTORY:

Ellsworth Bethel, Robert Gauss, Hugh O'Neill, D. C. Beaman,
Joseph Newitt.

EXECUTIVE COMMITTEE:

F. C. Goudy, ex officio; John Grass, Robert Gauss, E. M. Ammons,
James F. Kyle, E. C. Stimson.

WAYS AND MEANS:

Earl M. Cranston, F. C. Goudy, ex officio; Alva Adams,
C. W. Franklin, Murdo MacKenzie, W. M. Wiley.

RESOLUTIONS:

Alfred R. King, H. H. Eddy, K. L. Fahnestock, Charles A. Lorey,
Alva Adams.

LEGISLATION:

Earl M. Cranston, John T. Barnett, Dexter T. Sapp, H. H. Eddy,
Wm. L. Hartman.

CO-OPERATION:

Murdo MacKenzie, C. P. Dodge, John J. Harris, John Grass,
Alfred R. King.

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