PROCEEDINGS

OF THE

NATIONAL PARK CONFERENCE

HELD AT THE

YELLOWSTONE NATIONAL PARK
SEPTEMBER 11 AND 12, 1911

WASHINGTON
GOVERNMENT PRINTING OFFICE
1912

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INTRODUCTION.

On September 11 and 12 there was held in the Yellowstone National Park the first conference of departmental officials and other persons interested in the development and administration of the national parks. There were present at this conference the superintendents of the various parks, the principal Washington officers of the Department of the Interior who handle national park matters, and representatives of the concessioners, of the transportation companies tributary to the parks, and of independent organizations that have been interested in the problems of park administration. All persons holding concessions in the national parks were invited to be present and all of the railroads tributary to the parks were invited to send representatives. Every important interest connected with the parks both on the side of the Government and on the side of the concessioners and railroads was adequately represented. The purpose of the conference was to consider all the questions that arise in the administration of these reservations in order that the department might be able to make such changes in the regulations and to foster such development as might be for the best interest of the public. It should be distinctly understood that the views herein expressed are those of the individuals presenting them, and that the department gives no official sanction to the facts stated or to the recommendations made.

PERSONS ATTENDING THE CONFERENCE.

W. F. Arant, superintendent Crater Lake National Park, Klamath Falls, Oreg.
C. J. Blanchard, statistician, United States Reclamation Service, Washington, D. C.
W. M. Boland, ranger, Wind Cave National Park, Hot Springs, S. Dak.
Frank Bond, chief clerk, General Land Office, Washington, D. C.
Lieut. Col. L. M. Brett, acting superintendent Yellowstone National Park, Yellowstone Park, Wyo.
Eugene S. Bruce, expert lumberman, Forest Service, Washington, D. C.
Josef Brunner, assistant, Bureau of Entomology, Columbia Falls, Mont.
R. C. Bryant, Bryant camps, Yellowstone Park, Wyo.
H. E. Burke, assistant, Bureau of Entomology, Yreka, Cal.
D. E. Burley, general passenger agent Oregon Short Line Railroad, Salt Lake City, Utah.
J. B. Callahan, Finance Division, office of the Secretary, Department of the Interior, Washington, D. C.
H. W. Child, president Yellowstone Park Hotel Co., Yellowstone Park, Wyo.
Thomas Cooper, assistant to the president Northern Pacific Railway, St. Paul, Minn.

Foster Curry, representative of Yosemite Park concessioner, Yosemite, Cal.
William T. S. Curtis, representative of Hot Springs concessioners, Washington, D. C.
Dr. Charles Dake, president Federal Registration Board, Hot Springs, Ark.
W. D. Edmonston, assistant, Bureau of Entomology, Baker, Oreg.
Charles S. Fee, passenger traffic manager Southern Pacific Co., San Francisco, Cal.
W. L. Fisher, Secretary of the Interior, Washington, D. C.
Maj. William W. Forsyth, acting superintendent Yosemite National Park, Yosemite, Cal.
Gerrit Fort, passenger traffic manager Oregon Short Line Railroad, Omaha, Nebr.
W. J. French, superintendent Platt National Park, Sulphur, Okla.
Walter Fry, ranger, Sequoia and General Grant National Parks, Three Rivers, Cal.
L. C. Gilman, assistant to the president Great Northern Railway Co., St. Paul, Minn.
H. S. Graves, Forester, Forest Service, Washington, D. C.
E. S. Hall, superintendent Mount Rainier National Park, Ashford, Wash.
Maj. Harry M. Hallock, medical director, Hot Springs Reservation, Hot Springs, Ark.
J. M. Hannaford, second vice president Northern Pacific Railway, St. Paul, Minn.
F. F. Harvey, Atchison, Topeka & Santa Fe Railway System, Chicago, Ill.
L. T. Hay, manager, Arlington Hotel Co., Hot Springs, Ark.
F. J. Haynes, president Monida & Yellowstone Stage Co., Yellowstone Park, Wyo.
H. H. Hays, general agent, Wylie Permanent Camping Co., Yellowstone Park, Wyo.
R. D. Heinl, correspondent, Leslie's Weekly, Washington, D. C.
W. J. Henderson, concessioner, Yellowstone National Park, Yellowstone Park, Wyo.
James R. Hickey, vice president Monida & Yellowstone Stage Co., Yellowstone Park, Wyo.
L. W. Hill, president Great Northern Railway Co., St. Paul, Minn.
A. D. Hopkins, expert in charge forest insect investigations, Bureau of Entomology, Washington, D. C.
Maj. James B. Hughes, acting superintendent Sequoia and General Grant National Parks, Three Rivers, Cal.
W. E. Kelly, office of chief clerk, Department of the Interior, Washington, D. C.
E. A. Keys, inspector, Department of the Interior, Spokane, Wash.
H. E. Klamer, concessioner, Yellowstone National Park, Yellowstone Park, Wyo.
O. W. Lehmer, superintendent and traffic manager, Yosemite Valley Railroad, Merced, Cal.
W. R. Logan, superintendent Glacier National Park, Belton, Mont.
E. B. Linnen, inspector, Department of the Interior, Washington, D. C.
Alexander Lyall, concessioner, Yellowstone National Park, Yellowstone Park, Wyo.
R. B. Marshall, chief geographer, Geological Survey, Washington, D. C.
W. G. Maurice, Maurice Bath House, Hot Springs, Ark.
H. F. McCabe, Interior Department, Washington, D. C.
J. Horace McFarland, president American Civic Association, Harrisburg, Pa.
A. W. Miles, president Wylie Permanent Camping Co., Yellowstone Park, Wyo.
H. H. Myers, superintendent Hot Springs Reservation, Hot Springs, Ark.
J. H. Norris, inspector, Interior Department, Washington, D. C.
Allen C. Orrick, representing Palace Bath House, Hot Springs, Ark.
G. A. Pryor, concessioner, Yellowstone National Park, Yellowstone Park, Wyo.
L. F. Schmeckebier, clerk in charge of publications, Interior Department, Washington, D. C.
W. M. Sell, concessioner, Yosemite National Park, Yosemite, Cal.
D. A. Sherfey, resident engineer, Yosemite National Park, Yosemite, Cal.
S. E. Shoemaker, ranger, Mesa Verde National Park, Mancos, Colo.
Hoke Smith, Great Northern Railway, St. Paul, Minn.
R. E. L. Smith, representing Shaw & Powell, Yellowstone National Park concessioners, Washington, D. C.
W. G. Steel, president Crater Lake Co., Crater Lake, Oreg.
E. M. Sunderland, architect, Ouray Building, Washington, D. C.
J. P. Ternes, president Tacoma Carriage & Baggage Transfer Co., Tacoma, Wash.
C. A. Thompson, Assistant Secretary of the Interior, Washington, D. C.
C. S. Ucker, chief clerk, Department of the Interior, Washington, D. C.
George Uhler, supervising inspector general, Steamboat-Inspection Service, Department of Commerce and Labor, Washington, D. C.
A. G. Wells, general manager Coast Lines, Atchison, Topeka & Santa Fe Railway System, Los Angeles, Cal.
Richard Wright, acting superintendent Mesa Verde National Park, Mancos, Colo.
C. M. Ziebach, acting superintendent Sullys Hill National Park, Fort Totten, N. Dak.

EVENING SESSION, SEPTEMBER 11.

INTRODUCTORY REMARKS BY HON. WALTER L. FISHER, Secretary of the Interior.

Gentlemen: If you will pardon me for assuming the direction of the meeting we will proceed to business. I am taking the initiative because this conference has been called by the Secretary of the Interior to discuss the general subject of the national parks in this country. We will discuss the matter of the present condition of the national parks and what can best be done to promote the welfare of the parks and make them better for the purpose for which they were created. Having called the conference, I shall simply act as general director, so that we may avail ourselves of the advantages of proceeding in a parliamentary manner. In talking this matter over with those who have had most to do with it, we have reached the conclusion that progress will be promoted if we discuss this subject under three general heads—transportation, concessions within the parks, and the subject of park administration from the point of view of those charged with that duty.

Before entering upon the discussion of these general topics, it may not be inappropriate for me to say that this large gathering of men of affairs indicates the interest which is taken in this whole subject and is very gratifying to me and those who are associated with me in the administration of this very important work. Since I became Secretary of the Interior and after discussion of the question with those officials at Washington intimately connected with the administration of the national parks, I have formed the opinion that the parks have not received the attention they deserve. They have grown up like Topsy, and no one has been particularly concerned with them. This conference has been called for the purpose of discussing the difficulties met with in the various parks, in order that the difficulties met with in one park may be avoided in the others, and in order that the plans which have been found successful in one park may be adopted in the others.

The attendance in the parks has not increased as those most familiar with them believe it should have increased. While there has been manifested widespread interest in the parks, still the numerical attendance has not shown the increase which it is believed should be shown during the past 10 years, and particularly during the past 5 years. The first question, therefore, is how to direct the attention of the people to these parks in such a way that the people will know how to get to them and what the expense will be in getting to them. That, gentlemen, is a subject about which we are very much concerned, and it is a problem in solving which the railroads can be of great assistance. I do not necessarily mean financial assistance, although I do not wish to ignore that feature of the situation. We thoroughly appreciate the expenditures

which the railroads have made in many instances for the development of the parks; I mean expenditures made in the furnishing of increased facilities in getting to the parks, and particularly the work of publicity which they are carrying on. We know that costs them money, and although the inducement is a financial return to the railroads, it is an enlightened selfishness which is entitled to our grateful recognition. We think that the railroads may have some valuable suggestions to make to us—something, perhaps, which they may have been thinking they would like to do if the park officials and the Department of the Interior would cooperate with them. In other words, the way to start this conference is with the question of how we are going to get to the parks. After we get to them, other questions will arise and we can discuss what is going to happen from that point on. I would be very glad, indeed, to open the discussion by hearing some remarks from Mr. Hill, president of the Great Northern Railway.

REMARKS BY MR. LOUIS W. HILL, President of the Great Northern Railway Co.

Mr. Secretary and gentlemen: I will try to help you start this meeting and will endeavor to be as brief as possible and take up as little of the time of the assembly as I may in my remarks, because, as I understand it, the meeting was called primarily for the benefit of those directly interested in the parks, the superintendents and other officials. The railroads, of course, have nothing to do with the direction of the parks. Our relations with the parks are naturally very close, and I believe they should be closer. It is, I believe, most fortunate from every standpoint that this conference has been called, indicating, as it does, the great interest taken by the present Secretary of the Interior in the national parks. It is the first time the parks have received such attention, and I believe the excellent attendance here to-day indicates that it is appreciated. It is fitting that the first conference should be held in Yellowstone Park, the first of the national parks to be created. This park was started many years ago, and there are many reasons why it has not gone ahead as it should have gone. Glacier Park in Montana is the most recent of the parks to be created and is the one in which we of the Great Northern are most interested, because our lines touch it, but we are also interested in every national park in the United States, although our especial interest lies in Glacier, Yellowstone, Yosemite, and Crater Lake. This is because it is practically impossible to sell a round trip ticket to a man for any one park, the public always wanting to go from one park to another.

Thousands of Americans go to Canada every year for things they might just as well get in the United States. They go there for homes and they go there to see the scenery in the Canadian Rockies. Recently when I was there studying conditions I was told that five to six hundred people visit the Canadian Rockies daily. This shows the possibilities for Glacier

Park. I obtained the information from reliable business men. Ninety-five per cent of the people going to Canada are Americans. The reason for it is the advertising which is being done by the Canadians. As Mr. Fisher has said, the advertising largely falls to the railroads and those who are interested commercially in the parks, although the Government has done some, and in the future we all want to go ahead and do a great deal more in the way of advertising. This will change the current of travel from Europe and Canada to this country. I think it is safe to say that what took 40 years in the development of this park, Yellowstone, will be done, with proper development work, in three years in Glacier Park. There is no reason why within three or four years we should not have an attendance in Glacier equal to that which we have here in Yellowstone; at least, I know of no reason why this could not be done, and we are going ahead with this in view in our "See America First" campaign. So far as our railroad is concerned in the four parks in which we are most interested, we want to cooperate in advertising, and if there are any other ways in which we can assist we will do it. Before much can be done in this line, however, we must have trails, telephone lines, wagon roads, and camps for taking care of tourists. All of this will cost a good deal of money, and we can not expect to do too much at once. This year there have been considerably more than 3,000 people in Glacier, and so far we have only advertised Glacier in a sentimental way. There are not sufficient accommodations in Glacier for taking care of the tourists. We have established several camps, but we do not wish to go into the hotel business; we wish to get out of it and confine ourselves strictly to the business of getting the people there just as soon as we can, but it is difficult to get capital interested in this kind of pioneer work. With the cooperation and assistance of the Government we hope within two or three years to get financial people interested in the park and then we can get out and attend to railroading. The railroads are greatly interested in the passenger traffic to the parks. Every passenger that goes to the national parks, wherever he may be, represents practically a net earning. We already have the train facilities for taking care of the regular traffic and the tourist earnings are practically net, as long as they do not require extra train service.

The SECRETARY. Perhaps, following what seems to be the natural line of approach, it would be a good plan to hear from those who are interested in the park where we now are. When we discuss transportation facilities in connection with Yellowstone Park—transportation leading to and away from the park, as distinct from that within the park—there are three railroads especially concerned. I believe the first on the scene was the Northern Pacific, and if Mr. Cooper, assistant to the president of the Northern Pacific, will favor us with such suggestions as he may wish to offer, we would be pleased to hear from him.

REMARKS BY MR. THOMAS COOPER, Assistant to the President, Northern Pacific Railway.

Mr. Secretary and gentlemen: It is peculiarly fitting that the first meeting of Government officials and others specially interested in the national parks should be held in the Yellowstone National Park, the first that was created, and the establishment of which inaugurated the wise policy of preserving to the people of the United States forever the magnificent playgrounds with which nature has endowed them.

The principal purpose of this meeting is to consider in what manner the number of visitors to the various parks can be increased, and to this feature, from the point of view of the railroads, my few remarks will be devoted.

The passenger rates to this park are about 1½ cents per mile, which, considering the high grade of service demanded by this class of travel, makes these rates the lowest to be found anywhere in the world. The railroads justify themselves in making these very low rates on the theory that the business will not otherwise move. But in these days of close supervision of the railroads by national and State railroad commissions there is a danger that some of these commissions may take the position that in making these rates the railroads are discriminating in favor of a class of travel which may be characterized as luxury and placing a burden upon their regular business. Therefore, no matter how willing railroads may be to cooperate in any movement toward increasing travel to the parks, they will feel themselves restrained, for the reason stated, from making any lower rates than now prevail. Hence, as it appears to me, we may as well dismiss from our minds any idea that a decrease in railroad rates can be made to induce additional traffic.

As to advertising the parks, it will be conceded that practically all that has been done in this respect has been accomplished by the various railroads, excepting, of course, that class of advertising, which is the most valuable of all, which is done by every visitor through the parks when they tell their friends and neighbors of the wonderful things they have seen. But the character of this class of advertising depends very largely on the feelings which each visitor to the park carries away. There are, of course, some visitors whose love for the beautiful and wonderful is such as to overcome the smaller annoyances and discomforts that attend the trip to a more or less degree; but I think we will all agree that in order to secure the best advertising from visitors the discomforts of the trip must be reduced to a minimum, and to secure this result there must be an earnest cooperation of the railroads, the Government, and the concessioners. The railroads feel that in this respect they are doing their part, or, to put it in another way, that they are giving maximum service for a minimum compensation. I have never heard any serious complaints about the service given by the concessioners or the rates charged by them. Doubtless there are some

details of this service that can be improved, as there are in the railroad service, but I think I am safe in saying that in a general way the service of both the railroads and the concessioners is of high standard and their charges reasonable.

It is now in order to consider whether the Government has done or is doing its part to make the parks attractive to visitors, and in what I have to say in this respect it will be understood that my criticisms are directed to Congress, not to the administration, as I have no doubt the officers charged with the administration of the parks have done all that could reasonably be expected of them with the appropriations available. But I think we will all agree that Congress has been parsimonious in its treatment of the national parks to a degree that largely defeats the very purpose of their creation.

I will not go into detail on this subject, as I am not sufficiently familiar with the needs of the various parks to do so, but I will speak of one particular feature which happened in this very park this summer. It appears that the appropriation for sprinkling was exhausted about August 1; thereafter, for about 30 days, until the first rain came, the roads were in such condition that the dust was not only a discomfort, but a positive menace to health—so much so that some visitors, after their long journey to reach the park, turned around at the end of the first day's trip and went back. We can well realize the kind of advertising that the parks will receive from the majority of those who visited this park during the month of August. We may as well accept it as a fact that the majority of the people who can afford a trip to the national parks are of a class who are used in their daily life to a reasonable degree of comfort, and no matter how ardent their love of nature may be they will not make the park trip unless it can be done with a reasonable degree of comfort and safety.

From all of which it seems to me apparent that the real solution of the question we are considering, how to increase the number of visitors to the national parks, is to secure larger appropriations from Congress, in order that travel within the parks may be made with more comfort, and that we should all use our influence with Congress to secure such additional appropriations.

The SECRETARY. During the course of this conference I shall take the liberty to break in occasionally to make such comment as seems to be pertinent, as I shall expect you gentlemen to make suggestions. In connection with what Mr. Cooper has stated, perhaps it would be of use in future discussions here if I called your attention to one or two things. In the first place, as to the advertising done by the Government. This last spring, for the first time, the Department of the Interior, through its employees in Washington, prepared and furnished to the newspaper press of the country certain articles, with illustrations, with reference to the national parks and reservations. Very gratifying results have been

obtained from this work. The eagerness with which the newspapers sought this material, the avidity with which they took it, the willingness with which they published it, and the amount of favorable comment which came to me in a perfectly casual manner were all exceedingly gratifying. I think I can say to Mr. Cooper that, having no appropriation for publicity, we have done everything we could during the past few months in that direction. If we are to do more in that line or in other directions, we have got to come to the second step, namely, the getting of more liberal appropriations for these purposes. This is a matter that is in the hands of Congress, and I am sure the railroad men and others will help us out in that direction. In this connection it would not be inappropriate now to call your attention to the fact that the expenditure of many of the appropriations made by Congress for the improvement of the national parks, including the sprinkling of the roads, is left to the War Department—to the Engineer Corps of the Army—while the administration of the parks is turned over to the Department of the Interior. Even here in Yellowstone the superintendent, although an Army officer, was not given an opportunity to be heard in the preparation of the estimates. Perhaps that will illustrate to you as well as anything I could say how unsystematic, unscientific, and uneconomic the provision for the administration of the parks has been. I mention these things because many of those present may not have had their attention called to them before, and I believe everybody here can be of great assistance, individually and collectively, in rectifying some of these unintentional mistakes.

Following the procedure which I have already outlined, we should hear from the Oregon Short Line before we leave Yellowstone, and I will ask Mr. D. E. Burley, general passenger agent of that road, if he will be good enough to set forth the views of his company with reference to the national parks.

Mr. BURLEY. Although we are greatly interested in the parks and have been listening to the discussion and addresses here with much interest, I believe I have nothing of value to say at this time, so I will ask to be excused.

The SECRETARY. The next park we will take up is the Yosemite, and in that connection perhaps Mr. Lehmer, traffic manager of the Yosemite Valley Railroad, will give us his views with relation to the general question of the national parks.

TRANSPORTATION AND ITS RELATION TO NATIONAL PARKS, BY O. W. LEHMER, Superintendent and Traffic Manager, Yosemite Valley Railroad.

In discussing the subject of transportation and its relation to national parks our ideas are based largely on existing conditions in the Yosemite National Park, as we are more familiar with conditions there than elsewhere; but we believe they will apply with equal force to all national parks.

Transportation as commonly understood means the handling of freight and passenger business by common carrier. This I believe in most all our parks now is accomplished by railroads in connection with stage and wagon haul.

Our national parks should be our national playgrounds, and while they are not universally so considered to-day, the time is not far distant when we believe they will be looked upon as being such by the majority of the people. It is a well-known fact that each year finds fewer places open to those who wish to spend their vacations out of doors, where they can commune with nature away from the activities of everyday life.

Our parks, in order to attract the people, must be out of the ordinary, and it goes without saying that our national parks have this characteristic, or our National Government would not have set them apart for the use of the people. I have been through our wonderful park here, and I know it has all and more than the most enthusiastic lover of nature claims for it. I have been in the beautiful Yosemite many times, and each time find something new to charm us.

These parks belonging to the people should be made so accessible that all who wish to do so may behold their beauties and wonders. Transportation, as in nearly all developments, bears a very close relationship to the full enjoyment and benefit to be derived from the national parks. Not so many years ago our famous Yosemite was accessible only to the young and hardy, who were able to endure the hardships of a ride of 100 miles on horseback over trails which were hazardous and few there were who would venture upon the trip. Later roads were built to the valley, but needless to say that the early stage coaches running over the hot, dusty plains and mountainous roads were not conducive to the comfort and ease the traveling public is entitled to. And not until the year 1907, when the Yosemite Valley Railroad was completed to its present terminus at the park line, was the wonderful valley placed within easy reach of young and old, weak and strong, rich and poor. Now the traveler can leave San Francisco in the morning and in the evening be at the entrance to the park, with all the modern comforts of travel, or he can leave San Francisco in the evening in a Pullman car and eat his breakfast in a first-class hotel at the park entrance.

The rate from San Francisco to Yosemite and return, including the stage ride through the park to all hotels and camps, is only $22.35, and often during the season special excursions are run for 10-day trips, all expenses paid, which reduces the cost at least one-third over the regular rates. Before the advent of the railroad the transportation from San Francisco alone was about $55, and, as two days were required in each direction to make the trip, about $20 more were required to pay expenses, making a total expense of $75. Thus it is that modern transportation facilities bring the parks within easy reach of the people.

A noted writer and traveler whom we recently accompanied through Yosemite, after seeing the difficulties encountered in building the railroad and the enormous cost of construction, said that surely the men who put their money into the enterprise are benefactors of the people and deserve a vote of thanks for the chances they have taken.

Transportation to the parks is largely affected by conditions within the parks. Ample accommodations must be provided for the visitors. Congested conditions immediately check the flow of travel, as people will not be inconvenienced by such conditions when they can avoid it. Accommodations should be provided for all classes and conditions of people. The wage earner with only a limited amount of money for his outing should not be barred from enjoying the beauties of nature on account of prices being beyond his means. On the other hand, there are people who are able and who wish to pay for the best and will not travel to places where they can not be so accommodated, hence the necessity of hotel accommodations which are up to date with all the conveniences of the first-class hotel of the city.

Until these desirable conditions prevail in the parks travel will be restricted and the people as a whole will not derive their full benefit and pleasure from the national parks. We believe the Government should take sufficient pride and interest in this matter to see that everything possible is done to properly take care of all its guests. The same traveler previously referred to said he was ashamed of his Uncle Sam, seeing that nature had done so much for Yosemite and man so little. These remarks are not intended as a reflection on the direct management of the park, as I believe the men intrusted with its keeping have done all they could with the limited means at their disposal.

We believe that for the Yosemite Park, at least, a careful study should be made of its needs and a sufficient appropriation should be made, the expenditures to extend over a period of years, working out a comprehensive plan of improvements, such as would be a credit to the United States. Unless this is done, we never will receive the full benefits with the money appropriated and used for improvements.

We also believe that rail transportation should be extended to the gates of Yosemite or to the Pohono Bridge, which would bring the traveler right into the doorway of the great wonderland. This, of course, would have to be an electric line, as a steam road could not operate over the grades here encountered. This would in no way mar the beauties of the valley proper and would leave only a short carriage drive of 4 or 5 miles to all points of interest, camps, and hotels in the valley over a level road. This would be desirable not only on account of the tourist travel, but would reduce the team haul on all Government freight, as well as supplies for the hotels and camps, thus reducing the cost of providing for the travel. It would also shorten the wagon road by at least 9 miles, saving thousands of dollars each year on account of repairing and sprinkling the wagon road.

If the management of the parks is not in position to provide these improvements, which we believe for many reasons they should do, we believe that the conditions and restrictions should not be so onerous as to discourage individuals from undertaking these improvements. Railroad companies handling the business to the park lines usually have a hard time making their lines pay on account of the nature of the country through which they pass. Cost of construction is excessive and the country usually sparsely settled and very little freight business can be developed and the local passenger travel is limited. Hence the principal revenue is from the passenger travel to the park in its season. It can readily be seen that these transportation companies need all the assistance possible from those in control of the parks in the way of providing proper and adequate facilities for the accommodation of the people they take there, as transportation is limited to the facilities for taking care of the people.

The SECRETARY. We would be glad to hear from Mr. Fee, of the Southern Pacific, if he will oblige us.

REMARKS BY MR. CHARLES S. FEE, Passenger Traffic Manager, Southern Pacific Co.

The road with which I am connected, the Southern Pacific, is very largely interested in tourist travel, especially in travel to the Yosemite. We are interested in a great measure at the same time in travel to Crater Lake, Mount Rainier, and to this park. We are giving a great deal of attention to attracting business to them and we are advertising them as intelligently, persistently, and effectively as we know how. I do not have to repeat what is well known, however—that millions of dollars leave the United States each year and are spent in foreign lands. This is because of the way the people of those foreign lands take care of the visitors. We have only to look to Switzerland to see how that country takes care of her visitors. I do not think that in the way of assets in the line of scenery the United States need take a back seat when compared with any country on the face of the globe. Yellowstone Park will stand alone in its class with the possible exception of one or two others equally well situated, and it is to the development of the business to these parks that the railroads with which I am connected are devoting their very best efforts. I do not think anybody will take issue with me when I say that the best advertising in the world is not the written word nor the printed word, but is the spoken word. If you can send a man back home after having visited Yellowstone Park, Yosemite Park, and the other parks and have him go back thoroughly satisfied with his trip and an enthusiastic admirer of the parks, you have accomplished more than could be accomplished by any general advertising campaign.

I have been especially interested in the last few years in the development of the business of Yosemite Park. Mr. Lehmer, our friends of the Santa Fe, and others are acquainted with the present rather unsatisfactory condition of the park, and Maj. Forsyth has referred to it in his recent reports. I very much hope that these irregularities, lack of facilities, and lack of development, especially in the matter of roadways in and about Yosemite, including Mariposa Grove, may have more earnest attention on the part of the authorities in Washington. It is needless for me to say that we will bring all reasonable pressure to bear upon our Representatives in Congress, to the end that more adequate appropriations may be made for the parks. In the matter of transportation to the parks I think it is all that could be desired. I agree with Mr. Cooper that the public can not fairly ask that the railroads make any further reduction in rates. The fact of the matter is that the rate mentioned by Mr. Cooper, namely, 1½ cents, is very, very low, as low as or lower than that to resorts in any other country. Some of the railroads interested in this travel make rates—are obliged to make them—even lower rates than those mentioned by Mr. Cooper.

Now, as to advertising. I was very much interested in this question recently when I met a man on an incoming steamer to San Francisco. He hailed from Sydney, Australia, and was on his way to England. I learned that he had bought his ticket direct for New York and expected to go through without stopping over and go aboard his ship. That did not suit me. I thought it did not look just right, and I said to him, "It is not possible that you are going through from San Francisco to New York and then to England without visiting the Yosemite, the Grand Canyon, or Yellowstone Park?" He told me he had made his plans and did not wish to change them. After considerable persuasion he decided to defer his sailing from New York, and at my suggestion he made a side trip from San Francisco to Yosemite. I looked forward with considerable interest to seeing him on his return. He greeted me smilingly, and said, "Before I make any other remarks I wish to say that I am very glad I took your advice and visited Yosemite Park and the Mariposa Grove of big trees; but there is something else. I thought in Australia we knew something of dust, but you can outdo us for dusty roads in the Yosemite. It is a shame that in a magnificent park like Yosemite there are so few first-class roads and that better provision is not made for laying the dust." I explained to him that some of the roads are not within the jurisdiction of the Government and that those which were under the control of the Government were likely to be in good condition. My explanation was not entirely satisfactory to him; but he said that when he returned to Australia he would advise all his friends and neighbors who might get to San Francisco to take a trip to Yosemite, provided the season and the condition of the roads were favorable. I then asked him about a trip to

Yellowstone Park—if he was not going to see that park. He said: "No; you will have to excuse me. I have been hearing something of the conditions in Yellowstone as to the dust, and if they are only half true I do not care to make the trip, so I will take my train for New York." People who come here and visit our parks and resorts and find the hotel accommodations not first class, the roads not perfectly kept, go away and furnish about the worst advertising in the world.

I mention these matters to emphasize the fact that if the spoken word is the best advertising in the world, then it behooves everyone interested in our parks and resorts to see that they are so kept that the visitors will go away having had a pleasant and agreeable time and having seen the parks to the best possible advantage. So far as the company in which I am interested is concerned, we are only too anxious to cooperate.

The SECRETARY. We will now hear from Mr. Wells.

REMARKS BY MR. A. G. WELLS, General Manager Coast lines Atchison, Topeka & Santa Fe Railway System.

Mr. Secretary and gentlemen: In one of Winston Churchill's books, I think it is, there is an anecdote, the recital of which is credited to Abraham Lincoln, of blessed memory, and which tells of a certain politician who, when he got on his feet and commenced to talk to an assemblage of persons, could not shut off the flow of words until means were afforded him of sitting down, and on one occasion in making a speech from a platform on which there were no seats he was compelled to resort to the expedient of having a chair handed to him from the audience in order that he might sit down and so close his oration. I am just like that man, only different. It is difficult for me to talk when standing on my feet, hence have written, and, with your permission, will read what little I have to offer on the subject under discussion.

The relation which transportation bears to the national parks and national monuments is a very close one. These great wonders of nature, wisely set aside by the Government for the benefit of the people, would be altogether inaccessible but for transportation; in the larger sense that furnished by the great railways in order that visitors may be brought to the gateways of the reserves, and in the more restricted way that supplied by the stage lines within the boundaries of the parks. The age we live in is luxurious. Without transportation of the two kinds named, and their important and indispensable adjuncts—good hotels—these great natural creations would be seen by only a few enthusiasts. In some instances the transportation companies of the larger sort, in addition to expending the capital necessary to land people at the doors of the parks, have also been the pioneers in furnishing the money needful to install the

hotels, build roads, and supply as well the equipment and stock for the establishment of the requisite transportation of the minor sort within the limits of the parks and monuments.

I represent one of the larger transportation companies which has so invested its capital, and while I am not here to advocate monopoly of the public domain, which is unfashionable, and rightly so, being contrary to approved morals and repugnant to the policy of good government, remembering that my theme is "The relation of transportation to the national parks and national monuments," I feel that I am hewing to the line of my text, Mr. Secretary, when I urge upon the department of the Government of which you are the head a fair, broad-minded, liberal policy toward the transportation companies in the matter of concessions, unhampered by the howl of the camp follower, who comes in the wake of the pioneer, endeavors to set himself up in business, and failing because of lack of adequate capital or ability, or both, affects to see in every legitimate concession granted to the transportation company an undue preference extended to a hated monopoly. Then again I would urge upon your attention the desirability of eliminating from national parks and monuments, wherever he may exist, the obstructionist, who, holding bogus claims under the land laws, or through some other illegitimate means, prevents the building of roads or the installation of other convenient facilities designed for the benefit of the people visiting these great American pleasure grounds.

It also seems to me a proper function of Government that it should defray the cost of building and maintaining adequate roadways in both the national parks and national monuments, as has been done to a large extent here in the Yellowstone. In the national monument of the Grand Canyon the Santa Fe Railway is now engaged in building a highway along the rim of the canyon under a permit granted by the Forestry Department, which very properly requires that the road shall be open to all comers and free of tolls. The expenditure of the very considerable amount of money by the railway company for this road is not purely philanthropic. It is thought that the existence of this road will stimulate travel to the canyon, but I submit that our Government is too big not to charge itself with the cost of providing roadways in its national parks and monuments so that the public may enjoy their beauty in comfort. Municipalities recognize the propriety of this procedure in the upkeep of their parks, and in some of our Commonwealths, like Massachusetts, the State roads are maintained to a high standard of efficiency at the public expense. Hence I make an earnest plea, and in so doing hope I may be absolved from a suspicion of selfishness, for a more liberal policy by the Federal Government in its treatment of the national parks and national monuments.

The SECRETARY. I suppose everybody who has traveled over the Santa Fe system has heard the name of Harvey; and especially, in view of the wide field that the railroads fill in relation to national parks, it would be exceedingly inappropriate if we did not hear from Mr. Harvey at this time.

REMARKS BY MR. F. F. HARVEY, Atchison, Topeka & Santa Fe Railway System.

Mr. Secretary and gentlemen: I had no idea of being called upon this evening, but I will say that we are interested in the Grand Canyon. The canyon is a national monument and not a national park, and for that reason I fancy it is not considered as being entitled to the same recognition and consideration as a national park. We have, however, demonstrated, I think, our right to a place as "a point of interest" at least. The canyon railroad was built about 10 years ago—we have been up there about seven years. In that time I have seen the travel increase to the canyon from a few hundred a year to last year something over 26,000, and this year the visitors will run somewhere between 30,000 and 35,000. Our travel reaches the rim of the canyon; in the summer time the drives are in good condition and we can go around it with some ease and comfort; but, unfortunately, most of our business comes to the canyon at a time when the weather is not so good, in the winter time, and the necessity of good roads is absolute—simply can not get along without them.

It is not a question of dust with us. We can drive about a mile and a half from the hotel, and can not get any farther. The situation demands attention. If the Government will not take the matter in hand and provide funds, it seems to me that they should permit the railroad company to do it. It is not something that we can bottle up and let lay until the Government is ready to deal with it, but we have these people coming there—we have, as I said before, something like 30,000 this year—and the way conditions are now it is a reflection upon the Government and upon the railroad company. Our visitors there inquire as to why something is not done. The result is a distinct reflection on all concerned. As far as the railroad company is concerned, Mr. Ripley assured me that the Grand Canyon proposition as a whole has been a losing feature since the time it was started. Of course there is an indirect profit on account of people traveling over the line by reason of the Grand Canyon, but that is a very uncertain argument. It may be that such travel is due to the roadbed, character of services furnished, or some other element. At any rate, the company is reluctant to continue expenditures under existing conditions. They realize that there is a great attraction there and have indicated their willingness to proceed with necessary expenditures to develop the canyon, providing cooperation is had. In one respect the

situation differs from other places in that we do not have water. The water there has to be hauled in perhaps a distance of 120 miles—hauled in by train. There is water about a mile down the canyon, but it is impossible to get it up without going to a very large expense. My hope is that the visit of the Secretary will acquaint him with conditions obtaining there and thereby enlist his aid. Mr. Hill very properly stated that it is rather hard to separate one of these attractions from the other. They all belong together. For instance, the improvements made here by Mr. Child I regard as a benefit to the Santa Fe Railroad, though it is remote from them. I think there is a probability of the visitors here coming around by Yosemite and back by the canyon.

The SECRETARY. There are quite a number of railroad men on the list before me. I do not know exactly whom to select—I would prefer to have volunteers if they would be willing to speak. I would like to have any suggestions that occur to you, Mr. Gilman.

REMARKS BY MR. L. C. GILMAN, Assistant to the President, Great Northern Railway Co.

Mr. Secretary and gentlemen: I think that all that can be said on the subject has been touched upon by the representatives of the railroads—that is, the relation between transportation and the national parks. The railroads are willing to do their share, all of them, in the matter of transportation to the parks. Some of the gentlemen who have spoken have expressed a willingness to go even farther and to furnish the necessary transportation and other facilities within the parks, and that at the present time the real question to be considered is not so much the attitude of the railroads toward the parks as the attitude of the Government toward the parks. I think I may safely say that the attitude of the present executive portion of the Government is all that anybody could wish; but unfortunately the Executive has no power to make expenditures in the parks, no means of obtaining money with which to make these expenditures, so that our efforts from this time on, it seems to me, should be directed toward obtaining from Congress the necessary appropriations to properly develop the parks. We would depend upon the concessioners and the Government to make the parks attractive and to render within the parks the proper service at reasonable rates. When that has been accomplished, I am sure that good results will be had.

The SECRETARY. Now, there are other railroad men who have come here because of an interest in the subject, and we will be very glad to hear from them. If there are any suggestions, I would be very glad to

receive them, either as to rates or service. This would be a very good time to make some suggestions in that direction.

I know that one of the persons in the United States who is most deeply concerned in the development and use of our national parks is Mr. McFarland, president of the American Civic Association. As we are approaching the parks now by means of the railroads, I would be very glad to have a word from him.

REMARKS BY MR. J. HORACE McFARLAND, President of the American Civic Association.

Mr. Secretary, I really have nothing to say that would be of advantage in regard to transportation. I think the transportation at the present time is admirable. All I have to say is that the railroads are in advance of the Government in the treatment of these national parks and that it is up to the general public, including the railroad men, to bestir themselves to see that the national parks are put in such shape and under such management as will bring about the conditions they themselves want. I fancy that all of us from time to time are apt to jump on any visible part of the Government we can get our fingers or thumbs on, forgetting that this is supposedly a Government in which every man is equal—every one of us has at least one Representative in Washington to whom we may write a letter backed by a vote. It has been well said that our national parks have not been managed in a coordinate fashion, but if we will combine our efforts and each one of us use our influence on Congress a good many things that we would like to come about will result.

The SECRETARY. I had assumed, Mr. McFarland, that the general question of the organization of a bureau of national parks for the purpose of more efficient administration would be of interest to you; I had thought that this matter would be more appropriate a little later on, but if you care to speak on that subject now I would be very glad to hear you.

Mr. MCFARLAND. With your permission, then, I will speak now.

Some things have been said here to-night concerning American travel abroad. The Review of Reviews printed a review of the European travel situation some time ago, and the assertion was made that the pleasure travel tide which flows over Europe aggregates $550,000,000 yearly. It was asserted that the United States supplies two-thirds of this amount and got back as its share for its own scenic advantages less than one-half of the sum. This will serve to show that there is a strong financial inducement for doing something in respect to modifying the park policy. It seems to me that it is now time that the national parks shall cease to be incidentally handled in two departments and come to such handling as will make them as definite on the map of the United States as are the parks in any large city. We do not find in 150 or 200 American cities an

instance of successful park work when the administration was by incidental committees or by the street commissioner or the public-works commissioner. The parks are successful when they are the primary object of attention on the part of some one person or some definite body. A park commissioner is the usual means.

We want to consider whether there should not be more parks. I find that the Federal Government possesses 712,000,000 acres of land unappropriated and unreserved. Surely in that area, found in 26 States, there are portions which should be looked after. The same thing is needed by the national parks as by the city parks. How do the cities acquire a park system? I may speak from direct knowledge, because I had considerable to do with the parks in Harrisburg. There when the park question was taken up we employed the best man we could find for the purpose. He looked over our community, made an investigation of the various places which seemed best adapted to serve the needs of the town, and then made his report. The report was considered widely extravagant until a detailed examination was made of it, and we then saw that Mr. Manning was right. We followed his suggestions, and in 10 years the parks have grown from 41 acres to 749 acres, 1 acre for every 90 people. That can not be done without having a definite plan. With the exception of 54 acres, we had to buy every inch of the park land. We had no land to which the city might lay claim, being without the advantages which the Federal Government now possesses. I adduce this instance to suggest the enormous advantage of giving the matter expert consideration.

There are no American national parks east of the Yellowstone, while the center of population is in Indiana. To get to the parks people must travel 1,500 miles. This is good for the railroads, but hard on the people. I think it is the Nation's duty to serve some of the eastern people as well as the western and think parks should be created either by purchase or by using some of the unreserved public land which would be easily accessible to the people of the east. The taste for the parks grows by what it feeds upon. The parks in the city of Chicago are visited by 750,000 people each year. The people of the United States will not need to go abroad if they are provided with the means here to see the things that are beautiful, and instead of spending their money abroad it will remain in the United States. There is from every standpoint sufficient advantage surrounding the creation and maintenance of the national parks to make it right and necessary to formulate a definite park policy, and we should go at it with the same spirit that has made possible enterprises like the Panama Canal.

The benefits we are having from the parks are just beginning. The railroad men have told of the numbers visiting the parks. Mr. Harvey has mentioned the increase in the number of visitors to the Grand Canyon. The policy mentioned by the Secretary in regard to the press work is a very wise one, and when the parks are better known there will be an

enormous increase in the number of visitors. When you get people to go to the parks you are making them better fit for that civilization and that patriotism which we all speak of, but which we do not all of us work for. We all sing "My country, 'tis of thee" and "I love thy rocks and rills," but what have we done with those rocks? We have torn them down to get something from the inside. Those "rills" we have dammed up with silt and coal dirt. "Thy woods and templed hills"—but where are the woods? "My heart with rapture thrills"—but God knows at what! We have not begun to work out our national hymn, and we lie when we sing it. Our work with the national parks will help us to make the hymn an accomplished fact. The parks, broadly considered, properly supported, adequately laid out, and suitably maintained, will be more advantageous, even as a solid business proposition, than anything we can do to-day.

I had expected a letter from Mr. Frederick Law Olmstead, but as it has not been received I request that it be inserted in the record.

LETTER FROM MR. FREDERICK LAW OLMSTED.

OLMSTED BROS., LANDSCAPE ARCHITECTS,
Brookline, Mass., September 13, 1911.

Mr. J. HORACE MCFARLAND,
President American Civic Association, Harrisburg, Pa.

MY DEAR MR. MCFARLAND: I greatly regret that I did not receive your letter in time to enable me to get a letter to you at Mammoth Hot Springs before yesterday, as requested.

I do not know, however, that I could have said much that is not already well in mind. The two principal points which I should have tried to make are these: First, the importance of some kind of legislative definition in broad but unmistakable terms of the primary purpose for which the parks and monuments are set apart, accompanied by a prohibition of any use which is directly or indirectly in conflict with that primary purpose without, however, interfering with the serving of other purposes than the primary purpose in so far as they do not in any degree conflict with the most perfect service of the latter. Second, executive efficiency demands that there be a single responsible executive head over the park administration with adequate authority, as little hampered by external interference as is possible; and yet at the same time the exceeding difficulty of maintaining continuity of policy in regard to the ultimate large effect upon the parks of innumerable decisions in matters of detail continued over long periods of years, and the difficulty experienced by any busy executive officer in holding himself to such a comprehensive and far-sighted view, would seem to make it desirable for the Government to establish some sort of small, permanent independent "board of overseers" of very slowly changing personnel, whose duty it should be to make systematic and effective inspections at rather long intervals, to

discuss questions of general policy with the executive officer, to examine into the tendencies and probable effect of the methods of administration and of the laws controlling those methods, and to report to the Secretary of the Interior or to the President at stated intervals, perhaps no more frequently than once in each presidential term unless called upon to do so.

The extreme slowness with which the most important results begin to be generally apparent in park work (as in any work that is much dependent upon slow-moving, natural phenomena such as the growth and change of forests, and upon the formation of varying habits of use by a large and fluctuating public), and the extreme difficulty of so defining the purposes in view that they can be promptly and accurately comprehended by a new executive, make it peculiarly desirable in this class of work to have a slowly changing, permanent body of overseers or commissioners in a position to safeguard the one most vital feature of permanently successful administration, which is a harmonious continuity of policy.

This is the theory of the unpaid park commissions all over the country, and it is a sound theory, although I have much fault to find with the way it has been applied. The trouble has usually been that the members of such commissions have burdened themselves with administrative detail (which such a group of men is far less fitted to undertake than a single responsible executive), and have thereby obscured their vision for those very matters of general policy and ultimate result which it should be the duty of such a commission to watch. The two sets of functions and responsibilities, executive and deliberative, can and should be distinguished and both should be specifically provided for. By all means have a single-headed executive with every facility for prompt, unhampered, efficient action. By all means let this executive officer be also a man of all the judgment and discretion and wisdom that can be obtained. But let the Government provide also a deliberative body as a control upon his wisdom, just as it provides an auditor as a check upon the continuing honesty and regularity of those whom it expects to be honest and regular.

I hope that even now these general suggestions may be of some service.

Yours, truly,

FREDERICK LAW OLMSTED.

The SECRETARY. Is there anything further which anybody has to offer on the question of transportation? Have any of the superintendents or other park officials anything to offer connected with transportation; anything which they wish to call attention to now? I mean, of course, transportation to the parks. If not, we will consider some of the questions arising within the parks, and I have in my hand a list of the concessioners within the various parks. I see that Mr. F. J. Haynes is interested in some of the questions within this park, and we would be glad to hear from Mr. Haynes.

Mr. HICKEY. Mr. Haynes has been suddenly called away and he asked that I read a paper which he had prepared. With your permission I will do so.

TRANSPORTATION IN THE YELLOWSTONE NATIONAL PARK, BY F. J. HAYNES, President of the Monida & Yellowstone Stage Co., read by James R. Hickey, Vice President.

The Yellowstone National Park was set apart from the public domain and placed under the control of the Secretary of the Interior by an act of Congress of March 1, 1872.

It is a tract of land near the headwaters of the Yellowstone River, in the States of Montana, Idaho, and Wyoming. It is 62 miles in length from north to south, 54 miles in width from east to west, and contains 3,348 square miles, or 2,142,728 acres. Its area is greater than that of the States of Delaware and Rhode Island combined.

The topography of this garden of wonders is what would be expected in a country filled as this is with lofty mountain ranges. It is exceedingly rough and broken except in the central part plateau, where there are large tracts of comparatively even surfaces. The great mountain ranges occupy the larger portion of the area.

The climate of the park is one of extremes and of a kind which tells heavily against the maintenance of its highways. In the spring storms are frequent, rainfall is as heavy as in the Eastern States, when all the conditions of a wet climate are present. In the later summer the rain almost wholly disappears, the surface of the ground thoroughly dries out, and the roads suffer more from the lack of moisture than they did from its excess.

In the winter this region is cloaked with an average snowfall of 6 feet, which suddenly disappears early in June. The waters from this melting snow, in finding a rapid course to the mountain streams, cause serious damage to the roadways.

Within this wonderland nature provided no natural roadways. The location, construction, and maintenance of the roadways is therefore of first importance in the present method of efficient transportation facilities.

Over 80 per cent of the park is covered with pine forests, often of great density, and in many places so filled with down timber that they are almost impassable.

In the composition of the rock and soil of which the roads have to be constructed the park presents a greater variety, in all probability, than any other region of like extent upon the face of the globe.

The materials at hand constitute a most annoying kind of road material in their natural state, the greater part of which, when used in road construction, can scarcely be driven over with heavy loads.

Such is a brief outline of the physical conditions which are encountered in the construction for transportation purposes of the mountain roads of the Yellowstone National Park. The necessity for these roads arises from the desire of the public to see the peculiar natural phenomena with which this region abounds and which first became generally known about 40 years ago. The Government, in setting apart the entire region as a public reservation for the benefit and enjoyment of the people, thereby assumed the obligation of making its points of interest accessible to the traveling public. About 27 years ago it began the development of a road system.

The sundry civil act of March 3, 1883, directed the construction and improvement of suitable roads and approaches, under the supervision of an engineering officer to be detailed by the Secretary of War, and in July, 1883, an engineer was designated accordingly. This was the beginning of systematic road construction in the park.

The sundry civil act of June 28, 1902, recognized this project and provided for its construction, and it was practically finished ending June 30, 1906. It comprises a belt line or main circuit which reaches all of the important centers of interest, with side roads, bridle trails, and two stage-line approaches, one from the western entrance and one from the northern entrance, including wagon roads to the eastern and southern boundaries—in all about 350 miles of road and about 125 bridges.

The controlling points of interest which it was considered necessary to make accessible to all travelers are five in number—the Mammoth Hot Springs, the Norris Geyser Basin, the Firehole Geyser Basins, Yellowstone Lake, Grand Canyon of the Yellowstone. These points are reached by what is officially known as a "belt line," about 150 miles in length, over which the stages of the two stage companies holding leases pass around this circuit to the left.

The roads of the park are primarily designed for the transportation of tourists; secondarily only for the hauling of freight. This purpose has controlled absolutely in the matter of location. Not only do the roads reach to the important centers of attraction, but the intermediate portions are carried where the best view of the surrounding country may be had.

The limiting gradient of the main circuit is 8 per cent and this is reached in only a few instances. It has been found that for the purpose of tourist traffic an 8 per cent gradient is not much more objectionable than one of 5 per cent. Beyond 4 per cent a loaded coach can not be hauled at a trot for any considerable distance. Whenever the speed is reduced to a walk it is found that a team will ascend an 8 per cent gradient nearly as rapidly as a 5 per cent. The elevation is thus gained more quickly. A lighter gradient can be safely descended at a rapid trot, but for anything higher a slower speed is necessary.

In dry weather, without being sprinkled, the roads become and are very dusty, which is at all times a serious problem contended with in transporting the tourists.

The sprinkling fund is frequently exhausted long before the close of the park season, necessitating a total suspension of the sprinklers, in the absence of which the light volcanic surface of the road is blown away, leaving the highways rough, and subjecting the tourists to many discomforts. The dust materially increases the ever-present dangers of accidents on the sharp inclines and curves.

A per capita franchise tax is imposed by the Government on the regular transportation companies. This tax is remitted to the Interior Department and is not available for park purposes without the sanction of Congress.[1] The imposition of a similar tax on all visitors and freight outfits using the highways, if taken in connection with the annual appropriation, would provide a sufficient sprinkling fund for the maintenance of sprinklers for the entire park season. The tax so levied should be retained and disbursed by the officers in charge of the improvements and expenditures of the park.

The Yellowstone National Park is the pride of a Nation of 93,000,000 people and is dedicated in all its splendor to the world's people of all climes. To thus appropriate it was the noblest of national effort, but it was another thing and a vastly tedious and venturesome undertaking to have pioneered and paved the way to the complete accessibility and enjoyment by the public of this American garden of grandeur.

In the year 1881 Mr. F. J. Haynes, from the terminus of the Northern Pacific Railway at the junction of the Missouri River in North Dakota, turned his horse westward for 600 miles toward the vast unknown. In making this journey his personal safety was dependent upon his own vigilance while crossing the plains, which were then known as the Buffalo domain of freedom.

During this year Mr. Haynes observed in the park a small tourist party from England and Germany, who entered by way of Beaver Canyon from the Utah & Northern Railway terminus, 75 miles from the western boundary.

The first public transportation was by means of buckboards operated from the main line of the Northern Pacific Railway by Wakefield & Hoffman. In 1886 the Yellowstone National Park Transportation Co. was, under the hotel lease, operated by Wakefield & Haynes.

In 1892 the Interior Department granted a separate franchise to the Yellowstone National Park Transportation Co. This line was operated by Mr. S. S. Huntley and Mr. H. W. Child. Mr. Child is now the president of the Yellowstone Park Transportation Co.

[1] The proceeds of this tax are available for some work in the park, but not for road work and sprinkling, for which specific appropriation is made.—Editor.

In the fall of 1897, while on the summit of the Teton Range of mountains, Mr. F. J. Haynes and Dr. W. Seward Webb first discovered the idea of providing a regular transportation line from the western boundary, thus making more accessible to a large population a means of visiting this magnificent handiwork of nature.

As to the means of transportation in the park and as to the facilities of reaching the same, it is of interest to note the following in the report of Mr. P. H. Conger, superintendent of the park, for the year 1882: "A tourist entering the park might select the following route—the Union Pacific via Omaha and Ogden; thence by the Utah Northern to Beaver Canyon, where he takes a stage or private conveyance up the valley of the Snake River to the lower Firehole Basin, a little over 100 miles from the railroad [this point of entry is at present the western entrance], or he can take the northern route via St. Paul and the Northern Pacific to Livingston (Bensons Landing), from which a branch road is to be built, I am informed, early next season to the borders of the park, 65 miles from Livingston." This point of entry is now the northern entrance.

From this early beginning, with its attendant difficulties, to the present time the means of transportation and the facilities for reaching and passing through the park have steadily improved until to-day every known means of travel by horse is at the command of the tourist.

The transportation facilities employed in the park are a distinctive feature of this garden of paradise. The two regular stage companies holding leases in the park make the present trip of five days with 4-horse coaches and 2-horse surreys, traveling at a rate of speed not exceeding 6 miles per hour.

The number of miles traversed in a day's drive ranges from 9 to 40. On the long drives stops are made at noon for rest and luncheon at the lunch stations. As a protection against dust and against accidents on grades, drivers are instructed to maintain a distance of approximately 100 yards between coaches.

The Yellowstone Park Transportation Co., under a lease from the Interior Department, operates through the park from the terminus of the Northern Pacific Railway at Gardiner up to and over the belt line. This company has since its beginning operated from said entrance with an equipment sufficient at first to meet the demands and has steadily increased and maintained an equipment sufficient to comply with all demands of the tourists and of the Interior Department.

Since the completion of the Northern Pacific Railway to the northern entrance at Gardiner the trip of the tourist entering by way of the northern entrance with the Yellowstone Park Transportation Co., as outlined in Mr. Conger's report, is shortened by 130 miles, which consisted of rough staging outside the park.

The Monida & Yellowstone Stage Co., under a lease from the Interior Department, operates a regular transportation line from the terminus of the Union Pacific Railway at the station of Yellowstone at the western entrance through the park to all points of interest.

This western entrance was practically unknown until the advent of the establishment by Mr. Haynes, of the Monida & Yellowstone Stage Co., in 1898. Through the energetic and persistent efforts of Mr. Haynes in the fulfillment of his stewardship to the Interior Department the development, advantages, and convenience of the western entrance was brought before a large population heretofore unfamiliar with the beauties of the park.

In its first year, 1898, only 125 tourists entered through the western entrance that were carried by this line. At this time the Monida & Yellowstone Stage Co. operated from the station of Monida, on the Oregon Short Line Railway, a distance of 70 miles from the western entrance.

A large number of employees was necessary to meet the demands of all tourists presenting themselves at said entrance, although the travel was very light, and for periods of 12 days no tourists entered that were carried by its stages from the western entrance. Notwithstanding this fact, this company, as well as the other regular stage company, maintained an equipment of the highest efficiency, consisting of especially designed 4-horse coaches retaining many admirable features of the now historic old-style coach, combined with all modern features, opened at the sides for sight-seeing, suspended on leather thorough-braces, with covered baggage racks at the rear and supplied with heavy canvas curtains for protection against the elements, and equipped with lap robes, all being the highest standard capable of being constructed by the original Abbot-Downing Co., of Concord, N. H., for the comfortable, safe, and expeditious conveyance of passengers through the park.

By the individual and personal solicitation of Mr. F. J. Haynes, Mr. E. H. Harriman, president of the Union Pacific Railway, was induced to construct, at an expenditure of $3,000,000, a branch line from Idaho Falls to the station of Yellowstone at the western entrance, which line was completed and ready for passenger traffic at the opening of the tourist season of 1908. With the construction of this road an immediate increase of about 3,000 visitors to the park over the year 1907 through the western entrance was noted. Since the completion of the extension of the Union Pacific Railway to the western entrance the trip of the tourist entering by way of the western entrance, as outlined in Mr. Conger's report, is shortened over 200 miles, which consisted of rough staging outside the park.

The number of visitors to the park through the western and northern entrances since the year 1898 is as follows:

Visitors to Yellowstone Park through northern and western entrances.

Years.	Northern.	Western.	Years.	Northern.	Western.
1899	7,338	1,771	1906	12,474	3,404
1900	6,510	1,988	1907	11,292	4,150
1901	8,094	1,986	1908	10,185	7,166
1902	9,856	2,738	1909	20,174	10,380
1903	9,517	2,572	1910	10,675	7,403
1904	9,544	3,123	1911 (to Sept. 1)	9,529	10,820
1905	20,457	4,500			

By the maintenance of fixed schedules by the Monida & Yellowstone Stage Co. and the Yellowstone Park Transportation Co. ample time is given the tourists at each point of interest; however, stop-overs are allowed at any of the park hotels without additional stage charges.

All passengers carried by the Monida & Yellowstone Stage Co. and the Yellowstone Park Transportation Co. are accommodated at the hotels of the Yellowstone Park Hotel Co.

The total number of stage coaches, surreys, mountain wagons, buggies, express and freight wagons used in transportation by the Monida & Yellowstone Stage Co. and the Yellowstone Park Transportation Co. is 375, with a total seating capacity of the passenger vehicles of 2,555 persons. In moving these conveyances about 1,200 horses are required.

During the short season from June 15 to September 15 for a period of at least two weeks after the opening and before the closing of the season there is not sufficient travel to employ 20 per cent of the transportation facilities of the Yellowstone Park Transportation Co. and the Monida & Yellowstone Stage Co. With the exception of this very limited season the entire transportation equipment is idle, unproductive, and burdened with an enormous fixed charge for maintenance.

The coaches accommodate 6, 8, and 11 passengers and the surreys 3 and 5 passengers. Private conveyances of the above sizes can be secured for any tour in the park, and the trip prolonged and the conveyances used for drives in the vicinity of the hotels. The companies maintain long and short trips so as to accommodate the wish and time of the tourist.

Tourists holding a short-tour ticket can arrange for extending their trip at proportionate rates. Mail and telegrams are forwarded to the hotel where the tourist is stopping. Twenty-five pounds of hand baggage is allowed each passenger. Trunks are stored without charge. Parties contemplating a prolonged stay in the park can arrange with the stage companies for transporting their trunks on express wagons.

The stations of Yellowstone and Gardiner are directly connected with all stopping points in the park by a system of telegraph and telephones,

and in addition the Monida & Yellowstone Stage Co. maintains a private telegraph system from Yellowstone station to the Mammoth Hot Springs. Although many miles from railroad centers, the tourists are at every station in direct telegraphic communication with all points of the world. This thorough telegraph and telephone system is a substantial aid to the proper policing of the park.

The Monida & Yellowstone Stage Co. and the Yellowstone Park Transportation Co. have leases and rights within the park, which are accompanied by corresponding obligations, and in fulfillment of their obligations to the Government under these leases these companies have made large expenditures in special equipment of no other practical use except in the park. Their leases require them to keep sufficient transportation at all times for all the park travel, irrespective of the number of tourists traveling on any single day or in any season. They are required to keep an equipment of the first class—horses gentle and well broken, drivers sober, courteous, capable, and well informed as to the points of interest.

In addition to the above leases individual camp licenses are issued and permits for saddle and pack animals for use in connection with tourist travel through the park. Visitors may make use of their own vehicles as means of transportation and have free access to the roads of the park, with accommodation at the hotels.

The total number of people that entered Yellowstone National Park since any authentic record has been kept is about 300,000. This number is less than the population of the Twin Cities of Minnesota.

This naturally leads to the consideration of the location of the park and the railroad facilities for reaching the Yellowstone National Park through the western and northern entrances with reference to the population of the United States. The center of population is situated in latitude 39° 4′ and longitude 86° 19′. It is the southeast corner of Monroe County, Ind., about 15 miles southeast of the city of Bloomington.

The Yellowstone National Park is bounded on the north by the forty-fifth parallel of latitude, which extends from a point a few miles south of Portland, Oreg., on the Pacific coast, to Eastport, in Maine, on the Atlantic coast.

From coast to coast the territory south of this parallel embraces 36 States wholly therein and parts of 10 other States, and contains in all an area of 2,524,333 square miles, or more than three-fifths of the entire area of the United States, including Alaska. This same territory contains a total population of about 85,419,248, or more than nine-tenths of the entire population of the United States, which is now served by direct railway to the park.

A continued agitation is being carried forward for permission to operate automobiles over the roadways of the park. This means of transportation, as applied to the park for the purpose of supplanting the horse-

drawn vehicle, by experience has been found to be and is impracticable for many reasons, amongst which the impassable condition of the roads for long periods after the opening and before the closing of the park season, taken in connection with the narrow construction of the roadways and the ever-present and immediate danger to the life of the tourist in passing over the steep grades and sharp curves, coupled with the danger of frightening the horses by the sudden approach of the automobile or the unexpected back-firing of the engine or explosion of a tire.

Reliable statistics prove about 50 per cent of the visitors to the park make use of their own horse-drawn vehicle as a means of conveyance. The advent of the automobile would of itself necessarily result in a complete surrendering of the highways to automobile travel, thus depriving a large percentage of visitors access to the park and its roadways.

The foremost argument advanced by the individual auto owner desiring to use his own automobile for the tour is "that it would provide a more agreeable and rapid means of carriage." The experience of those familiar with the present method of transportation prove that the operation of a combination of automobiles and horse-drawn vehicles would necessarily result in a great loss of life, weighed, as it would be, on a scale founded on rapidity and enjoyment.

Less than 10 per cent of the transcontinental passengers touring the continent on railway lines adjacent to and passing the park ever enter this "Garden of Beauty," either because of the fact that the park tour consumes too much time and entails too many hardships or is too expensive. After an exhaustive study of the conditions, based upon reliable surveys, it has been found entirely feasible to construct wholly independent of the present highway system and without in any manner marring any of the natural beauties and curiosities of the reservation a rail line intercepting all the present points of interest and in addition embracing a vast territory of the park now unfamiliar to the tourist; also connecting with the present western and northern railway terminals and such railway terminals as may be established at the park boundary in the future if a connection can be constructed to the new terminals.

The contemplated use of gasoline motive power in self-propelled gasoline motor cars obviates the necessity of harnessing the waterfalls for power purposes or the extensive cutting or removing of timber for the erection of trolley wires.

These proposed steel-constructed, self-propelled, gasoline passenger cars have the capacity to accommodate from 12 to 74 passengers, with an ample baggage compartment, smoking room, lavatory, water-cooler, light, heat, and observation end, with every convenience of the modern standard parlor car.

As the safe, standard, modern, and ideal suburban car service, these cars have been heretofore adopted for practical use by the Pennsylvania, Rock Island, Union Pacific, and Southern Pacific and other railroad systems.

With the adoption of this means of transportation the expense of the park tour would be greatly reduced and the comforts and enjoyments of the tourists greatly enhanced, thereby attracting a large class of tourists who at present will not undergo the present hardships incident to the tour. By this means of transportation all the travel to the present magnificent hotels, as well as the tourists desiring the less expensive camps, would be accommodated.

This equipment would also include special constructed cars for the rapid transportation of Government and hotel supplies, all of which are at present moved from the park entrances for distances ranging from 5 to 60 miles by means of expensive, obsolete, slow, horse-drawn wagon transportation. By the adoption of this means of transportation it would relieve the present roads of freight and passenger traffic and greatly reduce to the Government the cost of maintenance, at the same time making possible within proper restrictions the use of the present roadways by individual automobile owners with their own automobile as a means of private conveyance.

In the matter of the betterment and improvement of the present transportation facilities for the benefit of the traveling public, the Monida & Yellowstone Stage Co. and the Yellowstone Park Transportation Co. now, as in the past, are ever ready to cooperate with and meet all the requirements of the department. In this connection Mr. F. J. Haynes, as president of the Monida & Yellowstone Stage Co., heretofore secured the cooperation of Mr. H. W. Child, as president of the Yellowstone Park Transportation Co., and Mr. A. W. Miles, as president of the Wylie Permanent Camping Co., to finance, construct, equip, and operate this proposed modern means of transportation in the park if the same meets with the consideration and approval of the honorable Secretary of the Interior.

While substantial results have been accomplished such as were anticipated by the Interior Department in its adopted policies, there yet remains much to be done in the way of development by the Government so as to make possible the complete enjoyment of these "commons" by the owners, the people of the United States of America.

The SECRETARY. The paper which has just been read is very interesting and presents some new phases and suggestions. I think this would be a very proper time for discussion of the matters brought out in this paper. We would be very glad to hear from anybody in regard to any of the matters or suggestions touched on in the paper. I know you are not all of the same mind with regard to the use of automobiles in the park, so why be backward?

Mr. L. W. HILL. Mr. Secretary, the question of permitting automobiles in this park is a rather embarrassing question. I know there are probably a large number of automobile agents, sales people, who feel that it would be a good thing to have this park thrown open to automobiles. I

have had some considerable experience in driving a car in the West, in Oregon, Montana, British Columbia, and through the Northwest. I carry a car with me and have one now down at the gateway, but should anyone ask me to take that car in the park I would feel very much embarrassed. I could take the car, make the trip, and be back for lunch. Now, what kind of a trip would that be? It would be useless until you had a tour of 1,200 or 1,500 miles. I think it would be absurd to put automobiles in here; it would make it possible to see the park in a short day. When I started from St. Paul to Helena, I arrived at Alexandria at half past 1; the tour was over for the day—start in the morning and before lunch the tour would be completed. That's the way I view it, and I am as much of an auto crank as any man. Then, there is another feature which has to be taken under consideration; to attempt to pass 4 and 6 horse stages down here on the road with automobiles would be folly. I would not risk it.

The SECRETARY. A very interesting expression of opinion. The Interior Department is in receipt of numerous requests to open the parks to automobile traffic. I would like to know if there is anybody here who is in favor of opening the park to automobile traffic.

Mr. MCFARLAND. A question which occurs to me is what would be the effect of the automobiles on the wild life of the park?

The SECRETARY. I take it that is an oratorical question. We want first to find some one who is in favor of opening the park to automobiles. May we then assume that the opinion is unanimous on this question? Then let us take up the other question suggested in the paper that a tax be used for obtaining funds for sprinkling the road. Is there anyone here in favor of that method of raising revenues? May we assume that the conference is unanimously against that method of raising revenues? Then there was the other suggestion in the paper—the construction of a railroad through the park to be operated by a gasoline-propelled car. Is there anyone here who is in favor of that method? If not, may we assume that the conference is unanimously against that suggestion? Then there were some other suggestions in the paper—there is much information in the paper which may be of great value. Those three points occur to me now. If anyone wishes to express an opinion on any other point in the paper we would be very glad to hear from him.

Assistant Secretary THOMPSON. The automobile question has been raised, and I take it that you may extend the question to the other national parks. I am ready to take a hand in that.

The SECRETARY. I intended to make it comprehensive. Yellowstone Park being the largest of our national parks, I assumed that Mr. Hill's point would apply to the others, as there are more roads in the Yellowstone than in any other. If, however, Mr. Thompson has anything to present or suggestions to offer on the use of automobiles in other parks,

that is a very important question. We will hear from Mr. Thompson, Assistant Secretary of the Interior.

Assistant Secretary THOMPSON. Gentlemen, I am quite certain if Mr. Hill had thought that his remarks with reference to automobiles had applied to other parks as well as the Yellowstone he never would have made that speech, because I happen to know that he is vitally interested now in having built a road up in Glacier Park. Now, as to the advisability or not of allowing automobiles in this park, the Yellowstone, I do not care at this time to express a final opinion. There are a number of suggestions that would enter into a consideration of that proposition. Mr. Hill has stated that in this park the introducing of automobiles would make the tour of the park a half-day's job, and thereby absolutely throwing to naught a great part of the property that the United States in one way or another has induced concessioners to place and install in this park. That is one of the considerations that should enter into a discussion of this proposition. The other considerations applying to this park have been mentioned either by the Secretary or those who have spoken on the subject, but with the other parks different conditions obtain. For instance, Glacier Park is a new park. The Government is building there from the beginning. The peculiar formation and contour of that park is such that, in my judgment, an automobile road leading from both entrances would be advisable. The fact is that an automobile tour of that park would be out of the question, because of the impossibility of building such a road to the greatest points of mountain scenery, but from the station, Belton to Lake McDonald, the Government has already constructed a road 3 miles long up to the lake, and it needs only a bridge to make it a first-class automobile road.

There is now under consideration the construction of a road from Midvale, on the east side of the mountains, up to a point somewhere near the center of the park, or as far as they can go advantageously with that sort of road, so by that means the tourist may be brought within two or three hours to the very greatest points of interest in the park; then he must necessarily make the tour on horseback or on foot to see the great beauties of the park. With Mount Rainier National Park it seems to me conditions are entirely different and entirely advisable as to automobile traffic. There is but one point of interest in that park, and that is that great mountain standing there as it does a lofty citadel, snow capped, and bordered with glaciers. The tourists' sole object when they go to that park is to see and climb that lofty mountain, so that there can be no possible objection to taking them to the base of the mountain as quickly as possible and as comfortably as may be. The same conditions exist, in my judgment, with reference to Yosemite Park, although I think I will raise a discussion there with the superintendent of that park, and I realize that his point of view is better than mine.

However, it does seem to me that the great advantage—the great thing of interest—in that park is the Yosemite Valley and the two or three other points that may be reached upon the great canyon or cliffs, so that the tourist may look down on the floor of the valley, 3,000 feet or a little more below. It seems to me that there can be no objection, providing a proper road is built, to an automobile's going up to what is known down there as the floor of the valley. That would take the tourist from the railroad station at El Portal in the quickest time and in the most comfortable fashion. From that point he may travel out over the floor of the valley and over the mountains to his heart's desire, and the objection that Mr. Hill raises to the use of automobiles in this park would not exist there. Automobile roads could not be constructed in that park, so that a tour of that park could not be made in less time materially than it is to-day. Those, gentlemen, are my views on the automobile question in the parks that I know about. I can see a great many objections to introducing automobiles in the Yellowstone Park and I can also see some things favorable to permitting their use. I may add to what the Secretary has previously stated that a very great pressure is being brought upon the Department of the Interior to open all our parks to automobile traffic, and I am certain that the question will have to be thrashed out by that department sooner or later and a final announcement made of a definite policy on the subject. It seems to me, therefore, right and proper that during this meeting there should be an open, frank, and free discussion on both sides of the question of automobiles in the parks.

Mr. HARVEY. Is Mr. Thompson familiar with the situation in the Grand Canyon?

Assistant Secretary THOMPSON. No, sir; I am not.

Mr. HARVEY. That is a very interesting subject to us; we are very much interested in it there. It seems to me that it is important that the policy be determined.

The SECRETARY. Gentlemen, you have heard Mr. Thompson's remarks in regard to the other parks. Are there any others here who think that automobile travel should be provided for in the other national parks?

Mr. WALTER FRY, ranger, Sequoia and General Grant National Parks. In the Sequoia and General Grant National Parks automobiles are allowed under certain restrictions promulgated by the Department of the Interior. On some of the roads automobiles are permitted, but on others they are not, as, for instance, over the road from Mineral King, a distance of 12 miles, the road is so steep automobiles can not get over them. Then we have the Mount Whitney Power Co. road constructed by that company (that road has not been opened to travel to the general public); then we have a road leading into the Giant Forest, the principal point of attraction within the reservation at the present time. On leaving Three Rivers, the principal point of entrance to the Giant Forest Road, it is necessary to climb an elevation of 5,500 feet. This road is not sufficiently wide to permit both automobile traffic and teams at the same

time. I know of no way of compromising the issue with these people other than to throw the Giant Forest Road open to automobile travel on certain days of each week. It would necessitate the travel of about 20 miles of road within the reservation after entering the western portion of the park. I consider this can be done without disadvantage to the department. It could be generally known throughout the community; our people could be notified that on certain days of each week automobiles would be permitted. As I said before, there is a great deal of pressure being brought on the officer in charge by the automobile associations in California. In the General Grant Park this year the rules and regulations have proven very satisfactory with regard to the automobile traffic, although there were a few individuals who objected to paying the toll that was exacted. The toll that has been charged has been quite sufficient to pay for the additional expense that has been incurred on the part of the department by reason of permitting the automobiles to pass through the reservation.

Mr. McFARLAND. Can Mr. Fry state the restrictions that are placed there?

Mr. FRY. The roads within the General Grant Park over which automobiles travel cover a distance of about 5 miles. The department charges $1 for a round trip through the park, or $5 for the season, made applicable to persons who are not doing a general transportation business.

The SECRETARY. Are there restrictions as to speed?

Mr. FRY. Speed will be limited to 6 miles per hour, except on straight stretches where approaching teams will be visible, when, if no teams are in sight, this speed may be increased to rates indicated on signboards, at no time to exceed 15 miles per hour. When approaching teams, at all times to slow down and take the outer side of the road and shut off their machine.

The SECRETARY. This is a very important subject, and I would like to have the views of you people who have come here to this conference. For instance, take the Glacier National Park proposition. Should it be the policy of the Federal Government to build roads in that park which will permit of automobile travel as well as horse-drawn vehicles? Those are questions which are of great interest to us. Mr. Hill, Mr. Thompson has undertaken to state your position; perhaps you had better——

Mr. HILL. I meant my remarks to be confined to the Yellowstone.

Assistant Secretary THOMPSON. Exactly; and the Secretary attempted to spread your remarks over the entire park situation.

Mr. HILL. The proposed road in Glacier Park is not entirely in the park. Three-quarters of it is through the Indian reservation. It would be impossible to build a wagon road or automobile road up in the park without going into millions of dollars of expense. The road we propose to build is up the east border of the park. It may be possible to build a road on the west side of the park up the Flathead. The idea of this road that we propose to build is to answer the same purpose that the railroad

answers from Livingstone to Gardiner. I think the people would much prefer it. I am very glad that Mr. Thompson made the trip through the park and that he is familiar with the situation. He is probably more familiar with it than anyone else here with the exception of Maj. Logan. People must see that park on horseback or on foot. The camps we have established are 12 miles apart with a view to having the people walk through if they wish, as they do in Europe. The road would be three-quarters off the park and one-quarter on it. The idea is to take the people from the train at Midvale and take them in stages or automobiles to Lake St. Marys; then take a motor boat up to the foot of Lake St. Marys up to the Continental Divide—leave the train in the morning and get up to the lake for lunch—see that portion of the park in a day; you can come out in half a day with an automobile.

The SECRETARY. As I understand it, it is simply an approach. Do you know of any other park with which you are familiar in which a similar condition would exist?

Mr. HILL. Mount Rainier National Park. The people of Tacoma are very much interested in establishing an automobile road in Mount Rainier National Park. In fact, the people of Tacoma have taken the matter up with me.

Mr. MARSHALL. There are other places in Glacier Park that are equally as accessible. I think the people who went through the park with me last year will agree with me that the scenery around Bowman Lake and down to Lake McDonald in that section of the park is as fine as St. Marys, and over that road it would be very easy to construct an automobile road. Generally speaking, I think that the people must have some form of transportation so that they can get to the different points of interest and spend the time there instead of being on some stage as we traveled on to-day. The conditions in the Yosemite could be improved on. I think that we ought to have some means of transportation to satisfy those who want to get to their point quickly.

The SECRETARY. There seems to be more difference of opinion on this point than appeared at the beginning. Are there any others who desire to say something in regard to the use of automobiles in national parks?

Mr. W. G. STEEL, president Crater Lake Co. In regard to Crater Lake Park we feel that automobile transportation is our only means of salvation. Our park is a new one. Several flat failures have been made in trying to establish a stage line. Last year we maintained an automobile line to Upper Klamath Lake, connecting by steamer to Klamath Falls, and also maintained a line to Medford. The business is increasing rapidly. Last year we had three times as many visitors as the year before, and so far this year we have had three times as many as in 1910. Half the visitors to our hotels come in their own automobiles. I do not suppose we have had a dozen people this year who have come in their own vehicles other than automobiles.

The Government has just completed a survey of roads in the park, including one entirely around the lake, making a circle of 35 miles, keeping throughout as nearly as possible a uniform grade and following the rim when practicable. Previous to two years ago visitors came in their own vehicles—that is, visitors from southern Oregon and northern California. There were only rare instances of anyone from elsewhere. After putting in automobiles we had people from the entire coast—Los Angeles, San Diego, San Francisco, Seattle, Portland, and other places, so that we feel that we must have automobiles for our park.

The SECRETARY. This subject will remain with us and probably come up for more appropriate discussion as the various parks are brought before the conference. I wish you would bear it in mind, because I would like to have your opinions. I myself have just had an experience of some interest in connection with automobiles. After leaving Washington I devoted some time to the inspection of irrigation projects and to matters pertaining to the Indian Office. I traveled a large portion of the distances in automobiles. In one day we traveled, I think, something like 125 miles—in one instance there were three relays—so that I had a good deal of experience with automobiles on western roads.

As to the permitting of automobiles in the parks I have formed no conclusion. From the discussion just had there seem to be two very decided opinions on this subject. I confess I was rather surprised at first when I found no one in favor of granting this privilege. It is now reaching the hour for adjournment, and unless it meets with objection we will now adjourn and we will convene here in the morning at 9 o'clock for the next session, when we will resume at the point we left off this evening. Unless there is objection, we will adjourn until 9 o'clock to-morrow morning.

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The SECRETARY. I think it would perhaps be just as well to defer further discussion of the automobile question, except as it may come up in connection with the different parks. It appears from the discussion had last night that the question presents different aspects in different parks, and it would be better, I think, to take it up in that manner unless some one now has views to express on the subject in connection with Yellowstone. If not, we will go ahead with the list of concessioners in Yellowstone. I see that Mr. Klamer runs a general store, and he has been asked to present his views on that subject.

Mr. KLAMER. There are no particular questions which it would be useful to discuss at this time, no difficulties, and no particular requests to make.

The SECRETARY. Pryor & Pryor have a concession for the sale of curios. I understand Mr. Pryor is present, and if he has any questions

to present in connection with his concession we will be glad to hear from him.

Mr. PRYOR. Mr. Secretary and gentlemen, our concession is merely a curio concession. We have a business extending over but three months in the year, and the only questions that have direct bearing upon us are those of taxation for the benefit of the park so far as maintenance, improvements, sprinkling, etc., are concerned and the one of a more liberal franchise.

When the tax question came up several years ago, the assessment as originally suggested was excessive, and we were permitted to submit to the department a financial statement of the business done by us to show why the tax as proposed was unwarranted, and in view of this statement the department was considerate enough to readjust the matter.

What we would like to emphasize is the peculiar limit which has been placed upon our concession at Mammoth Hot Springs, and as we understand the nature of this conference to be, in addition to other things, an opportunity for discussion of methods, ideas, and suggestions for the regulation, improvement, and maintenance of the national playgrounds, we are particularly interested in explaining certain features which affect us most keenly.

Our curio store is located very conveniently for the tourists brought to Mammoth Hotel by the transportation companies, and we have arranged to make it especially convenient for those making the camping tours to stop at our place by providing public necessary comforts and conveniences both in caring for the needs of the tourist as well as his team. This habit of stopping at our place was induced by special arrangement with the drivers and is a condition which did not exist before we acquired our lease.

As a natural result we have many inquiries for tourist supplies and necessities, things which we are prohibited from carrying according to the construction of our lease. What we would like, if possible, is to have our lease made more liberal and broadened to include those things for which there is a constant demand and can not be supplied the tourist without either unwarranted delay or necessary inconvenience by awaiting his arrival at the next place of supply. Now, just as an illustration, take kodak supplies. Often the tourist, and particularly those traveling the camping way, desires to photograph a local object of interest and, being unable to obtain the necessary supplies at this stopping place without unreasonable delay, he is obliged to continue his trip without the satisfaction of having secured a picture of a point of interest he desires. It is some of the revenue from this source to which we feel we are entitled. The question of having our concession made more liberal and equal to the others granted in the park is what we would like to present before the department.

Assistant Secretary THOMPSON. Do you have exclusive curio rights in the park?

Mr. PRYOR. No, sir.

Assistant Secretary THOMPSON. Do the general stores handle curios also?

Mr. PRYOR. Yes, sir.

Assistant Secretary THOMPSON. Of course they handle the necessities which you have mentioned?

Mr. PRYOR. Yes, sir.

Assistant Secretary THOMPSON. Is their curio line as extensive as yours?

Mr. PRYOR. I presume so.

The SECRETARY. Well, if they supply the trade, what justification is there for two concessions covering the same articles?

Mr. PRYOR. Perhaps there is not so far as curios are concerned at the same point of interest in the park, only I believe it for the best interests of the public.

The SECRETARY. The question is should these concessions as far as possible be regulated monopolies? That has been the policy heretofore. The question is whether this is a wise policy or whether we should have competition. This is a limited market with a limited season. The query is should we let the general store carry curios and exclude the other people or should we let the other people have that concession and exclude the general store. We seem to have a number of concessions covering the same thing in whole or in part.

Mr. PRYOR. Mr. Secretary, there is another consideration. We are handicapped during that season of the year when the park is closed to tourist travel, because we have no possibility for catering to the volume of business done in connection with the settlement at Mammoth Hot Springs (where Fort Yellowstone is also located), which is far greater than the department may possibly realize. This particular point of interest is not at all similar to others in the park on account of it being headquarters for the various departments of the Government and is open and accessible during the entire year. If we are entitled to consideration so far as getting revenues from the tourists and others is concerned, I think our concession should be more equal and cover that part of the trade that results directly from this source and the supplies heretofore mentioned are certainly an equal necessity to the little articles in the souvenir line. It is also reasonable to suggest that a tourist seeking a kodak film is a prospective curio purchaser and it would not seem entirely equitable to our concession that we lose this opportunity to create revenues for our business. It is the supplying of one want that leads to further suggestions.

The SECRETARY. These remarks in regard to this particular concession raise the broader question which I have indicated, and one that is of

great importance. Shall we give one concern a general concession covering merchandise, including curios, and expect them to live up to a carefully drawn contract to meet the demands of the trade at fair prices and thus regulate these things in the hands of a single concessioner or shall we have competition? What do you gentlemen think as to the wisdom of the one course or the other?

Mr. PRYOR. I believe it is for the best interests of the purchaser, more advantageous to the tourist, if there is more than one place where he can get his supplies. Would not this condition tend to bring about a better standard of price and quality?

The SECRETARY. If any other concessioners or members of the conference have views on this question, we would like to hear from them.

Mr. W. G. STEEL. I will tell you, as briefly as I can, the experience of our company in Crater Lake Park. I have been trying to develop this proposition for 27 years. Aside from the United States Government itself, every penny that was ever spent in the creation of Crater Lake National Park came out of my pocket, and besides that, it required many years of hard labor that were freely given. I went there first in 1885, and was deeply impressed with its overwhelming majesty, and realized that unless the General Government took immediate possession of the region it would be lost to the people forever and fall into the hands of individual speculators. During the following winter 10 townships were withdrawn from the market, after which it required 17 years of constant labor and attendant expense to get a bill through Congress and signed by the President providing for the creation of the park. When that was accomplished I felt that my long labor was finished, and was so congratulated by my friends and the press. I was so green, so simple-minded, that I thought the United States Government would go ahead and develop the proposition. In this I found I was mistaken, so had to go to work again.

All the money I have is in the park, and if I had more it would go there, too. This is my life's work, and I propose to see it through. I want a hotel as magnificent as this one; I want a road entirely around the lake that will cost $500,000, and I want other roads and trails that will cost as much more. We are now building a cut-stone hotel on the rim of the lake from the veranda of which you will be able to look down upon the waters 1,000 feet below. We have a 5-year lease and have come to the end of our string for money, if developments are to be made commensurate with the necessities of the proposition. We can not float bonds or otherwise borrow sufficient funds on a lease of that character. We want to do our part, and we want the Government to help us. All we ask is a 20-year lease. Give us that, and we can secure funds to carry on the work as it should be. Limit us on the lease and you limit the development. We must have a 20-year lease or we will not be ready to receive and properly care for the great number of tourists that will come

to us in two or three or four years, with transcontinental railroads operating within 15 miles. If necessary for the good of the cause, I will come to Washington and stay there through the winter to aid in getting money from Congress to build our roads. We want to build another hotel on the easterly side of the lake to care for visitors who will come to us on the completion of the Southern Pacific and Oregon Trunk in two years, to say nothing of the San Francisco Fair in 1915, when we will simply be swamped with tourists.

We can do all these things better as a single corporation than they can be done by a lot of little ones. We want to provide every facility for the accommodation of the poor man and his family as well as the rich, and if you will give us an opportunity we will do it. We have made good in the past, and we will make good in the future. However, we must have a monopoly for the protection of the men who supply the money and for the protection of the public as well. We will meet the department more than halfway in providing rates, rules, and regulations acceptable to the public and will accept the slightest suggestion from it as an order and always hasten to obey it. If you are going to divide the concessions, that practically means that we must retire, for it will lead to unnecessary jealousies and jangling among concessioners that must of necessity interfere with perfect service. In these matters I believe I express the sentiments of every concessioner in every park in the United States.

The SECRETARY. Gentlemen, I think Mr. Steel has stated the proposition that is really before us. The question is whether these concessions can be developed so as to meet public demands in a proper way and at a fair price unless they partake largely of the nature of a regulated monopoly, free from competition. On the other hand, there is the suggestion of competition, that in that way we better protect the tourist, as made by Mr. Pryor. We would be glad to hear any more views on the question.

I see the name of Mr. Smith, representing Shaw & Powell, operating in this park. Have you any views to express on this point?

Mr. R. E. L. SMITH. I have a set place on the program; I would prefer, with your permission, to defer an expression of my views on this subject until I reach that place on the program.

The SECRETARY. I extend my request to those who have not covered the particular topic under discussion. If there are no further remarks on this question, we will proceed to Lyall & Henderson. They are the next on the list, running a general store here in the Yellowstone. Are they represented?

Mr. LYALL. Mr. Secretary, I do not know as I have anything to say of sufficient interest to this conference only with regard to the subject brought up by Mr. Pryor. His remarks might have led the people to think that the traveling public were unable to get the particular article that he mentioned. I beg to state that we have always carried a full line of these films and almost anything else that the public will ask for in

a general store. I think these films can be had at various places around the park, at the different hotels, and at Mr. Klamer's place, and at the lake. I simply wanted to mention that fact.

Assistant Secretary THOMPSON. Your general store concession permits you to sell curios, too?

Mr. LYALL. Yes, sir.

Assistant Secretary THOMPSON. Well, then, what is the use of having the curio concession at all? Why don't we give Mr. Pryor a general store concession and let him compete with you?

The SECRETARY. Or give one or the other of you the whole thing.

Assistant Secretary THOMPSON. Yes.

Mr. LYALL. That's a question for the department to decide.

Assistant Secretary THOMPSON. That's a question I would like to hear from you on.

Mr. LYALL. The question of giving concessions to others—personally, as far as I am concerned, it is satisfactory to me if Mr. Pryor would have further concessions.

The SECRETARY. Mr. Lyall, do you think there should be one concession in this park for curios and a general store or more than one. Which do you think is the better policy, one concession or two?

Mr. LYALL. I should think it would be better to have both.

The SECRETARY. You think, then, there is enough profit in this trade here to support two competitors in this place?

Mr. LYALL. I believe, by strict economy, two could exist, Mr. Secretary.

The SECRETARY. If we limited it to one concession, do you think the man who had the concession would sell at a lower price?

Mr. LYALL. I think not.

Mr. KLAMER. I handle a general store here in the park—everything pertaining to supplies—my shipping point at present is 30 miles from a railroad. On canned goods and stuff of that sort I make very little profit. I think if you confined a man here in the park to a grocery business alone, he would make but very little profit out of it.

The SECRETARY. You think, then, that the concession ought to cover the whole field?

Mr. KLAMER. Yes, sir.

The SECRETARY. You have a store, a single store?

Mr. KLAMER. Yes, sir.

The SECRETARY. Have you any competition in the curio business?

Mr. KLAMER. Yes, sir; some. Mr. Haynes has souvenir spoons there and some other things.

The SECRETARY. I would be glad to hear the views of anyone else on this question of concessions. If there is no further comment we will hear from Mr. A. W. Miles, president and manager of the Wylie Permanent Camping Co.

PERMANENT CAMPS: THEIR CARE AND SANITATION IN YELLOWSTONE NATIONAL PARK, BY A. W. MILES, President of the Wylie Permanent Camping Co.

The act of dedication of the Yellowstone National Park indicates, in general but concise terms, the purposes for which the reservation is set apart. These are:

(1) The preservation from injury or spoliation of the forests, minerals, and the natural curiosities.

(2) The withdrawal of the territory from settlement, occupancy, or sale under the laws of the United States, and its dedication, in the language of the act, "as a public park or pleasure ground for the benefit and enjoyment of the people."

This act and subsequent statutes amending the same, bestow upon the Secretary of the Interior full power and authority to carry out the objects of the park, including the authority to grant franchises and regulate the rates of charges for every service rendered tourists on the reservation. Under this authority, three distinct methods of touring the park have been established by the Secretary of the Interior, namely:

(1) By means of stage lines connecting the seven hotels maintained by one company at or near certain principal objects of interest in the park, having the most modern and up-to-date accommodations, such as given in the best hotels at summer and winter resorts.

(2) By means of a stage line connecting permanent camps or tent stations, now eight in number, all operated under one company, whose lease requires an increase in the number of stations and other facilities as the demands of the public in the opinion of the Secretary of the Interior require. This system seeks to combine novelty and informality with a complete sight-seeing tour of the park.

(3) By means of movable camping outfits—in the main, personally conducted—under a yearly licensed system; there having been issued by the Secretary of the Interior for this season 59 licenses, with authority to use in the aggregate 160 wagons and 218 horses.

This paper will be confined, as far as practicable, to the subject assigned me—"Permanent camps, their care and sanitation in Yellowstone National Park."

The permanent camps, including the regular stage transportation connected therewith, are operated under a lease by the Wylie Permanent Camping Co., a corporation with a capital stock of $200,000 and a present investment of about $300,000.

Briefly stated, besides the hotel building at Gardiner and the various stables, storerooms, and other outbuildings throughout the park, this company now maintains about 654 tent rooms equipped as sleeping apartments, and has on hand for use in conveying tourists and their subsistence 140 vehicles and about 450 horses. If the age of a successful

operation is an indication of merit, the Wylie camps can claim all the prestige which is due to a pioneer line.

As you are aware, the park was created in 1872. In the next 10 years, however, very little was accomplished toward making the park in truth a pleasuring place for the people.

Only an insignificant number of people understood the scenic and scientific value of the new reservation. There were no railroads near the park and the reservation itself was an uncharted wilderness, without roads, bridges, or other modern highway improvements. During this period, too, the limits of the park were crossed and recrossed by bands of hostile Indians and an excursion through Yellowstone was a hazardous undertaking.

Within the first 10 years of the park's existence the Department of the Interior granted no regular leases, a fact which emphasizes the unattractiveness of the place at that time to tourists or capital. In the early eighties the accessibility to Yellowstone Park was increased a hundredfold by the extension of the Northern Pacific Railway into the Territory of Montana. By 1883 a branch was built from Livingston 50 miles south to Cinnabar, a point 3 miles north of the present village of Gardiner. The advent of this steel highway marked a new epoch in the traffic to and enjoyment of the park. Its new accessibility lured not only tourists from every State in the Union, but also the highest officials of the United States and foreign countries. In this one year alone the park was visited by President Arthur and a member of his Cabinet, the Chief Justice and an Associate Justice of the Supreme Court of the United States, the General and Lieutenant General of the Army, six United States Senators, one Territorial governor, a prominent railroad president, the ministers from England and Germany, the president of the Admiralty Court of England, members of the British Parliament, and other high officials of this and foreign countries.

The founder of the Wylie Permanent Camping Co. had made three complete trips through the park and published an illustrated guide book on Yellowstone prior to this date.

In 1883 10-day camping trips were added, the parties outfitting at Bozeman, Mont., and driving overland 84 miles to Mammoth Hot Springs. At this date the Wylie camps were movable or portable; that is, camp was pitched anew at each roadside stopping place. The tourists rode on horseback or on mountain spring wagons and the camp equipment and provisions came along behind in four-horse freight wagons. This method of transportation and service was in vogue for about 10 years, and since each season witnessed an improvement in the park roads there was a steady annual increase in tourist travel. In fact it can be stated as a cardinal principle of park transportation service, that the volume of business then, now, and at any future time will depend in a large measure on the condition of the park road system.

The modern traveler comes to the northern or western gateway of the park in a superbly equipped Pullman sleeper, which glides along over heavy rails set on a well-ballasted, dustless roadbed. The high character of the railroad service to the park serves to emphasize any inconvenience encountered by the tourists using the park roads.

By 1894 the business of the Wylie Co. had increased to such an extent that fixed camps were established at the principal centers of interest and the practice of pitching tent nightly was abolished, since which time the permanent camping system has been in process of development to its present standard.

In the official report of Maj. J. B. Irwin, United States Army, superintendent of Yellowstone Park in 1898, to the Secretary of the Interior, the superintendent says:

> The permanent camps seem to fill a demand on the part of a certain number of travelers in the park who wish to enjoy whatever benefits and pleasures may be received from camp life. I inspected frequently each of the camps and lunch stations and found them neat and clean, with all of the comforts one would expect to find in camp. It is not possible to make a comparison between the accommodations furnished by these camps and the hotels. Each comes fully up to the requirements of its special class, and the personal preference of each visitor to the park must and will determine the way of living while in the park

In 1899 the then superintendent, Capt. Oscar J. Brown, in his annual report said:

> That there is a demand for this kind of entertainment is fully indicated by the large number of tourists availing themselves of it during the present summer. Inspection of these camps showed them to be comfortable, clean, and well kept, with more conveniences about them than is usually found in camp life.

Nineteen hundred and five, the year of the Lewis and Clark Exposition at Portland, Oreg., was the first great season Yellowstone Park ever experienced. In the three years immediately preceding 1905 the total volume of tourist travel increased less than 400. Then, in a single season, the volume of traffic jumped from 13,727 in 1904 to 26,188 in 1905, an increase of 100 per cent. The Wylie Co. carried 3,668 tourists that year, and thus demonstrated its helpfulness to the department in assisting to care for an abnormal number of visitors to the park, since which time the company has been the established agency of the department for supplying the permanent camping service.

The investment of the company was such that the yearly license system as applied to it was abolished, and a lease was entered into, dated March 31, 1906, under which the company was required to provide facilities necessary to accommodate all persons desiring permanent camp service in the park, and, as construed by the department, imposing the further obligation of establishing and maintaining such additional camps and transportation lines as from time to time might be demanded by the public in the opinion of the Secretary of the Interior.

The Wylie Co. in 1906 made heavy expenditures to improve its transportation and camp service. Two of the camps were moved to better scenic and more sanitary sites. The method of tent construction was improved. Administration tents were established at each camp, improvements were made in kitchen equipment, and in short a definite policy for amplifying the plant and systematizing its operation was instituted.

That season of 1906, however, proved a great disappointment. The total number of visitors fell from 26,188 in 1905 to 17,182 in 1906 and the Wylie traffic dropped to 1,745, a sheer decrease of over 100 per cent.

The two following years, 1907 and 1908, would have been no better had it not been for the extension of the Oregon Short Line toward the west boundary of the park. The advent of this road is largely responsible for the increases of those years since the records of the northern entrance show no increase during this period.

In 1909 the Alaska-Pacific-Yukon Exposition was held in Seattle. As was expected, it made that year an unusual season for Yellowstone and required a large increase in equipment for us to comply with the obligations of our lease to take care of all who desired permanent camping accommodations. This increase was due entirely to the influence of this international exposition, and travel the following seasons of 1910 and 1911 has been materially less.

It seems hardly necessary to say that however enthusiastic we may be in the development of one method for caring for the public, there are many sources of discouragement and disappointments, due largely to the great fluctuations in the patronage secured. For instance, the large increase in the business in the season of 1909 caused us to increase our plant by one-third; yet the decrease of 80 per cent in the business for the following year made us realize as never before that a large part of our capital must be idle in lean years and that we can not expect to enjoy uninterrupted prosperity in the conduct of this business. A general railroad strike on any western railroad line, a lack of some important convention in a Pacific coast city, or reports of destructive forest fires are a few of the things any one of which during a given year would be a calamity to Yellowstone Park interests.

This, in outline, is a statement of the evolution of the Wylie camps from their origin, about 1883, to the present time. I use the word "evolution" because the Wylie system as it exists to-day is a development and not the product of a policy which followed the rules of well-known business enterprises. So far as I know there is nothing like this chain of eight permanent camps in this country. Without urging this statement, I can say with certainty that in bringing this outing system from its crude and unorganized simplicity of 25 years ago up to its present state of organization and efficiency we have had no guide other than our own experience in the light of the demands of a certain class of tourists and no rules save those prescribed by the Department of the Interior.

At the present time what we call a night station or permanent camp is, in fact, a village of canvas houses. The parcels of ground on which these tents are located vary in size from a half to 5 acres. Each camp consists of the following equipment: One office or administration tent, one lounging or pavilion tent, one dining-hall tent, one kitchen, one laundry, and from 20 to 100 single-room and compartment sleeping tents, a log supply and storage house with cement floors, a meat house for fresh meats and vegetables. The office tent, dining tent, and other general-utility tents are located in the center of the chain of sleeping tents, each numbered consecutively, extending outward in two or more directions, as suggested by the contour of the site and the location of trees. In every camp the sleeping tents, which of course make up most of the plant, are set in military alignment a uniform distance of from 4 to 6 feet apart, according to their several capacities. There are three standard sizes—single-room, two-room, and four-room tents. All tents are of 13-ounce Z blue duck, with navy-blue stripes. The pavilion tent is centrally located in each camp, varying in size from 20 by 30 to 40 by 70 feet. A very attractive feature is the camp fire in the center of each camp, surrounded by rustic benches, where an organ is played, songs are sung, and stories are told until 9 o'clock. At 10 o'clock the curfew bell is rung, and all is quiet in camp.

Each tent is erected on a raised platform with heavy wooden frame for the support of the walls and top, as well as the floor. All sleeping tents have a 10-inch baseboard extending around the floor on the interior of the tent. The canvas side wall extends below this baseboard, thereby preventing showers from beating in around the bottom of the compartment. The furnishings of the Wylie sleeping tents are limited strictly to the necessities, but no effort or money has been spared to make them comfortable. Each private compartment is fitted with a stove, table, chairs, bed, and washstand with needful appliances. In front of each bed is a rug; in the hall of each tent are several rugs. Years ago the company saw the prime importance of good beds. Each bed is double, with steel springs and a high-grade mattress, cotton sheets (laundered daily), woolen blankets, and comforts. Much importance and attention has been given to the dining halls, kitchens, and offices. A news stand containing drug-store supplies, confections, cigars, tobacco, and post cards is maintained at each camp. Writing tables are maintained in each office, with ample stationery. The dining halls of 1911 improvement are 30 feet wide and 45 feet long, floored and wainscoted around all sides to the height of 6 feet. Above the wainscoting is a screened frame 3 feet high, which is curtained to make the room dark when meals are not being served, thus excluding the fly, which has been heretofore a great pest. The top of the tent is black duck, overlapped at the eaves with a blue and white fly, which gives it coolness and comfort equal to that of a log or frame building. The kitchens are made of log, floored, and with

modern improvements and equipment throughout. The tables are long and narrow, with benches, and meals are served family style by young women.

The operating officials of the Wylie Co. are a general manager, master of transportation, assistant manager of transportation, head matron, a traveling steward, an auditor, and assistant auditor.

Each night camp is managed and operated by the following staff: A camp manager, a matron, assistant matron, clerk, from 6 to 12 porters or camp boys, from 6 to 12 dining-room girls, women cooks, women caretakers for the sleeping tents, and laundry women.

If I were asked to name a single factor which has contributed more than any other to the success of our permanent camping system as operated on its present scale I would answer, the character of our employees. To a system like ours this question is vital. The Wylie camps make no pretense to elaborate service or elegant furnishings. We merely advertise them as permanent camps, and it is the novelty as well as the economy which attracts people to this service. It is our constant aim to give the camps an individuality rather than to make of them a cheap substitute for hotels.

We have established a recreation pavilion at all night camps. This and other features, including the camp fire songs, are designed to break down formality and fill our guests with the true spirit of camping life. It is apparent that the employees under such a system mingle with the guests not only in the capacity of servants, but also as entertainers and interpreters. In view of this fact we have always drawn our camp employees from the ranks of intelligent and well-bred people. College girls and school teachers make up three-fourths of our female help, and the others are from private homes. Teachers of domestic science, geologists, college and high school instructors can be found in the ranks. I recall that our guide at the Upper Geyser Basin two years ago was a son of the president of the University of Illinois. A recent writer, emphasizing this feature of our system, said in a spirit of fun that he discovered that the boys who built the fires in the tents each morning were college professors in disguise. Tourists commend the management for the character of the employees, and almost invariably refer to the fact in subsequent correspondence. The following extract from a letter written by Mr. Wesley E. King, of the National Copper Bank of Salt Lake City, one of the many prominent men who toured the park with us this year, is as follows:

> What I like most about the Wylie way in addition to the accommodations of your camps and the convenience of your transportation facilities is the character of the employees or laborers which you have gathered about you. They are not menials, any of them, but intelligent, courteous, and well bred young men and women, and in taking care of us we have the constant feeling we were being looked after by loving brothers and sisters for whom we soon came to entertain a sincere regard.

It is no uncommon occurrence for a tourist to make application for employment for the current or next season. The attractiveness of this

work is evidenced by the fact that we received over 2,000 applications from women during the spring of 1911, and out of these we select those best suited to the work. This gives us a very wide range from which to select the new recruits, as our employees are now from homes in 23 States.

The writer, having had 26 years' experience in supplying equipment and transportation in the Yellowstone Park, has been educated to the requirements in this regard. Having been interested in the local and permanent camping business during the above period indirectly, and directly and personally for the past six years, the writer speaks from personal experience that the constant aim of the company has been to perfectly satisfy all tourists wishing to tour the park by the permanent camping method.

The Wylie Permanent Camping Co., having about $300,000 invested in their plant, are in a position under the present system to care for an average of 150 to 250 tourists per day.

I can not refrain at this time from commending the Department of the Interior for its admirable policy of maintaining the park as far as practicable in its present natural state, whereby it has forbidden any desecrations in the way of unnecessary hotels and a needless duplication of permanent camp sites and equipment. This aim has restricted transportation solely to vehicles drawn by horses, thereby enabling not only the larger number of tourists who avail themselves of the licensed accommodations to enjoy the several days of scenic touring, but the people who live in adjoining States, constituting about one-sixth of all tourists, to avail themselves of the enjoyment and benefits of making the tour in their own transportation.

In cooperation with the acting superintendent and other local officials of the Government great progress has been made in solving the important problem of sanitation.

Under existing methods the greatest care is taken to keep each camp in a thoroughly sanitary condition and to avoid the spread of disease through the instrumentality of the house fly, which is the principal pest of this park. The dining rooms, kitchens, warehouses, and storerooms are floored and screened. Each closet receives due attention daily, and the drinking water, piped to kitchen and dining room at each camp, is pure and free from contamination.

We have endeavored to comply strictly with the requirements of the Secretary of the Interior and of the superintendent of the Yellowstone National Park, who inspects the camps constantly during the season.

We have been able thus far to care for all desiring this system and method, and feel confident that under a continuance of the policy as heretofore inaugurated by the department we can handle as many as may wish to come this way in the future.

In closing I take pleasure in extending to the convention, and especially those members interested in the permanent camping idea, a cordial invitation to visit any or all of our camps.

The SECRETARY. Is there any discussion concerning the points brought out in this paper. There is a point which, it seems to me, might be emphasized at this time, and that is that we are going to hold another exposition on the Pacific coast in the very near future and the question of making preparations for that exposition is one of the most important things to be considered. I would like to hear from Mr. Smith.

REMARKS BY MR. R. E. L. SMITH, Representing Messrs. Shaw & Powell.

Mr. Secretary and gentlemen of the conference: I was very much interested last night in the discussion by the railroad men of the question of advertising. That is a subject which appeals to every one of us operating in this park. I think I can give you a homely illustration of the point made by Mr. Fee that personal representations are the strongest method of advertising by referring to some recent experience along that line. Mr. Fee stated that personal contact with the public was a more effective advertising medium than anything that could be printed and circulated. I had the pleasure of visiting the Yellowstone Park—it was my first visit here—about four weeks ago. Of course, when I went home I carried with me the usual complement of pictures, post cards, and other curios. When I reached home, I was surprised to find that exhibiting these things, with such descriptive explanations of them as I could give, proved interesting to so many people; and that my vocation as a conversational lecturer was in danger of growing to embarrassing proportions. I remember that a lady whom I had never heard of before came all the way from Baltimore to learn something about the Yellowstone Park, which she had not been able to get otherwise. She was contemplating a trip out here and assured me she would carry her purpose into effect. Others spoke about making the park tour as a result of my rather enthusiastic description.

Now, gentlemen, I represent and speak for the Shaw & Powell Co., who operate what is commonly called "movable camps" in this park. It is what is called officially "personally conducted" camps. Incidentally I speak for others in the same class, so far as my remarks apply. I assume that the most of you are familiar with the way in which these camps are operated, and hence I hardly feel it is necessary to take your time by telling in extended detail how it is done. The ideal and original method of "outing" was a camping party composed of congenial persons, moving as their inclination or pleasure suggested, stopping where they most pleased, and remaining as long in any particular place as fancy dictated.

Those of us who were in the West in the early days can recall how families and friends went upon these pleasant excursions, camping at night where we found water, and remaining as long as we liked. If we found good fishing and cared to fish, we remained until our fancy prompted us to move; if the scenery attracted us, we stayed until our pleasure in it was satisfied. That is the ideal plan of outing, and that is also the ideal way to tour this beautiful park. I notice that there are thousands of persons who agree with me, for, by reference to the report of the superintendent, I see that something like 3,700 persons passed through this park in private conveyances this year, camping as I have indicated. And every year this method of enjoying this pleasure ground has, I am informed, been pursued by large numbers of persons. I assume that in the beginning this method was the only one in vogue, but as the reputation of the park grew and people began to come in from great distances some method had to be adopted by which they could be accommodated and given an opportunity to see the attractions of the park within a limited time. Out of this necessity evolved the movable camp system. That system operates, briefly, as follows:

Taking the Shaw & Powell Co. as a demonstration. A party of tourists arriving at Gardiner, coming in from all sections of the country, strangers to each other, with different tastes and inclinations and under different conditions and limitations as to time, desire to see the park. For convenience, we will say there are 20 to 25 persons thus assembled. They are loaded on coaches and, leaving Gardiner at noon, are conveyed to our first camping spot, on Willow Creek, where we have a camp which is permanent in its character. That camp has been allowed us by special authority of the Interior Department. There the first night is spent. Next morning begins the real tour of the park. It is necessary for us to take with us our tents, our bedding, and other equipment, including provision for tourists and employees and food for horses. When lunch time arrives the equipment necessary for the preparation of lunch is unloaded, and when lunch is concluded this equipment must be reloaded on the baggage wagon. When the place is reached where night is to be spent all of the stuff on the wagons is unloaded, tents are pitched and gotten into shape, beds are erected, and all things made as snug as possible. When morning comes the same process of loading is gone through with and the baggage wagons proceed as upon the previous day. You can readily appreciate what an immense amount of labor is involved in the transportation and handling of this impedimenta. I will read you a few lines from a memorandum to show what an outfit of this character contains. This is the usual equipment for such a party of tourists: Two baggage wagons drawn by four horses and one cook wagon drawn by four horses, all of which are heavily loaded; one saddle horse; five 2-horse teams for the accommodation of the tourists. To handle the wagons and teams requires three baggage teamsters and five tourist

teamsters. In addition to these are required a cook and two waitresses and three camp men. Over all is a foreman, upon whom rests the responsibility of the trip. The money value of such an outfit is reasonably estimated at $7,500.

Passing further description of such a trip as we are contemplating, I beg to emphasize this point: No business can be successfully operated unless two cardinal principles are observed and adhered to. In the first place economy of operation must be supreme, and in the next place, and of not less importance, comfort and satisfaction of patrons must be attended to. In our movable-camp business as we must conduct it economy of operation has no place—it can not have. You can readily see that it is utterly impossible for us to operate under this system with real economy; you can readily see that the labor involved each day in the handling of camp equipment and supplies, to say nothing of the horseflesh which is cruelly tortured and worn out by the constant drag day after day, eliminates every feature of operative economy. To this point I desire to direct the attention of the conference; I might say the main purpose of my talk is to bring to your attention the absolute necessity which confronts us of so conducting our business as to apply the ordinary economical methods which suggest themselves, out of our experience, with overwhelming force. It is essential that we operate under an economical expenditure of money, labor, and time consistent with the comfort of tourists. Not only must we conserve our financial interests, by which I mean that we must be careful of our money expenditures, but we must also conserve the comfort and promote the pleasure of our patrons, and to do that we ought to be in position to adopt such new methods of operation as suggest themselves and discard those which are not consistent with progress. The idea of evolution constantly presents itself—from the original touring plan which I adverted to in the beginning to the movable camp, from the movable camp to permanent camp. The permanent camp plan is of course the ideal plan. You can draw your own inferences as to how difficult it is to operate movable camps satisfactorily when weather conditions are bad. Strong men and women endure the discomfort and hardships of the primitive camp plan and find real pleasure in them; others who have been accustomed to out-of-door life can also find pleasure in the primitive methods of the movable camp. When I toured the park a few weeks ago there was either rain or snow daily during my visit. This weather condition in no wise interfered with my enjoyment of the trip, but I was able to bring to my assistance many years of rough out-of-door life; and it so happened that nearly all of those who were with me had had out-of-door experience. But eastern people who lack in this direction find the primitive camping life at times of disagreeable weather distasteful and to some extent hazardous to comfort and health. Now, let me say something about our method of securing patrons. Most of our patronage is secured through tourists who

have been served by us and have gone away pleased. When they go home they talk with their friends of their experiences and thus advertise the park and its transportation accommodations. I should say here in passing that the Shaw & Powell Co. employ in the transportation of tourists, and in matters incident thereto, 83 men and women, 132 horses, and 39 wagons.

Now, Mr. Secretary, taking up the question which you have heretofore raised, whether transportation in this park should be according to monopoly or competitive systems. I believe, sir, that the Supreme Court of the United States has said that a reasonable monopoly is, with respect to certain statutes not objectionable, but this case is not, as the courts sometime say, like that one. You have inquired of the conferees as to the comparative merits of "controlled monopoly" and "competition." As against "controlled monopoly" I suggest the better plan of "controlled competition." I believe that a reasonable amount of competition in these public parks is something greatly to be desired, where not now in effect, and essential to be established if the public interest is to be best conserved. Reasonable competition is not destructive; on the other hand, it is constructive; it builds up; it tends to improve the service as to quality, and what tends to improve the character of the service rendered to the public tends to increase the patronage of the public. Competition will, in effect, take from no company operating under like conditions a single tourist. By this I mean that the number of tourists conveyed by any company operating in the Yellowstone Park will not be reduced by reason of competition; on the other hand, I believe every company operating under competitive conditions and deserving patronage will find its patronage increased as a result of its competition. Do you suppose that the opening of Glacier Park will affect the attendance upon this park to reduce it? I assert it will rather increase it. People will go to the Glacier Park and then come here; people will come here and then go to the Glacier; and those who do not visit both parks, as well as those who do, will return to their homes and, extolling the attractions of one and the other or both, make more business in both directions. It is a rule of business that good accommodations and perfect satisfaction tend to increase business in arithmetical progression. My company desires to popularize this park.

I realize that the railroads are giving us as low rates as they can afford. I believe, however, that we can indirectly reduce the expense of touring this park. We probably can not reduce the money cost, but we can effect a reduction in the expense, using the word in a broad sense, by increasing the quality of the service we afford. We do not want to reduce this park to a day's automobile trip affair. It should be maintained as a place for a real summer outing—where tourists can pleasurably spend a week, 10 days, or more; and in pursuance of that idea this company wants to adopt plans to reach the people of the Eastern and

Middle West cities and neighborhoods. We are financially able to do this; we have actual capital invested of $100,000, and we have sufficient money behind us to develop as much further as the patronage will justify. We want to give our patrons the best accommodations that their money will purchase; we want to lodge them in dry, warm tents, and place them to sleep in dry bed clothing, free from the odor of moisture and from all those things which tend to detract from the fullest enjoyment of their visit. We estimate that 40 per cent of the labor and time of our employees is wasted and thrown away, compared with what would be the effect if we could eliminate from our daily trips the dragging of our heavy impedimenta; we estimate that 25 per cent of our horseflesh is worn out and wasted in the drawing of those heavy loads. I wish that you could see some of our wagons and their loads. The time and labor and money that is lost in this direction we want to invest in additional comfort for our patrons. We have carefully considered the cost of maintaining permanent camps and are prepared to offer to our patrons camps equipped after the permanent style, equal to the best, at no greater outlay of money by the tourists than is now required for the inferior but more expensive to operate method. Mr. Secretary, we want to establish permanent camps and reduce the cost of our operation, and we are now offering to establish such camps and afford service as good as any without increasing the expense to the tourist. When you come to determine the question whether you will consider favorably this application, I beg that you will bear in mind the old and familiar and never refuted doctrine that reasonable competition is the life of every business. I maintain that this truth applies with equal force whether it be imposed upon public or private affairs.

I do not believe that reasonable competition will hurt anybody. I believe it will help everybody, for it will force everybody who is in business here to furnish the best that can be given for the money. I wish you would think of that when you consider your policy and come to determine whether or not a policy of reasonable competition should not be instituted which will permit Shaw & Powell to take care of its thousand or more patrons a year in a proper way without the cost of an additional dollar to them. We expect that you will do so.

The SECRETARY. The remarks are on a subject of great importance with us. I wish to express one reflection that occurs to me; perhaps I can put it in the form of a question. Mr. Smith, would this service which you would render be as good as that rendered by the other permanent camps?

Mr. SMITH. Yes, sir.

The SECRETARY. Then, doesn't that raise the question as to why the other permanent camps should be permitted to charge the extra $10?

Mr. SMITH. I think I should not be required to answer that question.

The SECRETARY. That is the question which confronts us. We must decide whether you can give the same kind of service; that is the whole question, not whether you should regulate their rates.

Mr. SMITH. We are here offering to do it; that is the only answer I can give.

The SECRETARY. If there is a representative of the Bryant portable camps present, we would be pleased to hear from him.

REMARKS BY MR. R. C. BRYANT.

I had not expected to be asked to speak to-day, and did not expect to do so, for I had not supposed that this was the time for discussion of the wishes and rights of the concessioners in the parks, but a discussion of the general principles of park interests, and so I do not care to take your time to discuss my business, which is comparatively small. The first time I came into the park it was with friends camping out. When the Oregon Short Line was opened to the western entrance many people wanted to camp with me, and more as a matter of summer recreation than of business I brought people here and sought a concession and obtained a concession for portable camps. I have been amazed to find the number of people that enjoy going through Yellowstone Park in that way. I have this season handled between 800 and 900 people in the park in this same system of portable camps. I have really without realizing it been drawn into an investment of $30,000 or $40,000 in horses, coaches, etc. I realize that when the business grows to such proportions it is really rather too large to be handled in that way, but I shall not discuss that phase of the matter at this time. The question should come up before the board or bureau or be taken up directly with the department officials. If the board is established, it seems to me that these things would be discussed before that board. There is considerable to take into consideration with relation to taking care of people. The growth of the business will be tremendous, especially on the west side of the park from the transcontinental trains running between the East and California. Between now and 1915 provision must be made for the entertainment of thousands of persons who will visit the Panama Exposition in San Francisco, and the accommodations here must be increased.

I do not know that I have anything further to discuss at this time. If there are any questions which the gentlemen desire to ask me, I would be glad to attempt to answer them.

The SECRETARY. Mr. Bryant, I do not think that is the question. I quite agree with you that we do not want to spend our time in dealing with the concerns of any particular enterprise. The question is whether we should have competition in these matters which are of the same character. We start, as you have said, with different forms of service. We have hotels, permanent camps, portable camps, etc. We grant con-

cessions for hotels; then a man applies for a concession for a permanent camp, and we grant it; then another wants one for a portable camp, and he gets it. Then those in charge of the portable camps report that that way of handling people is not economical and want to change to a permanent camp. Now, without discussing any particular enterprise or any particular concession, we should like to hear from you gentlemen as to whether we should have competition in the various forms of service in the parks. That is the question which I would like to hear discussed. I assume that the patrons are satisfied, or the business would not increase as it does. Mr. Bryant wants to change from a portable camp to permanent camps. That raises the question as to whether we shall follow the rule of competition or the rule of regulated monopoly. If anyone has anything to say on that question, we should be glad to hear from them.

Mr. BRYANT. I wish to say that I believe in the national parks and reservations there should be regulated monopolies. In this park that is the way it has been done. I think for the best service of the people it should be continued. But we can not make an ironclad rule under conditions as they exist here. It is a question as to how many people can be accommodated in any one concession. If the concession is taking care of as many people as it can accommodate, it might be wise to establish another store, another hotel, or another camp, as the case might be. That is a matter which must be taken up by the department. I believe in the principle of a regulated monopoly rather than general competition.

Assistant Secretary THOMPSON. You say the ironclad rule should be broken when one concessioner can not accommodate all the people. Is there any complaint that the present permanent camping system is not accommodating all the people who desire accommodations?

Mr. BRYANT. I do not think that is a fair question to ask me.

The SECRETARY. It might be considered as the opinion of a competitor.

Mr. BRYANT. I have not made a request for anything else, and there is no competition now, practically, in the particular line in which I am interested. The Shaw & Powell camps and I get our business from the west entrance of the park in this particular method of handling people. We do not compete with each other to any extent.

Mr. SMITH. Let me say something. I do not think that the ability of any one concern to handle all the people cuts any important figure. On the same theory we ought to say that there should be but one railroad between Baltimore and Washington, but one between Washington and Chicago, etc., because one road could increase its capacity sufficiently to handle all the traffic. There is a deeper and more important principle at the bottom of it. Competition is the very life of trade. That does not mean it gives it life——

Assistant Secretary THOMPSON. I am not taking issue with you. The Secretary has submitted the proposition of a regulated monopoly, as to whether or not that is the best form of conducting business in the national

parks. Mr. Bryant has stated that it is his opinion that a regulated monopoly is the proper form of administration in a reservation like this. I understand fully that you do not take that view of it.

The SECRETARY. Is there any other concessioner here who is interested in this movable camping system?

We have another form of concession in these parks. In Mount Rainier we have the Tacoma Carriage & Baggage Transfer Co., doing some business there. Is Mr. Ternes, the president, here? Have you any suggestions to make at this time, Mr. Ternes?

REMARKS BY MR. J. P. TERNES, President of the Tacoma Carriage & Baggage Transfer Co.

Mr. TERNES. I might say that we operate over 28 miles, 14 miles by automobile and 14 miles by horses. Travel handled by our company in Mount Rainier Park shows a 50 per cent increase during the last two years, and judging from the publicity which we are getting now I believe I will have to double my plant for the coming year.

The SECRETARY. Do you handle both passengers and baggage?

Mr. TERNES. Yes, sir. In order to do that I will have to increase my plant. That will take quite an outlay of capital—at least $15,000 or $20,000. It has been the custom to issue a permit for a period covering one year. Now, it seems to me that we should have a longer permit, should have a permit for 5 or 10 years, in order to put in a good plant.

The SECRETARY. What do you think the period of the lease should be?

Mr. TERNES. Five to ten years, say 10 years. The charges should be regulated every two or three years, at the discretion of the department. I think the transportation companies put in a good amount of money, and will have to have returns. When a concessioner gives good satisfaction the department is not going to disturb him. At the same time it is more satisfactory to him to know that he has an agreement with the department for a number of years; he feels better and gives the public better service, because he feels that the period which his lease has to run warrants him in installing better equipment. That is all.

The SECRETARY. There may be other concessioners or lessees who wish to be heard on this subject. Has anyone any ideas on this feature of the parks which he wishes to present now? I believe Mr. Sell, of Yosemite Park, is present, and we would like to hear from him.

Mr. SELL. I haven't anything to say regarding hotels or the valley, and I would rather listen to the discussion.

The SECRETARY. Mr. Sell, have you a hotel in Yosemite Park?

Mr. SELL. I am manager for Mrs. Cook, who leases a hotel from one year to the next.

The SECRETARY. From year to year?

Mr. SELL. Yes, sir; the equipment is owned by the Government.

The SECRETARY. Is that the only hotel in the park?

Mr. SELL. No, sir; there is a hotel at Glacier Point which is operated under the same lease.

The SECRETARY. Operated under a one-year lease?

Mr. SELL. Yes, sir.

The SECRETARY. Mr. Sell, has your principal, Mrs. Cook, taken up the question of taking care of the great increase in travel which will result from the Panama Exposition?

Mr. SELL. There is an agitation in the valley for a new hotel, but on account of the lease it is hard to get capital for building. They think there should be a 20-year lease.

The SECRETARY. Is Mrs. Cook prepared to handle the hotel in the proper way if suitable arrangements can be made?

Mr. SELL. I think I may say that I can interest the necessary capital, and that Mrs. Cook will withdraw.

The SECRETARY. That question of taking care of the additional travel which is bound to result from the Panama Exposition is one in which I am deeply interested, and the sooner you present your definite proposition to the department the better you will please me.

Mr. STEEL. With a 20-year lease I can get the money I need for the improvements I have in mind.

The SECRETARY. You should consider what proposition you can make to the department.

Mr. STEEL. I suppose that will be presented to the department by correspondence after this conference. I have it all ready.

The SECRETARY. Yes; the details should be taken up after the close of the conference. With this exposition in view we are particularly interested in having the park concessioners get their propositions into our hands at the earliest practicable moment.

REMARKS BY MR. FOSTER CURRY.

I have a letter here from my father, which he has requested me to read. It is as follows:

YELLOWSTONE NATIONAL PARK,
Gardiner, Mont., August, 8, 1911.

DEAR SIR: After being in this altitude three days I had to get out to-day. Please recognize my son, Foster Curry, as my representative in the conference. I would like to plead with you for 5 to 10 year leases instead of annual, and also for protection for our building, which became yours when built, which can not be insured by us, and we have no protection in case of fire loss.

Very respectfully,

DAVID A. CURRY.

Mr. CLEMENT S. UCKER.

Camp Curry, Yosemite, was established in the year 1899 as a hotel camp; run on the American plan, its location being on the floor of the Yosemite Valley, amid a grove of large pine and cedar trees under Glacier Point.

Its equipment was simple during its first few years of business, but improvements have been made from year to year, until now it furnishes its guests almost every convenience of a modern hotel. Water is piped throughout the camp; the tents are double roofed, different sizes, to accommodate from one to four people, as may be desired. The tents are furnished with iron beds, bureaus, washstands, and the board floors are carpeted with burlap or duck.

A rustic style kitchen and dining room have been built, the dining room having a seating capacity of 226 people.

The camp is equipped with sanitary toilets, eight tub baths, and one hot and cold shower bath. There is also a small steam laundry used in washing the camp linen.

A rustic style office with large open fireplace has been built, affording a comfortable rest and reading room.

In the year 1901 Camp Yosemite, now Camp Lost Arrow, was established by the Sentinel Hotel Co. on the bank of the Merced River, opposite the hotel.

This camp was later moved to its present site, near the foot of Yosemite Falls. The equipment of this camp consists of rustic style buildings and tents, similar to those in use at Camp Curry.

Camp Ahwahnee was established in the year 1908 at the foot of the Glacier Point Trail, about three-fourths of a mile from the hotel, and has a capacity of 200 guests. This camp is built and equipped in the same manner as Camp Curry and Camp Lost Arrow.

The camp grounds and camp buildings of all the camps on the floor of the valley are electric lighted, deriving their power from the Government electric plant. Besides these, there is a camp on Glacier Point that is run in connection with the Glacier Point Hotel.

During the first year of Camp Curry's business the camp entertained 280 guests, 400 guests the second year, and 3,600 guests the past season.

During the last three years more than three-fourths of the people who have visited Yosemite have chosen the camping route, proving the popularity and success of the camping business in Yosemite.

The best way to get people to go to the parks is to be liberal with the concessioners. In regard to leases, I would like to indorse what the gentleman over here (Mr. Ternes) said, that with longer leases we would feel like spending more money, say, if we had a lease for from 5 to 10 years. We feel that we should have that much time in which to know that we are going to be there. We advertise and draw business to Yosemite Park through the conveniences of our camps, and if we did not feel that we would be there for a considerable period it would be like

wasting money to advertise. I may say also that a limit has been placed on our accommodations of 400 people. The camps here handle all the people who enter. We are willing to make improvements and enlarge the accommodations so as to handle a larger number of people than at present. We hope that this matter will be acted upon favorably by the department.

The SECRETARY. May I ask what is the term of the lease of the Wylie people?

Mr. LAMAR. They are operating under a 10-year lease. The present lease is dated March 31, 1906, and runs for 10 years. It is an extension of an older lease.

The SECRETARY. That, I think, illustrates the inconsistencies which prevail in the administration of the parks. We find that where a man has a 10-year lease for Yellowstone, for the same kind of a concession in Yosemite he can secure but a 1-year lease, and there they have far less adequate accommodations from the hotels. It seems to me that this is a subject to which the department can very properly give attention.

We have had a series of talks from men of wide experience in transportation and other matters, and should now like to hear from Mr. Uhler, of the Steamboat-Inspection Service, on the question of inspection of power vessels in the national parks.

REMARKS BY MR. GEORGE UHLER, Supervising Inspector General of the Steamboat-Inspection Service.

Mr. Secretary and gentlemen: First I want to express to you my grateful appreciation of the compliment implied in the invitation to address this conference, because I feel rather out of place in a convention with gentlemen who are discussing questions that are entirely separate and apart from the service which I represent. The question of protection of life, and more particularly as applied to marine transportation, has been the humane policy of the Government since 1838, and it has lived and grown through 73 years of successful operation. It is a matter in which I have been deeply interested, and I think you will readily understand why when I say that for more than 40 years I have done nothing but work in connection with marine transportation. In the early operation of steamboats the importance of protecting life upon steam vessels was recognized by Congress. In 1838 legislation was enacted providing for the inspection of hulls and boilers of steamboats carrying passengers for hire. It seemed at that time to be the only concern of the people, under the act of Congress, to protect the passengers. In fact, the enacting clause provided for the better security of the lives of the passengers. The method of inspection of steamboats was this: Upon application of the master or owner of a steamboat to the judge of the district court in which the steamer

was located or operated, the judge selected a man to inspect the boilers and one to inspect the hulls, each of whom received $5 for his services from the owner of the vessel. The results were such that in a few years the question was agitated whether there should not be a general law which would provide for the inspection of steamboats generally, and in 1852, on August 30, a bill was signed by the President providing for the general inspection of steamboat hulls, boilers, and engines and for the licensing of pilots and engineers. There was also provided in the legislation an exemption for certain classes of vessels from its requirements. The bill also provided for the establishment of boards of local inspectors in different parts of the country and also for supervising inspectors in charge of the districts. The result of the legislation was so far beyond the expectation of the people and Congress that in 1864 the clause exempting certain classes of steamboats was made a provision of the law, transforming it from an exemption to a requirement. In 1871 the whole system of steamboat inspection was revised and we got what is now generally known as "The steamboat law." I shall not undertake to go into the statistics of the service, but from my researches of the earlier records I find results which are not only interesting, but also a source of surprise to me, because I had not fully realized the importance of the service in its earlier organization which gave strength to the humane policy of the Government to protect life and minimize disaster—a policy that has lessened to a wonderful degree the perils incident to steam navigation and has put to flight those common vices of thoughtlessness and recklessness which formerly prevailed in navigation as in other methods of transportation in contempt of consequences so alarmingly prevalent.

The licensing of pilots and engineers was a question which for many years agitated the service as to whether or not the requirements were too drastic. Whether or not a man who has shown his fitness was able without any further examination to secure a license. We said no. He had to qualify by examination, show his familiarity with certain waters, depth of the waters, his familiarity with the course and trend of the channel, and to establish beyond peradventure his reliability in cases of accident, and his reliability to safely navigate the vessel over which he was given charge. The same method prevailed with the engineers. They were required to pass a rigid examination and made to demonstrate by an examination what would be their action under certain conditions, particular attention being given at all times to the matter of emergency cases, and what their action would be under such circumstances. As the service grew it took into consideration other matters, such as life-saving equipment, etc. We required that steamboats of certain tonnage and certain capacities should be equipped with hand pumps in addition to steam pumps. We found that while steamboat owners and agents as a general rule were willing and anxious to equip their vessels with reliable

life-saving equipment, still others bought cheaper kinds of equipment. So in later years the service took over the matter of making specifications in detail as to the character of lifeboats, life preservers, etc. Further, it drew into the specifications for the construction of lifeboats certain features of material, etc. Every lifeboat and every life preserver used to-day on a steamer under the jurisdiction of the Federal Government is made under specifications prepared by the board of supervising inspectors, and every length of hose is required to stand a pressure of 100 pounds to the square inch, so that it has been the purpose of the Government, through this service, to give the public adequate protection and at the same time to always maintain a high standard.

Last year in transporting nearly 400,000,000 passengers we lost 392 lives. A little over 800,000 people carried to 1 life lost. So that, Mr. Secretary, every life that is lost from a steamer or from any vessel under the jurisdiction of the Federal Government is charged to the responsibility of the service and is covered by the statistics in the report. For instance, the year before last we had from suicides and other causes 44 deaths which no human precaution could have prevented, as in the case of a man seated on the rail who falls overboard. Provision can not be made against accidents like that. Then came the time when the gasoline boat made its appearance, and while the law has made no provision for anything other than a vessel propelled by steam, it had to take into account this growing factor in the commerce of the country, so that in 1892 legislation was enacted providing that all vessels propelled by naphtha, gasoline, etc., above 15 tons and carrying freight or passengers for hire would have to be inspected. The result of that legislation was that particular care and attention was given by owners to the fact that in the construction of a vessel she must be brought just a little bit within 15 tons so that she might escape the requirements of the law. From time to time the law was made a little more drastic, until nearly all vessels carrying passengers are under some provision of the law. The act of Congress approved June 7, 1897, provided that every vessel propelled by machinery should be considered a steam vessel within the contemplation of the law, so that every vessel propelled by machinery, no matter in what service she was engaged, whether or not she was for pleasure, she had to be provided with lights, fog signals, and had to observe the rules of the road. Later on the motor boat made its appearance as a pleasure craft, and you can very readily understand how the owner of the motor boat, who used her for his own purposes only, took to the law requiring him to meet certain regulations. Notwithstanding that there was some opposition to this, Congress has seen fit to throw this same mantle of protection over the pleasure boat as well as the commercial boat.

Mr. Secretary, I want to say that while all of these means of protection have been thrown around the passenger on the steamboat and the railroads, which the railroad representatives have good cause to realize;

while everything has been done that can possibly be done to insure the safety and comfort of the passenger, the human element still enters into the safety of any person who intrusts himself to the care of a common carrier. We have cases of where a sleeping engineer on a steamboat has allowed his water to get low and resulted in an explosion. A very sad case was brought particularly to my attention in the death of Mr. Spencer, president of the Southern Road—a road that has equipped its system with all possible precautions against accidents, the block system, signal stations, etc.—where the engineer had gotten his orders and had signed for them, read them and put them in his pocket, where, say, his orders read, "No. 10 to pass No. 27 at a certain place." He went past his meeting place and met disaster. In that case the railroad company absolutely could not prevent that accident; there the human element was the factor that determined; the man had forgotten. I have not been able to understand, Mr. Secretary, why all of these restrictions have been thrown over steamboat companies and over railroads and yet find transportation companies, who have just as much responsibility, to be exempt from the slightest condition of inspection. Now, in my traveling around the country in the Steamboat-Inspection Service, extending over all parts of the country, I have had a chance to observe quite considerably the results of what we might term "noninspection." My suggestions, in some cases, I am glad to say, have been kindly received and adopted. It is a fact that since the adoption of these precautions no accidents have occurred, without taking any credit to myself. A peculiar condition, Mr. Secretary, in connection with the Steamboat-Inspection Service is that it applies only to the navigable waters of the United States. Navigable waters of the United States have been defined by the Supreme Court of the United States as those waters which by their natural course or by any method of improvement make a continuous highway over which general or competitive business may be carried on or between the two States that border on the water, so that a vessel located on an inland lake is exempt. Some States have laws which take up that question—the State of New Jersey, for instance. They have what are termed marine inspection laws. My mind now comes to conditions on Yellowstone Lake. Yellowstone Lake, aside from being within the confines of one State, was on a Federal reservation, consequently exempt from the application of the law regarding the inspection of steamboats; but right there I am glad to say the Department of the Interior recognized the importance of this inspection to such an extent that they required that these boats should be inspected by the Steamboat-Inspection Service before they would be permitted to navigate on the lake. I have not seen the motor boats now on the lake, although my men have been there and inspected them.

I spoke awhile ago, Mr. Secretary, of the absence of regulations in certain forms of passenger transportation. I could never quite understand why the regulations should be so severe upon railroads and so restrictive

and so severe upon steamboats, and yet the very minute that we get to the entrance of this park that supervision stops. I observed the dangerous conditions on the road coming here from the Mammoth Hotel to the canyon yesterday; perhaps it is because I am not used to that kind of travel. I would be perfectly at home in a small boat in deep water, but I think that every transportation company doing business should do so under some kind of regulations that will insure the safety of the passengers. I do not think it is right that the mantle of protection should be thrown over a certain few of the traveling public and denied to those who are making some of the most perilous voyages that can be possibly thought of. The steamboat question in the Federal reservations is pretty thoroughly disposed of, but if you will allow me to suggest, Mr. Secretary, and I speak more earnestly upon the question because of my deep interest.—my life's work practically has been the administration of the law looking to the safety of passengers—I think that not only the coaches, their running gear, harness, etc., should be inspected, but I believe that these mountain roads should have their trackwalker just the same as a railroad. We came to a point yesterday on my trip here where if anything unusual had occurred, it made no difference how well the horses might have been inured to mountain roads and how absolutely under the control of the driver they might have been under ordinary conditions, there would have been nothing on the face of God's earth to have prevented them from starting down the side of that mountain. I want to say, Mr. Secretary, that's the way it appeals to me. I think that some one of the officers under the command of the superintendent of the park, or some of his men, might be detailed to make such an inspection of the coaches, harness, etc.[1]

I want to suggest, in closing, Mr. Secretary, that there is no reason why the regulations of the department should not fully cover all inspection in the national parks. Our inspectors go all over, even to inspect boats used by the Alaskan Indians away up in the Arctic regions, showing that the policy of the Government, no matter what the expense or inconvenience, is to not only extend the mantle of protection over passengers, but the poor devil who is down in the forecastle. The humblest emigrant is protected by the Federal Government; he must have so much air space, and so on. The idea was at one time that the man who went aboard these carriers could take care of himself—that is erroneous. I have found out that the average passenger can not take care of

[1] The transportation companies have their coaches and wagons thoroughly inspected by competent and experienced men at every station, who go over the running gear and any parts liable to break.

During the tourist season all roads on the belt line and the approaches from Gardiner and Yellowstone are patrolled regularly twice a day in advance of the stages, and in addition all camping places are visited daily, which requires passing over the biggest part of the roads and back by a second patrol; that is, the whole line is gone over at least twice a day, and the greater part of it four times.

In addition, station men are constantly passing to and fro between stations en route to the post and other stations on business. On an average three officers from the post are in the park away from headquarters on duty at all times, and during the season of 1911 the commanding officer was on the road 21 days during the summer.—Editor.

himself, and we have to take care of him; and I think the law should be extended to reach every phase of transportation and where we are bound, in a general sense, to take care of the man who offers himself for passage upon any vehicle controlled or operated by a common carrier.

The SECRETARY. I am unable to find anyone on the list before me representing steamboat or launch owners operating in the national parks. If there is anyone here who has such a concession, we would be glad to hear from him. Is there anyone here representing the railroads who would like to say something on this matter? If not, we will take up the next subject, which is one of very considerable interest. In all of these national parks there is a very considerable body of timber. For instance, in the Glacier Park there is a large body of timber, and it has been suggested that some of this timber when matured could be cut, providing that it in no way marred or injured the scenic beauty of the park, keeping always in mind the paramount purpose of the creation of the park. We would like to have the representative of the Forest Service, Mr. Bruce, whose services we were permitted to have in the Glacier Park through the courtesy of the Forester for the purpose of making an investigation in that park and as a precedent to be followed perhaps in other parks.

REMARKS BY MR. EUGENE S. BRUCE, Expert Lumberman, Forest Service.

Mr. Secretary, my chief, Mr. Graves, is present, and it might be better if I were called upon after him.

The SECRETARY. I had arranged to have Mr. Graves address us at a later period of the program on the general subject of forestry, and unless he has some objections to offer we would like to hear from you now regarding the utilization of timber in the national parks.

Mr. GRAVES. Go ahead, Mr. Bruce.

Mr. BRUCE. Mr. Secretary and gentlemen: In regard to the utilization of the mature timber in the national parks my personal opinion is that such timber should be utilized wherever it can be done without injury to the scenic beauties of the park, which I believe should always be considered of the first importance. The mature, dead standing, and windthrown timber in the national parks should be sold and utilized wherever possible up to the point where such cutting and removal is liable to affect the scenic beauties of the park. Beyond that point I do not think it should be carried.

In some of the national parks a large amount of the mature timber can well be utilized at the present time, while in others very little of it can be utilized on account of the timber being located in such places that it is so inaccessible that it can not be removed at a financial profit. There

are certain localities in Glacier National Park where a portion of the timber can well be removed without injury to the scenic beauties of the park, and such utilization of the natural resources of timber would furnish a considerable source of revenue to aid in constructing needed trails and in protecting the park. The mature timber should be disposed of wherever it is possible to do so without injury to the scenic beauties of the different parks and thus avoid allowing the timber to die, fall down and rot upon the ground, or become a dangerous fire menace. I believe that the sentiment of a majority of the thinking people who have been instrumental in bringing about the reservation of national parks would be to the effect that wherever the mature and dead and down timber could be cut and removed at a profit and where such removal would benefit the commercial interests of the country without materially affecting the scenic beauties of the national parks involved that it should be done in every instance.

The SECRETARY. I wish, Mr. Bruce, you would describe the general conditions as you found them in Glacier Park. I do not mean the details as they are in the records of the department, but the general situation as you found it.

Mr. BRUCE. Mr. Secretary, unless one is somewhat familiar with the general outline of Glacier National Park my remarks will not be very intelligible. The Great Northern Railway runs along the southern boundary of the park, and there is considerable fire-killed timber along the southern boundary which should be sold. In many of the ravines and stream beds running back into the mountains from the Flathead River and the Middle Fork of the Flathead River there is considerable mature timber not fire-killed which could well be sold in connection with the dead timber, which was principally killed by the forest fires of 1910. The mature live timber should, however, always be left standing where necessary, and especially where it affects the scenic beauties of the park by reason of being brought prominently into view of the traveling public, who visit this park chiefly on account of its scenic beauties.

On the higher slopes nothing whatever should be cut in those localities where the wind would be liable to blow down the timber left standing on account of its being deprived of a portion of its support as a result of the timber being removed.

In that portion of the park along the east side of the Flathead River there is considerable fire-killed timber which should be sold at once if satisfactory purchasers and a satisfactory price can be secured. The possibility of a sale of timber always depends largely upon the commercial desirability, the quality and location of the timber, the regulations under which it is to be removed, and the time allowed for the cutting and removal of the timber. The same general regulations which apply to the cutting and removal of timber from the national forests will

usually apply to the cutting and removal of timber from the national parks, with perhaps some few additional regulations to cover different conditions sufficient to adequately protect the natural scenic beauties of the national parks. There is some live mature timber that can well be cut and removed in the vicinity of Lake McDonald in Glacier National Park, and there is also in this vicinity a considerable beetle-killed, infested, and blown-down timber which should be cut and manufactured into lumber. In my report to you, Mr. Secretary, I have recommended that in this particular locality this class of timber be cut and manufactured into lumber by the Government under the direction of the superintendent of the Glacier National Park to be used in the construction of the necessary administrative buildings for this park. There is no one large area or body of timber in this locality that should be sold in an amount sufficient to interest a prospective purchaser. The work of cutting and removal should be very carefully done under close supervision and there should be wide reserve strips left along the shores of the lake and along the main traveled roads and trails in which nothing whatever should be cut or removed except the dead standing and down timber, nor should any timber be cut where it would open up or mar the scenic beauties of the tops of hills or mountains visible from Lake McDonald. The same general principles of utilization of mature or dead timber where it can be done without injury to the scenic beauties of a park which are applicable in the Glacier National Park will, in my judgment, apply in a greater or lesser degree to the other national parks, and I believe that a general policy of utilizing the merchantable mature, dead standing, and blown-down timber wherever it can safely be done without affecting those features of interest or scenic beauty which the parks were primarily created to perpetuate should be applied to all national parks wherever possible.

The SECRETARY. The broader question of handling the forests in the parks is one of very great importance and one which, because of the unfortunate organization of the governmental service, it has been impossible to handle in the most efficient manner. Perhaps you do not know that the Forest Service, contrary to the general understanding, is not a part of the Department of the Interior, but a part of the Department of Agriculture. The result of this is not always happy, although during my administration both the Department of the Interior and the Forest Service have shown every possible disposition to cooperate whenever the necessity for such cooperation was realized.

We have with us the Chief Forester of the country, Mr. Graves, and I am sure that at this time, especially as the railroad men will have to leave us shortly, we would all like to hear from Mr. Graves on the general question of forestry in the national parks.

REMARKS BY MR. H. S. GRAVES, Forester, Forest Service.

Gentlemen, I have come to this conference primarily because the problems of administration of the national parks have a very intimate relation to those of the national forests, which are under my direction. Most of the parks themselves are great forests. Many of them are entirely surrounded by national forests or are adjacent to national forests with very similar physical conditions. It is absolutely necessary that those in charge of the parks and the forests work in close, practical partnership. While the purpose of the national forests differs from that of the national parks, there are many questions of administration which are very similar, if not alike.

The forests and the parks are for the most part great undeveloped forests in which there are not as yet adequate means of communication and in some cases none at all over very large areas. In the past these areas of forest have been without protection and have suffered incalculable injury from fire and insects. To-day they produce far less in the way of timber than their real capacity, and the old slashings resulting from previous burns and from insect depredation are a tremendous menace from further fires, as well as being very unsightly.

The problems of organization of these great areas are essentially the same. These problems concern the efficient organization of the parks and forests for their protection, for their administration and the conduct of regular business, and for their development to carry out the purposes for which each was specifically established. The largest problem is that of protection from fire and insects, and that problem is the same in the forests and parks. For its successful solution the work on contiguous parks and forests must be so closely coordinated that the whole protection system is practically one.

I shall not go into details in the various questions of forestry involved in park management, but shall touch only certain principles which we are following on the national forests in connection with our protective work and which apply to the parks as well as to the forests. I have already spoken of the undeveloped character of our forests. We have the problem of organizing these areas so as to make protection from fire possible. The first necessity is to build trails into the forests in order to make the different portions accessible. This is required in order to enable an adequate control; it is necessary also to enable the movement of men and supplies in attacking fires. A second necessity is a complete system of telephone lines through the forests to afford quick communication in case of fire and a proper coordination of the various members of the patrol organization. The forests must be further equipped with well-located signal stations connected with headquarters by telephone. During the present season scores of fires have been quickly located and extinguished through our system of signal stations. It is essential also

that ranger cabins be constructed in various parts of the forests so that during the season where there is danger of fire the forest officers may be near at hand. These cabins serve further as bases of supplies in case it is necessary to establish camps for the men engaged in fire fighting. The forests must be thoroughly well equipped with tools and appliances for fighting fires. It has been our experience during the year 1910 that we were often unable to fight the fires properly because we did not have adequate tools and other aquipment. It was a great lesson, and as a result we have greatly improved the protective equipment of the national forests and are much better prepared for emergencies than formerly. Still again the forests must be equipped with facilities for transporting the tools and supplies into the forests and in some of the less accessible forests we have pack trains which we use regularly in connection with improvement work. In case of fire they are available to transport supplies and tools to the crews.

Our forests are full of litter, down timber, and dead snags, all of which constitute a menace from fire. Every practical man knows that we can not clean up any considerable part of this débris without prohibitive expense. We do, however, prevent further accumulation of débris in connection with timber sales by disposing of the tops at the time of cutting. Gradually the old slashings can be reduced at dangerous points to guard against fire.

Another problem concerns the organization of the protective force. At the beginning of the administration of our national forests there was no systematic coordination of the different parts of the protective force. Usually each ranger worked by himself without regard to the others, and the force of one forest worked independently of the other forests. The organization of the protective force is one of the greatest and most important problems we have. I do not care how many men you have on the rolls, unless the force is well organized efficient work can not be accomplished. In the forests as now handled each man is in close touch with the other members of the protective force. The rangers are in systematic communication with each other. They notify each other of danger and help each other in case of need.

In addition to the regular staff there is an organized reserve force which we can throw into action for a few days or a few weeks in case of great danger. This reserve force is recruited from the people who live on the forest or do business there. We are organizing so far as possible every person who lives on the forest or near enough to be accessible as a constituent part of our protective system. Preparation is made, also, in case of emergency, to secure large bodies of fire fighters from outside. Thus we are organizing a protective system which utilizes evey person within or near the forests.

The work of constructive development of the forests is conducted according to systematic working plans which outline the policy of admin-

istration, improvement, protection, timber sales, range management, and reforestation. General preliminary working plans have been prepared for all forests. More detailed plans have been already made for the forests having the most business. These plans look not only to proper present management, but provide for a development of the forests in the future according to a consistent policy. The national parks will be developed along somewhat different lines than the forests; but there is essentially the same kind of a problem of constructive development, which, as on the national forests, requires technical administration and far-reaching working plans. In some cases we have a slight advantage in the national forests in that we are cutting more timber and hence can often push our work of improvement more rapidly than would be the case if the resources were not utilized as on the parks.

I may say that on the national forests we do not overlook the question of the preservation of the scenic beauty. It is not, however, our prime principle of administration. Our first work is the properly regulated use of our resources, the use of the ripe timber and its replacement by new growth. But in making cuttings we do not overlook the question of the appearance of the forests. On the other hand, in the parks the question of scenic beauty is first, and development and use of the natural resources is secondary. This work is so closely related to the work in the national forests that the two can be harmonized and the two administrative bureaus and departments work in the closest partnership.

Personally, I believe there should be a bureau of national parks organized to carry out the purposes for which the parks were created, and with that organization and our own working in closest cooperation in all the different lines where our work touches we can meet the important problems successfully.

The SECRETARY. In connection with what Mr. Graves has said I think perhaps it would not be inappropriate for me to express some conclusions which I have arrived at in regard to this question of the relation of the Forest Service to the national parks and the Department of the Interior. I will start by assuring you, gentlemen, that I believe I will have the enthusiastic indorsement of all the people representing the Department of the Interior when I say that the Interior Department has no desire to add to the amount of the work which it now has. The Department of the Interior should lose some of the activities with which it is now charged by law. The Patent Office, for example, in my opinion is a branch of the department which should be transferred to the Department of Commerce and Labor, because it is primarily concerned in a matter of commerce. This will serve as an illustration of some of the things which should be taken away from us. On the other hand, I am thoroughly convinced that the separation of the Forest Service from the Department of the Interior is fundamentally a mistake. As a business proposition it is

absolutely uneconomic. We have in the Interior Department to-day many questions of forestry in one form or another in three or four bureaus. The Indian Office is administering large tracts of land for the benefit of the Indians and meets with many questions in regard to the forests thereon. We have to organize a force to supplement the administrative officials of the bureau on forestry questions. When there is already organized in the Forest Service a corps of experts, it is perfectly clear that we are duplicating and must duplicate their work, and it is likewise clear that we can not expect to get the same grade of talent where the service is merely supplemental to the work of the Indian Service, while in the Forest Service the work is the primary object of the bureau.

Now, there are not only these timbered lands administered by the Indian Service. There are in the public domain enormous areas of forested land, and here arises again the same difficulty. When we come to the national parks we again meet with the same difficulty. In the matter of the location of the roads and trails through the national parks, if the Forest Service were a branch of the Interior Department we could develop the parks in such manner as to promote better protection against forest fires. I do not mean that the same roads and trails would always serve the ends of fire protection and development of the parks, but I have no doubt that in many instances this would be the case, and I believe there are now in existence many trails which are located just far enough away to be useless for fire protection, while, with the proper forest supervision in the beginning they might just as well afford excellent protection against forest fires.

If Mr. Graves is right, and it seems to me that he is right, we should have a bureau of national parks to take care of the administration of the parks; but there should also be a bureau in the Interior Department to have supervision over all forestry questions whether in the Indian Service the Land Office, or in the national parks. Then we would have one service worthy of the name. We would have proper administration, we would prevent the needless duplication of work, and we would get the best results. The difficulty in perfecting this work now, as was said by Mr. Graves, is because we have two heads for the service. The bureaus are in two departments, and while there is the sincere desire and earnest effort to secure practical cooperation, divided authority means unavoidable inefficiency and sometimes serious mistakes. We might attempt to consolidate authority and responsibility in the Department of Agriculture were it not for the fact that the final disposition of all these lands—Indian lands, the public domain, and the forest reserves themselves—rests and apparently must rest with the Department of the Interior. It controls the titles, and as to the Indian lands and the public domain generally it must control the administration. Under these conditions it seems that consolidation of all the forestry questions in an enlarged and more efficient Forest Service must place that service in the Interior Depart-

ment, although if any of you can suggest some other solution which will not add to the labors of the present Secretary, I shall be particularly glad to hear from him.

Mr. LOUIS W. HILL. In discussing this idea of the Interior Department taking charge of the forestry matters, I think most of the people of the West would be gratified. These things are vital to the western people. This is the first time that the department has taken the matter up in this way, and if these questions are followed up, it will naturally be of great importance and facilitate matters very much. Now, we have had from time to time many matters up with the Forest Service. We are passing through Glacier Park now, and it brings up the question of fire protection. I think where a railroad passes through a reserve the timber clearing should be widened. I think where trails are built and wagon roads constructed the question of forest protection should be considered. Where timber is cut, it should be hauled to the center and burned. Speaking with some of the parties who were at the fires last year, they said it was difficult to stop the fires as there were no places to control them. It is of the greatest advantage to have firebreaks. As you noticed, on the road that we came over yesterday, the trees were cut and then thrown back into the edge of the timber, thus making a veritable fire trap. While the railroads may be careless we do not wish to leave the timber that way. It certainly will facilitate matters if this taking over of the Forest Service is brought about. We heartily approve of the suggestion you have outlined.

Mr. COOPER. I rise to indorse very heartily the plan, which you have suggested, of transferring the Forest Service from the Agricultural to the Interior Department. I have considerable business to transact with the Forest Service and with the various branches of the Interior Department, and it seems to me the logical place for the Forest Service, by reason of the very nature of its business, is in the Interior Department.

I want to thank you, Mr. Secretary, for the opportunity given us to participate in this conference, and again to say to you that anything we can do to promote the work of this meeting and to induce more travel to the park we will be very glad to do.

The SECRETARY. Are there any others who wish to say something on this subject?

Mr. J. HORACE MCFARLAND. I want to most heartily second all that you have said, Mr. Secretary, as well as what Mr. Graves has said on this subject. Unquestionably the best results will come from such a combination as you have outlined, and I see no difficulty with the harmony that is brooding over the situation here to-day in such handling as will conserve in the highest degree the best interests. The people who love scenery, if they are sane, do not worship a tree—they realize that it must be used. If all these matters were handled in one department it would promote the highest use of all the lands. I believe by this means the forest conditions would be improved and the park conditions improved.

AFTERNOON SESSION, SEPTEMBER 12.

The SECRETARY. We would be glad to hear from Mr. Hopkins on the subject of insect infestation—the damage done to trees by insects in the national parks. Mr. Hopkins is connected with the Department of Agriculture.

INSECT DAMAGE TO STANDING TIMBER IN THE NATIONAL PARKS, BY A. D. HOPKINS, Expert in Charge of Forest Insect Investigations, Bureau of Entomology, U. S. Department of Agriculture.

CHARACTER OF THE DAMAGE.

The damage by insects to the living trees of the forests and ornamental grounds of the national parks consists of injuries to the foliage, branches, or the entire tree, which mar or destroy their attractive, educational, and historic features and diminish or destroy their commercial value.

Throughout the forests of the Rocky Mountains and Pacific slope, including the national parks, a large percentage of the timber has died during the past half century. The old standing and fallen dead trees, the red foliage of those that died last year, and the fading tops of those dying now bear evidences of the work of insects and are conspicuous examples of a great waste of forest resources. In some localities a few scattering trees die each year within a township or section; in others, clumps of trees, or whole forests, die within a single year.

The conifers, which are the predominating trees of this western part of the country, are subject to a high death rate from insect attack. The pines, the spruces, the Douglas fir, the balsam firs, the hemlock, the cedars, and the Sequoias, have one or more destructive enemies.

In the fall, spring, and early summer the dying and recently dead trees are conspicuous on account of their fading, yellowish-red, and reddish-brown foliage, as if injured by fire. When they are in large patches, or extend over a considerable area, their death is often attributed by the casual observer to forest fires.

EXTENT OF THE DAMAGE.

The extent of the damage to the forests by insects through the accumulation of dead timber and the dying of matured trees over large areas is vastly greater than the general observer would suppose. In fact, the dead and fallen timber is so common in all forests that it has heretofore been recognized as a natural and inevitable condition. Large areas of insect-killed timber have been charged to fire without further thought or examination to determine the real cause. Fallen timber has been attributed to storms and scattering dead trees to old age.

During the present year a reconnoissance was made of typical sections in one of the national forests, where there was no evidence that destruc-

tive forest fires had occurred during the past 20 years. It was found that the standing and fallen dead yellow pine that had died within that period amounted in board feet to nearly half as much as that which was then living, and of the sugar pine and Douglas fir there was one-fourth as much dead as was then living, and every dead tree examined in the estimate showed evidence that it had been killed by insects.

In the Black Hills National Forest of South Dakota over one-half of the timber died within about 10 years. In Oregon and Montana nearly all of the larger pine died within a few years on areas of a few hundred to 100,000 acres or more. These, together with many other examples of extensive dying of timber, have been investigated and found to be caused primarily by insects. These investigations have demonstrated beyond question that a vast amount of timber is killed by insects every year within the forested area of the Rocky Mountains and Pacific coast regions. Furthermore, the accumulation of this dead timber and fallen débris is a menace to the living, because they furnish fuel for destructive forest fires. The losses from insect depredations are thus augmented by fires.

The extent of damage to the forest and other trees of the national parks has not been estimated, and, with the exception of investigations conducted in the Yosemite and Glacier Parks, we do not have much direct information as to the damage already done. It is plain to us, however, that the general conditions are not different from those which prevail throughout the regions in which the parks are located and in which the destructive species of insects are known to occur.

The amount of damage in the parks must be considered not only on the basis of the commercial value of the forest resources, but on that of the æsthetic and educational value of the virgin forest of typical examples of tree species. The loss of a section of the forest which forms the attractive feature in a landscape and is the only remaining example of the original type of forest growth of that region is far greater than that represented by the commercial value of the timber, as is also the loss of notable veterans and giants of the different species. These old forests and old trees are at present one of the attractive and instructive features of the timbered areas of some of the national parks, and if they are protected from their insect and other enemies they will be even more attractive features in coming centuries. Under present conditions these old trees of the virgin forest are in greater danger of being killed by insects than are the younger trees. Indeed, many of them have been killed within recent years.

The three giant sugar pines on the trail from Wawona to Glacier Point and the Yosemite Valley are examples. Two of them were dead and the other was dying when I saw them in June, 1904, and there was conclusive evidence that their death was caused by the mountain pine beetle. The veteran sugar pine known as "Uncle Tom" was being attacked at the same time by the same species of beetle, and I am informed that it died next year. The loss of these four giants of the species is irreparable.

The Sequoias are supposed to be immune from depredating insects, but they are not. They are more resistant than other species, and that is one reason they have lived so long. However, each species has a bark-beetle enemy which under favorable conditions is capable of killing the largest and finest specimens. I saw one of the large redwoods in the vicinity of Eureka, Cal., that had been killed by its bark-beetle enemy, and when in the Mariposa Grove in 1904 I discovered the bark-beetle enemy of the big tree in the living bark of a storm-broken limb.

THE PRINCIPAL DEPREDATORS.

The mere mention of the names of the thousands of species of insects, each of which causes some peculiar injury during the life of the different tree species, would occupy more time than is allotted for this paper. Therefore we must consider the more important of those which are directly responsible for the death of the trees.

The little genus of Dendroctonus beetles, or tree-killing beetles, is represented in the Rocky Mountain and Pacific slope regions by a few species which are more destructive to the conifers of western North America than all other forest insects combined. They are a constant menace to the pine, spruce, and Douglas fir of the national parks. They are certain to be present in every park in which there are forests of their host trees, and have doubtless caused far greater damage than the park officials have realized.

The species, in the order of their destructiveness, are the mountain pine beetle, the western pine beetle, and Engelmann spruce beetle, the Jeffrey pine beetle, and the red turpentine beetle. All but the Jeffrey pine beetle of the Sierras are common to the northern Rocky Mountains and the Pacific slope. Those common to the central and southern Rocky Mountains are the Black Hills beetle, the Engelmann spruce beetle, the Douglas fir beetle, and the red turpentine beetle. There are three other species common to the southern Rocky Mountains and northern Mexico which are of less importance in causing the death of trees.

These insects are small, stout, black to reddish-brown beetles, ranging in length from about 2 to 9 millimeters, or 0.08 to 0.32 of an inch. They fly in the period from April to October and attack the main trunks of the living healthy trees by boring into the bark and excavating long winding or nearly straight egg galleries between the bark and the wood. In this manner they completely girdle and thus cause the death of their victims. As soon as the bark begins to die the eggs deposited by the beetles hatch, and the young grubs or larval forms complete the destruction of the inner bark. All of the broods develop into the adult stage within a year and emerge from the bark to fly in search of new victims. Each species has its peculiar habits in the choice of host trees, method of attack, and period of development.

THE MOUNTAIN PINE BEETLE.

The mountain pine beetle attacks the mountain or silver pine, sugar pine, western yellow pine, lodgepole pine, and evidently all other pines of the northern Rocky Mountains and the Pacific slope. The adult beetles fly in the period from July to October, inclusive. When abundant they concentrate their attack on clumps and patches of trees. Their long, nearly straight egg galleries and radiating larval mines soon kill the bark on the main trunks, but the foliage of the infested trees remains green and apparently healthy until the following May and June. It then begins to change to a pale green and later to yellowish and brown. By the time all of the foliage is dead, about the 1st of July, the overwintered broods of beetles begin to emerge. By the middle of August most of them are out of the dead trees and have entered the living ones.

This is by far the most destructive insect enemy of the pine within its range, and under present conditions is a constant menace to the forests of matured or merchantable sized timber. It can be controlled by felling the infested trees and by removing the infested bark from the main trunks without burning the bark or tops. This work must be done during the period between the 1st of October and the 1st of July to destroy the broods of the beetle before they emerge. Whenever the timber can be utilized the product will pay all expenses. If it has no commercial value it will cost on an average of 50 cents a tree for the required treatment. After an outbreak is under control the living timber can be easily protected from further depredat ons by giving prompt attention to the felling and barking of any clumps of dying trees found during May and June. Rangers or fire patrolmen can be instructed so that they can do this and anything else that is required to maintain control.

THE WESTERN PINE BEETLE.

The western pine beetle attacks the western yellow pine, the sugar pine, and the Jeffrey pine. The beetles fly in late June to October, inclusive, and usually attack scattering individual trees, often selecting the larger and older examples. The adults excavate winding egg galleries between the inner living bark and the wood and the larvæ transform to the adult stage in the outer bark. The beetles begin to fly and attack the trees in June and continue the attack until October or November. The first generation develops and emerges in August to November, and the second generation passes the winter in the trees that are killed by it in the summer and fall.

The foliage of the infested trees begins to fade and turn yellow in a few weeks after the trees are attacked by this beetle. The summer broods of the first generation leave the trees by the time the foliage is reddish brown, but the overwintered broods do not emerge until the following May and June, in some cases several months after the foliage is brown.

This species is next in importance to the mountain pine beetle as a destructive enemy of the pine, and the two species often combine in their attack. In this combined attack the western pine beetle is a secondary enemy of the trees because it follows the attack of the other species. When it is the primary enemy it is responsible for the death of a few scattering trees each year throughout the forest which results in the accumulation of dead timber. In the aggregate, this accumulative loss is very extensive, involving as it does the largest and best trees.

It can be controlled and the living timber protected from its ravages by felling the infested trees during the period between the 1st of October and the 1st of June and removing the bark from the main trunks and burning it. It is necessary to burn the bark because the broods of this species transform in the outer bark. They are not destroyed by simply exposing the inner bark as is the case with the mountain pine beetle.

THE JEFFREY PINE BEETLE.

The characteristic habits of the Jeffrey pine beetle are similar to those of the mountain pine beetle and therefore it requires the same treatment.

THE DOUGLAS FIR BEETLE.

The Douglas fir beetle attacks the Douglas fir, the big-cone spruce, and the western larch. The beetles fly in April and May and enter the living bark on healthy trees and on trees that have been injured by fire and those that have been recently felled. In habits of attack and general characteristics the Douglas fir beetle is similar to the mountain pine beetle, except that the former begins to fly earlier in the season and the foliage of the infested trees begins to die in the fall. It is very destructive to the Douglas fir throughout the Rocky Mountain region from British Columbia to Mexico but is much less so on the Pacific slope and especially toward the coast. It can be controlled by felling the infested trees during the period between the 1st of September and the first to middle of the following April and removing the infested bark from the trunks without burning.

THE RED TURPENTINE BEETLE.

The red turpentine beetle is the largest species of the genus Dendroctonus. It begins to fly in April and is active until October and November. It attacks the pine and rarely the spruce, but as a rule confines its operation to the base or basal portion of the trunks. While its normal habit is to breed in the bark of stumps and logs of newly felled trees, it often infests the bark on healthy trees. It rarely kills a tree, but is the cause of a large percentage of the basal wounds known as "cat faces" and fire wounds, so commonly met with in the pine. This is a far more difficult species to control than the others because it breeds in the stumps of felled

trees and the base of those killed by the other species or by fire. Valuable individual trees can be protected by cutting the beetles out of the bark as soon as their presence is indicated by masses of exuding resin mixed with reddish boring dust.

Wherever there is continued lumbering operations, the red turpentine beetle confines its attack to the stumps, but in the national parks and private grounds, where a limited amount of timber is cut, or where the ravages of the mountain pine and western pine beetles have been controlled, it is likely to cause more or less extensive damage to the living timber for a year or two after.

In combating the other beetles in the national parks care should be taken to remove the bark from the stumps whenever they are found to be infested with this pest.

THE ENGELMANN SPRUCE BEETLE.

The Engelmann spruce beetle attacks the Engelmann spruce, blue spruce, and any other species of spruce found within its range, but does not attack the pine, Douglas fir, or balsam fir. It flies in the period from June to August and attacks the bark of the main trunks of the older or matured trees. Its habits are similar to those of the mountain pine beetle, except that it flies earlier in the spring. When the trees begin to die the needles fade to a pale green and fall before they change to yellow or brown, but the bare twigs present a grayish-brown appearance. The infested trees are easily located in the fall and early spring by the fallen needles and the bare twigs of the tops.

This species occurs from British Columbia to Mexico, and at times is very destructive to the Engelmann spruce forests. It can be controlled by felling the infested trees and removing the bark from the main trunks during the period beginning with the 1st of October and ending by the middle to last of May.

THE BLACK HILLS BEETLE.

The Black Hills beetle is by far the most destructive insect enemy of the pine of the central and southern Rocky Mountains and the Black Hills of South Dakota. Its habits are similar to those of the mountain pine beetle, and the same methods are adopted for its control.

FAVORABLE CONDITIONS FOR THE BEETLES.

There are certain conditions in the administered, as well as in the natural forests, which contribute to the multiplication and destructive work of these Dendroctonus beetles. One of the most favorable conditions is an extensive forest of matured and old trees of pine or spruce, because in the beginning of an invasion such trees are more often the first to be attacked and killed. Trees in such a forest injured by lightning or storms often form centers of infestation, in which the beetles

increase to sufficient numbers to enable them to kill a few trees, and then the invasion is started, year after year increasing in force until a large percentage or all of the timber is killed. They then attack the young trees, and often waste their energies on saplings, in which the broods fail to develop.

DROUGHT.

It is a common belief that severe droughts weaken the trees and thus contribute to favorable conditions for the attack of the beetles. We have made pretty thorough investigations of this subject and are led to conclude that exceptionally dry seasons are more unfavorable for the developement of the beetles than are moderately humid ones, and that, therefore, droughts do not contribute to their multiplication.

FOREST FIRES.

Forest fires contribute, to a limited extent, to the multiplication of certain species which breed in fire-scorched trees, but as a rule forest fires kill more beetles than they protect.

COMMERCIAL CUTTING.

Commercial cutting of timber may contribute to the multiplication of certain species which breed in the stumps and tops, but if the cutting is continuous the insects confine their attack to the cut-over areas and do not invade the living timber. Sporadic summer cutting, however, is dangerous. The odor of the cut wood attracts the flying beetles to the locality. This contributes to their concentration, and when the cutting is stopped they invade the living timber.

SECONDARY ENEMIES.

The secondary enemies of the trees consist of numerous species which attack the bark and wood as soon as the trees become weakened and are dying from other causes. The Dendroctonus beetles are the primary enemies or leaders in the attack. The secondary enemies are to a certain extent their allies, and when very abundant may contribute to favorable conditions for rapid advance in the destructive movement, but more often they are dependents and scavengers, merely utilizing the dead and waste material. With rare exceptions these secondary enemies are not capable of killing trees on their own account.

UNFAVORABLE CONDITIONS FOR THE BEETLES.

The unfavorable conditions for the destructive work of these Dendroctonus beetles are to be found in administered forests, where the ripe or matured timber is utilized and where the young timber is protected by the prompt disposal of any clumps of dying trees during the fall, winter, and spring months.

In other words, systematic forest management, based on a knowledge of the principles of silviculture and forest entomology, will soon present conditions so unfavorable for the Dendroctonus beetles that they can no longer exist as agents of destruction and waste.

NATURAL ENEMIES.

The natural enemies of the beetles serve as a repelling force against the progressive development of an invasion. Indeed they are among the principal factors which have prevented the extermination of certain of the more important forest tree species. These natural enemies consist of parasites and predatory insects, which feed on all stages of the barkbeetles, and birds, which feed on the adults and young of the barkbeetles. Were it not for the fact that birds also feed on the predatory and parasitic insect enemies of the barkbeetles, and that they are so limited in numbers, they might render the great service that is so commonly credited to them. Insect diseases in the form of epidemics sometimes serve to bring an invasion under complete control. Unfavorable climatic conditions have been known to exterminate a species of Dendroctonus beetles within an area of thousands of square miles. Under natural conditions successive generations of the older trees are killed, but the invaders are checked or repelled by their natural enemies. Generations of younger trees take the place of their ancestors, and the forest as such is perpetuated.

NATURAL CONTROL THE MOST EXPENSIVE.

In the national parks, national forests, and private forests where the resources have a commercial value this natural control of the insect depredators on the timber is the most expensive and wasteful. Our friends, the enemies of the beetles, can not be depended upon to operate for the best interest of the Federal or private owner. They can, however, be made to render efficient service as the allies of the owner in an aggressive warfare by him against the invaders. They are indispensable in the defense against renewed attacks and in the maintenance of conditions which will insure the future protection of the living timber.

GENERAL METHODS OF CONTROL.

It is through a knowledge of the habits and seasonable history of the various species of depredating insects, and the various complex factors operating for and against them, that forest entomologists are enabled to advise methods of procedure in practical control operations either to reduce or eliminate the favorable conditions for the multiplication of the beetles or to promote and utilize the factors that are unfavorable for their existence.

It is also through a knowledge of the characteristic evidences of their presence in the living and dying trees that we are enabled to give instructions to an experienced timber cruiser, forest ranger, or fire patrolman,

which will enable him to readily detect an infestation and report upon its character and extent.

Experiments with and demonstrations of methods of control have furnished up-to-date information on the essential requirements in conducting active control operations, which enables us to advise the most economical and effectual method to be adopted for each species of beetle, each species of tree, and each locality where an infestation prevails.

Therefore, if the symptoms are accurately described and information is furnished as to the local facilities for utilizing the infested timber or for treatment at direct expense, specific recommendations for successful control can be made without an examination by an expert.

The presence in any national park of quantities of dying pine, spruce, or Douglas fir that has not been caused by recent fires is evidence of the presence and destructive work of one or more species of the Dendroctonus beetles. An examination of the bark of the main trunks of some of the dying trees will usually furnish conclusive evidence, for if the trees are infested the characteristic work in the bark, as illustrated in the bulletins of the Bureau of Entomology, will be easily recognized.

The next thing to do is to determine the extent of the infestation, the kind of trees involved, and the facilities for disposing of the timber by sale, free use, or direct expense. Then the superintendent should report the facts to an expert and ask for advice and recommendations. If he will then proceed without delay to dispose of the infestation according to instructions given him, success in checking or completely controlling the pest is almost certain to follow.

If upon locating an infested area, it is found to extend beyond the park boundary into adjacent privately owned timber or the national forests, cooperation, or at least concerted action is required, because an important center of infestation is a menace to the living timber within a radius of 10 to 20 miles.

If the timber of a national park is healthy, and centers of infestation are found in adjacent forests within a radius of 10 to 20 miles, the park superintendent should notify the owners. If, for any reason, the owners can not dispose of the infestation the park officials should help do it just as they would help in fighting a fire that was threatening the park. In a like manner the Federal and private owners of healthy timber adjacent to a park should help dispose of any extensive infestation in the park, because it may be more of a common menace than a forest fire.

If this policy of cooperation for the general good is adopted, and the essential requirements for successful control are strictly adhered to for a few years by the officials of the national parks, the national forests, and the principal private owners, the damage to living timber on the parks and adjacent lands will be reduced to a minimum, and ultimately thousands of dollars in commercial and æsthetic values will be saved for every dollar of public or private money expended.

The SECRETARY. If there is any discussion of the paper just read by Mr. Hopkins, now is the time for it. If not, we will proceed to the next subject, and we will ask Mr. Bond, chief clerk of the General Land Office to address us on "Administration of national monuments."

THE ADMINISTRATION OF NATIONAL MONUMENTS, BY FRANK BOND, Chief Clerk, General Land Office.

The act entitled "An act for the preservation of American antiquities," approved June 8, 1906 (34 Stat., 225), was the final result of a concerted effort of archæologists, scientists, and others, active both within the public service and in unofficial fields. Long prior to 1906 the slow, cumbersome, and ineffective process of creating reservations by special acts of Congress had been tried, and with few exceptions had failed. Briefly, these efforts were ineffective, not because the Members of Congress were opposed to the preservation of historic and prehistoric ruins, but largely, I think, because these ruins occupied tracts far too insignificant in area, and the ruins themselves were not believed to be of sufficient national importance to warrant for each, or for each little group even, the creation of so important a reservation as a national park. More than one effort, however, was made by the friends of new legislation before a general measure, in the main satisfactory to those actively interested, was finally agreed upon and later enacted into law. At first the preservation of historic and prehistoric ruins was alone considered, but the great value to the people, as a whole, of the widely scattered evidences of nature's handiwork in the form of great caverns, extraordinary examples of mountain formation, due to volcanic activity or to surface or subsurface erosion, forced the conclusion that a law authorizing the protection of historic and prehistoric ruins would be seriously deficient unless it also provided for a public guardianship of these treasures of nature—a guardianship which would permit their free study for the extension and diffusion of knowledge and their inspection and observation for the pleasure of the people. So the purpose of the proposed act was greatly enlarged and extended by the insertion therein of the word "scientific."

The intent of the act as finally passed has been broadly and, I feel, properly and wisely interpreted in the very great majority of appeals since made to its authority. We have now monuments created by man, such as the pueblos, the cliffs ruins, and the sepulchers of nameless and unknown peoples, often most extraordinary as to location, character, and size; we have mission churches of the earliest period of Spanish conquest in the Southwest, and also lofty rock towers and cliffs upon which were carved over 300 years ago, with the daggers of the commanders, the names, dates, and other records of their visits and activity there. We have cinder and lava mountain forms, exemplifying geologically recent volcanic activity. We have extraordinary canyons and caverns, lofty piles and monoliths, and natural bridges, magnificent and impressive

almost beyond description, the products of erosion. We have also, as a monument, a magnificent Pacific coast redwood forest, a grove of sequoia which, as hardy seedlings, spread their ever-green leaflets to the warming sun almost before man began the written record of his birth and achievements. The great majority of these monuments were made possible because the objects preserved have great scientific interest; but I have at times been somewhat embarrassed by requests of patriotic and public-spirited citizens who have strongly supported applications to create national monuments out of scenery alone. In many persons the artistic and scientific powers are happily blended, but the terms of the monument act do not specify scenery, nor remotely refer to scenery, as a possible raison d'être for a public reservation. Reserves of this character may be created by special acts of Congress; however, the existence of magnificent scenery within the boundaries of proposed monuments has not, to my knowledge, acted as a deterrent in their establishment. The creation within a national forest of the Grand Canyon National Monument, containing over 800,000 acres, is a case in point.

NUMBER, LOCATION, AND JURISDICTION OF NATIONAL MONUMENTS.

There are now 28 national monuments, distributed by States as follows:

Alaska:
- Sitka.

Arizona:
- Montezuma Castle.
- Petrified Forest.
- Tonto.
- Grand Canyon.
- Tumacacori.
- Navajo.

California:
- Lassen Peak.
- Cinder Cone.
- Muir Woods.
- Pinnacles.
- Devils Postpile.

Colorado:
- Wheeler.
- Colorado.

Montana:
- Lewis and Clark Cavern.
- Big Hole Battlefield.

New Mexico:
- El Morro.
- Chaco Canyon.
- Gila Cliff Dwellings.
- Gran Quivira.

Oregon:
- Oregon Caves.

South Dakota:
- Jewel Cave.

Utah:
- Natural Bridges.
- Mukuntuweap.
- Rainbow Bridge.

Washington:
- Mount Olympus.

Wyoming:
- Devils Tower.
- Shoshone Cavern.

Of these monuments 17 are under the jurisdiction of the Department of the Interior, as follows: Eleven created out of the public lands—the Devils Tower, El Morro, Montezuma Castle, Petrified Forest, Natural Bridges, Lewis and Clark Cavern, Mukuntuweap, Shoshone Cavern, Gran Quivira, Sitka, and Colorado; two, the Navajo and Rainbow Bridge, are in Indian reservations; one, Muir Woods, was a gift under the terms of the act; two, Tumacacori and Chaco Canyon, were partial relinquish-

ments of entered homesteads under the terms of the act; and one, the Pinnacles, was excluded from a national forest. The remaining 11, embracing Lassen Peak, Cinder Cone, Gila Cliff Dwellings, Tonto, Grand Canyon, Jewel Cave, Wheeler, Mount Olympus, Oregon Caves, Big Hole Battlefield, and Devils Postpile, being within national forests, are under the jurisdiction of the Department of Agriculture.

A supplemental proclamation has been issued in the cases of three of the monuments, for the following reasons, viz: In the case of the Natural Bridges, Utah, to definitely locate and identify with an official survey and to include prehistoric ruins and prehistoric cave springs whose existence was unknown before the survey was made; in the case of the Lewis and Clark Cavern, to definitely locate in accordance with subsequent official survey; and in the case of the Petrified Forest, to readjust the boundaries and reduce the area from about 95 square miles to 40 square miles.

A modification of the Navajo National Monument will be asked as soon as certain necessary surveys therein are completed.

MONUMENTS UNDER THE JURISDICTION OF THE SECRETARY OF THE INTERIOR.

DEVILS TOWER NATIONAL MONUMENT.

This monument was created September 24, 1906, and was the first after the passage of the act. It is located in T. 53 N., Rs. 65 and 66 W., of sixth principal meridian, Crook County, Wyo. It embraces 1,153.91 acres of forested, mountainous, and grazing lands, in the approximate center of which is situated the magnificent rock pile of great height, with walls so precipitous that they have seldom or never been scaled, for which the monument was named. The tower is entirely the effect of surface erosion, its rock being much harder than the average country rock surrounding it. The pile covers an area of 20 acres or more, and its lofty height, over 1,300 feet above the river near its base, makes it visible for long distances and from all directions. On this account it was used as a guidepost by early explorers and trappers and by the Indians of the Plains long before them.

The first steps toward its reservation from private entry and possession were taken on February 19, 1892, when a temporary forest reservation embracing 60.5 square miles was created. Two-thirds of this tract was restored to entry on June 27 following, and the remaining 11,974 acres were included in a bill to create "The Devils Tower Forest Reserve or National Park." The bill failed of passage, however, but the reduced tract stood withdrawn until the national monument was created 14 years later. The Devils Tower is in no danger from tourists, souvenir hunters, or even professional vandals, but its natural forests, undergrowth, and grassy environment add much to its natural beauty, and they should be

carefully preserved. To make this monument of value to visitors an iron stairway, winding if necessary, and securely anchored to the face of the vertical wall, should be constructed to the top of the rock.

The magnificent panorama of mountain and plain spread out on all sides below and extending for hundreds of miles in all directions would amply repay the visitor for the toil of the climb. The rock would then be a watchtower, as well as a guidepost of the past.

EL MORRO NATIONAL MONUMENT.

This interesting monument was created December 8, 1906. It is located in T. 9 N., R. 14 W., New Mexico principal meridian, Valencia County, N. Mex., about 35 miles east of the Zuni pueblos. It is composed of a colossal, towering cliff at the extreme end of a high and grotesquely eroded, varicolored sandstone wall of a mesa which marks one boundary of a lava-strewn valley draining into the Zuni River. Upon the top of this rock are prehistoric pueblo ruins. The cliff is not only beautiful in color, but most majestic and imposing because of its great height and its isolation. Its sheer walls are marked often with brilliant stratification bands of red, yellow and brown, and brownish gray, with here and there a projecting stratum of harder stone which protects the softer wall below. Upon these faces and in many places the early Spanish adventurers, possibly even those seeking De Vaca's mythical "seven cities of Cibola," and others who came after them and followed this well-known trail to the Zuni, Moqui, Navajo, and other Indian lands, left records of their presence carved plainly and permanently upon these rocks, their names, the objects of their expeditions, and their successes, as well as the dates of their passage. The legible dates vary between 1629 and 1737. Many are doubtless much older, but are partly illegible from the erosion of wind-blown sands and other natural agencies. These inscriptions are of great historical interest, and every reasonable effort should be made to protect them from the encroachments of the modern name writer and other vandals in public places who barbarously deface so many public buildings and monuments the world over.

The section of land upon which El Morro is located was temporarily withdrawn from settlement, entry, sale, or other disposal by the Secretary of the Interior June 14, 1901, and remained withdrawn until after the creation of the national monument, embracing a reduced area of 160 acres, in 1906.

MONTEZUMA CASTLE NATIONAL MONUMENT.

This monument is located in T. 14 N., R. 5 E., Gila and Salt River meridian, Arizona. It reserves and protects from private entry a strip of high cliffs, 40 chains wide by 1 mile in length, in the face of which are a number of cliff-dwelling ruins. Of these, and one of the most important

in the Southwest, is "Montezuma Castle," for which the monument was named. The monument was created December 8, 1906.

This noted prehistoric ruin is located upon a ledge which is about 55 feet above the talus at the base of the cliff. It is in a recess at a bend in the rock wall, and is further protected from the ravages of time and the elements by an overhanging ledge of harder rock above. This ledge forms the only roof of the smaller top story. The ruin, as it now stands, is 48 feet high, has 5 stories, and contains 21 rooms, generally in a remarkable state of preservation. The castle's base was reached by ladders which extended from the base of the cliff to several narrow ledges in succession. Curio hunters prior to the creation of the monument had excavated under the foundations at the right-hand corner and the same had given way, and had used dynamite to break down an inner wall in the hope of finding relics.

The Arizona Antiquarian Society has made some very necessary repairs to protect the walls of some of the outer rooms, where the original roof had fallen, by the use of corrugated iron roofing.

PETRIFIED FOREST NATIONAL MONUMENT.

This monument was created by proclamation December 8, 1906. It is located in Tps. 16 and 17 N., Rs. 23 and 24 E., Gila and Salt River meridian, Arizona. The silicified forest remains of the district are not all confined within the boundaries of the reserve but are scattered, in more or less abundance, over a territory embracing nearly a hundred square miles. These deposits were the object of considerable commercial activity as early as 1884. Several companies were organized to exploit the alleged limitless fields of jasper, agate, amethyst, and chalcedony, more abundant, more magnificent, and more valuable than all of the Siberian jaspers, Pyrenees marbles, Chinese jades and Russian malachites together. Possession and ownership were sought through the location of placer mining claims, of which one hundred and seventeen 20-acre tracts were located largely with dummy entrymen, as appears from the reports, and among the finest and most abundant petrifactions. But these efforts to secure title were abandoned when the nonmineral bearing character of the stone was established and the high cost of manufacturing it into ornaments was learned by experiment. A stamp mill also was erected on the Santa Fe Railroad near the depostis, not to manufacture the petrifactions into useful forms but to pufverize them for abrasive purposes. This adventure is said to have failed because of excessively high freight rates. Several carloads of the smaller fragments were sent to Sioux Falls, S. Dak., and St. Paul, Minn., for manufacturing purposes, but the records fail to show whether or not the ventures were financially successful.

As already mentioned herein, the Petrified Forest Monument, created in 1906, contained about 95 square miles, and this large area was reserved

because the most desirable and necessary tracts could not be determined in advance of a geological survey of the district. The boundaries were, therefore, temporary and were to stand until a geological survey could be made. Such survey was made in May, 1911, by Dr. George P. Merrill, geologist of the Smithsonian Institution, who, on request of the Secretary of the Interior, was detailed to visit the monument, make a survey of its deposits of silicified woods and report thereon with such recommendations for reducing the area as in his judgment the situation would warrant. The result of his work was a second proclamation signed July 31, 1911, modifying the boundaries of the monument and reducing its area to 40 square miles, or less than one-half the original reservation. It is now believed that the monument contains all of the petrified wood and all the land that the public interest requires. The most important deposits both as to size of logs and character are reserved and to properly restrict and control collectors, two tracts within the mounment have been set aside for their use. An effective custodianship will confine the operations of all authorized persons to these tracts.

Effort had been made to largely increase the area of the monument by adding to the original tract of 95 square miles, an approximately equal area north of the railroad, but the fact that the north side attractions were chiefly, if not wholly, scenic in character, was disclosed by correspondence, and I did not feel justified, under the terms of the monument act, in supporting the plan for enlargement.

CHACO CANYON NATIONAL MONUMENT.

This monument was created March 11, 1907. It embraces five separate tracts containing, approximately 20,629 acres of land, lying chiefly in Chaco Canyon, T. 21 N., Rs. 10 and 11 W., New Mexico meridian, San Juan County, N. Mex.

On May 1, 1900, the Santa Fe New Mexican, a newspaper of Santa Fe, published an item to the effect that Richard Wetherill was exploring and excavating remarkable prehistoric communal dwellings in Chaco Canyon. On the 8th of the month a special agent of the General Land Office at Santa Fe was instructed by wire to proceed at once to the locality to investigate, and if the alleged depredations were verified to lay the facts before the United States attorney. The agent wired that the excavations had been carried on for two years and the relics and entire rooms of the largest pueblo were being sent to the American Museum, New York City, the funds therefor being furnished by J. L. B. and F. E. Hyde, of the latter place. In April and May, 1901, another agent of the General Land Office visited the ruins, and in June recommended withdrawal of all lands in 40 townships from settlement to prevent entry of those occupied by the ruins. The lands were withdrawn by direction of the Secretary of the Interior April 4, 1905, four years later, and after the tracts upon

which the three or four principal ruins were located had been entered under the land laws by Wetherill as a homestead. Subsequent examinations of this homestead entry were made in 1905 by another special agent and while he did not attempt to decide upon the actual purpose of Mr. Wetherill in entering a homestead that seemed at the time of entry to be chiefly valuable for prehistoric ruins located thereon, did show that the entryman had several buildings in value not less than $5,000, 60 acres in corn, 5 acres in wheat, and 2 acres in vegetable garden, all being raised without artificial irrigation. Also 5,000 sheep, 200 horses, 400 chickens, range stock, etc. It was apparent that a cancellation for fraudulent entry would be difficult and probably unjust; that instead of excavating the ruins the entryman was protecting them, and that he was willing to relinquish to the Government, under the terms of the monument act, the tracts within his entry upon which the great ruins were located. This he did on receipt of formal papers January 14, 1907, and about two months later, or March 11, 1907, the monument was established. Prior to Wetherill's relinquishment his homestead was carefully surveyed by an examiner of surveys and the ruins and the tracts upon which they were located finally determined.

The Wetherill relinquishment embraced four lots containing in the aggregate 47 acres of land, and was the first surrender of entered land under the act.

The Chaco Canyon prehistoric pueblo ruins are in many respects the most important of those in the Southwest. Pueblo Bonito, which was partially excavated by Wetherill, and also by the Hyde Exploration Expedition for the American Museum, New York City, is reported as having originally had 1,200 rooms, was 4 stories high, and covered a large area. This ruin, together with Chettro Kettle and del Arroyo, was relinquished for the monument. From the excavated part of Bonito great quantities of turquoise beads, pieces of pottery, and some human bones were taken, but the report states that the actual field of research is barely touched, since not only much the greater part of Bonito is yet virgin soil, but numerous other ruins within the monument limits have not yet been marked by a spade or pick. There are at least 17 important communal dwelling ruins within the reserved tracts.

MUIR WOODS NATIONAL MONUMENT.

This is one of the most attractive of the national monuments made possible because of its great scientific interest, although the chief of the objects it protects and preserves are giant redwoods 18 feet in diameter at the base and 300 feet high. It is located about 7 miles northwest of San Francisco and is visited annually by thousands of people, who may almost step over from the crowded streets of a great modern city into a wilderness where nature reigns supreme and appalls with the magnitude

of her works. The monument tract embraces 295 acres, covered with a virgin forest of which three-fourths are giant redwoods, with much fir and the common hardwoods of the coast country. It is a part of Rancho Sausalito, an old Spanish grant. This magnificent possession of the people was the gift of a public-spirited citizen of San Francisco and Chicago, William Kent, who placed a market value on the redwoods alone at $150,000, but who believed that as the attractive and impressive feature of a national monument they would be priceless. The deed to the United States of America is dated December 26, 1907, and the monument proclamation followed on January 9, 1908, two weeks later. At the request of the donor the monument was named in honor of John Muir, of California. It is certain in the years to come that this unique and accessible national monument will be visited and appreciated by a growing army of nature-loving people. The custodian estimates that 50,000 people visited it the past year.

PINNACLES NATIONAL MONUMENT.

This monument was created January 16, 1908, and lies within what was the Monterey National Forest, California. It is a small reservation containing about 2,080 acres of land, and the monument, owing to the recent elimination from the national forest, is now under the jurisdiction of the Department of the Interior. It is located in Tps. 16 and 17 S., R. 7 E., Mount Diablo meridian.

The pinnacles is a monument of lesser importance. The objects reserved are groups of peculiar rock formations, the effect of erosion, I believe, accompanied or underlain by a series of caves of scientific as well as popular interest.

NATURAL BRIDGES NATIONAL MONUMENT.

This monument was created April 16, 1908.

Three gigantic natural bridges with horizontal span were discovered in southeastern Utah, in 1895, probably by Emery Knowles, a cowboy, and later in that year were visited by three cowmen, one of whom acted as guide to a prospector named Long, in 1903. Long gave to the world, through the Century Magazine of August, 1904, photographs and descriptions of the bridges. For several years thereafter nothing more definite as to the geographic location of the bridges could be learned than that they were situated in White Canyon and its tributaries, more than two days' ride easterly from Dandy crossing of the Colorado River. In May, 1908, the General Land Office instructed W. B. Douglass, an examiner of surveys, to make an examination and survey of the bridges, which was done that month. On June 8 following a cave spring at the head of the South Fork of Fish Creek and a cave spring on the head of Road Canyon were withdrawn from settlement on receipt of telegram from Douglass, via Dolores, Colo. Later Mr. Douglass filed the field notes and plat of his location survey of the bridges.

The proclamation of April 16, 1908, did not definitely locate the bridges with reference of one to the other, nor as to their geographical location on the map. It did, however, reserve a 40-acre tract around each bridge. A much larger tract was surveyed, because of the cliff dwellings and other prehistoric ruins located on the walls of the canyons, which the bridges crossed. The two prehistoric cave springs with pictographs on their walls, which were withdrawn from entry June 8, were added with 160 acres surrounding each. The total area of the monument as provided in the second proclamation of September 25, 1909, was 2,740 acres. These three magnificent natural bridges together with the Rainbow Bridge, discovered later, are unique and unprecedented both as to height and spans. No other known natural bridges equal or even approach them in their awe-inspiring grandeur.

LEWIS AND CLARK CAVERN NATIONAL MONUMENT.

Two proclamations, as already noted, have been issued covering this monument, the first on May 11, 1908. At this time the land was unsurveyed, and the reservation was made in order to prevent entries that might be embarrassing later, and with the intention of asking a second proclamation after an official survey had fixed the definite location.

For some years prior to the creation of the monument a portion of the tract was covered by a mineral location, which was finally held invalid by the General Land Office and the Department of the Interior. The official survey, however, developed the fact that the cavern, and the 160-acre tract which centered on the cavern's entrance, were in an odd-numbered section, which became the property of the Northern Pacific Railroad Co., according to the terms of its grant from the date of the passage of the act. This company formally deeded the land to the United States, February 14, 1911, with the understanding that title would immediately revert to the grantor in case the tract was abandoned for monument purposes, and the latter would be entitled to immediate possession. A second proclamation was then issued by the President, definitely fixing the boundaries of the monument with reference to the public surveys. This proclamation was of date May 16, 1911.

This limestone cavern is located in T. 1 N., R. 2 W., Montana principal meridian, Montana. It has been partially explored to a depth of many hundred feet, and as appears from reports on file is superbly decorated with stalactites and stalagmites and all manner of curious drip formations of great interest. Eight or ten chambers have been explored, the largest of these being 105 by 135 feet, and about 100 feet high. Many of the stalactitic formations in this chamber are over 20 feet long, and of almost indescribable beauty.

TUMACACORI NATIONAL MONUMENT.

This little monument, containing but 10 acres of land, affords protection to an old Spanish Mission Church, located in T. 31 S., R. 13 E., Gila and Salt River meridian, Arizona. It was built by early Jesuit monks,

who burned the bricks therefor. Its walls in some places are 12 feet thick, and the old burying ground lies to the rear with the ruins of an old fort therein. The cemetery and mission are inclosed by a high brick wall. This old mission was on the rejected Tumacacori land grant, and has suffered much from neglect as well as vandalism. Portions of old paintings within the chancel have been knocked off and carried away, and the names of many of these vandals are written inside the nave. The land upon which the mission stands was entered as a homestead by Carmen Mendez, who fully appreciating the desirability of preserving the ruin, showed the faith that was in him by relinquishing the necessary 10 acres of his claim to the Government, June 30, 1908.

NAVAJO NATIONAL MONUMENT.

The present monument reservation was created March 20, 1909, for the purpose of preventing unauthorized excavations of several very important prehistoric pueblo ruins located within the Navajo Indian Reservation, but whose exact geographical location was unknown. For this reason all of these ruins within a large tract were reserved, together with a 40-acre tract surrounding each. This still stands for the reason that we have not yet been able to definitely locate one of the most important ruins on Navajo Creek by a careful traverse line connecting it with some established public survey corner. This ruin, however, is of exceeding interest. It was visited by examiner of surveys, W. B. Douglass, who not only found an important and astonishingly well preserved ruin, but discovered written upon the walls of some of the rooms a record, for the most part easily legible, of the visit of an early Spanish expedition with names, dates, etc.

The principal ruins at the head of Laguna Creek are along the walls of its canyons on the south side of Skeleton mesa. One of these contains about 150 rooms. There are in all four groups of ruins in the neighborhood of Bubbling Spring. One of these groups contains five separate ruins, having about 40 rooms each. Of the Bubbling Spring group perhaps Keet Seal and Betata Kin are two of the most important. These have been connected by traverse with an Arizona-Utah boundary monument and a second proclamation might have been issued some time ago greatly reducing the area and the number of ruins of these groups reserved by the Navajo monument proclamation, but for the fact that we wish to add to and make a part of this monument the important ruin on Navajo Creek containing the Spanish inscription and discovered by Douglass.

MUKUNTUWEAP NATIONAL MONUMENT.

This monument was created July 31, 1909. It is located in southwestern Utah, in Tps. 40 and 41, S., R. 10 W., Salt Lake meridian, and is upon unsurveyed land. It contains approximately 15,840 acres, which lie, in the main, within one of the most striking canyons of the Rocky Mountain States. The canyon has smooth, perpendicular walls varying in

height from 800 to 2,000 feet, which are, with the exception of one trail, unscalable within the monument limits, and this trail is so dangerous that only unburdened animals are permitted to use it. Parallel with the canyon walls and midway between them is a long ridge high enough to cut off all view from either side of the canyon to the opposite canyon wall, thus dividing the canyon into two parts equally important. The North Fork of the Rio Virgin, a stream over 20 feet wide and 18 inches deep, flows through the canyon. The United States deputy surveyor who closed his lines upon the canyon walls reports that the climate in the bottom of the canyon is tropical while the regular mountain temperatures prevail immediately adjoining and beyond the rims. At intervals along the west walls several streams plunge over the edge of the chasm forming magnificent falls 800 to 2,000 feet high. Some of the views into the canyon are only surpassed in grandeur by those offered by the Grand Canyon of the Colorado. From the descriptions on file, however, I think this canyon is, in many ways, similar to the Yosemite Valley, California, now in a national park, whose vertical walls, while considerably higher in places are not continuously perpendicular, and whose highest waterfall, the Yosemite, has a drop of 1,600 feet.

SHOSHONE CAVERN NATIONAL MONUMENT.

This little monument was created September 21, 1909. For the purpose of preventing entry and to determine by examination the character of this cavern and the tracts of land which might be needed for its protection, two sections of land were withdrawn February 16, 1909. In April following a mineral inspector of the General Land Office visited the cavern and reported in substance as follows: That it was discovered by Mr. Ed. Frost, of Cody, in 1908, who chased a mountain lion into it and, after vainly trying to smoke out the animal, concluded to explore. A mining claim was soon located on the cave, but no evidence whatever of mineral was found, either in the limestone of the cavern or in the surrounding country. The entrance to the cavern is on the north face of Cedar Mountain about one-quarter mile south of Shoshone River, 3 miles east of the Great Shoshone Dam of the Reclamation Service, and 4 miles west of Cody, Wyo. It has been explored about 1 mile and found to be adorned with many beautiful drip formations including in places an entire encrustation of beautiful and sparkilng crystals. There are holes and pits in the cavern of unknown depth and other attractive features which, considered as a whole, were worthy of a small reservation. The monument contains 210 acres ol land, and is in T. 52 N., R. 102 W., of the sixth principal meridian, Wyoming.

GRAN QUIVIRA NATIONAL MONUMENT.

This small monument, covering 160 acres, was created November 1, 1909. It covers the ruins of what in the early Spanish régime was doubtless an important mission. It is located upon a commanding eminence

about 200 feet above a broad valley to the west, and from it panoramas of mountain ranges are in view in several directions. The walls of the church are from 12 to 20 feet high and 2 to 4 feet thick. Inside, the church measures 30 feet in width by 100 feet long, was located almost due east and west, and has a transept near the west end. There is to the east and north of the church the heaped up piles of rectangular stone, covering several acres and evidently all that remains of a once great Indian pueblo. A portion of these remains are within the monument, but the great majority are within a patented homestead which is believed to have been fraudulently obtained; no cultivation, because of the desert character and lack of water, and no homestead having been established. No one lives upon the tract now, and there is no evidence whatever that anyone ever did live upon it.

SITKA NATIONAL MONUMENT.

This is a small monument containing about 57 acres only, and was created March 23, 1910, for the purpose of protecting the burying ground of Russian soldiers killed at this spot in the last battle with the natives in their struggle to maintain their independence. Here also are numerous totem poles, some of great size and splendid carving, which give, by quaint and monstrous figures in relief, the Indian history of the clan to which each belongs.

RAINBOW BRIDGE NATIONAL MONUMENT.

This interesting monument was created May 30, 1910. It embraces 160 acres of land lying about 4 miles northwest of Navajo Mountain in the Navajo Indian Reservation, extreme southern Utah. In the center of this tract and for whose protection the land was reserved is, in some respects, the most remarkable natural bridge in the world. The first white man to see and describe it was W. B. Douglass, an examiner of surveys, who, after surveying out the Natural Bridges National Monument, was sent to locate a bridge which a Paiute Indian, called "Mike's boy," stated he knew of and had seen. If found worthy for a national monument, it was to be surveyed. This natural bridge spans a canyon and small stream which drains the northwestern slopes of Navajo Mountain, a lofty and well-known landmark. Among the known natural bridges of the world it is unique in that it is not only a symmetrical arch below, but presents a curved surface above, thus roughly imitating the arch of the rainbow for which it is named. Its height above the surface of the water in the creek below is 309 feet, and its span 278 feet. It is well worth a place among the national monuments created because of their scientific interest, and, like the Natural Bridges Monument with its group of three lofty and most magnificent horizontal spans, this arched bridge will some day be on some regular line of travel followed by both the student and the archæologist and the increasingly numerous seekers after recreation.

COLORADO NATIONAL MONUMENT.

This monument was created May 24, 1911. More than four years ago the people of Mesa County, Colo., began a petition campaign to have certain tracts of land reserved as a national park. These lands embraced two striking canyons, known as Monument and Shackelton Canyons, which nature had carved out of the highly colored country rock and ornamented with magnificent and impressive columns, spires and towers in great numbers. These canyons meet within the proposed park. On request of the governor and auditor of the State of Colorado certain lands were withdrawn from all forms of entry, pending legislation to create a national park, on July 15, 1907; and on December 24, 1909, additional tracts were withdrawn on request of Senator Guggenheim, who stated that he would introduce a bill in the Senate for park purposes, which he did. Congressman E. T. Taylor also introduced a similar bill in the House, but for the general reasons already stated herein, both failed of passage. Petitions were then presented through Mr. Taylor to have the tract proclaimed a national monument. Before a monument proclamation was prepared, the General Land Office sent two of its field mineral inspectors to make a geologic and mineral examination of the lands and report, with recommendation for the reservation of the least area of land necessary to accomplish the end sought. This report was received May 1, 1911, and on May 24 the President signed the proclamation creating the Colorado National Monument, as stated above. The monument is in T. 1 N., R. 2 W., Ute meridian; T. 11 S., Rs. 101 and 102 and T. 12 S., R. 101, all west of the sixth principal meridian.

MONUMENTS UNDER THE JURISDICTION OF THE SECRETARY OF AGRICULTURE.

LASSEN PEAK AND CINDER CONE NATIONAL MONUMENTS.

These monuments were created within the Lassen Peak National Forest, Cal., May 6, 1907. They are located in Ts. 31 N., Rs. 4 and 6 E., respectively, of the Mount Diablo meridian, and contain the Lassen Peak, 1,280 acres, and Cinder Cone 5,120 acres. As illustrating the most recent volcanic activity south of Alaska, they are of great scientific interest. The eruptions from these peaks occurred not more than 200 years ago, as shown by trees killed at the time, which are still standing. Within the reserved tracts, also, are hot springs which show continued volcanic activity and may not now be entered under the mining or other laws, but are reserved for the benefit and enjoyment of all, and there are also reserved a number of small lakes of great interest, and characteristic of the region, being formed, in the case of Snag Lake, by the lava which flowed across and dammed the little valley in which the lake lies. The stumps of many trees drowned at the time the water rose are still standing therein.

The efforts first made to reserve these geologic features were directed toward a national park, but it was found upon examination that in order to include the desirable objects it would be necessary to reserve a large tract and one which would include districts much more valuable for other purposes. The proposed park contained about 3,634 square miles. The proposition was abandoned after a careful examination had been made and the several small monuments within the district created instead.

These monuments are administered by the regular forest officers in charge of the forest in which they are located.

GILA CLIFF DWELLINGS NATIONAL MONUMENT.

This monument was created by proclamation dated November 16, 1907, and is located within the Gila National Forest, in T. 12 S., R. 14 W. of New Mexico principal meridian, New Mexico. The monument consists of a group of hot springs and cliff houses in the Mogollon Mountains, neither very large nor very important, but are located within a district in which few prehistoric ruins are found. The reserved tract contains 160 acres of land.

TONTO NATIONAL MONUMENT.

This monument was created December 19, 1907, and is located in T. 4 N., R. 12 E., Gila and Salt River meridian, Gila County, Ariz. It consists of two cliff dwellings about 2 miles south of the Tonto Reservoir of the Reclamation Service and about 5 miles southeasterly from the town of Roosevelt. The principal ruin is within the high flaring entrance to a large, shallow cavern, is three stories high, approximately 60 feet wide and 30 feet deep, and contains 14 or more rooms. The ruins are not of the first class, but they are located so close to what is fast becoming a large urban and agricultural population that their reservation as a monument was believed to be in the public interest. They are within the Tonto National Forest and centrally located within a small but rough mountainous tract of 640 acres.

GRAND CANYON NATIONAL MONUMENT.

This monument lies within the Grand Canyon National Forest in northern Arizona, is upon unsurveyed lands, and contains upward of 800,000 acres. It was created January 11, 1908, and is one of the monuments which, in spite of its great size and the difficulties in the way of giving it a thorough examination, is being visited annually by a large and increasing number of people. The railroad north from Williams on the Santa Fe to the canyon makes the monument easily accessible. A statement that it embraces the most attractive portion of the Grand Canyon of the Colorado River is all the description it needs. But there are practically no facilities for getting down into the canyon except upon the back of a burro and no possibility of traveling about to view the sublime effects of stream erosion after one gets to the bottom. However, a visit to the ruin where

at one's feet is spread out the most extraordinary and magnificent panoramas in the world is ample compensation for the time and cost. This monument should be developed and made accessible to the public. Roadways should be constructed to the bottom of the canyon and on or near the bottom, both up and down stream, and competitive hotels erected and controlled near the canyon rim, but not within the monument boundary lines. If the boundary line on the southeasterly side of the monument were moved near the rim, I believe the change would be in the public interest, for then adequate and very desirable electric railways could be given a right of way and would soon be constructed near the rim, but outside of the monument, to the great advantage of those who travel long distances to view the canyon. An electric railway running both easterly and westerly from the end of the steam railroad near the canyon's rim would from one end to the other place before the visitors an ever-changing panorama of a gorge which of all the world Arizona alone possesses.

JEWEL CAVE NATIONAL MONUMENT.

This little monument reserve was created February 7, 1908. It contains 1,200 acres of land and lies in the Black Hills National Forest, in Tps. 3 and 4 S., R. 2 E., Black Hills meridian, South Dakota. The objects sought to be preserved are two caverns known as Jewel and Jasper Caves, which were discovered by Albert and F. M. Michaud, who heard the noise of wind coming out of Jewel Cave through a hole in the ground. After enlarging the opening they located the ground as a mining claim, and held it for the jasper and manganese found in the cavern. They spent three years developing the cave and followed the main wind passage for a mile and a half and 600 or more feet vertically below the surface. The cave is evidently an old subterranean water course through the limestone. The "Jasper" is a similar wind cave and was discovered a mile and a half west of Jewel cave, and, like the latter, was located by miners as a mining claim.

In both of these caverns the wind currents blow inwards and outwards, the periods in the Jewel Cave averaging about 15 hours each way. The Michaud Bros. attempted to exploit the caves but their patronage was too small. An effort was then made by many interested persons to have a national game preserve containing 60 square miles created by Congress, but a justification for same was not apparent and so a national monument was created, the same reserving only so much of the land as was necessary to protect the caves.

WHEELER NATIONAL MONUMENT.

This monument, embracing 300 acres of land, is in T. 42 N., R. 2 E., New Mexico principal meridian, Colorado. It lies within the Cochetopa and Rio Grande National Forests and was created December 7, 1908. The objects reserved from entry are striking examples of erratic surface erosion.

MOUNT OLYMPUS NATIONAL MONUMENT.

This large monument lies within the Olympic National Forest, Oregon, and contains 576,000 acres of land lying on the summits and high slopes of the lofty Olympic Mountains. This region is of great scientific interest because of the existence of numerous small glaciers, and because the Olympic elk, a species which has been reduced in numbers so rapidly as to carry fears of its extermination, appears to be making on these lofty summits, scarred with ever present ice, his final struggle for existence. This is their summer range and breeding ground, and all hunting or collecting is absolutely prohibited.

OREGON CAVES NATIONAL MONUMENT.

This monument lies within the Siskiyou National Forest, Oregon, and reserves 480 acres in T. 40 S., R. 6 W., Willamette meridian. These lands were withdrawn from all forms of entry August 5, 1907, on request of the Secretary of Agriculture, and were created a national monument July 12, 1909.

The Oregon Caves were discovered by Elijah Davidson in 1874, and were partially explored in 1877, when four floors or levels were opened up in part. The caves are below a limestone peak, commonly called Cave Mountain, which seems to be honeycombed with caverns of various sizes that extend for miles in the form of galleries and chambers hung with stalactites. It is believed that the caves run under and entirely through the mountain connecting with openings on the other side. Numerous streams of water meander through the several levels and larger bodies of water can be heard in pits too deep to be sounded by a 300-foot rope. Strong currents of wind race through some of the galleries. No doubt when these great caverns can be explored and made accessible and safe this monument will be among the most popular of the cave monuments created.

The Forest Service has improved the trails leading from each side of the divide to the caves, making the latter more accessible than formerly. But little work has been done within and much should be done. Vandals already have broken off and carried away many of the beautiful drip formations which abound in the caverns, and parties of explorers are changing the snow-white crystals to a dingy yellow.

DEVILS POSTPILE NATIONAL MONUMENT.

This monument embraces about 800 acres of land and was created July 6, 1911. It is located within the Sierra National Forest and within what was formerly a part of Yosemite National Park. The principal object protected by the monument is a series of fine basaltic columns, which have in part toppled over, making a large pile of prismatic log-like

sections which, from a distance, strikingly resemble a pile of posts. This formation is deemed worthy of protection because it is the best example of columnar basalt within the United States, as far as known.

BIG HOLE BATTLEFIELD NATIONAL MONUMENT.

This monument contains 5 acres and embraces the Big Hole Battlefield in T. 2 S., R. 17 W., Beaverhead County, Mont. It is within the Big Hole National Forest.

ADMINISTRATIVE CONDITIONS.

With the single exception of the Muir Woods National Monument, of the monuments created out of public lands or out of relinquished lands, the protection afforded to reserved objects is practically confined to the restraining qualities of an official notice, warning the public of the fact of a Government reservation and of the penalties for violation of the regulations adopted for its protection. These have a sufficient restraining influence when the visitor is honest, or when the danger of discovery is so great as to make carelessness, appropriation, or vandalism dangerous. Because of a total lack of funds protective make-shifts have been adopted in some cases, but in the majority the warning notice, with its threat of prosecution, has had to do. Under these conditions, so far as the caverns, the pueblos, cliff and other ruins, and the prehistoric sepulchres are concerned, it is only a question of time when they will be secretly attacked and pillaged piecemeal, until there is nothing left to preserve; and, it seems to me, that if they are not to be developed and made accessible and their treasures uncovered, the sooner monuments which may be despoiled or destroyed are turned over to private ownership and exploitation, the better, because we will then be relieved of a responsibility which we now feel but can not make effective. And as for the monuments like the Devils Tower, the Colorado, Mukuntuweap, Pinnacles, and others, if they are not going to be accessible for study and recreation by Government aid, it were better that they be turned over to private ownership, because in the latter case they would soon be made available at a price, which would be much better than not available at all. Those who had the price would be able to see, the rest would neither gain nor lose. But no monument should be turned over to private development and exploitation under contract, agreement, lease, or otherwise. Such arrangements are not only certain of being unsatisfactory, productive of scandal, and prolific of complaint, but they would necessarily, and at once, negative the purpose of the monument act; that is, to preserve for all time and without price these extraordinary heritages. It would, I think, be unpatriotic to advocate the abandonment to private speculation of any one of them.

PRESENT PROTECTION.

The Muir Woods National Monument is within easy reach of San Francisco, a large city with a large transient population. Owing chiefly to this fact, but also to the origin of the monument and the ease with which its chief attractions could be ruined, this monument has a real custodian, one who is paid an annual salary and who is on duty all the time. Roadways have been constructed, fire guards maintained, and visitors to the giant redwood forest controlled, to the end that no living thing within the monument, bird, beast or plant, is harmed and the danger of fire is reduced to a minimum if not a negligible quantity. This custodian was the custodian employed by the former private owner and his official appointment was an admirable thing, but he is paid out of a fund which the Comptroller of the Treasury advises is available, although intended when asked of Congress for another and very different object.

The Devils Tower should have some one in charge during the summer season to prevent fires and unauthorized grazing, and to make trails and act as guide, as well as care for such improvements as are indicated herein to be necessary in the development of the reservation. A small salary for actual service would, I think, secure a satisfactory custodian.

The extreme isolation of El Morro will render attempts to protect it adequately difficult. Since all of the inscriptions made during the nineteenth century are reported undesirable, while many are positively bad, I think, possibly, it would be well to remove them and post conspicuous warning notices that thereafter every effort would be made to arrest all offenders for similar acts of vandalism. This method of preservation of these most unique of all historical records would, of course, necessitate regular visits to the monument; and I think the early erasure of all new names, after noting them for punitive purposes, would discourage the practice.

For Montezuma Castle a resident custodian at a small salary could, I think, be easily secured, but better and more permanent means of access to the ruins are greatly needed, and vandalism in the past has made repairs necessary in some places.

The Petrified Forest has a custodian, who lives at Adamana, the railroad station nearest the monument. He was formally appointed at a nominal salary of $1 per month. I have heard no complaint of neglect of duty, but I am informally advised that his chief business is that of guide to the forest. I can see no serious objection to this under present conditions, except that his charges should be regulated by the department, and a strict observance of the regulations governing the reservation should be required of him. The great difficulty encountered here is that of requiring observance of strict regulations from an individual who is paid nothing

for his services. To properly administer this extraordinary national monument, which is worthy both of a fostering care and such development as will make it easily accessible and at a minimnm cost to visitors, the custodian should be paid a reasonable salary, not large, but large enough to demand and require an effective guardianship in exchange. He should be equipped by the Government with means for transportation of visitors, and if an annual appropriation for the maintenance of same were denied, then a round-trip charge from the nearest railroad point, sufficient to meet the cost of maintenance only, should be maintained.

No custodian has yet been appointed for Chaco Canyon, but there should be one as soon as funds are available. No large salary would be required here, but some money will be needed to repair falling pueblos. The custodian should be on the ground to warn off unauthorized explorers who would excavate without permits, and fail, in the absence of supervision, to strengthen walls made dangerous by their labors or to restore those damaged thereby. If many of these ruins shall be found incapable of restoration, which is extremely probable, he shall keep them intact until exploited by authority and their treasures disposed of for the public good.

No custodian has been appointed for the Pinnacles, which was transferred from the Forest Service, and I think it very doubtful if one will be needed. Certainly none is needed at the present time. However, should the locality become more easily accessible and better known, development work would become necessary and the appointment of someone to administer the reserve will naturally follow.

I know of no reason why anyone should harm the Natural Bridges. No sane person would attempt such a feat, and it is certain, because of their isolation, that it will be a long time before they can be visited by any but hardy horseback riders familiar with the desert and the toll it collects. The name carver is the only vandal to be feared, and his records should be obliterated as fast as discovered.

For the Lewis and Clark Cavern a proper and effective administration is greatly needed. Few things tempt the vandal more than the beautiful stalactites which dame nature hangs in the caverns she digs far from the light and the heat of the sun. Some of these ornaments in the Lewis and Clark Cavern have been broken down and removed, but the great majority remain and should be protected. The cavern is reached by one of the great transcontinental railroads, and visitors may be plentiful soon. No opportunity should be given the curio hunters to knock down and carry away these drip formations, which are the cavern's principal charm. There should be a resident custodian at a moderate salary to develop the roads and trails, build and keep in repair stairways, and pilot parties through the cavern. To prevent access without a guide, the entrance to the cavern should be closed and kept locked, as at present, and provision for artificial lighting, without smoke, should be made.

The old Spanish mission Tumacacori should have a custodian at a modest salary. No doubt the entryman who relinquished the ground for the monument would make a good custodian and be satisfied with a salary of $20 a month or less. The old mission church, however, should be restored as far as possible and kept in repair, and the myriad vagabond names and writings removed from its walls.

The Navajo Monument needs a custodian as soon as its final boundaries are established. Reports testify that some of the ruins have been visited and much pottery uncovered and carried away. With the reduction of this monument to three or four 160-acre tracts, as is now contemplated, there will still remain almost an unlimited virgin field for exploitation by colleges, museums, and associations armed with the necessary permits to excavate and remove treasures. In this connection I wish to state that I am of the opinion that all excavating and all restorations of ruins protected by national-monument proclamations should be done by and under the authority of the Government, and that the collections made therein should be placed primarily in the Smithsonian Institution; those which are typical and of greatest interest and importance to remain there on exhibition for the benefit of students and seekers after knowledge, and for the pleasure and enjoyment of others. I believe that a legitimate objection does not lie against the adoption of this policy, because the ratio of reserved ruins to those not protected by monuments is very small indeed.

I have been advised by those who know best, that the fruitful field for archæological research in the Southwest has in fact neither metes nor bounds.

The Mukuntuweap Monument will need a custodian at a small salary as soon as the advent of a railroad brings it within reach of the people. Roads and bridges will have to be built and kept in repair, and transportation facilities within the magnificent canyon maintained. It is in no danger now, not even from name vandals.

The Shoshone Cavern under present conditions does not seriously need a local custodian. Prior to its creation the mineral inspector found that many low-hung stalactites had been broken off and carried away, but much better facilities for reaching the cavern must be provided before many people will visit it. A stairway one hundred or more feet high, permitting access to the entrance by way of the Shoshone Canyon road, and safe trails and by-paths through the cavern itself are greatly needed.

The Gran Quivira appears to be in no danger of unauthorized exploitation and does not, I think, need a custodian at any price at the present time. These ruins are not believed to be of sufficient value as to warrant efforts at restoration on a large scale, but thorough excavations might reveal very valuable relics of the people who dwelt there long before the Spanish conquest and make restoration a very desirable policy.

The Sitka Monument is in little danger from vandalism, because it is so far away and the difficulties of transportation are so great that the principal objects preserved, the totem poles, could not be easily removed.

The Colorado Monument needs a custodian, not so much to protect the monument from vandalism as to develop roads and trails and make all parts of the reservation easily accessible. A custodian could act as guide also. Mr. John Otto, of Fruita, Colo., who has freely expended his own time and money in making trails through the canyon and over impassable places for years, was appointed superintendent and caretaker of the monument on June 7 last at a nominal salary of $1 per month.

ADMINISTRATIVE RECOMMENDATIONS.

As far as I am advised the Forest Service has not appointed local custodians, superintendents, or caretakers for the monuments in its charge. This responsibility is assigned to the district supervisors of national forests and other field assistants, and I assume that the actual protection given by them is similar to that afforded in the Interior Department by the chiefs of field divisions and by the local land officers of the General Land Office. All of these officials, by virtue of their positions of authority, can threaten punishment for offences committed and they may make good, but what we want for most of the monuments is protection from damage, not punishment afterward. The value of the services of national monument custodians will depend upon their immediate presence and personal supervision, supplemented, of course, by that watchfulness and devotion to duty characteristic of the good public servant everywhere. We need this, but we need something more. Under existing conditions two departments are charged with jurisdiction over national monuments, and three may be. Responsibility is divided. There can be no uniformity in administration under such conditions unless there is uniformity in letting the monuments alone. The chiefs of field divisions and the local land officers have now all they can do if they efficiently discharge the regular duties imposed by law and the regulations thereunder. I assume it is the same with the officers of the Department of Agriculture. If this is not true, it were better to reduce the personnel than to attempt to require of the supernumeraries a long distance service which they are unable to perform. I believe, therefore, that not only should we have effective local custodianship, but the administration of all national monuments of whatever character or wherever located, or however secured, should be consolidated and the responsibility for their developement, protection, and preservation placed where it can be made effective.

It is possible that 28 national monuments, or that portion of them which needs development, do not form a sufficiently weighty trust to warrant a separate administrative unit to develop and administer them. If this be true, why not consolidate a little further? Create an administrative unit for the national monuments and national parks together. The method of creating these reserves is different, but after creation there is no evident difference between them. They are as like as two peas in a pod. Furthermore, with the exception of the ruins, any general plan of

development which may be adopted for the one will be equally applicable to the needs of the other. Experience shows that there can be no effective administration for either under present methods and regulations, because the time given to them is largely stolen from that assigned to other work. As a whole they receive only incidental consideration when the public interest is great enough, and the reservations are important enough to demand a sympathetic and energetic effort directed exclusively toward solving the problems of development and administration they present.

The SECRETARY. I am sure you will appreciate all the interesting information which Mr. Bond has given us on a subject which, as stated by Mr. Bond, is very little understood.

We have another matter of administration connected with the national parks which has been mentioned to me by a number of individuals here at this conference as being in their judgment important, and we will ask Mr. Sunderland to present a paper on "Architecture and engineering, its relation to isolated Government improvements."

ARCHITECTURE AND ENGINEERING: ITS RELATION TO ISOLATED GOVERNMENT IMPROVEMENTS, BY E. M. SUNDERLAND.

Mr. Secretary and gentlemen: It is not my intention in my talk upon the subject assigned me to give a lecture upon archæology or statics, but I do wish to hang out a danger signal, or if not permitted to do this, to put up the green flag, which, as you all know, in railroading signifies caution. In the past two years and a half I have been intrusted by the Department of the Interior with several commissions for architectural and engineering work upon Government reservations. During this time I have seen many buildings and engineering works which remind me of the comment made on the mermaid, "The mermaid is too much of a fish to hug, and too much of a woman to fry." Many of the Government improvements are structurally too good to be dismantled and abandoned, but still in design are poor. Many of you are intrusted with the developing of reservations and parks which are in their infancy, I have in mind two of these reservations which I have recently visited, and upon which practically no improvements have been made. I sincerely trust that those of you who have charge of such reservations and the developing of same will give most careful consideration to the following:

SITES, CONSTRUCTION, ARCHITECTURE, SANITATION, FIRE PROTECTION, AND TEMPORARY WORK.

In selecting sites for a building, those should be selected which appeal to you from a picturesque standpoint, the site that only needs a building to complete the picture. This of course is conditional as to

whether water supply, drainage, and approaches are obtainable. It often happens that the site most desired for a building from a picturesque standpoint becomes impractical for the reasons that water supply, sewerage, and approaches can not be economically constructed.

In the construction of buildings and engineering work stability should be the first consideration. If anything is to be sacrificed for economic reasons, do not sacrifice the construction; rather, sacrifice the architecture. I mean by this that your buildings can be well designed in massing, but the ornamentation and elaboration can be limited. The first cost of any work should not be such as to cause the overhead charges to be too great; I mean by this, your annual expense for up keep.

In the selection of the style and type of architecture the same should be governed by the location, climate, and surroundings. A building of the Mexican Mission or the Spanish Renaissance style would not be appropriate in a park of such character as Glacier National Park, nor the chalet or chateau here except in the higher altitude. In the design of a building the massing is what catches the eye. There may be handsome columns and capitals and the detail elaborate, but if the eye is not attracted to the building by its general pleasing outlines, the detail will never be appreciated, because to persons passing the completed picture is what attracts the eye.

Many of you are intrusted with large propositions, as I have stated before which are in their infancy, for instance Glacier National Park and Platt National Park. It seems to me that in parks of this character a careful study should be given to a definite layout for the entire park and the contemplated improvements. If there had been a definite scheme adopted for the Hot Springs, Ark., the many sore thumbs of architecture would not exist; the hodgepodge there is pitiful. There we have the Romanesque, Greek, Gothic, and Renaissance within one hideous grouping, and it seems to me that conditions such as this is an ample warning to those of you who have in charge the development of new propositions.

In designing buildings for my private practice, I have found that if I gave my clients plenty of heat, good plumbing, and tight roofs, that they would put up with a great deal in the way of the lack of the ornate. In this connection I wish particularly to emphasize the necessity of a well-designed and constructed sanitary layout, especially as to the ventilation, sewerage disposal, heating, and water supply.

As to temporary work, it has been my experience that where appropriations are inadequate for the improvements contemplated, those in charge will say, "We will do this work only temporarily, only for a year or two until we can get Congress to appropriate more money." This is a dangerous practice, for the work in most instances becomes a permanent fixture and is extravagant and deceiving in the end.

I have heard to-day many remarks about the natural beauties of our parks in comparison with those of Europe. American tourists returning

from Europe not only comment upon the beauties of the landscapes but invariably are enthusiastic over the architecture and its harmony with the natural beauties of the landscapes. Here we are starting out with a new country, developing new parks, and we should be careful not to mar the natural beauties of nature with inappropriate and poorly designed architecture.

The SECRETARY. Is there any general discussion on the subject of architecture in the parks, sanitation, or the other subjects touched by Mr. Sunderland?

We will now hear from Mr. Schmeckebier on publicity. Mr. Schmeckebier is in charge of the publicity work in the Department of the Interior.

PUBLICITY IN ITS RELATION TO NATIONAL PARKS, BY L. F. SCHMECKEBIER, Clerk in Charge of Publications, Department of the Interior.

Publicity regarding the national parks may be accomplished in three ways: (1) By means of news items or specially prepared articles given to newspapers or magazines; (2) by means of handbooks giving detailed information regarding each park; (3) by means of exhibitions of photographs, lantern slides, and moving pictures. The department has already taken steps to disseminate information by each of the methods mentioned, but the active and hearty cooperation of the park superintendents is needed to get the best results.

First let us consider the newspaper field. This class of work is readily divided into special descriptive articles and news items. Descriptive articles are generallly sent out for the Sunday editions of the papers in the large cities, while the news items are given to the press associations and the newspaper correspondents. As a rule such articles will be prepared in the Washington office, but there is no reason why the field men should not contribute materially if they have the time and opportunity.

The best field for the activities of the park officials is in regard to news items, which should be forwarded to the Washington office from each park as often as possible. Now what constitutes an item of news? Too many people think that only sensational matter constitutes news. As a matter of fact much of the sensational matter is no news at all, being simply the manifestation of an active imagination. In reality everything that happens is news and the things that are undertaken in the regular work of developing a park make the very best of news items.

The entire process of development, such as trail and road work, building bridges, and the discovery of new points of interest form the foundation for numerous items of news. For instance, if you are starting to build a road or trail, that fact should be given publicity, but do not rest content merely with a statement that a road or trail has been started. The item should indicate the place held by that particular work in the general

development of the park. You should state where the road begins, whither it leads, and what points of interest will be made more available. Perhaps the road may lead to a glacier, a grove of big trees, or a mountain from which a magnificent view may be obtained, or it may cross some stream in which the trout abound, or it may traverse some beautiful valley that offers fine opportunities for camping; it may reach to a section of the park that has been difficult of access or it may materially shorten the distance. Give the course of the road in a general way, indicating whether it is along the shore of a lake, whether it goes through forest, or whether it is in open country from which extended veiws are obtained, and if the work of construction is especially difficult give the particulars. After you have let the public know that your road is started do not abandon it for news purposes. If the work is delayed by a rock slide or a forest fire another apportunity is offered for publicity, and the completion of any unit or of the entire road gives the publicity man a chance to tell the whole story over again. What has been said with regard to the road applies to all the work of man and nature in the park, because nature will furnish you with many a unique item of news. In this park any unusual action of the springs and geysers or the discovery of new phenomena constitutes items of great interest to the public. In other parks glaciers, caves, springs, or waterfalls may be discovered or some new information regarding them may be available. Forest fires in or near the parks should be reported, with a statement of the damage done, and if the fire has not done any appreciable damage that fact should be brought out. You are not expected to present this material in shape for the press. Write the facts clear, mark it "news item," sign your name, and forward it to the Washington office.

You might ask, "What is the purpose of all this?" In the first place these parks are public institutions supported and maintained by the Government, and the people are entitled to know what is going on and what is being done. It is true a report is made each year, but the number of persons reached by the report is very limited, and they are reached only once a year; while items given out to the press reach people who do not know that there is such a publication as an annual report. Then it is only just to the superintendents who are charged with the management of these parks that the work being done should be given as much publicity as possible. The people that have been to the parks and others that know of the parks see that you are on the job and that you are getting results. Most important of all we want to get people interested in the parks because the continued development of the parks must necessarily depend on the interest of the public. We want people to see the names of the parks in the papers, to realize that there are such things as national parks, and to feel that these great national pleasure grounds are being developed for their use and benefit. To a man who

has been to one of the parks a little item in the papers concerning it is like shaking hands with an old friend. We want to keep the good will of this man who has been to the park, to call back to him the pleasant days he has spent within its borders, and to remind him that a better park awaits him on his return.

Every year millions of dollars are spent in Europe by American tourists who have seen nothing of their own country, but at present there is a well-defined movement in this country to have our people see America first before seeing the sights of the Old World. We want to take advantage of this movement, and have our people realize that they are the owners of great pleasure grounds, which are not surpassed by anything that Europe can offer.

Thousands of people have heard of the beauties of these national wonderlands, and every time they see an item of news their desire to see the parks is stimulated and they are brought a step nearer to our gates.

I have discussed these items in some detail because men who have had no experience with publicity work do not realize what an abundance of material there is around them. I have known this for some time, but it was never brought to my attention more forcibly than during the past summer, when the publicity work for the parks was first started. Early in the summer a call was sent to the parks for news items, and the result of that call has been one item contributed by the superintendent of this park. Now, I do not mention this by way of criticism, because I realize that the publicity work is something which had not been attempted before and which perhaps did not appear of much importance. But I want to impress upon you that the publicity work is of great importance in the future of the parks, and I want you to realize that what is routine and perhaps commonplace in your regular work is novel and interesting to the public.

Now, let us consider what literature to aid the traveler should be issued by the Government. Heretofore we have issued practically nothing. As the annual report must necessarily be of an administrative character, it is of little value to a person knowing nothing of the park. Furthermore, I was surprised to find that many of the handsome and attractive booklets issued by the railroads contain little specific information. Practically all of these are issued for a special purpose and contain general descriptive matter, and the items that affect the business of the person or company issuing the publication.

Each of the superintendents of the larger parks has already been requested to submit the data for a handbook, which it is intended shall give all necessary information to a person that knows nothing about the park. It is not intended to give a great amount of detailed description, as this can be obtained easily from other sources. It is proposed, however, to give a list of all the important features in the park, a brief characteriza-

tion of each feature, its distance from some central point, and the manner of reaching it. This will enable persons to intelligently plan a trip through the park. A list of such places in the Sequoia and General Grant National Parks was given in the annual report on those parks for 1909, and it is proposed to follow the plan of that list if no better one is suggested. The handbook will contain a brief statement of how to reach the park. This statement will be confined to the names of railroads that are immediately tributary to points near the park.

The handbook should also contain a section on the method of transportation through the parks and a list of permanent hotels or camps. This portion is regarded as of great importance in cases where there are two transportation lines in the park or where there are several systems of hotels or permanent camps. The Government will, of course, express no preference for any system of hotels, permanent camps, or transportation. The pamphlet will give the locations of hotels and camps, the addresses of managers, and all rates that are authorized and sanctioned by the department. In several of the parks the hotels are located on patented land, and there may be some question regarding the listing of such hotels. As these hotels are located within the exterior limits of the park, I am of the opinion that they should be listed in the same manner as the hotels that hold concessions, as these hotels are necessary to the people that visit the park, and none of them, I believe, compete with hotels that hold concessions.

The handbook should pay particular attention to information needed by campers. It should tell particularly at what points guides, cooks, horses, outfit, and provisions may be procured, and the approximate cost of all these items should be given if practicable. I should be glad to have expressions of opinion as to whether it is desirable to publish the names of guides, persons who have horses for hire, and dealers in campers' supplies. In publishing such a list it will be necessary to exercise strict impartiality in the selection of names, but care should be taken to include only the names of persons that are known to be trustworthy. As it is proposed to issue a new edition of the handbook each season, the department could strike from its list any guide who had been guilty of misbehavior or any dealer who made a practice of overcharging. Such a procedure would be an incentive to all persons to act fairly in the treatment of visitors.

The department should also issue small handbooks giving an account of the natural features of each park. For the Yellowstone, Crater Lake, Mount Rainier, and Yosemite parks there should be issued a small pamphlet giving their geologic history in such terms that the publication will be understood by the intelligent tourist. For this park there should be an account of the geysers, the hot springs, the fossil forests, and other phenomena of peculiar interest. For the California parks there should

be issued a general pamphlet on the big trees. For all the parks there should be compiled lists and descriptions of the birds, game, and flowers. A lot of material for these publications is available; its publication is only a matter of the time necessary to reassemble it in proper shape. Such publications not only will add to the pleasure of the tourist, but their education value is almost incalculable.

The department has already published a list of magazine articles on the national parks and reservations, and hopes to compile a list of books and articles in books. In the handbook on each park will probably be reprinted the list of books and magazine articles on that park. These lists will be compiled at the department, as it is impossible to do this work in the field.

The last phase of publicity work that I care to discuss is the pictorial side. The department has made arrangements for assembling a collection of pictures of the scenes in the parks for exhibition in public libraries next winter. This exhibit is being assembled through the cooperation of the various railroads that are tributary to the parks. The cordial help being extended by the railroads will result in a collection of great interest and value.

The department hopes to obtain some lantern slides showing scenes in the parks, but the details of this matter have not been worked out.

The department desires to acquire as many views as possible of scenes in the parks. These pictures should be on hand so that they will be available for publicity work as well as for reference and for use before the committees of Congress.

As new opportunities for publicity are presented the department will endeavor to take advantage of them. The field I have outlined is extensive enough for the small force that is available in the Washington office. The success of the plans formulated depends on the enthusiastic cooperation of the superintendents of all the parks, and I have not the slightest doubt but that this cooperation will be forthcoming.

The SECRETARY. I can only add this to what Mr. Schmeckebier has said; that is, that his suggestions are intended for practical application. We expect to keep a check on the steps taken by the officers in charge of the parks to comply with these suggestions, and we will have something to say about the men who carry out the suggestions, and perhaps something to say about those who do not. This is intended as an invitation, not a warning or a threat.

We will now have remarks on the general question of park administration before taking up some of the more detailed matter, and would be glad to hear from Mr. R. B. Marshall, Chief Geographer of the Geological Survey, on the subject.

PARK ADMINISTRATION, BY R. B. MARSHALL, Chief Geographer, United States Geological Survey

It is an honor and a real pleasure to be present at this, the first conference of the acting superintendents of the national parks. Much good must come from such a gathering of men, all of whom are doing everything in their power for the good of their parks. I can not help but feel that Secretary Fisher's idea in calling you together is the best step toward getting first-hand information regarding each of the national parks, as well as being a definite move toward the betterment of our national playgrounds.

It was my pleasure recently to listen to Mr. Fisher in Denver, and the plain, personal way in which he talked to his audience leads me to believe that from you he wants to hear every phase of your work discussed, and that any suggestions you may have to offer may be freely given without a thought of fear or favor. We of the Geological Survey have found, even in the few months that Mr. Fisher has been our secretary, that he is always willing to listen, that he weighs facts, and when he has given his approval it means get at it at once; and I am sure his first and ever-prevailing thought is that of the people, and in this conference the administration of the national parks for the people, the whole people, is what should be the guiding principle.

I shall speak very frankly to you, giving my point of view as I see it, and I ask you to accept my brief notes in the spirit in which they are given. If I say anything regarding your park in the way of criticism please do not think that I wish in any way to reflect upon you or your administration. I believe each of you are honestly doing all you can under present conditions. It is these same conditions that I will talk about.

It has been my good fortune during some 20 years in the Geological Survey to have topographically surveyed three and visited seven of the principal national parks, and my point of view has always been, is the public, the great mass of the people, getting the greatest benefit from the parks, and, if not, how can conditions be improved to make the parks more attractive so that more people will go to them and will stay in them longer than they now do? A natural park, preserved in all its beauty and at the same time made accessible to the public for all time, is as grand a heritage as it is possible to leave to future generations, and too much thought and care can not be given to its development and preservation, at the same time providing for its fullest use by the people of to-day. In 1910 in the 11 principal parks there were only about 200,000 visitors, less than one-fourth of 1 per cent of our 90,000,000 people. There should have been 1,000,000. The question is, what can be done to increase the number of visitors over that of 1910? Naturally, we must turn to the administration of the parks for an answer. What is it?

Let us take the Yosemite, for instance. First of all, Congress has given practically no money for the development of the park. Therefore there could be adopted no comprehensive plan of development, no definite policy could be inaugurated by the department. The result is that this wonderful park, the finest in the world, is practically in no better condition to-day than it was in 1890 when established. Many of the roads and trails are in worse condition—the same old dust is there, where there is more water than could possibly he used in sprinkling. Only one miserable hotel now, where in 1890 there were two, one of which, the Stoneman House, destroyed by fire years ago, was fairly good. The underbrush over all the park, and especially in the valley, has increased to such an extent that if a fire should once get a good headway we would lose one of the principal attractions of the park, its magnificent forest. The present shack of a hotel was only a makeshift when first built. The location is the worst imaginable. Even the Indians did not chose this site for their tepees. There are no walks or driveways over which one may travel without getting smothered in dust. There are no attactions save an unkept nature's wonderland. There are any number of people who would travel miles for the pleasure of golf, tennis, open-air concerts, skating, skeeing, sleighing, and similar attractions in the wonderful Yosemite. Such civilized attractions would add much to the physical pleasure to thousands of the people of California alone, to say nothing of the people from other States, or even the world. I believe the Secretary would be tempted to forget the affairs of state and make at least one trip a year to the Yosemite for a chance to put a ball over the bunker, El Capitan, with a Mono Indian for a caddy.

But it will take money to improve our national playgrounds and I, for one, am firmly of the opinion that the grown-up children of the nation would be willing to pay for the improvements. If they are once aroused to a full appreciation of the needs of the parks, by a well-planned national park organization, Congress will be forced to respond and authorize a few millions to be spent where the people will get the direct benefit, and, mark me, there will not be one word of criticism of Congress for any money that it allows to be spent in improvements in our national parks.

Therefore, I say, Mr. Chairman, the first step to take is to put the parks on a permanent civil service basis, with a general superintendent of national parks at the head and superintendents and assistants in each park. Have them formulate plans for your approval and start a campaign of publicity to let our people know that they possess such wonderful unimproved property. Let us have a national park magazine, for free distribution, filled with photographs and live human-interest stories. I am confident that such men as John Muir, John Burrows, Olmstead, Burnham, Chase, White, and many other of our out-door writers, would gladly contribute, making an official magazine that would do more good

than can be estimated, in arousing the people, who want to help but don't know how to go about it.

You may say that I am a national park enthusiast. I am, but who could have lived in nature's wonderlands for 20 years and be otherwise? I know you who have lived in the national parks must feel the same sense of affection as I for nature's handiwork, and you must spread the enthusiasm. Make it more contagious. Play the game for all it is worth, until the people will come in such numbers and will have such a personal interest in the parks that there will be no need for the soldier or the ranger, or the sign "keep off the boulder."

But I am drifting, losing the trail, getting too deep in the gardens, nature's paradise.

To come back out of the woods to administration.

I fully agree with the statement in the annual report of the Secretary of the Interior for 1910, that some effort should be made to turn the tide of tourist travel from the mountains of Europe, where millions of dollars are spent annually that should be spent in our own national parks. Our parks are as beautiful in every respect as any to be found in the older countries. Their accommodations for visitors, however, are perhaps the least attractive and at the same time the most expensive to be found anywhere. It can not be expected that the tourist will go to the parks in our own country when the cost of such trips is more than that of a European trip. The railway companies should and must cooperate by reducing their transportation charges. They should give to the tourists from any point a round-trip rate equal to the present rate for the single trip. The resulting increase in travel in the long run will yield greater profit than is now derived from the small number of tourists at existing rates. The same general view should be taken by the local transportation companies, and by the hotels and camps, in the treatment of tourists after they reach the park. The present policy is to tax them all they will stand. This attitude prohibits those who most need the benefits of the parks from visiting them. Therefore the transportation companies—unintentionally perhaps—discourage rather than encourage the fullest use of the parks for the purposes for which they are created. Unless the present attitude is materially changed it is a question whether it is worth while to spend so much time and money in park improvement for the very few who can now afford the trip, especially as those few do not need the outing as much as those who are denied this great benefit solely because of the rates charged by the transportation companies. In reality, these companies are having improved at Government expense localities from which they, more than anyone else, derive profit.

We have 13 national parks, containing more than 4,000,000 acres. We should have 50, but even the 13 deserve administration by a separate bureau. The direction of the work involved will surely require a man of large experience, and he should receive liberal compensation for his services.

There should be created a bureau of national parks, with a director in charge. He should be an engineer who has had experience in the mountains and the woods, who knows the country. He should be a man who has had actual and not merely theoretical experience with conditions in the national parks. His office in Washington need not be large; in fact, it should be a field-service bureau. There should be for each park or group of parks a civilian superintendent, who should be an engineer, or at least have a general knowledge of engineering, and rangers or guards for patrol duty, all of whom, including the director, should be appointed under civil service. These appointments should be entirely divorced from politics, and the positions should be held for indefinite periods. In that way only can first-class results be accomplished, for the officers and men should be thoroughly familiar with all conditions in the parks and such familiarity can only be acquired by years of experience and observation.

But there is a long step between the recommendation that a bureau of national parks be established and the actual creation of such a bureau by Congress, but in the meantime the above plan of administration should be put into effect so far as it can within the law, and thus start the organization, so as to provide for the public convenience in every possible way until Congress shall create the Bureau of National Parks.

And I suggest that any bill providing for the creation of a bureau of national parks shall carry all appropriations in lump sums, which shall include all salaries to be paid in connection with the administration of the parks. In grading the salaries of professional and other skilled employees under the Government cognizance should be taken so far as practicable of the value of similar services in private work. Almost without exception the salaries paid by the Government for such services are much lower than those paid in private work, many specialists receiving only one-half or one-third of the compensation they would receive outside of the Government service.

Being a topographic engineer, I am fully convinced that a topograhic map is absolutely necessary in planning any engineering development. Without it millions must be spent in preliminary work in connection with development interprises, whereas, with a topographic base map in hand, costing about $20 a square mile, or 3 cents an acre, the engineer may sit in his office and plan practically all his work without going to the field, thereby dispensing with the costly preliminary surveys. Therefore, when I began the topographic survey of the Yosemite National Park in 1893 I was impressed with the importance of having a first-class topographic map for administrative and development purposes to take the place of the crude maps accompanying the superintendent's annual report. I worked in every way I knew how to put my scheme into effect, both with the Geological Survey and the departmeat, but it took time and patience. They say all things come to him who waits—anyway, in 1909, 16 years later, with the assistance of Maj. H. C. Benson, at that time acting

superintendent of the Yosemite National Park, the department authorized the preparation by the Geological Survey of administrative topographic maps of the Yosemite, Sequoia, General Grant, and Platt National Parks; in 1910, of the Yellowstone, Glacier, and Crater Lake National Parks, and during the season of 1910–11 field surveys were begun of the Mesa Verde and Mount Rainier National Parks, which it is expected will be completed during the present field season. Therefore, by 1912 my dream of 1893 will have come true and there will be available first-class administrative topographic maps of nine of the largest national parks. I have here copies of six of these administrative maps for your inspection.

The Wind Cave and Hot Springs maps can be prepared whenever the department desires them from data already in the Geological Survey, leaving only Sullys Hill and Casa Grande ruin to be surveyed.

I hope these maps will prove to be worth to you for administrative purposes all that I have claimed for them. I would also like to have a folded edition in the hands of each tourist visiting the parks. Being now directly responsible for the accuracy and appearance of the topographic maps of the Geological Survey, I shall welcome any criticism from any and all of you, that the maps may be made of more service to the department and to you in your work, as well as to the public, which I hope will be constant users of them.

I believe that all work of improvement and construction in the national parks should be done directly by the Department of the Interior and that all funds created by Congress for that purpose should be placed directly under the control of the Secretary of the Interior, to be expended by him, the work not being delegated to the Chief of Engineers, as has been the practice in the past in the improvement of national parks. There should be no division of authority and responsibility in the improvement and administration of the parks, such as necessarily results when two coordinate branches of the Government have equal authority over two pieces of work which, although apparently independent of each other, are as a matter of fact parts of one project, between which no distinct line can be drawn.

The manner in which the work of improvement is carried out must, of necessity, depend largely on the appropriations made by Congress for that purpose and the revenue derived from concessions granted within the parks. Experience has shown that it is impracticable to limit to a specified sum the expenditure in any one area or on any particular piece of work. No single piece of work included as an item in general estimates for improvement of a national park could be completed within its estimated cost if done independently of other work. The preliminary expenditures for equipment, etc., would more than equal the estimated cost of the single piece of work. Only if Congress at the outset provides

a certain appropriation for an entire project, to be made available annually in lump sums, can the best results be attained. This is the plan under which in 1900 was adopted the project for the recently completed system of roads and trails in the Yellowstone National Park, and I wish to quote from the 1901 report of Capt. H. M. Chittenden (Brig. Gen., United States Army, retired), of the Corps of Engineers, who was in charge of that work for several years:

> The sum appropriated (act of Mar. 3, 1901) largely exceeded any former appropriation. It was made immediately available. It was in a lump sum, thus giving more latitude in using it where most needed. It designated what proportion should be applied to works of improvement and what to administration and protection. The advantage of these liberal provisions is already apparent in the season's operations. More work has been accomplished at this date (July 11) than is ordinarily by the 1st of September. *The appropriation will yield 20 per cent larger results, dollar for dollar,* than has been possible under any previous appropriation.[1]

Again, I quote from Capt. Chittenden's report for 1903:

> The money has been applied to the work most needed, and the quality of the work has depended upon the funds at the time available. The whole system is being progressively developed, and every new contribution made by Congress is applied where most needed, and all tends toward the final results.[2]

The protection of the enormous timber resources of the national parks from destruction by fire is one of the most important considerations in their administration and maintenance. As most of the parks are surrounded by or border on national forests, there should be the fullest cooperation in the administration of the two. Most of the acts creating the parks provide that the Secretary of the Interior "shall sell and permit the removal of such matured or dead or down timber as he may deem necessary or advisable for the protection or improvement of the park." Steps should be taken toward accomplishing this cleaning up at the earliest practicable date. All underbrush and rubbish should be properly burned off. It is recognized that the humus found on the ground in all forests is in reality the fertilizer which is necessary to the life of the trees, and that if this humus is entirely destroyed the trees will suffer; but the large amount usually found in uncared-for forests is wholly unnecessary and when it remains undisturbed the danger from fire is greatly increased. If this humus is burned off at the proper season—early spring or late fall—there will still remain sufficient for the nourishment of the trees.

A complete and adequate fire-protection service should be established in each of the parks. The numerous high peaks, by reason of their location in all parts of the parks, are admirably adapted to serve as fire-signal stations. The parks should be divided into fire districts radiating from the signal stations, and a network of firebreaks should be cut over the en-

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[1] Annual Report, Chief of Engineers, 1901, pt. 5, pp. 3785–3786.
[2] Annual Report, Chief of Engineers, 1903, pt. 4, p. 2461.

tire area, sufficiently close to control all possible fires. An adequate telephone system should be constructed, connecting the administrative headquarters with each of the fire-signal stations. A competent ranger or guard should be placed in charge of each station during the dry or fire season, and it should be his duty to keep constant watch for fires in the hills and valleys below his station. Immediately on discovering a fire in his district or the surrounding country he should notify administrative headquarters by telephone, and guards should then be dispatched at once to the danger point.

The points for fire-signal stations should be selected, made accessible, and the service inaugurated at the earliest practicable date. The station buildings themselves may be of very simple character, but should be substantial and permanent. Preferably they should be built of stone, with window on each side and circular tower on top for look-out in all directions. Each station should be equipped for living purposes, and be provided with a good observation instrument and maps, so that the observer can locate a fire and report at once to the superintendent.

My belief is that many thousand head of cattle could be pastured each season in the various national parks with no resulting damage. If given 5-year leases the cattlemen would be glad to pay a reasonable fee per head a month, which would create a large fund to be used in general improvement of the parks. The cattle would keep the trails open and eat the underbrush. The interest of the cattlemen in conserving the feed for their cattle would induce them to become an organized fire-fighting ally. In addition, such a policy would remove much of the present attitude of criticism against the Government for withdrawing these lands from use of any kind save as pleasure grounds.

A uniform system of providing hotel accommodations should be adopted for all of the national parks. At the present time such accommodations, as a general rule, are entirely inadequate. Concessions should be granted for a period of years sufficiently long to warrant and encourage the construction of first-class hotels. All plans for hotels should receive the approval of a board of architects, which should also approve the selection of sites, in order that the hotels may be properly located and so constructed as to meet prevailing climatic conditions as well as to be architecturally attractive and in harmony with the sorrounding country. Recently I heard that a concession was to be granted for a hotel in the Giant Forest, but the location proposed is the worst that could be selected. It is in the heavy timber, where no sun will reach it; it is damp and not surrounded by attractive scenery, whereas if a site were selected on the bluff, 3,000 feet above Kaweah River near Moro Rock, there would be constant sunshine, a wonderful stretch of magnificient scenery in plain view for 180°, with Sequoias all around. Such mistakes in the selection of sites would not be made if all plans were subject to approval by a board

of architects. All hotels and camps in one park should be either under one management or so controlled that the public will not be subjected to annoyances by runners or stage drivers, bewildering the tourist by urging him to go to this or that camp or hotel.

In calling attention to a few specific conditions, I have hoped to make them appear to you in their real light, as I see them—conditions which I believe would not have been allowed to exist for one minute if there had been some one person charged with the duty of looking out for all the parks. Therefore, I can not too strongly urge, Mr. Chairman, the establishment at once of an organization of some kind whose sole duty it shall be to administer the national parks.

The Sequoia National Park should be enlarged, as outlined in Senate bill No. 10895, introduced at the last session of Congress by Senator Flint, of California.

The boundary line, as shown on the map which I have here, and as defined by Senator Flint, is a natural one, and right here I want to urge in the strongest possible way that all park boundaries be made to conform to natural lines wherever practicable.

I believe that in the improvement of the Glacier National Park, which is in all of its virgin beauty and affords a splendid opportunity for the Government to carry out an ideal plan of improvement profiting by its abundant experience in the management of the other national parks, the cooperation of the Great Northern Railway should be encouraged to the greatest possible extent. Applying this more broadly, I believe that the fullest cooperation should be encouraged of any railroad reaching a national park. The development of the park will enhance the general attractiveness of the entire region and will give a distinct impetus to travel. Undoubtedly, therefore, the railroad company would be desirous of aiding in the work in every way possible, in order that it may satisfy the large tourist business that will surely come as soon as accommodations can be established. I believe that the Government, in order to confer upon its people full and early enjoyment of the privileges of the Glacier National Park may with propriety accept the assistance of the Great Northern Railway. It seems to me that this would be a good business principle for the department to establish in behalf of the people.

I want to say just a word about the Mesa Verde National Park, which I I visited during the past July. There is nothing in this park to make it of national importance save the cliff dwellings. There is no opportunity for camping; the scenery is common to many of the Western States and needs no protection. The inaccessibility of the park, the long distance, and the miserable railroad accommodations make it, I think, out of the question to make this park popular to any degree in comparison with the other parks. The road which is under construction, particularly along the north face of the cliff, although of scenic value, is in the worst place possible to main-

tain it. It will, I estimate, require $50,000 to put these few miles in good order, and because of the slide rock and other material through which it passes that $10,000 a year will be none too much to keep it in safe condition.

There is practically no water within the park, and until water can be found the department is taking a big chance of wasting public money in building roads and accommodations where they may not be used by the public on account of lack of water. The nearest water supply in any reasonable quantity is 40 miles distant and 3,000 feet below the top of the mesa.

The present boundary of this park must be changed on the north and east if the mesa ruin is to be entirely within the boundary, and on the south if that for which the park was created is to be protected—that is, the cliff dwellings. The present boundary does not include a single ruin. My recommendation would be to create a national monument of small acreage around the ruins—say each canyon containing the cliff houses, and have the area around all the canyons converted into a national forest.

The question of whether or not troops should be stationed in the parks and monuments is a mooted one. The present policy of stationing Federal troops in the parks for brief periods is shortsighted, and the system is entirely inadequate for proper protection. The tendency appears to have been to continue and even to extend this policy. It is questionable whether troops should be stationed in the parks at all; but if they are they should be detailed for guard duty only and for periods of at least five years, and then not all changed at the same time. It requires at least one year of experience for a man to become at all familiar with the conditions in any one of the national parks. In this connection I wish to quote from the annual report for 1904 of Capt. George F. Hamilton, United States Army, acting superintendent of the Sequoia and General Grant National Parks:

Administration and guarding of the parks.—I believe the present system of administration and guarding of the parks to be entirely wrong and quite unsatisfactory in its workings. The parks should be entirely under civil control, with a permanent superintendent and 6 to 10 rangers carefully selected, one being a head ranger. Soldiers should not be sent here. The system which I propose would give a more fixed policy of administration and would secure the continual presence of a superintendent. The parks would be much better and more efficiently patrolled and protected by this ranger force than by soldiers. During the short time that soldiers are on duty here the officers and men can not become familiar with the geography of the park and the location of trails. They are, under the present system, placed in detachments at important points about the park and patrol from these stations as far and as often as practicable, but can not patrol and investigate nearly so well and efficiently as rangers would. • It takes some time for soldiers to become familiar with their duties here. They can not be expected to take the interest in the park and in the enforcement of all the regulations which rangers would take. The soldiers sent here are not for the time being available for military duties; they have no drill; they are performing the duties of civil guards. The entire expense of maintaining two troops of cavalry here,

including the cost of supplying them, is properly chargeable to the guarding of the parks and is borne by the War Department, whereas it should be borne by the Department of the Interior.

* * * * * * *

Altogether the present system of guarding the park entails hard work upon officers and men, great expense to the Government, and is very unsatisfactory in its results.

The following statement is taken from the Chittenden report on the Yosemite National Park:[1]

Moreover, at present the authority of the military is intermittent. They arrive in the spring and leave in the fall, before the troops have learned their duties and become sufficiently familiar with the country to guard it effectually. The next spring new troops are sent, and these in turn are relieved before they can obtain a satisfactory knowledge of the country.

I also wish to quote from the report for 1907 of Gen. S. B. M. Young, United States Army, retired, superintendent of the Yellowstone National Park:

The enlisted men of the Army are not selected with special reference to the duties to be performed in police patrolling, guarding, and maintaining the natural curiosities and interesting "formations" from injury by the curious, the thoughtless, and the careless people who compose a large percentage of the annual visitors in the park, and in protecting against the killing or frightening of the game and against forest fires. It is quite obvious that any man assigned to duty in any capacity in the park should possess special qualifications for the proper discharge of that duty, and he should be by natural inclination interested in the park and its purposes. In addition, every man should be an experienced woodman, a speedy traveler on skees, an expert trailer, a good packer, who, with his horse and pack animal could carry supplies to subsist himself for a month alone in the mountains and forests, and besides he should be of a cool temperament, fearless, and independent character, and handy with his rifle and pistol to enable him to find and overcome the wily trapper and the ugly large-game head and teeth hunter. He should be well informed in the history of the park and thoroughly cognizant with all the curiosities and points of interest therein; he should also be qualified to pass a reasonable examination in zoology and ornithology. A visiting tourist should always be favored by an intelligent and courteous answer on any subject pertaining to the park from any guard interrogated. Inattention or discourtesy should subject the guard to proper discipline or dismissal from the park, when, in the judgment of the superintendent the discipline of the park service would thereby be promoted. Divided responsibility and accountability as to police control and management seldom produce the best results, and should no longer obtain in the Yellowstone Park. Under existing conditions the superintendent is answerable to the Secretary of the Interior, while at the same time the troops acting as park guard are held to accountability and discipline as is contemplated and provided for in the United States Army.

The pay of enlisted men in the Army is too meager to attract capable men who can fill these requirements, and the duties are too onerous for the remuneration. It requires a year for new troops arriving in the park to become familiar with the duties required of them, and during that year many of the enlistments expire and the vacancies are filled by raw recruits. At the expiration of three years, or at most four years, these troops are ordered elsewhere and new troops take their place. The proper and necessary military instruction and training can not be carried on, and thorough disci-

[1] Senate Document No. 34, Fifty-eighth Congress, third session, page 18.

pline can not be maintained. The troopers can not be examined and made subject to such tests of efficiency as good service in the park requires.

Civil guards, on the contrary, would be selected by examination with reference to their special fitness, their interest in the work, and their capacity to perform it; they would at the same time be subject to appropriate tests for efficient park service and subject to dismissal on failure to meet such tests. By continuous service efficient civil guards would soon become thoroughly familiar with the park, its topography, roads, byroads, pack trails, game trails, game habitats of winter and summer, and likewise with the haunts and methods of the poachers who are constantly seeking profit by invading the park to shoot game for heads and teeth and to trap for furs. The troops assigned from time to time for guard duty in the park can scarcely all become familiar with its topography and trails ere a just regard for the proper maintenance of organization and discipline and a fair division of duties, foreign and domestic, require their withdrawal. And so continuity of service can not be had from the Army except at intolerable expense to Army organization and discipline.

Men whose continued employment is guaranteed during good behavior and efficient work would render the task of developing as near as possible a perfect system of protection and control reasonably easy, and the service would be more efficient and very much less expensive to the Government.

The policy of harassing the persons who have private holdings within the national parks in taking their stock to and from their patented lands is shortsighted and unwise. Let us remember, gentlemen, that these claims were taken up before the parks were established, the range was open and had been for all time before, and practically every person who took up a claim felt assured from past experience that he would justly be entitled to a certain range. Otherwise, his 160-acre mountain meadow would be of no value at all, and now to fence it will cost more than the feed is worth. It does not make any difference if the land has changed hands—the general principle remains the same. As an example of the restrictions placed upon the owners of private lands within some of the parks, take the following extract from the written authority of one of the park superintendents to a landowner within the reservation to take his stock to his lands and graze it.

You are required before taking any stock to such lands to present for file in this office satisfactory evidence of title thereto and have the metes and bounds thereof plainly marked and lands fenced. When these conditions are fully complied with, you will be granted a permit to carry your stock onto the lands under military escort, which will meet you at the park boundary upon due notification to this office of the precise date and place. Similar notification must be made with request for permission to carry your stock out of the park. You will be held responsible that all your stock is kept within the bounds of the lands controlled by you, and you are hereby notified that all stock found outside the bounds will be driven out of the park and not be permitted to return.

Conditions of this character amount practically to a prohibition.[1]

All private holdings within the national parks should be eliminated by purchase as soon as possible, but in the meantime the private rights should be given every consideration within the requirements of the law.

[1] Chittenden Report on Yosemite, Senate Document 34, Fifty-eighth Congress, third session, page 6.

I believe the public is generally willing to obey the laws, but if the strictest interpretation of the law is always to be enforced, with no allowance for years of custom or no appreciation of any other than the administrative point of view, it will surely create enmity, and the people so affected and their friends will antagonize the administration to the point of constant irritation. I think there can be no better policy pursued than to reason with the settlers, be one of them, so to speak, let their friends be your friends, encourage them to appreciate the value of the parks and to be glad to have their homes near the boundary, as is always the case in cities, where homes are more valuable if abutting on a park. There has always been a noticeable effect in the betterment of conditions generally when a park superintendent has appreciated the public's point of view in contrast to one who has literally interpreted the law.

Personally, I would much prefer to allow a few cattle to stray into a park or to have a few trees cut inside the boundary line, rather than to have the settlers damning the administration and the parks because of these restrictions.

We all make mistakes, and we invariably think the other fellow's point of view is worse than ours. Let us be charitable and remember always that we are working for these same people, they are paying our expenses and it is the common people that need protection and assistance far more than the few with whom one seldom comes in contact. The rich can take care of themselves—the average man needs all the assistance we can give him. One can not rise to success or achieve greatness and hold it by tramping underfoot his fellow beings; but, by being generous, kind, considerate for the good of all, anyone, and especially the Government, may rule indefinitely, and this, from my point of view, should be the ruling thought in any policy inaugurated by the department.

The SECRETARY. It occurs to me that there may be some things in Mr. Marshall's paper on which divergence of view may exist, and we will be glad to have any discussion of it. I am sorry Mr. Marshall failed to get his expected "rise" out of Mr. McFarland because of his suggestions as to the utilization of the resources of the parks.

Mr. MCFARLAND. I see no objection to what Mr. Marshall has said as to using the mature timber and permitting grazing. They are matters of administration which can be worked out; the whole subject is being thrashed out here in the best possible manner. Any legitimate and proper usage of the advantages and resources of the parks and monuments is bound to be beneficial. All that is advanced by this conference is sure to be useful, whatever may be the means or under whatever department the work may be done, in making the parks serve in the best possible way the purposes for which they were created.

The SECRETARY. Mr. Sunderland, is it your idea that before any improvement work is done the scheme for the whole should be definitely laid out?

Mr. SUNDERLAND. There should be a definite scheme for the development of the entire park and it should be carried out as money becomes available.

The SECRETARY. Should not those receiving concessions be subject to that scheme?

Mr. SUNDERLAND. They necessarily would be.

Maj. FORSYTH. Mr. Secretary, there are two points in Mr. Marshall's paper on which I would like to say a few words. I thought at first I would wait until my paper was read, but perhaps it would be best to touch upon them now. The question of cattle in the parks is the most vexatious one with which we have to deal. The Chittenden report from which Mr. Marshall read is six years old. Mr. Marshall did not consider one point of view. It is that of the people who are going to clamor against cattle wandering over the best meadow lands in Yosemite. From three to six or eight hundred people camp in Yosemite Park, using their own transportation, pack and saddle animals and occasionally a wagon, and they depend entirely for forage of their stock on the little meadows that would be destroyed by grazing cattle in the park. He did not mention that point in connection with the grazing of cattle. Another thing which struck me was that he assumed that the park superintendent had authority to exercise his discretion about the cattle question. The superintendent must obey orders. The regulations prohibit cattle roaming in the parks and the superintendent keeps them out. That is all I wanted to say.

Mr. MARSHALL. I am very glad to have my good friend, Maj. Forsyth, call me to time. I did not mean that we should let the cattle go through the park and destroy the pasture, because I want to go through the park again myself. It would be a very easy matter to segregate certain areas and have the cattle kept in certain stations. When it comes to the superintendents carrying out the orders of the department, I venture the opinion that no one carries them out any better than does Maj. Forsyth.

The SECRETARY. Would you suggest that these areas be fenced?

Mr. MARSHALL. I think it would be a good policy to do so. I think it would be better to fence the meadows.

The SECRETARY. I have not been to Yosemite and can not express an opinion as to that park. Would you suggest that we permit pasturage of cattle here in Yellowstone?

Mr. MARSHALL. I do not think the cattle would hurt anything. There are a number of bears here though, and they might hurt the cattle.

The SECRETARY. The two would certainly conflict.

Mr. MARSHALL. The men who own the cattle would look out for that part of it.

The SECRETARY. I think it would be rather expensive and unprofitable to have to look after the cattle in that way. Do you think the rental which they could afford to pay would make it worth while to fence in certain portions here? Would not that interfere with the campers?

Mr. MARSHALL. The campers go to certain areas.

The SECRETARY. But many of the people who camp do not follow the ordinary paths.

Mr. MARSHALL. I think you will find that the area they cover distinct from the regular circuit is very small.

Mr. SUNDERLAND. I have been out in Oklahoma on a forest reservation where the cattle roam at large—at the Fort Sill Reservation. I have heard of one case where a calf was carried off. I have seen bear, but the animals which do damage to the small stock are the coyote and timber wolf. Fifty cents a head is paid for them. I was out one day and what worried me most was the masculine gender of cattle. I judged them to be masculine from their actions. There are thousands of cattle there.

The SECRETARY. We have one large reservation quite different from the others—Hot Springs of Arkansas. That reservation is more of a health resort. There has recently been constructed on that reservation some bath houses and the question of the administration of those bath houses has been taken up, especially from a sanitary point of view and we have asked Mr. W. G. Maurice, of Hot Springs, to present a paper on that.

Mr. WM. T. S. CURTIS. Mr. Maurice is not present and with your permission I will read his paper.

BATHHOUSES ON THE HOT SPRINGS, ARK., RESERVATION: THEIR PROBLEMS FROM THE STANDPOINT OF PRACTICAL ADMINISTRATION, BY W. G. MAURICE.

In order that you may fully understand the cause of many of the problems that confront us, I must ask you to go back with me to the early days when the Interior Department first assumed control of these great hot springs.

Since boyhood I have been directly connected with the bathhouse interests and have seen the bathhouse advance from the wooden shack, equipped with wooden tubs, to which the water was conducted in wooden troughs laid on top of the ground, to the palatial houses that are now in process of construction.

Charles E. Maurice, my father, was one of the original lessees at the time the commissioners made the Hot Springs Mountain a permanent reservation. For many years there was very little improvement or change in the bathhouses.

The first house of any consequence was built by Fordyce & Maurice and was christened "Maurice's Palace." It was situated on Central Avenue, opposite the present Bathhouse Row. This was a very primi-

tive affair, yet in those days was considered all that its name signified—a palace.

When the order was issued by the department that all bathhouses should be upon the permanent reservation, and that the waters should not be piped therefrom, this house was abandoned as a bathhouse, and the same firm built the present palace, which was at that time considered a very complete plant. Later, in 1879, the Ozark was built, and as the patronage to the resort increased other houses followed, but no attention was paid to sanitation and all hygienic appointments were unknown.

The department paid very little attention to the hot springs, and the superintendents of the reservation paid less up until within the last 10 years.

Drumming for doctors, bathhouses and hotels flourished unmolested by the department or the city of Hot Springs. This traffic in human ills was carried to such an extent that it kept many visitors from our resort. I have personally known many cases where drummers received $2 a head from the bathhouse and $1 from the negro attendant, for their "fruit," as they termed the visitors. This, in some cases, was 50 per cent of the money received by the bathhouses for the 21 baths.

Many houses were forced to do this in order to get any business at all. There were also many doctors who had to be taken care of financially by the bathhouses, and all hotel and boarding houses expected free baths for their familes and employees.

Spasmodic efforts were made to suppress this traffic by the different superintendents, but with no assistance from the city officials, nothing was accomplished. This condition was deplorable. A lessee with thousands of dollars invested in a bathhouse was dominated by a drummer who did not even pay a poll tax. It was almost an impossibility to build up a legitimate business, and many lessees were forced to pay the drummer in order to make a living.

To these conditions was due, to a great extent, the poor equipment and services furnished by the bathhouses. There was no competition upon legitimate lines and no incentive to give proper care or attention to the invalid; the payment to the drummer was deemed sufficient.

The department was not entirely blameless for such deplorable conditions, because the leases were not just or equitable, inasmuch as they contained the "One year cancellation clause," which placed the lessee in the position of a tenant at the will and mercy of the department. On this account the lessees would only expend what was absolutely necessary to keep their houses together.

The department later issued leases to hotels off the reservation. In consequence all hotels of the first class, and many of the second class enjoy this great privilege of using the hot waters. This placed the reservation bathhouses in a position where they can only expect the patron-

age of the cheaper hotels, rooming and boarding houses. This class naturally seek the cheaper houses on the reservation. Instead of this condition, the reservation should be the main attraction for all visitors to Hot Springs, and should rival the beauties of the great European "spas."

Nature has been very lavish in her gifts to Hot Springs. The greatest and most wonderful healing waters in the world are there, combined with beautiful scenery and a delightful climate, yet the reservation, the show place of the world, which should be the mecca for the elite, is patronized only by the cheaper element of our visitors.

So you see the department as well as the lessee is to blame for the condition that existed until recently.

To offset the very great advantage enjoyed by the hotel bathhouses, we must offer to the visitor bathhouse accommodations superior to the hotels with comforts and conveniences. We must give that which will appeal to the better class, with a view of putting our beautiful reservation upon a higher and better plane; with a view of making it what it should be—the most beautiful in the world.

Upon the appointment of Mr. Harry Myers as superintendent of the Hot Springs Reservation a change for the better was soon noticed. He at once commenced a systematic fight against the drumming evil and waged a relentless war upon the drummers, with the result that at the present time there is little, if any, bathhouse drumming being done.

Following close upon the appointment of Mr. Myers came that of Maj. Harry M. Hallock as medical director. I am sure that his heart grew faint when he made his first inspection and realized all too well the material he had to work with.

Gentlemen, there was not a bathhouse in the city that made any pretensions to sanitation or ventilation.

The equipment in many of them was old and out of date . The attendants for the most part were ignorant, uneducated and, naturally, unclean. He has since his appointment accomplished a great deal of good in bringing order out of chaos and realizing an almost perfect state of affairs.

Many new rules have been issued for the betterment of the service and the improvement of the sanitary conditions of the houses.

A little over a year ago we were visited by Mr. Clement S. Ucker, chief clerk of the Interior Department. I believe he saw at once the great possibilities of this resort. During my conversation with him he delighted and encouraged me when he spoke of "A Greater Hot Springs," and of his ideas of greatly improving conditions at the Springs, and urged the earnest cooperation of all the lessees in the policy of the department. He predicted that we would have bathhouses that would rival those of the Old World. I told him then, as I have just told you, the obstacles in our way. Those obstacles were removed, and to-day one can see the result of his visit.

Two palatial bathhouses, at a cost of over $200,000, are now under construction. In beauty and equipment they will surpass those of Europe. Another house is being rebuilt and remodeled at a cost of over $40,000, and next season the department will be able to point with pride to, and be justly proud of, its bathhouses. Next year, too, will see others just as magnificent erected. With the new and beautiful fountains and spring pavilions on the reservation, the department can point with pride to its own resort.

I feel that we have just started on the upgrade. Since the department has realized that the United States Government, of which it is such an important factor, has the most wonderful health resort in the world, and with broad-minded and progressive men in the department to help us develop it, the officials may expect in the future the most hearty cooperation from all the bathhouse lessees, as well as the strict observance of all rules for the betterment of the service and improved condition of our houses.

When I allow myself to ponder over what Hot Springs should be, my enthusiasm, ambition, and love for the resort starts me "day dreaming," and in fancy I picture a beautiful city under Federal control. This city of my dreams has everywhere that vital requisite—clean streets. It is a sanitary resort in every sense of the word. Its parks are part of the natural beauty of the city itself and a delight to both residents and visitors. I see Hot Springs, Ark., so improved that its citizens can, to the thousands who go to Europe each year, shout from the house tops: "See America first. Come to us. Visit Hot Springs. We have the best."

And, gentlemen, we can say this now in reference to our bathhouses, but are still lacking in civic improvement, and, much as I regret to admit it, I am afraid that it will be ever thus under our present system of city government.

Like so many cities of its kind, Hot Springs has been torn asunder, patched up and rent and "doctored" again by the prolonged war of disgruntled and dissatisfied factions in the past. Though it may not be necessary to open for your inspection the leaves of its history of years gone by, in order that you may fully understand some of the obstacles that have prevented the city's advancement, a reference to that contention is not foreign to my subject. Individuals seemed to strive for their own aggrandizement, regardless of their actions where the city proper was concerned. God gave to its people wonderful opportunities and set the seal of the Infinite on our picturesque resort that nestles so snugly in the very lap of the historic Ozarks when He caused to burst forth from the dark and unexplored caverns of the earth those hot and healing waters, the fame of which is known wherever the germ of disease is found. Commercialism, however, in the past o'ershadowed a proper appreciation of that gift, until its citizenship realized that it must first cleanse itself before it could hope to give confidence to the world that treatment in Hot Springs was all that God intended it should be.

I believe that an entirely new system of bathing should be introduced, following as closely as possible the system in vogue in Carlsbad, Germany.

This new system will do away entirely with the objectionable helper and the constant "tipping" of two or three persons in order to get the needed service. It gives to each attendant a stated task. To each and every bather is given a specified hour for his or her bath. I will introduce this new system, and if it is successful—and I see no reason why it should not be so in Hot Springs as well as in other resorts—I hope to see it adopted by the department.

And now, gentlemen, in closing I will also suggest the following:

(1) A more simple system of reports to the superintendent, if possible, as at present it necessitates an extra clerk to keep them.

(2) A rule requiring the manager or bath superintendent to have regular inspection of the bathhouse and help at stated hours twice each day. (The medical director could inspect each house at inspection hours, which would assist him very materially.)

(3) A rule discontinuing the use of germ-bearing rugs, carpets, curtains, etc., and to discontinue the use of all wooden furniture in bath departments, substituting for all such enameled steel.

(4) A rule that all towels, robes, sheets, etc., furnished by the bather must be of a white material.

(5) That rule No. 6 be changed to read that all persons be required to have an attendant, instead of reading "It shall be optional with the bather whether he employs an attendant or not." The rule in its present condition works a great hardship upon the bathhouses. The attendants are not paid by the houses, but by the visitors, and they are expected to fix the bath, clean the tub and room after the bather is finished, and the regular patrons are discommoded. The rates are graded so that a person can get a bath as cheap as 35 cents, including attendant, towels, etc.

I would be lacking in appreciation if I permitted these remarks to be concluded without some statement from me as to the honor and pleasure I feel in being requested to speak on this subject, and I rely upon you as coworkers, and your generosity, to give me credit for being both proud and delighted to be here. I can not but express my enthusiasm over this meeting, and feel that the department has inaugurated a policy in bringing together for consultation the men to whom its treasures in wonderlands have been intrusted, something that will redound to its great good in the future; something that will make its citizens in every State, when the "wanderlust" possesses them, realize that the Old World has no treasures more priceless than those over which floats the "Stars and Stripes;" that there are no wonders across the seas but what can be duplicated and excelled in many places right here within the broad domains of their own great and glorious country.

REMARKS BY MR. WILLIAM T. S. CURTIS.

Mr. Secretary and gentlemen of the conference: Representing, as I do as counsel, the various bathhouse lessees upon the permanent reservation at Hot Springs, Ark., and the Arlington Hotel, which is also situated upon said reservation, I desire to add a few suggestions to the clear and able presentation of the various features and conditions of Hot Springs submitted by the superintendent, Mr. Myers, and the medical director, Maj. Hallock, and that submitted by Mr. William G. Maurice, of the Maurice Bath Co., in his paper, which, at his request, I have just had the pleasure of reading.

One feature of the discussion upon which I desire to lay particular stress is that relating to the proposed establishment in your department of a bureau of parks and reservations, to be under the immediate charge at Washington of a bureau chief familiar with these reservation interests, who would be able, by his undivided consideration, to give proper and personal attention to the multitude of questions which daily arise, and which will yearly increase, especially when the features of our wonderful resources and the beauties of our parks and reservations and the healing efficacy of the waters of Hot Springs are brought more prominently to the public attention, which they undoubtedly will be as the outcome of this conference which we are now holding.

Such a bureau if created would have under its control the many details of administration, subject, of course, to the supervision of the Secretary of the Interior, and would relieve to a large extent your already overburdened immediate office.

Listening as I have to the proceedings of this conference and to the remarks and suggestions that have been made by the representatives of the great transportation companies and by those connected with and so well informed as to the conditions in our parks and reservations, I am impressed with the idea that the business attending all of these many public interests is fully entitled to the dignity of recognition by the creation of a separate bureau in your department on the same lines as that which has been given to the subjects of mining, education, public lands, and other kindred subjects, each of which, as we know, has a bureau of its own.

Now, speaking of Hot Springs, Ark., you have heard what has been said and recommended by the other gentlemen who have preceded me on this interesting subject, and it is exceedingly difficult for me to add anything of interest thereto, but I do venture to hope that as the outcome of this conference and the publication of the proceedings and the publicity which will be given to it by your department and the press the general public will be better advised as to the wonders of our land, the marvelous scenic beauties such as are shown in this beautiful park, with its unsurpassed falls, canyon, and geysers, and in the Glacier Park, Mont., whose moun-

tain lakes, forests, glaciers, and crags are unsurpassed, the Yosemite, Mount Rainier, and others, and with the further fact that at Hot Springs, Ark., within easy access to all parts of our land, are springs and waters unsurpassed by those in this or any other land, and that it is useless and absolutely unnecessary to cross the sea in order to seek restoration to health.

Twenty years ago the conditions at Hot Springs in the matter of transportation were somewhat inferior and difficult, and the bathhouse and hotel accommodations in many cases not of the best; and all these facts, taken in connection with the old system of drumming, which has now, I am glad to say, been abolished, had the effect of diverting many of those seeking health to foreign resorts, such as Carlsbad, Weisbaden, etc., but now these conditions have entirely changed, and, Mr. Secretary, if you would only go to Hot Springs, which I hope you will do at a very early date, in order that you may see for yourself and be cognizant with conditions, I am sure you will find that the springs rival, if not excel, those of any health resort abroad.

The Arlington Hotel, which I have the honor to represent as counsel, is prominently located upon the permanent reservation front, bearing the same relation to Hot Springs as this magnificent house, the Cañon, does to the Yellowstone, and can well be spoken of as one of the wonders to be seen, and it is an inducement to those visiting the Springs to linger for a prolonged stay. No finer house than the Arlington can be found in any section of the country. It was erected at a cost, including appointments, in the neighborhood of $800,000, and the accommodations to be found there are all that the most exacting patrons can demand. It was constructed and built on its present extensive scale, at the request and under the direction of the Secretary of the Interior, the idea being to give to the visiting public at Hot Springs a hotel as fine as could be found in the land.

Now as to the bathhouses, the same remarks can apply, and after the present houses, which are now under construction, are finished, together with the others that are upon this reservation, and which are run so well by the lessees in accordance with governmental regulations, and under the direct supervision of the superintendent and medical director, Hot Springs can well be the Mecca for the multitude of our public who are afflicted, and who require treatment such as is obtained at these springs.

I am pleased, Mr. Secretary, to say that the progressive and public-spirited policy of your department, such as has been applied to Hot Springs, and which has been so marked within recent years—yes, I might say within the last couple of years—has met with the hearty approval of those whom I represent. They have been, and are now only too anxious to uphold your hands in any movement that will better serve the public. They have willingly expended their money and energies in adding beauty

to the springs, and placing thereon buildings and improvements that will be a monument to their good faith, knowing and believing that your department will, by a continuation of a broad and conservative policy, recognize and encourage their efforts in that direction, and in doing so, you will thus better serve the public, and such encouragement from your department will be an incentive to the lessees for expending their money in better improvements, and in better service. If your department did not, by such a broad and liberal policy, encourage these lessees holding concessions upon the national parks and reservations, how could it, from a business standpoint, be expected that such improvements as these which we see here in this Cañon Hotel, or those at the Arlington and in the bathhouses at Hot Springs, would have been made? These lessees who, with so much public spirit, have expended their money in making such extensive improvements, had confidence in the good faith of the Government, knowing that whoever should occupy the position of Secretary, would be broad and liberal, and appreciative of their efforts, and would do nothing whatever that would tend to jeopardize their interests or lessen their assurances of the hearty cooperation and support of the Federal Government.

I do hope, Mr. Secretary, that in your next annual report to Congress and in your official conferences with Senators and Members, in relation to future appropriations, you will bring prominently to their attention these questions to which I have referred, and that, as far as appropriations are and may be available, you will use the same toward exploiting and bringing to the attention of the public these great national resources, the hot springs and parks, thus giving to the efforts in that direction of those interested, the moral and active support of the National Government. Such a seal of approval, I am sure, will go far toward diverting from abroad the streams of travel to our own land, and to such health resorts as Hot Springs.

Mr. Secretary, if I may be permitted while I am on my feet, I would like to make a few remarks also about the latest acquisition by the Government, namely, the wonderful and unexcelled Glacier Park in Montana, which has been spoken of to-day during the discussion of park matters. It was my good fortune a week or so ago to take a trip through this park with a party in which were the Assistant Secretary, Mr. Thompson, and Maj. William R. Logan, the superintendent. The memories of that trip will never be forgotten by me. Long will I remember the impressions I received in viewing its mighty crags and peaks, capped with eternal snow, the unbroken and virgin forests reflected in lakes nestling below like ermeralds, and above all the mighty glaciers lending added beauty to the scene.

The wisdom of Congress in setting aside this storehouse of grandeur for the public, will be more and more appreciated, I am sure, as the years roll by, and taken in connection with the Yellowstone, the Yosemite, the

Grand Canyon of the Colorado, and the other parks, form a series of attractions that should induce our citizens to see America first rather than continue their annual pilgrimages abroad.

I would feel remiss should I not refer to the impression made upon my mind when I saw the wonderful progress made by the department and of the work performed by Maj. Logan, the superintendent, who, within only a few months, through the aid of his earnest rangers and men, has constructed with a mere pittance of an appropriation several miles of magnificent macadamized road, leading from Belton, on the Great Northern Railway, to the foot of Lake McDonald, which is the natural western gateway of the park, and also over the wildness of the mountains and the Continental Divide, has built scores of miles of horse trails and paths, making it possible to reach many of the most interesting sections, and if Congress will but give additional appropriations, I am sure that in another year, under his guidance, every portion of the park will be accessible either to the foot tourist or on horseback.

I may be considered an enthusiast. I admit the fact, and, like Mr. Marshall of the Geological Survey, believe that I have a malignant type of enthusiasm, but what I saw in the Glacier Park was enough to make any man as enthusiastic as myself.

I have seen much of this world, but to my mind Glacier Park is the central jewel, and I hope that the American public, as the result of this conference, will be better, properly, and fully advised of what nature has stored up for them in this direction.

To be fully appreciated, these wonders must be seen and visited.

The SECRETARY. Gentlemen, before calling upon the park superintendents, I think it would be well to discuss the last remaining general topic that we have. As most of you know, we maintain a force of special inspectors in the Department of the Interior, whose duties are to go about as directed to supervise and to investigate these parks and other branches of the service, so that they may report on special matters sent them for investigation as well as on general conditions. Their work is most important. It is important that they should understand the work from their point of view as inspectors and also from the point of view of the people they are investigating. I will ask one of the older, if not the oldest, inspectors in the service, Mr. E. B. Linnen, to present his views on this very important subject.

GENERAL INSPECTION WORK RELATING TO NATIONAL PARKS, BY E. B. LINNEN, Inspector, Department of the Interior.

It has been my pleasure in the performance of my official duty to inspect, on several occasions, a number of our national parks, and while the duties of the Secretary's inspectors have been confined more largely

in other channels, such as the inspection of Indian reservations, Indian schools, United States land offices, offices of United States surveyors general, and matters pertaining to the public lands, still I deem it a matter of much importance that at least annual inspections should be made of our various national parks. These inspections should be general and so complete and thorough in their character as will acquaint the Secretary fully with the conditions as they exist in each of our national parks.

We have 13 national parks and 28 reservations for the preservation of antiquities and national monuments, containing over 5,000,000 acres, situated in 15 differant States and Territories. These national parks have been set aside by the Government for the whole people, because of the great natural beauty, scenic grandeur, and special features created by nature which make them worthy of preservation, governmental supervision, and such improvements, protection, and general management as will make them specially inviting to our sight-seers who delight in the beauties of nature.

These national parks contain wonderful and picturesque scenery, hot springs, geysers, lakes, streams, gigantic redwoods, mammoth trees in vast forests, cliff dwellers' ruins, beautiful driveways, grand mountain scenery, and other special features of interest, all of which have been created by nature, and which have been set apart by our Government because of their splendid natural beauty.

This inspection should embrace the books, accounts, and finances of the superintendent. It should be shown that the Government funds are being properly handled and accounted for; that each appropriation is being used for the specific purpose for which it was made, and the inspection in this regard should be so complete and thorough as to develop any irregular use or waste of Government funds. There should be a uniform system of keeping the books and records, time books, property accounts, etc., to show each fund, cash balance, balance of each appropriation, etc.

In the course of a recent inspection of one of our national parks it developed that Government funds were being wrongly used, and covered by vouchers made in the names of certain parties who performed no services as laborers, park rangers, or in any other capacity. Large sums were spent in the purchase of property without calling for competitive bids, even though active local competition in these articles existed. Payrolls were padded and falsified and other irregularities developed, which clearly demonstrate the necessity for at least annual inspections of national parks.

In the preservation of these national parks, and in order that they may be accessible to the sightseer and lover of nature, it is necessary that certain improvements be made by the hand of man. Thus one of the most important features is the question of good roads.

These roads should be laid out by competent engineers with a view to making it possible to get to the various points of interest to be visited, and to showing the scenic beauties in each park to the greatest advantage. Such roads should be laid out and constructed with regard to their permanency and the protection and safety of the traveling public.

Generally, I believe that roads, bridges, and other improvements as may be found necessary to be constructed within our national parks should and can be constructed more economically under the contract system than by laborers employed under the jurisdiction of the superintendent.

It is especially desirable that suitable accommodations be provided in the parks for the many visitors where they may be lodged and fed. Good hotels or other suitable accommodations should be maintained by or under the jurisdiction or proper supervision of the Government, and conducted in a manner suitable and satisfactory to the Government. It should be possible for the traveler who visits our national parks to have equally as good accommodations as can be found in our cities, and to be served at prices not greatly in excess of those which obtain in the cities. The traveler and sightseer who has the time and means sufficient to visit our parks delights in good accommodations, and hostelries conducted in our various parks should be not only a credit to the management but to the General Government, the duty of whose officers it is to see to it that such accommodations, reasonable prices, and satisfaction is meted out to the traveling public.

There should be a uniform policy adopted for the supervision, maintenance, and improvements in our national parks. The inspector should carefully inquire into all concessions, and all persons to whom special concessions have been granted should be checked up, and it should be shown that they are paying therefor an amount commensurate with the value of their privileges; that they are not abusing same, and that they are conforming to the rates, rules, and regulations. The construction of public works of whatever character should be carefully looked into and checked up by the inspector. Suitable office quarters for administrative purposes should be provided, telephones and telegraph lines should be constructed, good pure water should be supplied, sanitation and sanitary conditions should be looked into and insisted upon, the patrol by a guard to prevent forest fires, trespass of stock, killing of game, etc., should be carefully looked into.

The means of transportation in our national parks should be given consideration and attention; accommodations for traveling in our parks should be by means of comfortable conveyances, vehicle, automobile, or otherwise, as appears best in each individual park, which should supply ample room for the traveler and his baggage. These conveyances should be covered as a protection to the traveler against heat and storms. The prices should be reasonable and regulated by the Government, as should

also be the prices in the various hotels and lodging houses in our parks. The natural beauties and works of nature in whichever manner they may obtain should be carefully preserved and guarded by the Government officers whose duty it is to look after each national park, and the inspector should see to it that the superintendent, park rangers, and other employees are performing their various duties in a competent, faithful, and painstaking manner, that they are obliging and courteous to the general public, and that each employee is performing his specific duty in a proper manner. The protection of the game in our national parks is well worthy of attention, and great care must be given to this particular feature if the game is to be preserved. It has occurred to me that it might be wise for the Government to fence, with high strong wire fences, certain of its national parks which contain large quantities of game, for their preservation. This particular feature has been strongly brought to my attention by reason of the fact that in this Yellowstone National Park large numbers of elk, which make it their natural feeding ground during the summer months, go south during the fall and winter months to the Jackson Hole country, where some are slaughtered and many hundreds die from hunger each winter.

Wolves, mountain lions, and coyotes should be killed to safeguard the young antelope and fawns and prevent their extermination.

Some of the many beauties which nature has provided in a majority of our national parks are their splendid forests and timber, containing, as some of them do, gigantic redwoods, pines, and some of the finest forests in the world. Ample and adequate protection should be made to prevent the destruction of these magnificent forests by forest fires and the timber beetle. A wide fire guard should be constructed at the outer edge of these parks to prevent forest fires; likewise it should be the duty of the park rangers to see to it that campers within our national parks observe strictly the regulations to prevent forest fires occurring. The ground should be cleared of rubbish and worthless undergrowth where possible, to prevent fires and improve its appearance. Too much attention can not be paid to this feature of fire protection.

At least two of our parks contain the prehistoric ruins of the ancient cliff dwellers. Several cities or villages of these old cliff dwellers' ruins are still in a very fair state of preservation. These ancient ruins are particularly interesting to the archæologist and student of nature, and they should be protected and preserved in the best possible manner.

Each of our national park superintendents who will take a special interest in his work can always find plenty to do in the matter of laying out and accomplishing further necessary improvement, whether they be additional roads and bridges, additional hostelries, or additional fire protection, beautifying the grounds or something that will attract the visitor and preserve the natural beauties within the park. The inspector should

make such a general inspection of all the matters herein enumerated as will qualify him to report with certainty to the honorable Secretary and acquaint him with conditions as they really exist, and also make such suggestions for the improvement and betterment of conditions as he believes necessary.

Each of our national parks possesses some special feature, differing from the others, and this is especially true of the Hot Springs Reservation at Hot Springs, Ark. This national park is one which is visited by many thousands of our people annually, who go there to receive the benefits from the curative properties contained in these famous health-giving waters. This, aside from the glorious climate and natural scenic beauties in said reservation. This national park contains the famous hot springs, which waters contain wonderful curative powers and from which the Government derives a revenue of $5 per month for each bathtub located in each bathhouse or hotel using the water. Likewise the Government derives a revenue of ground rental from several of the various hotels and bathhouses situated on the reservation, the moneys derived from these sources of revenue being employed for the maintenance of said national park and its management. One of the evils which had to be contended with at this point was the drumming system, which has heretofore obtained to an alarming extent and which has been the cause of much criticism on the part of the general public, and a matter which the Government was called upon to handle with much tact and firmness. Drumming was largely practiced on behalf of certain doctors, hotels, and rooming houses. They had their runners interviewing visitors and patients in the city of Hot Springs, also on the trains leading into Hot Springs, and they imposed upon and grafted the unsuspecting health seeker and traveler and gave Hot Springs a bad name by reason thereof. I am pleased to say that under the present management this drumming evil has been nearly stamped out, and while it still exists to a small extent our people can now visit Hot Springs with the assurance of courteous treatment and Government protection which formerly did not obtain.

Our national parks, rich in their natural beauty, should be a source of pride and delight to all our people. They have been set apart by our Government because of the wonderful works of nature and their scenic and awe-inspiring beauties. Some have until quite recently been in a measure neglected by our Government. The wonderful grandeur and beauties of nature are now being brought to the attention of our department, whose duty it is to preserve them, and steps are now being taken along the lines herein indicated with the object in view of the adoption of a uniform policy of administration; for the construction of good roads, comfortable hostelries, adequate means of transportation, protection against forest fires, preservation of the game, the preservation of primeval forests, prehistoric ruins, and antiquities. Our whole people are becom-

ing interested in our national parks. Many thousands visit them each year. The lavish manner in which nature has endowed our parks has made them second to none in the world, and it should not be necessary for our people to visit foreign countries in their search of nature's attractions, wonderful mountains, and places of natural beauty, for here, in these parks, nature has provided wonders which are the never-ending delight of the visitor. To the lover of nature there is poetry in every beautiful scene. I am of opinion that this department might well give a little more attention to the national parks and their improvement, and that it would be wise if a bureau of national parks were created for such purpose.

EVENING SESSION, SEPTEMBER 12.

The SECRETARY. We were on the question of park inspection, and perhaps any discussion of that had better be postponed until we hear from the next two inspectors, whom I will call on in a moment. You will recall that in Mr. Marshall's paper he referred to topographical maps of the park. If you are interested in that you will find them there on the table for your examination. We shall be glad to hear from Mr. Keys regarding road and trail construction.

ROAD AND TRAIL CONSTRUCTION IN THE NATIONAL PARKS, BY E. A. KEYS, Inspector, Department of the Interior.

It has been deemed unnecessary to enter into a general discussion of highway construction as generally applied to the State and county and the numerous problems that enter into the same, and indeed this would be impossible without the addition of complete specifications and detailed plans, but rather to confine the paper in a general way to the roads of the national parks without regard to the peculiar topographical and climatic conditions of any particular park.

ORGANIZATION.

In each of our national parks where the financial resources justify there should be an organization to handle the public work of the park, and where the revenues are insufficient to justify such an organization this class of work might be handled from the nearest park having such an organization; as, for example, if the financial resources of Crater Lake National Park did not justify such an organization the organization from Yosemite National Park, with its equipment, might be temporarily diverted to Crater Lake National Park to make surveys for this park. In no case should a piece of work of any magnitude be allowed to proceed unsuperintended by a man of technical knowledge. This, of course, should be under the direct supervision of the superintendent of the park.

The engineering organization in each park should have a man of general experience, who would be qualified not only to construct roads, but buildings, waterworks, sewer systems, power plants, etc. (such a man can be found among the younger engineers).

Where the problems along the above lines are complicated, such as an extensive sewer system, the superintendent of the park should be allowed the services of a consulting engineer to assist in determining the best possible general sewer design. The report of the superintendent regarding this branch of the service, including plans and specifications for the various classes of work, should be submitted through a central office to the Secretary of the Interior, and this office should be in charge of a man of technical knowledge of such matters.

SURVEYS.

Before any work of magnitude is undertaken in any of the national parks for a system of roads a carefully prepared general plan should be worked out, and each piece of construction should be some unit of this general plan, so that when it is finally completed every unit will go to make up a system of highways which will be a credit to the Government. If there is only $5,000 a year available in any particular year the small amount which this will construct should be some small unit of the general plan.

These carefully prepared surveys, with necessary profile and cross sections, would enable the engineers to submit through the superintendent of the park to the Secretary of the Interior a carefully prepared estimate of the cost of these roads, so that when the work should be undertaken at some future date the department would have at its command sufficient data to determine the probable cost of the undertaking in time to thoroughly discuss the matter and arrive at some definite conclusion before Congress is asked for an appropriation.

PLANS AND SPECIFICATIONS.

Before the work of actual construction is commenced proper plans and specifications should be prepared showing the cross section of the road, width, the amount of crown, depth of macadam, and all necessary data to proceed with the construction of the road. These plans and specifications should be standardized and approved by the Secretary of the Interior and available to send out to the superintendent upon request for the same, and the plans should not be departed from without express authority from the department, except in so far as is necessary to meet peculiar local conditions. Some of the first features which present themselves to the superintendent starting at the beginning of a highway are what shall be the maximum allowable grade, the width and depth of the macadam, what height of crown, what available rock is best suited for the purpose at

hand, what class of culverts shall be constructed—concrete, terra cotta, galvanized iron, masonry, or wood. With properly prepared plans and specifications these matters would be settled definitely for the superintendent, with the exception of applying the general plans and specifications to the peculiar local conditions to which each case must be adapted.

Departing from the title of this paper, but in connection with the above, I would say also that it would greatly facilitate matters for the superintendent if standard plans and specifications were prepared and adopted by the department for sewer construction—that is, standard manholes, standard flush tanks, and standard septic tanks should be adopted and in all cases where a sewer system of any magnitude is to be installed the matter should be carefully considered and if necessary the department should not hesitate to employ for a limited time to assist the superintendent some of our well-known sanitary engineers, who should be consulted on the general and important matter of sewer disposal. In the case of our newer parks I believe it would be well to lay out in the beginning a general town-site plan where there is likelihood of a town growing to some magintude, then design the sewer system for this town and compel the buildings to conform to the town site and sewer system. This is a matter which is especially important in the national parks, where the work will be viewed by thousands of critical tourists, among whom will probably be some of the leading engineers, not only of this county but of other countries.

In connection with sewer disposal I desire to call attention to the but recently invented Emhof septic tank, which has been invented by one of the leading German scientists and which has been recently reviewed in the Engineering News and approved by no less an authority than Rudolph Herring, probably the ablest sanitary engineer in the United States.

Attention is called to this invention particularly for the reason that it is thought that it will be found applicable to sewerage disposal in some of our national parks. It appears that Mr. Herring made a trip to Europe, taking with him his assistants and made a thorough test of this septic tank before writing the above-mentioned article.

In connection with the adoption of standard plans and specifications for the roads, one of the first problems which presents itself is determining the maximum allowable grade and at the same time reach the points of interest throughout the park. This is a subject which has a somewhat large range and what follows is with reference to maximum grades on broken stone roads. In Prussia the maximum grade in mountainous country is 5 per cent, in France the standard on national roads is not to exceed 3 per cent, departmental roads not to exceed 4 per cent, and on subordinate roads not to exceed 6 per cent. On the great Alpine road over the Simplon Pass built under the direction of Napoleon Bonaparte the grades average 4½ per cent on the Italian side and 5.9 per cent on the Swiss side. In only one place does it become as steep as 7.7 per cent.

In Great Britain the celebrated Holyhead Road built by Telford, the celebrated English engineer (from whom this class of road derives its name) through the very mountainous district in north Wales has an ordinary maximum grade of 3⅓ per cent with one piece of 4.5 per cent and a very short piece of 5.9 per cent, on both of which pieces care was taken to make the surface smoother and harder than the remainder of the road.

In New York on the State aid roads the nominal maximum grade is 5 per cent, but grades of 6 per cent have been found necessary in some places. In New Jersey are a number of State aid roads having grades of 7 and 8 per cent and one of 10 per cent. The Massachusetts State Highway Commission which has probably made more careful scientific research in road construction than any other State has fixed no maximum grade, but it appears on some of their important roads the maximum grade is 7 per cent.

For mountainous roads where the bulk of the traffic is down grade the maximum grade is often 8 per cent, and sometimes as much as 12 per cent. Experience in heavy freighting shows that wagons can be controlled on 12 per cent grades, but can not be satisfactorily controlled on steeper grades. I believe in the construction of roads in our national parks 10 per cent grades should be the maximum and this for a limited length.

A width of road for our national parks should be adopted which would not make them too expensive and at the same time would be wide enough not to endanger lives at the precipitous points. The width of travel way wide enough for necessary traffic is ordinarily overestimated. Two wagons having a width of wheel base of 5 feet and width of load of 9 feet can pass on a 16-foot roadbed and leave 6 inches between the outer wheels and the edge of the paved way and a clearance of 1 foot between the inner edges of the roads. An extreme case of this kind will rarely occur, hence a width of 16 feet should be sufficient unless there is considerable rapid traffic and this is a feature which we must sooner or later deal with, for I believe that we can not long exclude the advent of rapid traffic in the form of automobiles from our national parks and that our future construction should be guided by this feature.

The Massachusetts Highway Commission carefully measured the width of traveled way on numerous crushed-stone roads and found an improved width of from 15 to 24 feet, the average being 16 feet. The maximum width of the traveled roadway averaged 14.92 feet, and the width of numerous traveled roads averaged 11.5 feet. Upon this evidence the commission concluded that a width of 15 feet is ample, except in the vicinity of the larger towns. In New Jersey the width for State-aid roads is from 9 to 16 feet. The width of the French roads varies from 16 to 22 feet, and in Belgium there are many roads only 8¼ feet wide.

It is my judgment that the width of 16 feet of paved way is sufficient for most of the principal roads in our national parks. At the precipitous points, in order to give the tourists a feeling of more security, an earth shoulder might be added to the outer edge, but where such a point occurs on a maximum grade the grade should be decreased at the dangerous point, and the road elevated at its outer edge upon the same theory that the outer rail of our railroads is elevated.

Theoretically, the shortest radius of curvature permissible on roads depends upon the width of road and upon the maximum length of teams traveling on that particular road and upon the speed of the teams. The length of a 4-horse team and vehicle is ordinarily about 50 feet. To permit such a team to keep upon a 16-foot roadway would require a radius of about 75 feet for the inner edge. In laying out the alignment for the roads in our national parks consideration should be given the maximum length of teams used in that particular park. It is also a good plan where these curves occur on steep grades to decrease the grade on the curves.

The principal requisites of a rock suitable for broken-stone roads are hardness, toughness, cementing or binding power, and its resistance to the wear under the grinding action of wheels. The rock should also be homogeneous in order that the road surface should wear smoothly. The hard, dark-colored, igneous rock commonly called trap rock is probably the best suited as road material, both as to its wearing and cementing qualities. The hard, uniform grained basalt, showing a steellike fracture and free from gas blows is probably the best road material to be found in this country. Next in order are the granites, but these vary so widely that many of them are practically worthless as road material. The fine-grained granites have been known to give good results, while the course, loose-grained ones are practically worthless as road material.

According to some authorities the gravel of the glacier drift furnishes excellent road-making material, and as a rule the gravel of bluish color will cement together while the reddish or brown gravel will not. However, so far as I am able to ascertain this class of material has not been actually used in road construction to any great extent and little is therefore known of its action under traffic.

In the construction of roads in our national parks the problem which will confront the superintendent is not so much what is the best material for road construction, but what is the best available material on the ground, and this will require a careful study of all available rock in that particular location, and in order to obtain the best material I would not hesitate to change the location of a road in order to make the material accessible to the particular job. It is thought that this is another case which would appear to warrant the necessity of a central office to which the superintendent could refer samples of rock to determine their suitability for road construction.

FORM OF PROFILE OR CROWN.

Some authorities claim that the upper surface should be curved, while others claim that the upper surface should be two planes intersecting at the center of the road and having their angles of intersection slightly rounded off. Both forms are in common use throughout the country, but the first or curved form is probably the most commonly used; both have their ardent advocates. The Massachusetts State Highway Commission has adopted the form of two planes intersecting at the center; while the standard section for the New York State aid roads is curved. The curve usually adopted is not that of a circle, as is generally understood, but that of a parabola. My personal objection to the form of two planes intersecting at the center is, first: After the road is built it gives the appearance of a poor attempt at making a curved surface; in the second place, when the flanks wear a little, to the eye they look swaybacked and at the same time allow water to stand on the surface, which is detrimental to the foundation of the road.

HEIGHT OF CROWN.

The proper height of crown depends largely on the way of making repairs. If new material is added at long intervals, then the crown should be somewhat greater to compensate the wear, which would take place between repairs, but if the system of continuous repairs is used the crown may be somewhat lower. The transverse slope should be greater on narrow roads than on wide ones to prevent the water from carrying the surface material into the side ditches.

There should be more crown on steep grades than on flat ones, and indeed the crown should be in reality a function of the grade,—that is to say, there is no need of carrying the water to the gutter any faster than to prevent its flowing down the center of the road. In other words, the grade from crown to the gutter should be somewhat larger than the longitudinal grade of the road, and indeed a high velocity from crown to the gutter is undesirable, as it carries too much of the binding material into the gutters, which must be shoveled out, and usually by hand, and at the same time produces ridges in the road. Another disadvantage of high crown is that in riding over the road, unless the wheels are centered over the crown, the vehicle will ride onesided, and the occupants be forced against one another, thus making it somewhat uncomfortable. In concluding this subject I would say that in the construction of roads in our national parks I believe a crown of 6 inches would be found to be sufficient. This might, however, be increased to a maximum of perhaps 12 inches upon our maximum grades.

THICKNESS OF MACADAM.

The object of placing a layer of broken stone under the roadway is to secure, first, a smooth, hard surface; second, a water-tight roof, and, third, a rigid stratum which will uniformly distribute the pressure of the

wheel over the area of the subgrade so that the bearing power of the soil will not be overtaxed.

The smooth surface and tight roof will depend upon the quantity and quality of the binding material, and the rigidity of the layer depends upon the binder and largely upon the thickness of the stratum. The supporting power of the subgrade depends upon the nature of the soil and particularly upon the drainage. Therefore for the above reasons the minimum thickness of the broken stone depends upon the nature of the soil, drainage, traffic, and binding material. The initial thickness of the roof depends upon the wear permitted before new material is added. If the repairs are continuous, the initial thickness may be a minimum, but if the repairs are made periodically, that is at intervals, the initial thickness must be equal to the minimum thickness, plus the amount allowed for wear between intervals at which repairs are made. After the road has been worn down 3 or 4 inches, it is usually so uneven as to require resurfacing, and for this reason it is uneconomical if the road in this stage is much or any thicker than the minimum required to prevent its breaking through.

There has been much discussion, and there is a great deal of difference of opinion, as to what shall be the proper depth of broken stone road. The depth considered necessary by the most extreme advocates of thick roads has decreased with more improved methods of construction, particularly the use of good binder and the advent of the steam roller, and as the advantage of thorough underdrainage has been better understood.

In the early days a depth of from 18 to 24 inches was frequently considered necessary for heavy traffic, while now 6 inches or less is usually considered sufficient. The Massachusetts State Highway Commission has carried on very extensive experiments to determine the proper thickness of macadam, and from these experiments has derived a formula for determining the thickness, which it is thought unnecessary to reproduce here.

In Massachusetts the thickness of State aid roads varies from 4 to 16 inches, and the standard for crushed stone roads with macadam foundation on well-drained sand or gravel is 6 inches, which the commission concludes is sufficient for ordinary traffic. In New Jersey the depth of macadam varies from 4 to 12 inches, but is generally 6 inches. The advocates of a small thickness of macadam often cite the experiment at Bridgeport, Conn., where some 60 miles of road having only 4 inches of macadam were constructed and gave excellent service, even under heavy traffic, but in this case all the conditions were extremely favorable for a thin road.

For the roads in our national parks I would recommend a minimum thickness of 6 inches of macadam and a maximum of about 9 inches. The thickness of course should depend upon the class of rock used in the

macadam and the class of binder it is possible to obtain, and the proximity of the material to the site. If the best available rock is comparatively soft, and the binder is not as good as it should be, I believe it would be wise to use the maximum thickness in such cases.

CONSTRUCTION EQUIPMENT.

In the construction of roads in our national parks I believe that the department should have available in so far as possible standard specifications for construction equipment—such, for example, as standard designs for crushing plants, including the type of crusher, type of screen, and type of bin construction. This data could be sent out to the superintendent, who could remodel them so as to suit their peculiar local conditions. There should be also a standard type of road roller, carts, wagons, etc. After a piece of work in any particular park is completed it might be possible to transfer the construction equipment to one of the nearby parks, provided, of course, the cost of transportation were not too great. There should also be standard plans for highway bridges and culverts.

MAINTENANCE.

After a road has been properly constructed and the surface has been made compact and smooth it is very essential that it should always remain in this condition. The general impression is that a stone road is a permanent construction which needs very little attention after it is finally completed, but the best we can do is to approximate an indestructible road; therefore proper maintenance or up-keep is equally as important as good construction, and, indeed, the best roads are the result of good construction and a system of maintenance whereby every small defect is corrected before it has time to cause serious damage. Among highway engineers there are two general methods of maintenance: First, continuous maintenance; second, periodic maintenance or repairs. In the first system the waste caused by the grinding of the wheels under traffic is supplied gradually as it is worn away and carried to the gutters by the wind and rains by adding a patch here and there and thus maintaining the full thickness of the road. By the second method the road is permitted to wear thin and then an entire new surface is added. Of course, this latter system does not exclude small repairs, but rather limits them to the timely filling of holes and ruts in order to check more extensive damage to the road. In Europe the system of constant maintenance is the one generally used, while in the United States the method of periodic repairs seems to be more commonly used, although in the United States both methods have their advocates.

I believe in our national parks it will be found advisable to adopt a combination of the two above-mentioned systems of repairs—that is to say, after the snow and ice have cleared away in the spring the entire road

system should be given a careful overhauling and that slight continuous maintenance will have to be applied throughout the season for which the park is open to the public.

EQUESTRIAN ROADS AND TRAILS.

In the construction of this class of roads throughout the national parks there is very little which can be said, except that standard widths and limiting grades should be established. It will be impracticable, of course, in this class of road or trail to use rock as a surfacing material, but I believe that the lines should be carefully located by instrumental work, so as to select the easiest grades, and I believe it would be well as fast as these trails are located to have a progress map upon which they can be immediately plotted. This would greatly facilitate tourists in getting around through the parks, as well as for administrative purposes.

It is thought that a width of about 6 feet would ordinarily be sufficient for these trails. This width, of course, could be increased at the precipitous points where the grade of the trail might also be decreased somewhat in order to give a feeling of more security to the tourists and to lessen the danger. It is also deemed advisable that these trails at the precipitous points should ordinarily be in-cut—that is to say, by benching back rather than to build out a dry rubble wall, the grades, of course, to be the best it is possible to obtain and reach the points of interest. In this class of construction I believe it would be wise to adopt some form of light equipment which could be packed on animals' backs.

WIDTH OF TIRES.

It is probable that the question of what shall be the proper width of tires to be used on the roads of our national parks has presented itself to some of the superintendents and it is therefore thought that remarks on this subject will not be out of place. It is very essential that the wagon in passing over the road should help to make and preserve it rather than to destroy the road and therefore in so far as the road alone is concerned and within reasonable limits, the broader the tire the better for that particular road. Quoting from N. S. Shaler, formerly president of the Massachusetts State Highway Commission:

> The matter of width of tires has been a subject of much remark. There has, indeed, been no end of idle talk concerning this matter, much of it directed to the point that our American builders have shown a lack of judgment in building with narrow tires, while they should provide their vehicles with broad treads such as are in use in Europe. The fact is that in this, as in many other matters in which our people have departed from ancient and Old World customs, they have been led by wisdom and not by folly. This will, on a little consideration, be made evident. Where there is no definite pavement, as is the case in $\frac{99}{100}$ of the American roads, the wheels have in muddy weather to descend into the earth until they find a firm foundation on which to rest. In so doing they have to cleave sticky mud, which often has a depth of a foot or more. If these wheels were broad tired, the spokes would also have to be thick and the felloes

wide, so the aggregate holding power of the mud upon the vehicle would be perhaps twice what it is at present. It is useless to talk about the advantage of a broader tread for the wheels of our wagons until we have a thoroughly good system of roads which they are intended to traverse. Any laws looking to this end would be disobeyed because of private needs so general they would amount to public necessity. When the roads of a district are made good, only as to main lines of communication, the side roads and farms still demand the peculiar advantages afforded by the narrow tire.

Quoting a little further from the same authority:

The best argument against the enactment of laws concerning broad tires is found in the fact that the numerous and long-enforced English statutes on this matter have of late years been abrogated, a century of experience having shown that they are difficult to administer, and generally disadvantageous.

The Massachusetts Highway Commission, after an elaborate discussion of the matter, says:

It is a matter of doubtful expediency to endeavor in the present state of our highways, by general legislation, to control the width of tires and diameter of wheels.

The above-quoted articles are entirely logical with reference to the highways of our States and counties, but are not entirely applicable to the roads of our national parks, for the reason that there are not so many conflicting interests concerned, and I believe that the adoption of some standard width of tire tending to preserve the roads should be carefully considered.

Although there is not much difference between the tractive power of broad and narrow tires, the latter are much more destructive to the road but in deciding upon the proper width of tire there are other factors beside the road that should be considered. Other things being equal a wagon with broad tires is not so easily managed as one with narrow tires, and for this reason might prove dangerous on some of the roads of the parks; but it is believed that it would be well to investigate this matter from actual trials with wide-tired vehicles.

DUST PREVENTIVES.

One of the most important problems in connection with road construction and maintenence in our national parks is the suppression of dust. In some of the parks this is bad enough now, but when the motor vehicles are admitted it will be worse, and at the same time the damage to the road will also be worse than is now found from the use of iron-tired vehicles. A general discussion of the causes and effects of this subject will not be entered into, but in a general way it is thought a few remarks would be applicable.

The dust problem in our national parks must be handled in one of two ways. First, by constructing the roads in such a manner by incorporating such materials in the aggregate as to reduce to a minimum the formation of dust; or second, by treating the surfaces of the existing roads with materials which will give the same results. The latter may

be either by the use of water or some of the known emulsions. While neither of these methods can be said to be entirely satisfactory at the present stage, yet I believe where the materials are used in the proper proportions, and both materials and methods of construction are better understood, that by the first method, that is to say, an oiled macadam road, which is constructed by the incorporation of an oil which has an asphalt base during construction, good results may be obtained, and it is believed that in those parks where the dust is especially troublesome that a short piece of this class of road should be actually constrcted as an experiment.

The heavy oil with an asphalt base, such as is found in our western States has a very great binding quality and is superior for this purpose to our eastern oils which have a paraffine base. On account of its greasy nature, oil with a paraffine base has very little cementing or bonding quality and is, therefore, unsuited for road construction. Those parks in the vicinity of Bakersfield, Cal., where probably the best oil for road construction is found, should certainly make some experiments along these lines, as it is thought that the cost of transportation will not make this material prohibitive.

If the consrtuction of the oiled macadam road in some of our national parks should be found satisfactory, the item of cost of sprinkling saved thereby should not be overlooked, as in some instances the cost of this item is considerable, and I call attention to the estimate for the necessary equipment for road sprinkling in the report of the acting superintendent of the Yosemite National Park for 1908, which is about $18,000 for approximately 10 miles of road.

There are very little data available covering actual cost of an oiled macadam road, but that which I am able to find would appear to fix a maximum cost for the addition of oil over an ordinary macadam road of about 14 cents per square yard. At this figure the first cost of applying the oil to a 16-foot road for a stretch of approximately 10 miles would be about $13,000, or a saving of about $5,000 between the first cost of the oiled macadam road and the purchase price of the necessary equipment for sprinkling the same road.

Quoting from an article on oiled macadam road construction and maintenance, found in the transactions of the American Society of Civil Engineers for March, 1911, Mr. Ross, who has charge of the roads for Newton, Mass., says:

> Asphaltoylene was used in 1907 on two roadways in Newton, a surface of 16,822 square yards being treated at the manufacturer's contract price, 6 cents per square yard. At present these roads are in very good condition.

It will be noted that this statement was made after the road had been in use about four years. Quoting further from the same article:

> Several macadam-surfaced streets having varying grades up to a maximum of 9 per cent and subjected to heavy horse-drawn and auto traffic were submitted to the

liquid asphalt treatment. The method was as follows: A quantity of sand was heated to a temperature of 200°F., dumped in a pile, leveled and asphalt was poured over the hot sand in the proportion of one gallon of asphalt to each cubic foot of sand and then the whole mass was turned with shovels, or mixed in a concrete mixer (the latter being preferable on account of the cost). This work was done at the pit. The mixture was teamed to the work and spread on the roadway to a depth of one-fourth of an inch, being raked even with 14-tooth wooden rakes. Rolling was not considered necessary and the street was kept open at all times. The cost of this treatment was about 3 cents per square yard. It has the advantage of leveling and building up the surface of the road, each new application providing a new wearing surface. This work has remained in perfect condition without further expense since the summer of 1909.

There has been considerable of this class of work done in Spokane, Wash., but at this location it can not be said to have proven entirely satisfactory, but I attribute this more to the fault of construction than to the principle involved.

CONCLUSIONS.

Along the lines set forth in this paper the following conclusions are drawn:

(1) That there should be located in each one of our national parks, where the revenues and appropriations would warrant it, an assistant engineer to act under the direction of and in conjunction with the superintendent of the park, all reports including plans and specifications to be submitted by the superintendent to a central office to be in charge of a man having technical knowledge of such matters, this office to be equipped to prepare proper plans and specifications for the various classes of construction work, which will arise in the parks.

(2) The adoption of standard plans and specifications, in so far as possible, for the various classes of construction.

(3) Careful surveys and estimates for future extensions of the work, in accordance with a general road and trail plan previously adopted.

(4) The carrying on of experiments with oil and tar macadam roads and a general discussion among the superintendents of this subject, especially as to dust preventatives.

The SECRETARY. We shall now hear from Mr. Norris on general inspection work.

GENERAL INSPECTION WORK AS A PART OF PARK ADMINISTRATION, BY J. H. NORRIS, Inspector, Department of the Interior.

Mr. Secretary and gentlemen of the conference: As a result of the accession or setting aside, by act of Congress or otherwise, of a vast territory, covering an area of approximately 5,527,000 acres, for national parks and for the preservation of American antiquities and national monuments, the continued increase in population, wealth, business, and

railroad facilities of the United States, the building of roads, bridges, and trails, making the parks, antiquities, and monuments accessible, and the judicious advertising of the natural wonders within the borders of the reservations, the work has grown until this branch of the service is now one of the important ones with which the department has to deal.

When we take into consideration the fact that this vast area is divided into 13 parks, covering approximately 4,600,000 acres, and 25 reservations for the preservation of American antiquities and national monuments, covering over 900,000 acres, scattered, as they are, over 15 States and Territories—namely, California, Arizona, New Mexico, Colorado, Utah, Oregon, Washington, Idaho, Montana, Wyoming, South Dakota, North Dakota, Oklahoma, Arkansas, and Alaska—as follows:

National parks:	Acres.
Yellowstone, Wyoming, Montana, and Idaho	2,142,720.00
Yosemite, California	719,622.00
Sequoia, California	161,597.00
General Grant, California	2,536.00
Mount Rainier, Washington	207,360.00
Crater Lake, Oregon	159,360.00
Wind Cave, South Dakota	10,522.00
Sullys Hill, North Dakota	780.00
Platt, Oklahoma	848.22
Casa Grande Ruin, Arizona	480.00
Mesa Verde, Colorado	42,376.00
Five-mile strip for protection of ruins	175,360.00
Hot Springs Reservation, Arkansas	911.63
Glacier, Montana	981,681.00
Total	4,606,153.85
National monuments administered by Interior Department: [1]	
Shoshone Cavern, Wyoming	210.00
Montezuma Castle, Arizona	160.00
Petrified Forest, Arizona	60,776.00
Navajo, Arizona	600.00
Tumacacori, Arizona	10.00
El Morro, New Mexico	160.00
Chaco Canyon, New Mexico	20,629.00
Gran Quivira, New Mexico	160.00
Muir Woods, California	295.00
Lewis and Clark Cavern, Montana	160.00
Mukuntuweap, Utah	15,840.00
Natural Bridges, Utah	2,740.00
Rainbow Bridge, Utah	160.00
Devils Tower, Wyoming	1,152.00
Sitka, Alaska	57.00
Total	103,109.00

[1] The above list was taken from the report of the Secretary for the year ended June 30, 1910, and since that time I am informed that there have been some additional reservations and some changes in the areas of the above reservations by reduction.

National monuments administered by Department of Agriculture: [1]	Acres.
Cinder Cone, California	5,120.00
Lassen Peak, California	1,280.00
Pinnacles, California	2,080.00
Grand Canyon, Arizona	806,400.00
Tonto, Arizona	640.00
Gila Cliff Dwellings, New Mevico	160.00
Jewel Cave, South Dakota	1,280.00
Wheeler, Colorado	300.00
Mount Olympus, Washington	480.00
Oregon Caves, Oregon	.....
Total	817,740.00

it will be readily seen that the subject of inspection is almost unlimited in its scope.

Inspection work in connection with future park administration should be thorough and complete, independent of local influences. The principal points to be covered by an inspection are:

(1) Whether or not reservations for park purposes or monuments are capable of development as national institutions.

(2) The assistance in adopting a definite uniform policy for their maintainance, supervision, and improvement.

(3) The management—adaptability of the superintendent to the surroundings and whether or not he has met the conditions incident to the establishment of the park or reservation for national monuments.

(4) Complete, comprehensive, and systematic plans for roads, bridges, trails, telegraph and telephone lines, sewer and water systems, hotel accommodations, transportation, and other conveniences, such as will make all points of interest accessible and afford an opportunity for the sightseer to see them to the best advantage.

(5) Concessions to hotels, camping companies, transportation companies and others, whether or not adequate compensation is received for such concessions, whether or not suitable quarters and transportation facilities are provided for the comfort of the tourists at reasonable prices, and the methods employed in soliciting patronage.

(6) As to the best and cheapest methods of transportation and best means of regulating prices and competition in the different lines of business employed by concessioners and their responsibility, taking into consideration the fact that fair interest on capital invested for the suitable comfortable transportation and care of tourists should be realized in order that men of means will invest their money in buildings and equipment for such accommodations.

(7) As to the length of term for which concessions should be granted in order to secure the best results.

[1] The above list was taken from the report of the Secretary for the year ended June 30, 1910, and since that time I am informed that there have been some additional reservations and some changes in the areas or the above reservations by reduction.

(8) Careful inspection of all public works and conduct of concessioners.

(9) Suitable quarters, in keeping with the surroundings, for the proper comfortable administration of affairs.

(10) Uniform system of keeping records, accounts, property returns, time books, registration, etc.

(11) Sanitary conditions and sanitation.

(12) Forests—proper protection for their preservation from fires and keeping them in their natural state.

(13) Preservation of natural wonders, such as geysers, terraces, glaciers, ruins, and other historic or prehistoric structures or monuments.

(14) Suitable notices at the various points of interest as to names of natural wonders, streams, geysers, glaciers, ruins, lakes, etc.

(15) Preservation and conservation of all power sites, timber, and minerals.

(16) Modes of travel—whether should be by vehicle, automobile, or otherwise.

(17) Grazing and trespass of stock.

(18) Patrol of parks, guards, etc.

(19) Patented lands within the borders of the reservation and best methods of handling the same.

(20) Enforcement of rules and regulations with reference to concessioners and others, and as to modification, amendment, revocation of or adoption of new rules and regulations.

(21) Season when park or reservation should be open to the public.

(22) Proper care, feed, and protection of animals, game, and fish.

(23) Fencing.

(24) As to appropriate appropriations for future improvement work.

The setting aside and dedication of the national parks and monuments was a step, and but one step, in the right direction. As stated in the report of the Secretary for the fiscal year ending June 30, 1910, with reference to national parks and national monuments, it was "the only practical means of preserving their wild grandeur from human desecration, 'where specimens of the best of nature's treasures have been lovingly gathered and arranged in simple, systematic beauty within regular bounds.' "

I am of the opinion, therefore, that a close personal inspection and report on all of the matters herein mentioned by an officer of the department, independent and outside of any local influence, giving to the department the benefit of his views on conditions as he found them to exist, would add to the value of the service, and perhaps bring about, or at least help to bring about, that condition which should be desired, a uniformity of action and system, a more successful administration of affairs, and arouse such an interest in the parks of the United States that they will really and truly be dedicated, not only in name but in reality, for "the benefit and enjoyment of the people."

The SECRETARY. If there are any questions on the two papers just read, I would be glad to hear them now. If not, perhaps the questions will come up in the reports of the superintendents and if any of the superintendents wish to ask questions they can do so at that time. I think we will depart from the regular order and ask Maj. Forsyth, of the Yosemite Park, if he will present to us what he has to say at this time.

NATIONAL PARK ADMINISTRATION, BY MAJOR WILLIAM W. FORSYTH, Acting Superintendent, Yosemite National Park.

In discussing the general subject of national park administration it is perhaps proper to say that my experience in national park duty has been limited to two parks, the Yellowstone and the Yosemite, and that I may, therefore, possibly make the mistake of assuming some rules of administration to be of general application whereas they would be applicable in these two parks only. Of course for efficiency of administration there must be organization and the organization must be that best adapted to the needs and conditions of the particular situation. In order therefore to provide suitable and adequate organization a study must be made of the needs and conditions that are to come under administration. This is axiomatic, and applies to all kinds of administration. Before applying it to the national parks it is necessary to consider the object for which these parks were set aside and it is believed that it may be safely assumed that the object was the benefit and enjoyment of the people whether or not the law setting them aside specifically so stated. They must, therefore, be protected, their attractions must be made accessible, the means of access and operation must be maintained, and the administrative work, including the expenditure of funds, must be recorded and accounted for to higher authority. It seems apparent, therefore, that nearly every administrative act will fall under one of four general heads, namely, protection, improvement, maintenance, and accountability.

In order to determine the kind and amount of protection necessary, we must first know the number and character of the enemies and the probable energy of their attacks, and it is perhaps safe to say, that nearly all the parks are menaced by similar enemies.

There are forest fires, trespassers, including poachers, cattle, and sheep, and in general all violators of the park rules and regulations, especially the vandal who cuts his name in the bark of a tree or paints it on a rock, or digs up and carries away some rare wild flower, plant, or shrub. Then comes disease, not only those that attack human kind, but diseases of the trees, those that destroy the forests, reenforced sometimes by insects. Then there are several undesirable wild animals, such as the coyote and the cougar or mountain lion, that destroy the deer and antelope and bighorn sheep. Of all these enemies to the parks the most dreaded and destructive is the forest fire, and it is believed that the greatest protec-

tion from it is afforded by such a system of patrolling as will insure early discovery of the fire. A small forest fire is easily extinguished. Where a particular area should be protected from fire, as, for instance, the Sequoia or big tree groves in California, complete protection is given by removing all dead timber and other inflammable material from the area and cutting a guard zone around it. The big trees are not easily burned if there is no combustible material near them. In regard to trespassers, poachers, vandals, and other violators of the park rules and regulations adequate protection can be given only by the enactment of laws making their offenses misdemeanors and prescribing appropriate penalties; that is, the enactment of laws similar to that now provided for the Yellowstone Park. Against the diseases to which humanity is liable the best protection is thorough sanitation and the rigid enforcement of proper sanitary rules. Against the insects and diseases that destroy the forests the aid of the Department of Agriculture should be solicited.

Finally, the people who visit the parks should be protected from accident or injury, and provision made for succoring them in distress. Where the parks are guarded by the troops there are always field hospitals and in the Yosemite Park the Army hospital is often used as an emergency hospital for the public, and many people receive prompt treatment and relief there every summer.

We come next to improvement and maintenance, but as the resident engineer of the Yosemite Park will discuss these in detail I shall only say that it would seem that in those parks whose attractions have not already been made accessible surveys should be made and a general road and trail project prepared, and thereafter all road and trail construction be made in pursuance of this plan and progress toward it completion.

Next and last comes accountability, and while the system adopted should be as far as practicable uniform for all the parks, local conditions will make some minor variations necessary. I feel quite confident, however, of the advisability of having a fiscal agent, or disbursing officer, in every park where considerable expenditures are to be made, so that payments may be made promptly. Much dissatisfaction arises among workmen when they quit or are discharged and find that they have to wait a month or more for their pay.

What has been said so far is believed to be of general application, and I will now pass on to the conditions and needs of one particular park, the Yosemite, which has been under my charge for the last two and a half years.

Perhaps it will help you to understand if I tell you briefly how the present Yosemite National Park originated.

By act of June 30, 1864, the United States granted to the State of California the Yosemite Valley and the Mariposa Big Tree Grove "for public use, resort, and recreation;" that is, for a State park, which it continued to be until August, 1906. By act of October 1, 1890, the

United States set apart as reserved forest lands the present Yosemite National Park, or nearly so, but the act gave the tract no name, although it was clearly the intent of the act that the lands should constitute a park, as is shown by section 2 of the act, reading as follows:

> That said reservation shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be, as soon as practicable, to make and publish such rules and regulations as he may deem necessary or proper for the care and management of the same.
>
> Such regulations shall provide for the preservation from injury of all timber, mineral deposits, natural curiosities, or wonders within said reservation, and their retention in their natural condition.

and so forth, enough to show that it was reserved as a park without a name. But although the act gave it no name, the public did and the name was Yosemite. So general was the adoption of the name that we find it used by Congress in the act of February 15, 1901, relating to rights of way through certain parks. It was not, however, until February 7, 1905, that Congress in the act changing the boundary lines of the reservation stated specifically that the reservation should thereafter be known as the "Yosemite National Park."

California, by legislative act approved March 3, 1905, receded and regranted to the United States the Yosemite Valley and the Mariposa Big Tree Grove, and Congress, by joint resolution of June 11, 1906, accepted the recession and again changed the boundary lines, and the Government early in August of that year formally took possession of the Yosemite Valley and the Mariposa Big Tree Grove.

Now, then, as far as I have been able to learn the legal status of the Yosemite National Park has never been officially or legally defined, and the need of doing so is an existing one and of growing importance. The questions that suggest themselves are, What jurisdiction, if any, has California over the Yosemite National Park? If she has any jurisdiction, is it the same both in the valley and exterior to the valley? If she has jurisdiction over any of it, the limits should be accurately and clearly defined in order to avoid conflict with the Government. As a matter of fact California does exercise jurisdiction in various ways in Yosemite Valley as she levies and collects property taxes and school taxes from residents there.

Is it legal for the coroner of Mariposa County to hold an inquest in Yosemite Valley? Is it legal to open polls and receive votes in Yosemite Valley for a State election? Is it legal for a State justice of the peace to hold court in the Mariposa Big Tree Grove? These are some of the questions that suggest themselves.

One of the needs of this park, therefore, is that the extent of the jurisdiction of California over it, or over any part of it, be defined; and this jurisdiction question suggests another need of the park, and that is the elimination of private ownership of lands and roads. In the brief sketch

given above of the origin of the park it may have been noted that the boundary lines have been materially changed since the original reservation was made. One of the principal reasons for the changes was to throw out of the park as much as possible of the patented lands, the private title to the remainder to be extinguished by the Government. So far, however, Congress has failed to act, and these lands have steadily increased in value, until now it would cost much more to buy them than it would have done six years ago when the first boundary changes were made. There are nearly 20,000 acres of these lands in the park, and the Yosemite Lumber Co. is now building a logging railroad from El Portal to the park boundary line in the vicinity of 6,000 acres of timber land that the company owns just inside the park. In the near future then we may expect the denudation of these 6,000 acres to begin. To my mind the acquisition by the Government of all the private land and road holdings is the overshadowing need of the Yosemite Park.

These two needs, that of defining the jurisdiction of the State of California over the park, or any part of it, and of extinguishing the private titles to lands and roads in the park, are special needs, and are believed to be peculiar to the Yosemite Park.

Another great need of the Yosemite Park, but not peculiar to it, is the need of a law for its protection similar to that now provided for the Yellowstone Park. Considering the subject of protection in connection with the Yosemite, it is believed that protection will always be incomplete until such a law is provided.

As it is now, expulsion from the park is the only penalty for the most flagrant and serious violation of the rules and regulations, as well as for the most trivial.

Protection against fire is afforded by patrolling from all the outposts in the park, supplemented by the telephone. There are ten outposts, all connected with each other and with the superintendent's office by telephone, thus enabling prompt notice of the fire to be sent into headquarters.

A detachment of 10 soldiers and 5 pack mules is held in readiness at all times for fire fighting, and we have no dread of any fire that may start within the park. It is only the fires that start outside and burn toward the park that cause anxiety, for they are likely to be beyond control when they cross the park boundary.

Those that start inside are sure to be discovered before they gain much headway.

The only thing needed to make protection for the Yosemite complete and satisfactory is the enactment of the law referred to above.

Taking up now the improvement of the park, let me give you the annual estimates and the corresponding appropriations for the last five fiscal years—that is, the period since the Yosemite Valley became a part of the National Park.

Estimates and appropriations for Yosemite National Park.

Fiscal year.	Estimate.	Appropriation.	Revenue.	Total available.
1908	$89,355	$30,000	$11,000	$41,000
1909	236,530	30,000	11,000	41,000
1910	395,980	30,000	11,000	41,000
1911	470,655	62,000	11,000	73,000
1912	508,180	50,000	11,000	61,000

To these different appropriations should be added the annual revenues of the park, the average revenues for the last five years being about $11,000 a year.

It will be noticed that for the last three years the amount appropriated was about one-tenth of the amount estimated as needed. During these three years—that is, during my administration—we have built about 3½ miles of Telford macadam road, installed a road-sprinkling system for about 14 miles of road, built 3 cottages and 3 barns and wagon sheds, partially rebuilt the intake and water-supply system for the electric power plant, installed a new Pelton wheel in the power plant, installed a rock crusher and quarrying plant, and extended the electric power for 4 miles to operate the rock crusher and the pumps for filling water tanks for the road-sprinkling system. We have just completed a trail from Yosemite Valley to Lake Tenaya, a distance of 10 miles, making perhaps the prettiest lake in the park easily accessible.

Two bridges have been built over the Merced River, one of them an iron suspension post bridge and the other a wooden bridge for wagons. Work is now in progress on a water-distributing system in Yosemite Valley, to cost about $45,000 when completed. Several trails exterior to the valley have been materially shortened, and all trails have been kept in repair.

So much for what has been done.

What should be done are the extension of the road sprinkling system from Yosemite village to Happy Isles, and from the floor of the valley to Fort Monroe on the Wawona road, the completion of the improvement of the road from El Portal to the valley, a garbage incineratory erected, the preparation of a general plan of roads and trails and thereafter all road and trail construction to be in pursuance of this plan and progress toward its completion.

New road—Fort Monroe-Glacier Point—75,000 feet, to be a part of this plan.

There are five bridges for wagons over the Merced River in Yosemite Valley, one over Yosemite Creek, and one over Tenaya Creek. As the renewal of these become necessary reenforced concrete bridges should be built, the Sentinel Bridge being thus replaced in the near future.

A modern up-to-date hotel should be built in the valley. There is only one hotel there now, and it was built years ago, when the valley was

accessible only in the summer time. Being intended for summer only, it was located on the cool or shady side of the valley and was not provided with heating facilities, nor plumbing fixtures for the supply of hot and cold water, nor amusement rooms for guests when bad weather kept them indoors. The valley is now open to the visitor summer and winter, and a hotel with every comfort and convenience is much needed and should be located on the sunny side of the valley. Mirror Lake is rapidly filling up with sand, which should be removed and further filling prevented. This is not a difficult problem.

One more point, and I am done:

Under the head of accountability, where I have stated in general that a resident disbursing officer should be provided for those parks in which extensive improvements are made, I wish to add that even where the improvements are not extensive some park official should have funds placed to his credit for the purpose of paying laborers only. This, in my opinion, would prevent much discontent among discharged laborers and also annoyance to the park management.

The SECRETARY: I think, perhaps, unless there are some questions or suggestions relative to the paper just read we will ask Col. Brett if he will tell us something about conditions in Yellowstone.

REMARKS BY LIEUTENANT COLONEL L. M. BRETT, Acting Superintendent, Yellowstone National Park.

I am rounding out my first year in the park here and I do not feel competent as yet to discuss a great many questions. I simply want to say that I had a great many problems to solve and I never took one of my problems to any man doing business in this park without receiving the very best he had to give. His information was always disinterested, honest, and valuable. Placed here with a new command, absolutely new to every situation myself, I can not tell you how much that meant to me and to the proper administration of the affairs of the park. Of course we know of the criticism passed on the subject of the conditions of the roads during the month of August. The engineer officer, who is even newer than myself, came here in June and found his allotments made for him. He did the very best he could with them and the responsibility rests entirely on the lack of funds.

I do not believe it is necessary for me to defend the Army and the work of the troops in these different parks, but as there has been an expression of the desirability of replacing the troops with civilian employees, I have concluded that it is best to give this assembly a little idea of the equipment and work of our men. The military organization and its discipline is just as well suited for this kind of work as it is for any other military work, because this is military work. We have grades extending from

the commander of the troop to the corporal. We have scattered through the park detachments of about 200 men in all and have about 150 held in reserve at Mammoth Hot Springs. They cover every boundary line, every approach, and the loop. They are organized so as to give warning at once of any fire, disturbance, or trouble of any description. Last year a large section of the northwest was almost devastated by forest fires. The troops were called upon to fight the fires with the rangers. The letters to the different departments from those rangers and from those in authority speak in the highest terms of the work of the troops, showing our organization is fitted for that kind of work. That the game surrounds the soldiers' stations, that the deer will eat out of a soldier's hand, speaks for itself. The game has no better friend in this park than the soldier. There are 350 of us in the park to-day, scattered in 15 different soldier stations and at times, especially in the winter, occupying 11 other snowshoe cabins for the protection of this park. There are 70 mules that draw the heaviest wagons, always on the road, every day that the snow will permit, for the purpose of supplying these different stations and snowshoe cabins. In the pack-mule trains we have a chief packer, cargador, blacksmith, cook and 16 packers, which force is ample. The troops are so organized that they can be used in sections in any part of park, traveling in detachments. The detachments are all the way in size from a corporal's command to that of the troop with its captain, depending on the necessity or the degree of danger. We have here two temporary hospitals, one at the fountain and the other at the lake.

When you take into consideration the cost of replacing all of this by civilian labor, it very soon runs into the hundreds of thousands of dollars. The only augument which can be adduced for replacing us by the other form is that the other form should have more permanency. I grant you that, but I do not grant its efficiency. I believe that the system is very efficient to-day and has been and that with the small change of detail—instead of ordering out all at once but half be so ordered and those who remain instruct the newcomers—I am convinced that our force would be as efficient as any that could be secured.

The SECRETARY. Is there any discussion of the matters presented by Col. Brett? If not, we will next hear from the superintendent of the Hot Springs Reservation, Hot Springs, Ark.

THE PAST, PRESENT, AND FUTURE OF HOT SPRINGS, ARK., BY H. H. MYERS, Superintendent of the Hot Springs Reservation.

The Hot Springs of Arkansas are located at Hot Springs, Garland County, Ark., 63 miles southwest of the capital of the State, Little Rock. Ever zealous and watchful of the interests of its people, the Government by act of Congress enacted April 20, 1832, that the Hot Springs in said territory, together with four sections of land including the said springs

at as near the center thereof as may be, shall be reserved for the future disposal of the United States, and shall not be entered, located upon, or appropriated for any other purpose whatever.

The permanent reservation consists of 911 acres, and comprises the East, West, and North Mountains, which lie in and around certain portions of the city of Hot Springs. The daily flow from these 44 hot springs approximate 1,000,000 gallons, and comes out of the earth at an average temperature of 147° F. The Government has spent several millions of dollars on its scheme of improvement of the springs and the surrounding land, which consists of a system of mountain roads approximately 10 miles in length and beautifully laid out and improved walks, both of which wind around the mountains by easy grades to the summits, the altitude of which is a little over 1,000 feet, from which is disclosed at various points a beautiful scope of undulating country for a distance of 80 miles, together with the surrounding peaks of the Ozarks.

The early history of these hot springs belongs to the realms of legends and traditions tinged with romance and adventure. Their discovery dates back to when the Indians roved unmolested through the forests, pitching their wigwams and lighting their camp fires in the most advantageous places, where were found game and plenty of pure water. No doubt, these dusky aborigines were familiar with the virtues of these hot waters centuries before Columbus ever sailed the trackless deep and unknown seas when he first discovered the land of America. Soon after this historic event, strange and fascinating tales of the wonderful curative powers of these thermal waters began to flow to all portions of the new world, and indeed we may well believe that the story was credited even then that somewhere hid in the western wilds was a wonderful fountain of youth whose magic waters would banish the traces of time and cause the roses of youth to bloom again. In the early part of the 16th century this alluring and entrancing tradition must have been wafted to the ears of Ponce de Leon, who as a reward for his valiant services to Spain was then governor of the island of Porto Rico. This was a period in the world's history when men believed in the philosopher's stone and the elixir of life, and it is not strange that that battle-scarred old veteran Ponce de Leon should believe in the remarkable Indian tales or that he should head an expedition in quest of the magic waters which would restore the virility and sweetness of youth and pristine vigor. In March, 1512, with three ships he sailed from Porto Rico in search of the prize which was to restore the immortality of youth. On March 29 he landed on the mainland of this country near the point now called Fernandino. Taking possession of it in the name of Spain, he called it Florida, because the land was first seen on the Pascua de Flores, and because it was fair to look upon, being covered with pleasant groves, and carpeted with flowers. Following the landing many explora-

tions were made, and all streams and springs were tested, but they searched in vain for the mythical fountain of youth. The Indians in possession of the country were fierce and warlike, and told always the same disappointing tale "Beyond you, far beyond you, is the stream you seek." After returning home, having failed to penetrate the wilderness far enough to have discovered Hot Springs, he returned again to Florida more zealous and ardent in his desire, because of a wound received, from which he believed the healing waters could wash the poison. Again he failed and returned to Cuba, where death released him from the old age he had so valiantly and vainly sought to rejuvenate in the hot springs.

The story of Ferdinand de Soto, who subsequently found his grave in the Mississippi River, and who, no doubt, also sought the benefits of these healing waters, is similar in its record of sorrow and disappointment to that of de Leon.

There is but little doubt that the healing powers of these hot springs was well known to the Indians in that period, and legend goes on to declare that the springs and the immediate surrounding country was the land of truce, for each and every tribe was privileged to bring its sick and wounded for care and treatment. This fact is borne out by the many evidences extant of excavations made in the mountains, and many arrowheads and hammers of prehistoric ages have been found which are made from the novaculite which abounds extensively in many portions of the reservation, and is a valuable whetstone.

In the year 1800 French trappers spent much time at Hot Springs and made it their headquarters, and soon after President Jefferson negotiated with Napoleon for the Louisiana Territory. In 1803 he sent an exploring party headed by Dunbar and Hunter for the purpose of making an examination of the waters and surrounding country and ascertaining if anyone was in possession under such rights as would enable them to establish claims in the future. Nothing was found except a few scattering shanties.

After taking the temperature of the water and noting the surrounding country and the wonderful geological formations, they made special mention of the curative properties of the water and the oilstones which are used all over the world to-day.

The source of the heat of these waters can only be conjectured. The finite mind can not delve into the mysteries of that arch alchemist "Nature," or view the caverns wherein she works this wonderful secret. The scientists may inform and theologians may declare, but the sources of the heat, or the constituency of the various salts, gases, and other materials which formulate the waters, remain a mystery. But that nature has compounded from her wonderful storehouse and resources a water whose potency for curing diseases of mankind exceeds that of all others,

there is no doubt. The Government, to determine what the qualities of the healing properties of the Hot Springs were, in 1904 especially commissioned Prof. Bertram B. Boltwood, of Yale College, to make a scientific test of those waters for that wonderful mineral, radium, the result of the research by Prof. Boltwood being in part:

(1) The waters of the springs on the Hot Springs Reservation are all radioactive to a marked degree.

(2) The radioactivity of the waters is due to dissolved radium emanation (a gas), and not to the presence of salts of radium or other radioactive solids. Medical science is unanimous in the assertion that this water is the greatest of all the eliminatives. This being true, it can readily be understood why the greatest benefits are derived by the use of these hot waters being charged with radium gas which flows direct from the spring to the user without permitting the evanescent radium property to be lost.

A course of baths at Hot Springs consists of 21 baths. There are 24 bathhouses located there, ranging in price from $3 to $10 for the 21 baths, to which must be added the attendant's fees of $3 for the 21 baths, which is the same in all the bathhouses. There are 11 of these bathhouses on the permanent reservation and 13 on private property. The hot waters used by all the bathhouses both on and off the reservation is the same.

The average number of baths given annually is approximately 1,000,000. The healing power of these waters is the wonder of medical science, and nowhere can be found any water that has and is effecting such wonderful cures as these.

In 1880 the Government established at Hot Springs an Army and Navy hospital for treatment of the sick of both branches of our country's defenders, as well as the veterans of the Civil and Spanish-American Wars. The records of this hospital show that 90 per cent of its patients are either entirely cured or materially benefited.

The entire control and conduct and use of the waters of the Hot Springs is vested in the General Government and is handled by the Interior Department, which is represented at Hot Springs by a superintendent appointed by the Secretary of the Interior.

The price of the baths at all of the bathhouses is fixed and maintained by the Government, which controls the water supply and prescribes all rules and regulations for the management of the bathhouses and the administration thereof.

Congress in 1878 enacted "That the superintendent shall provide and maintain a sufficient number of free baths for the use of the indigent, and the expense thereof shall be defrayed out of the rentals hereinbefore provided for." This bathhouse is maintained at Government expense and is absolutely free of charge to any citizen who is indigent and unable to pay for baths. There are given an average of 200,000 free baths at this bathhouse annually.

The department does not undertake to give a complete list of the cures that have been effected by the use of these waters, or to say what diseases

or ills they will cure, but a course taken by a person in normal health results in a rejuvenation and vast reinvigoration.

The use of the waters opens the pores and channels for the expulsion of matters injurious to health, arouses torpid and sluggish secretions, stimulates the circulation, the muscles, the skin, and the internal organs, and thus purifies the blood and removes aches and pains, restores the weary and exhausted, and revives the debilitated, and helps build up the entire system.

The city of Hot Springs is a modern, well-built city, and has some 600 hotels and boarding houses, ranging from the very best to those suitable to any man's station.

The department controls the practice of medicine in Hot Springs so far as it pertains to the use of the hot baths, and physicians who are permitted to prescribe the hot waters must be registered by the Federal Registration Board appointed by the department, and no physician who is not registered and authorized by the department to prescribe the hot waters can do so.

The rules further provide that any person who patronizes or treats with a physician who is not registered by the Government can not take the hot baths. Any person desiring these baths can by calling at the superintendent's office obtain a list of registered physicians and any other information looking to his comfort.

In the administration of the affairs at Hot Springs this department has but one object, to see that everyone who is entitled to them may avail themselves of these wonderful waters, surrounded by every protection possible.

The climate conditions of Hot Springs are very excellent. The mean rainfall for an average year being 5.20; the mean temperature for the average winter month is 58.07, and for the summer month 90.02.

The number of annual visitors to Hot Springs averages approximately 150,000.

All sorts of healthful outdoor amusements are provided and indulged in, such as golf, tennis, baseball, horseback riding, and mountain driving.

In the proper administration of adequate rules for the fullest protection of the many thousands of visitors here many obstacles had to be surmounted. The worst feature of a very serious condition was that of doctor drumming, which has in a great measure been obliterated. First, we installed United States inspectors on all incoming trains, whose duty it is to inform the public of the rules and what to do to comply therewith for their individual benefit. Next was instituted a daily bathhouse report, and a more strict enforcement of medical ethics through a very efficient Federal medical board; the result has been that this most of all objectionable feature of the most famous resort in all the world was reduced to the minimum, no longer are there drummers on all trains, and no longer can those human parasites make commercial traffic of the ill and

afflicted—the Government has assumed a place of general guardian of the visitor here and sees to it that each receives a square deal. A question which has been for two years a source of much agitation is that of the State ceding to the Federal Govenment absolute and exclusive jurisdiction of the original four sections of land which composed the reservation as set aside by Congress in 1832. I believe, and this belief is shared by a majority of our citizens, that if the Government had such jurisdiction, and managed the city as on plans similar to those in the management of the District of Columbia, that it would be but a short time until this would not only be recognized as the worlds best and foremost health resort but at the same time the best governed city and the world's show place. I have labored unceasingly to create sufficient sentiment along these lines as to have the State legislature make such cession, and while success along these lines does not seem imminent, yet there is much to encourage the belief that some day the citizens will realize that Government control is all that is lacking to bring about the magnificent results referred to. I am of the opinion that jurisdiction has never passed from the United States, but this is a matter of legal interpretation of the acts of Congress and the bill of rights when Arkansas was admitted to the Union in 1836, and will, of course, have to be passed upon by the courts.

Another thing which has agitated us is that the city of Hot Springs, normally about 15,000, has to provide facilities for a city of 50,000, and the revenues are insufficient to do this, so the question is, could a small tax, a cure tax, be levied on the visitors to be used in support of the city and the construction of streets, boulevards, etc. If such could be done it would result in vastly improved facilities and add much to the pleasure and benefit of each citizen and visitor.

I incline to the belief that this will go down in history as an epoch-making conference, it will divide the time when this resort as well as the great national parks were operated locally with but scant knowledge of their conditions on the part of the department, from the time when the department actually knows the needs and is in personal contact with local conditions. From my experience I am strongly in favor of a national park bureau, with a bureau head whose duty would be to personally know the needs and local conditions; it is difficult for an official in Washington, without knowing the ground, to determine always just what is most desirable; for instance, during all the time since 1832 to this good hour, but two heads of the department have ever visited this resort. This is unfortunate, for the presence occasionally of such official inspires the citizens to a more cordial support of the governmental efforts, and brings about a more hearty cooperation in the administration of our affairs, the people like to feel some one at the head knows them and and knows their needs.

Some of the matters discussed here appear to me to depend altogether on local conditions, so that a general rule is impossible, for instance, the

permission of automobiles in national parks. Now take our reservation; very few there are who would even advocate the use of machines here, while perhaps there are other parks where no harm could follow their use, so that the result brings us back to the matter of a park bureau where its head could after personal acquaintance determine which was best.

This conference will I feel sanguine result in one thing which is bound to be beneficial, that of our meeting the Secretary. Getting acquainted with him and knowing him is bound to make every subordinate here feel a personal loyalty to him and increase our zeal in our effort to add all the honor and luster to his administration within our power by each doing his level best.

Mr. Secretary, I want on behalf of the citizens of the greatest health resort in the world to ask you now to come and see us, let us demonstrate to you that we all feel grateful for your efforts in our behalf, that we appreciate your interest in us, and your efforts to ameliorate in every possible way conditions which will insure to every citizen and visitor the best possible results. The Government has no asset nearly so valuable as these hot waters—forests may be replenished, roads may be built and restored, water may be conserved, all things material may be increased, but health when lost can not be bought, the nearest approach is to come and bathe in these wonderful waters and obtain rejuvenation; to the sick they bring health, to the afflicted they bring relief, to the well they bring brightness of eye and alertness of step, rest from fatigue and happiness to all.

The SECRETARY. I notice the name of Maj. W. R. Logan, superintendent Glacier National Park. I would like to hear from Maj. Logan.

Mr. HERBERT F. MCCABE. Maj. Logan is here, but owing to a severe cold he has requested that I read his paper or incorporate the same into the record of the conference.

The SECRETARY. Very well, Mr. McCabe, we will be glad to have you read the paper.

A NATIONAL PARK IN THE FORMATIVE STAGE, BY W. R. LOGAN, Superintendent, Glacier National Park.

It occurred to me when I was assigned to prepare a paper on "A national park in a formative stage" that it would be interesting for you to know something about the earlier history of our latest born national park at a time when it was entirely uninhabited save by the wild animals of the mountains and roving bands of Indians of the Kalispell, Kootenai, Piegan, and Blackfeet tribes.

It was my good fortune in the springtime of my young manhood in the years 1881 and 1882 to visit the region which is now known as Glacier National Park with an exploring expedition headed by Prof. Rafael

Pumpelly, of Newport, R. I. The first year, in the month of June, we made an attempt to enter the country from the east side of the mountains, but the snow was so deep upon the summit of Cut Bank Pass that it was impossible for us to continue; so we "back tracked" to the prairie country—went around to the north and tried to effect an entrance through Kootenai Pass. Here again we failed, owing to the tremendous amount of snow choking up the pass, and the attempt to enter was abandoned for that year, as Prof. Pumpelly had other exploring work awaiting his attention in the vicinity of what is now Great Falls.

The following year we made a second attempt; this time we decided to try an entrance from the west. In the month of August we started with a pack train from Helena, journeyed down past Missoula, came across the Big Blackfoot, on down to the Jocko Agency, thence crossing the reservation, following along the west side of Flathead Lake to the place where the town of Kalispell now stands, which at that time was bare prairie. From that point we moved up to the present site of Columbia Falls. At that time this fertile region, which is now so thickly populated, was inhabited by a few wandering bands of Indians, our party comprising the only whites in that section. From the site of Columbia Falls we plunged into the mountains through Bad Rock Canyon. After traversing over portions of the Flathead country for several days finally we came to the south shore of Lake McDonald, where we picked up an old Indian trail which led us over Cut Bank Pass. The trip was a strenuous one, as we had to chop almost our entire way through the mountains, the Indians having abandoned the trail some 25 or 30 years previous. Only one conversant with mountain travel can realize the difficulties to be encountered in making a trip of this nature, and more especially in following an old Indian trail, which is always laid out along lines of least resistance. Our first discovery of a glacier was at a place we called Mud Creek, the name of which in later days was changed to Nyack Creek. This glacier was afterwards named by me "Pumpelly Glacier," in honor of Prof. Pumpelly, the leader of the expedition. According to information I now have, Lieut. Ahern, of the United States Army, was the next man to enter, Ahern Pass being named after him. Then came the Great Northern Railway by way of the old Two Medicine Pass, opening up to the world the famous Lake McDonald, located at the southern end of the park, within 3 miles of their track at Belton, Mont. It was not long after that some enterprising people of Kalispell cut out a trail from Belton to Lake McDonald, and for years the people of Kalispell and the Flathead Valley visited the Lake McDonald region during the summer months. Finally the attention of the Members of Congress from Montana was called to the scenic beauties of this portion of the Rocky Mountains, and I believe Lake McDonald was visited by Senators Carter and Dixon, who were very much impressed with the scenic wonders to be found there, and steps were immediately taken to have Congress set the same aside as a playground for the American public.

Glacier National Park, the youngest of our national parks, was created by the act of Congress approved May 11, 1910. It is located in northwestern Montana, and its 1,400 square miles embraces rugged mountain peaks, forest-clad valleys, glistening glaciers, and deep blue mountain lakes. The park is bounded on the north by the Dominion of Canada, on the east by the Blackfeet Indian Reservation, on the west by the Flathead River, and on the south by the Great Northern Railway. The park possesses attractions for the scientist and tourist which are not surpassed in any country of the world, tourists of world-wide experience pronouncing it the Switzerland of America. Within its confines are 60 large glaciers, these enduring ice sheets spilling their pure chill waters over hundreds of cataracts and splashing cascades into foaming mountain streams, where all varieties of trout abound, into clear, cold lakes that lie long and ribbonlike in the forested valleys. Cut in twain as the park is by the Continental Divide, the lofty mountain peaks within its borders are covered with perpetual snow.

To quote an excerpt from an address by Mr. R. B. Marshall, chief geographer, United States Geological Survey, delivered before the Canadian Camp, New York City, March 6, 1911:

I say without fear of contradiction that Glacier National Park is one of the most beautiful mountain sections in the world. To the east lie great plains, drained by the Mississippi River system. To the west, in sharp contrast, rise great walls of mountains, forming the Continental Divide, extending apparently unbroken for miles. In the canyons are roaring streams, heading in the melting snow and ice, flowing into placid lakes and on into the arroyos of the plains beyond. The western portion is drained by Flathead River eventually into the Pacific.

Rising more than 10,000 feet above sea level is Mount Cleveland, the highest of innumerable lofty peaks. Dotted over the entire region are many beautiful lakes, some only a hundred feet, others 10 miles or more in length. There are in all more than 60 live glaciers, some containing but a few acres, others several miles in extent. The whole region is inhabited by wild animals, but the unwritten sign of the boundary line warns the hunter that the park game is reserved for the pleasure and enjoyment of the people. The numerous streams and lakes abound in gamy trout of many varieties, and, while you may not hunt in the park, Uncle Sam places no bar upon the use of the rod and reel. In fact, here is everything to satisfy the most ardent student and lover of nature.

One of the most attractive features of the Glacier National Park, in my opinion, is its location immediately adjacent to the Canadian boundary line, with its possibilities for the creation of an international park.

With this brief introduction of our park, I will give a short résumé of the work accomplished during my administration from August 8, 1910, at which time I was detailed as superintendent of road and trail construction, up to the present time. Twenty-eight days before my arrival at the park and assuming charge forest fires broke out in various portions of the reservation, and immediately upon entering duty at the park I devoted all my attention and directed my energies in fighting the fire fiend, which for some time, on account of the unusually dry weather, threatened to wipe out the entire park. In connection with the fire

fighting, I was rendered invaluable assistance by the War Department, which detailed six companies of soldiers to assist in checking the fires. Too much praise can not be given the officers and soldiers for the excellent service they rendered during the month they were in the park. And right here at this point I might say that to my mind one of the most important problems with which a park superintendent has to deal is the fighting of forest fires, and I hope to hear this question discussed fully at the conference. I am glad to say that Mr. Graves has fully covered this question, and I know his remarks will be of great value to the superintendents present. The scenic beauty of our national park is enhanced to a great extent by virgin forests of western larch, cedar, white pine, Douglas fir, spruce, and hemlock, and if these forests are destroyed or even scarred it will take many generations to restore them to their present condition. I am glad to be able to say for our park that fortunately the terrific fires that swept within its borders last year were confined to portions not visited by tourists, and the scenic beauty of the park suffered little or no damage. This year we have not had a single fire of any consequence, as extra precautions have been taken and the season has been an unusually wet one. Upon the cessation of the fires in 1910 I turned my attention to trail work. Very little was done, however, along these lines, as the season was about over, and camp was broken September 26.

On the 28th day of April, 1911, I arrived at Belton and immediately commenced active operations, my first step being to secure deeds to the right of way between Belton and Lake McDonald from the owners of patented lands through which the proposed government road was to run. I called a conference of the several landowners, and after much persuasion and difficulty finally secured a right of way 60 feet wide and a little over 2 miles in length through the dense forest extending from the Middle Fork of the Flathead River to the south shore of Lake McDonald. The difficulty I had in securing this right of way, as well as other problems which have arisen by reason of private holdings within our park brings out another qnestion which should be taken up at this conference, viz: "What are we going to do with the private holdings in our national parks?" This question naturally leads us up to the subject of jurisdiction over these patented areas, which is a very important matter. After securing deeds to the right of way and forwarding them to Washington, I commenced work on the road and here is where my real troubles started. The proposed route was almost a quagmire from one end to the other, the trees on the right of way averaging from 12 inches in diameter to 5 feet. First came the cutting of the trees on the right of way, sawing them into merchantable lengths and "skidding" them off the right of way; then the piling and burning of the brush. After this was done, came the next stage of the work, viz, blowing out the stumps. Approximately $1,000 was expended for dynamite and powder for this part of the work, so you can get an idea of the number of stumps. After the stumps

were blown and the roots pulled out came the building of the subgrade. In order to get the best subgrade obtainable, I found it necessary to take the road down from 18 inches to 5 feet, to say nothing of the numerous fills that had to be made. During the period that we were engaged upon this part of the road incessant rains set in, which made the grading very difficult. Next came the putting down of the cushion over the subgrade, which had been crowned to the proper height, leaving it in proper shape for the crushed rock and dust coat, a coating of 6 inches of crushed rock and gravel going on and then the necesary dust coat. The road proper was made 24 feet wide, leaving 8 feet of a brim on each side, which I propose later to level to the proper grade and plant in grass seed, thus making a border of 8 feet of green grass on each side of the road. At the present time I am glad to say that the road is almost completed.

At the same time that I was engaged on road work I had small crews scattered throughout the mountains cutting and cleaning out old trails and building new ones. A great deal of this work was done by my ranger force, whom I wished to harden up and toughen for real ranger work in the mountains. In addition to my rangers I also had other small crews out doing the same kind of work. While laying out and constructing trails this year I kept two points in mind: First, to have the trails run to the best scenic points of interest, and, second, with a view to a fire guard system, building the trails so that I can quickly throw a fire-fighting force from headquarters to any portion of the park which may be endangered by fire, always keeping in touch with my base of supplies at Lake McDonald.

The following table shows the number of miles of trails cleaned out and built this year:

Trails cleaned out and built, season of 1911.

	Miles.
Old trails cleaned out from foot of Lake McDonald to head of lake	11
New trail from foot of lake to head of lake	1
McGee's Meadow Trail, partly reconstructed	4½
New trail from Ranger Station at head of Lake McDonald to the Falls	2
Cleaned out trail from head of lake to Avalanche Basin	7½
Cleaned out trail from head of lake to Sperry Glacier	6
Cleaned out trail from head of lake to Kootenai Lake	34
Cleaned out Brown's Pass (Bowman Lake trail)	20
New trail Bowman Lake country	6
Cleaned out old trail from boundary line up Boundary Creek	8
Built new trail Belton Hills	15
Built Red Eagle trail	20
Cleaned out Red Eagle trail	10
Cleaned out Gunsight trail (this trail partly rebuilt)	20
New trail up Park Creek	7
Cleaned out Swift Current trail	10
Built approximately 12 miles of trail in Belly River country	12

making a total of 194 miles of trails which are now in fair condition.

This being the initial year of the park, the trails were hurriedly built to accommodate the tourist travel, which far exceeded our expectations. It is my purpose next year to extend these trails to a width of 8 feet, making the trail proper 4 feet wide, cutting out as much of the heavy grades as possible in order to insure the greatest possible safety to tourists. In this connection I might state that I can use $50,000 on trail work next year to good advantage.

During the time I was engaged on road construction and trail work I had a crew of men out installing a telephone system, and I now have 48 miles of telephone line, which includes 7 miles of a private line, which eventually we will take over. Ultimately I hope to connect up all the more important points by telephone in order to keep in touch with all parts of the park. In some instances use was made of the trees without felling them to string the wire on, but in most cases regulation telephone poles were put in, as for example, the line between Belton and Lake McDonald, where temporary headquarters have been established. The line between Lake McDonald and Logging Creek was installed more for the sake of fire protection than for any other purpose. By means of this line we can keep in touch with the forest ranger stationed on the south side of the Flathead River, who has a better view of the park from his station than my own rangers, and who can thus instantly notify us of any fires breaking out in that portion of the park. On the other hand, my rangers on the north side of the Flathead from their lookouts have an excellent opportunity of detecting fires in certain parts of the national forest, and they in turn have instructions to promptly notify the forest ranger should they see any indications of fire in the national forest. The forest ranger in charge of the Flathead National Forest and I have agreed upon this plan, and I believe such cooperation will prove highly beneficial to the national forest and the park.

Touching upon the matter of rates exacted from concessioners doing business within the confines of the park, the rates fixed for this season are purely tentative and will be adjusted to meet the increase in business. This subject of rates brings out another problem, viz: Should not certain privileges be granted for a longer period than one year? For instance, such concessions as permanent camps, hotel privileges, boat and stage privileges—would it not be advisable to grant these privileges say for a period of five years, fixing the rates on a basis of every 1,000 people, the department maintaining the right to advance the rates to meet the increase in tourist traffic, say on a basis of 1,000? As conditions are now concessioners are inclined to hesitate about investing a great amount of capital without some assurance that their privilege will not be taken away. I simply touch upon this question in order to bring it to the attention of the conference, and will not at this time go into any discussion concerning it. To meet the increase in travel on Lake McDonald I advised Messrs. Denny & Kelly, who have the boat privilege on the lake, to build a larger boat, which they accordingly did, and we now have on

Lake McDonald, in addition to the number of private boats, three passenger boats, having a carrying capacity all told of 175 persons.

During the summer I built one large dock and one smaller one, which are used by the licensed passenger boats as well as the private boats on the lake.

In conclusion I would state that in taking up the administering of Glacier National Park, which, as you know, is in a formative stage of development, I have kept in mind the following points, to which I shall adhere during the time I am superintendent:

To inaugurate and establish a definite and well-defined policy with respect to the handling of concessioners doing business within the confines of the park.

To develop the park as rapidly as possible consistent with facilities now obtainable, keeping in mind the future day, which I feel is not long distant, when the American traveling public will at last realize that the works of nature of their own country are unsurpassed anywhere in the world and our national parks will come into their own.

The laying out of comprehensive roads and trails to the best scenic portions of the park and the installation of a telephone system in order to insure better supervision and protection from fire, always keeping in mind that the preservation of nature's wonderful handiwork for future generations is the primary object of Congress for setting aside this area as a national playground.

The SECRETARY. We will now hear from Mr. Hall, Superintendent of the Mount Rainier National Park.

ROAD AND TRAIL CONSTRUCTION, WAGON AND AUTOMOBILE TRANSPORTATION, HOTELS AND TENT CAMPS IN THE MOUNT RAINIER NATIONAL PARK, BY EDWARD S. HALL, Superintendent of the Mount Rainier National Park.

ROAD AND TRAIL CONSTRUCTION.

The Government road in the park was opened for travel to the Camp of the Clouds, in Paradise Valley, a distance of 20½ miles from the park entrance, late in the summer of 1910, although not completed at that time. During the present season approximately $10,000 is being expended on the road above Narada Falls, this amount remaining from the original appropriation of $185,000 for its construction.

The road is well located, but in places is narrow and poorly drained. Below Longmire Springs a 2 per cent grade is obtained, and between Longmire Springs and Paradise Valley it exceeds 4 per cent only in a few short stretches.

The bridges are of heavy construction and well built except those over the Tahoma and Kautz Forks, spans of 40 and 30 feet, respectively, and these should be replaced with steel bridges.

Three and one-half miles of road has been constructed by the Government from the western boundary of the Rainier National Forest to the western boundary of the national park to connect the park road with the county road. This stretch of roadway is in bad repair and has not been brought to the grade intended by the engineer's survey. It should be transferred from the War Department to the Interior Department, placed under the control of the park superintendent, and appropriations made for its upkeep and repair.

The present road from the western boundary of the Rainier National Forest to the Camp of the Clouds, in Paradise Valley, should be widened to 16 feet, and at dangerous points parapets should be constructed to keep stages and automobiles from going off grade. It is estimated that the cost per mile for widening the road to 16 feet would be $3,500, except the section of rock work above the Nisqually Glacier which extends for a distance of 2 miles. This section is through a side cut of rock and hard pan, with the present wall from 12 to 40 feet in height, and with a perpendicular drop on the outside of from 800 to 1,200 feet. About 1,000 feet of the solid rock can be widened by a side chamber for approximately $2.50 per foot, the remainder must be widened from 8 to 10 feet on the bank side and the bank reduced to a slope of one to one to prevent the annual slides which are caused by the swelling of the material on the bank by rain and frost. Under present conditions the ditches fill completely with the first rain. Dry rubble walls can not be maintained on this material on account of the swelling and sloughing off under the foundations.

Dirt for surfacing is very scarce, volcanic ash being used where obtainable. This ash makes a solid and dry covering when mixed with the proper amount of moisture and clay but wears rapidly and is hard to secure in any quantity, as only a thin strata underlies a heavy growth of timber and moss. At a point 11½ miles above Longmire Springs a deposit of clay mixed with sand and gravel has been opened and is being used for surfacing across meadows and rock slides. This is the only suitable soil for surfacing so far found in any quantity.

Unlimited quantities of tough rock for macadam are found along the road in the park. One large slide of columnar basalt, broken ready for the crusher, has 3,000 feet of road constructed through it, and many fine ledges of granite are cut by the road from Nisqually Glacier to the head of Paradise Valley. The value of material found in the park for binding purposes in macadam construction has not been proven, but the cementing properties of the soft rock and hard pan on Ricksecker Point is very noticeable.

It is estimated that by installing a rock-crushing plant in the park the road could be macadamized for $3,000 per mile, and I wish to recommend that $75,000 be expended for widening the road to 16 feet, construct-

ing parapets at dangerous points, and building steel bridges over the Tahoma and Kautz Forks, and that an additional $70,000 be expended for the purchase of a rock-crushing plant and road outfit, and macadamizing the road its entire length, these estimates not including any improvement to the Government road outside of the park.

A survey has been made by the United States engineers for a road into Indian Henrys Hunting Ground. This proposed road would branch off from the present road 4 miles above Longmire Springs and would be approximately 6 miles long. It would open up another beautiful mountain valley, and it is recommended that an expenditure of $20,000 be made for the construction of this road.

A survey should be made for a complete system of roads in the park, and with this object in view I wish to recommend that an expenditure of $25,000 be made for this purpose. When this survey has been completed Congress should be asked to make an appropriation to cover the cost of constructing the entire road system, available each year in amounts that may be expended during the open season to the best advantage. If this plan is carried out construction work could be started on the north and south sides of the park at the same time, thereby opening the north side for tourist travel.

All Government trails in the park are well located and are in good repair. They are, however, entirely inadequate for its proper patrol and protection, and a system of trails should be laid out and constructed at the earliest possible date. Heavily timbered portions of the park are now all but inaccessible and in the event of fire great difficulty would be experienced in getting a fire fighting crew, with necessary tools and provisions, to these inaccessible points.

A trail should be constructed around the mountain at the lowest practicable elevation, and from this main trail short trails should be built that would reach all parts of the park. With the trails now constructed it is beileved that an expenditure of $10,000 would complete a very satisfactory system of trails, and it is recommeneded that this amount be expended during the season of 1912. This trail system is considered to be the most important and necessary improvement to be made in the park.

Trail construction in the park is difficult and expensive owing to the rough character of the ground, the heavy stand of timber, and the cost of transporting supplies.

WAGON AND AUTOMOBILE TRANSPORTATION.

The Tacoma Carriage & Baggage Transfer Co. operate the principal stage line in the park, using 28 head of horses, three 4-seated and four 3-seated stages from Longmire Springs to Paradise Valley, and between Ashford and Longmire Springs three 18-passenger automobile stages, one

automobile for transporting express and baggage, and a freight wagon. The automobile stages have not been found to be entirely satisfactory owing to the rough roads over which they are operated.

This company conducts its business in a satisfactory manner and the equipment is as good as may be expected considering that its permit to operate in the park is granted only from year to year.

George B. Hall conducts a livery business at Longmire Springs and uses 37 saddle and pack horses and 13 driving horses. He operates three 3-seated stage wagons between Longmire Springs and Paradise Valley, gives satisfactory service, and has had all the business he could handle during the present season.

Six persons have been granted permits for the use of "rent automobiles" in the park. These machines are operated between Tacoma and Nisqually Glacier, and will average perhaps 15 trips each during the season. They are not run on schedule and make trips only when a load can be secured.

Private automobile travel has been very heavy during the present season, 1,006 machines having entered the park for the season to September 5. A fee of $5 is charged for a season permit for each machine, and the revenue from this source to September 5 has been $3,750. To this date 9,513 persons have passed in over the Government road.

The rules and regulations governing the admission of automobiles into the park are rigidly enforced, and the disposition of most owners is to adhere to them without question. No automobile accidents of a serious nature have occurred in the park.

HOTELS AND TENT CAMPS.

The hotels and tent camps have been entirely inadequate to accommodate tourists visiting the park during the present season.

The National Park Inn is a three-story building 125 feet long by 32 feet wide, with 36 rooms, and by using 86 tents in connection will accommodate 225 guests. This hotel was constructed during the spring of 1906 and was opened for business July 1 of that year. It is not properly constructed for a first-class hotel, and it is understood that the company contemplates erecting a more modern building before the opening of another season. A log clubhouse has recently been constructed near the main building. It is attractive in appearance and is used as a recreation hall by the hotel guests.

The tents used in connection with the hotel have board floors and walls, are equipped with doors, electric lighted, and are well furnished. The hotel table is supplied from the commissary of the Chicago, Milwaukee & Puget Sound Railway at Tacoma and is satisfactory. A complete refrigerating plant is operated in connection with the hotel.

The Longmire Hotel, maintained on the Longmire patented tract, is a small frame building with 12 rooms. Tents are used in connection, and it is operated as a second-class hostelry and does a large business.

At Paradise Valley, a distance of 6½ miles by trail and 14 miles by road from Longmire Springs, a tent camp with 60 tents is maintained. This camp is run at its full capacity during the months of July and August.

At Indian Henrys Hunting Ground, a distance of 7 miles by trail from Longmire Springs, a tent camp with 15 tents is maintained, and does a good business.

These two tent camps are of a second-class order and are not often patronized by persons who expect first-class accommodations, and it is believed that the lack of first-class tent camps or hotels in these two mountain valleys reduces the aggregate number of persons visiting and remaining in the park many hundred each year.

The sanitary conditions at these camps are not satisfactory, and this defect can only be remedied by the construction of a sewer system or septic tanks.

The SECRETARY. Mr. Richard Wright will now tell us something about the Mesa Verde National Park.

THE MESA VERDE NATIONAL PARK; ITS PAST, PRESENT, AND FUTURE, BY RICHARD WRIGHT, Acting Superintendent, Mesa Verde National Park.

The Mesa Verde National Park was created at a comparatively recent date; that is, by the act of June 29, 1906. It is not a large reservation, containing but 66 square miles. It is situated in the extreme southwestern part of Colorado, adjoining the northern boundary of the Southern Ute Indian Reservation.

The park was established for the preservation of an extensive and remarkable group of cliff dwellings, the habitations of a tribe of prehistoric men of the stone age. The cliff dwellers themselves were small of stature, peaceable in character, dwelt in communities for mutual protection and were skillful and industrious to a high degree. The archæologists tell us that from the mummies which have been found in the cliff houses these human beings were dolicocephalic, or narrow headed, in this respect differing markedly from the local Indians, who are brachycephalic, or broad headed. On account of the diminutive stature of these men they did not excel in combat or warfare, and hence were obliged to fortify themselves in the high and almost inaccessible recesses of the cliffs. That they were peaceable and industrious is shown by the remains of the lasting and artistic pottery they made, the tracts

they cultivated on the level mesas above the cliffs, and the care and skill with which their dwellings were constructed. That their age was a stone era is shown by the absence of any metals from their abodes, and the presence of exclusively stone implements, such as grinders, hammers, arrowheads, and the like. That they dwelt in communities is demonstrated by the construction and architecture of their buildings, their dwellings containing hundreds of individual living rooms and chambers, and larger rooms, called kivas, which were used for assembling places, either for the purpose of worship, councils, or ceremonies.

These ancient ruins are spectacular and impressive in appearance, being constructed in the recesses of the solid cliffs, walled about like ancient fortresses and crowned with towers and bastions like castles of the Middle Ages.

Little is known as to the exact era of the cliff dwellers' existence. Dr. Hewitt, a leading archæologist, has said:

> The time element in the history of these ancient groups is obscure. We know that the cliff cities were in ruins at the time of the coming of the Spaniards. Any statement of the date of their abandonment must be largely conjectural. If we were to venture such a conjecture, it would be to suggest from 8 to 10 centuries ago as the most recent date of occupation in the localities above described.

The greatest problem which has confronted the department in the past in connection with the development of the Mesa Verde National Park has been the transportation of tourists from Mancos, the nearest railroad point, to the cliff dwellings, a total distance of about 30 miles. The Mesa Verde proper (meaning green plateau) is an immense and intensely interesting geological formation, consisting of tinted rim rock, huge and precipitous slopes of sand and shale, with rolling hills of verdure on the top. The cliff dwellings are found in the huge canyons located in the extreme southern part of the park and in the sections of the Southern Ute Indian Reservation lying directly south of the center of the park and within the 5-mile strip over which we have jurisdiction.

The mesa rises almost abruptly from the plain to a height of about 2,000 feet. When once on top, travel is comparatively easy. The problem we have had to meet is the construction of a highway so graded that the top of the mesa can be reached by a passable wagon road.

The line of road was surveyed to wind around the foothills at Point Lookout, the northern extremity of the park, thence up the west side of the mesa through the shale to a saddle at the head of what is known as Moorefield Canyon. The road then turns into Moorefield Canyon, out again on the side of the mesa, and then into the head of Prater Canyon. At intervals along this route the roadbed is necessarily cut into the shale. This substance is a sort of decomposed or disintegrated rock which can easily be crushed in the fingers and wholly lacks substance or any degree of resistance to either wind or water erosion. Those portions of the road which run through this shale are continually caving away or being blocked with slides from above, caused by rains. The only remedy for this, in my opinion, is the widening of the roadbed at these points

at least five feet, surfacing with crushed rock, cribbing with stone or timber, where necessary on the outside edge, and the building of solid retaining walls on the inner side. This strengthening of the road must be done if we are to have a safe and substantial road for tourists. We must have the money to do the work.

At the end of this route—that is, at the head of Prater Canyon, where the road leaves the slope and runs on top of the mesa—this difficulty ceases. The contractor who has been working on the road this summer has built 3½ miles of good road along the line of survey southward toward the ruins. We need further road construction for approximately 6 miles in order to connect up with that portion heretofore built northward from the ruins along Chapins' Mesa. When this work is finished the entire route will be open to wagons and carriages, and if we can obtain sufficient money to properly rebuild the shale road the grade will permit automobile traffic.

The principal ruins, as I have stated, are situated south of the Indian reservation line, outside of the park proper but within the five-miles strip, over which we have jurisdiction. Through the efforts of assistant Commissioner of Indian Affairs Abbott, Maj. McLaughlin, and Inspector Linnen, a treaty was entered into last spring with the Southern Utes whereunder the Government takes a tract lying directly south of the park and embracing the most important ruins in exchange for certain public lands suitable for grazing south of Ute Mountain and far west of the park. I am informed, however, by Mr. R. W. Berry, Geological Survey topographer, who has been engaged on a map of the park, that the lines run southward by these gentlemen to include the ruins omit the inclusion of Balcony House, one of the most important structures. This was due, no doubt, to the inaccurate composition of the Land Office map of the park. This omission should be remedied by such action as the department may deem advisable.

The future promises well for the Mesa Verde National Park provided we can secure a congressional appropriation sufficient for its proper development. The present route to the ruins is by a horseback trail. This trail is fearfully rough and precipitous, and it seems almost unnecessary to refer to the utter impossibility of promoting heavy tourist travel to the ruins under these circumstances.

I have asked in my estimate for a sum of approximately $28,000 for road construction. Compared with the amounts asked for by the custodians of some of the other national parks, this amount seems modest indeed.

The Denver & Rio Grande Railroad has tentatively promised that excursion rates to the park will be made as soon as the main wagon road is completed and the running of excursion trains thereby justified.

Upon the completion of the various improvements which we contemplate, such as the completion of the main wagon road, telephone lines, custodian's house, artesian wells, etc., we have every just reason to

believe that tourist traffic will come to the Mesa Verde in numbers hitherto undreamed of. The park is rached by the Denver & Rio Grande Southern, a narrow gauge railroad leading into Mancos by two routes, the northern and the southern. The southern route, which, in my opinion, is the best one for eastern travel, comes down from Denver by way of Pueblo, Alamosa, and Durango. At present visitors must stop over night in Durango and leave for Mancos, a three hours' journey, late the following morning. I think we will have no trouble in persuading the railroad authorities to run the cliff-dwellings excursion trains right through Durango to reach Mancos before dark during the summer season.

The travel which will come over the northern route will bring tourists down from Grand Junction and points west by way of Telluride and Montrose.

To my mind the Mesa Verde Park has wonderful possibilities for development. If properly provided for and effectively administered it should rank among the most important of the national reservations, a position which its quaint and mvstic contents, its natural beauty, and its historical value fully justifies.

The SECRETARY. Gentlemen, I think from the character of this and the previous report there is really no useful purpose to be subserved in reading reports concerning which there is no occasion for discussion. I mean the detailed reports on particular parks will be quite as useful in the record as they will be to simply read them to this audience. If there are any of the papers, however, that are of a character which will lead to discussion by the entire body that would be different.

Assistant Secretary THOMPSON. Before this body finally adjourns, I think it proper to show our appreciation in some formal manner of the the entertainment we have had at the various magnificent hotels throughout the park and also of the courtesies extended to us by the Yellowstone Park Hotel Association, the Yellowstone Park Transportation Co. and the Yellowstone & Monida Stage Co. They have by their kindness and courtesy added materially to the comforts and success of this gathering. I offer therefore for your consideration the following resolution:

Be it resolved by the conference of National Park Superintendents now in session at the the Canyon Hotel in the Yellowstone National Park, That the hearty thanks and sincere appreciation on the part of this gathering are hereby extended to the Yellowstone Park Hotel Association, the Yellowstone Park Transportation Co., the Yellowstone & Monida Stage Co., and in particular to Messrs. H. W. Child and F. J. Haynes, for the uniformly kind and courteous treatment and consideration accorded by them to the officers of the Interior Department here assembled and to all other members of the conference.

Mr. E. M. SUNDERLAND. As I am the only one who made a remark which could be construed as a criticism of this magnificent house, it gives me great pleasure to second the motion.

The SECRETARY. I thought it would be wise not to have any formal resolutions, but I think this resolution would be a proper one now. I assume the intention was to include all those who have contributed to our pleasure. Are there any remarks on this resolution? If not, all of those in favor of it will signify by rising. (Resolution unanimously carried.)

Mr. STEEL. Before this meeting adjourns I want as one to express my gratitude to the Secretary of the Interior for the action he has taken in bringing this conference to pass, which has advanced the cause of national parks ten years since yesterday morning, and I would like to ask that all delegates rise to show their appreciation to the Honorable the Secretary.

The SECRETARY. I thank you. I want to say, in concluding, that perhaps mention should be made of those papers that have not been read or otherwise referred to. I want to say that Mr. Arant, superintendent Crater Lake National Park, is here, as well as Maj. Hallock, of the Hot Springs Reservation. I wanted merely to call attention to those papers that have not been read. Now, I think there is nothing that can be said in conclusion of what I regard as an exceedingly successful conference. I want to express my appreciation of the attendance of those who have come here—those who are connected with the service, those who have business relations with it, and those whose interests are indirect. I think we can all congratulate ourselves on this the first conference on national parks, and with that I shall declare the conference adjourned.

PAPERS PREPARED FOR THE CONFERENCE.

THE MEDICAL SIDE OF THE HOT SPRINGS RESERVATION, BY MAJOR HARRY M. HALLOCK, Medical Director.

The hot springs of Arkansas are 44 in number. They are located in a narrow ravine on the western slope of Hot Springs Mountain, which is a part of the Ouachita Range and an offshoot from the Ozark System. They are practically in the city of Hot Springs, which is 50 miles southwest from Little Rock and has an elevation of 600 feet above the level of the sea.

The water is remarkable for its purity and for the small amount of mineral matter it contains. Its temperature, as determined for the different springs, varies between 97° and 147° F. It is radio-active, and the beneficial results obtained from its use are now largely attributed to this fact.

The baths produce a reaction accompanied by an elevation of body temperature, accelerated heart action, with diminished blood pressure in the arteries, and a stimulation of the nutritive changes in the tissue cells, especially those composing the organs of elimination and those concerned in the formation of the blood. Combined with the internal administration of the water, they may reasonably be expected to afford relief in

gout or rheumatism after the acute or inflammatory stage; in neuralgia when dependent upon gout, rheumatism, malaria, or metallic poisoning; in the early stages of chronic Bright's disease, in catarrhal conditions of the gall bladder, in certain forms of disease of the pelvic organs, and in sterility in women, in chronic malaria, alcoholism, and drug addictions; in many chronic skin diseases; in some forms of anemia; in syphilis; in gonorrheal rheumatism, in toxemias and conditions of defective elimination; and in some forms of cardio-vascular disease with increased tension in the blood vessels. The baths are contra-indicated in tuberculosis of the throat and lungs and in all forms of cancer.

A second great resource of Hot Springs is its unusually fine climate, which makes out-of-door life not only possible, but enjoyable almost every day in the year. Overworked business and professional men and all who need rest and recuperation find in the reservation walks and drives, in visiting the many interesting points in the vicinity, on the golf course, and at the country club, forms of recreation that have a powerful influence in the restoration of health and strength. Much greater development of these features, however, such as the improvement of streets and roads, the erection of a casino for the maintenance of the better class of amusements and entertainments, as well as the maintenance of a street-cleaning department, and a larger police force, is essential if Hot Springs is to be fully developed as a spa.

The reputation of the locality as a health resort dates back to legendary times. It is known that the Indians brought their sick here in the belief that the Great Spirit was present in the water. It is said that even in those days there was strife for its control which finally terminated in the establishment of a neutral zone and a recognition of the common right of all tribes to participate in the benefits to be derived from its use. De Soto is believed to have bathed here in 1541. The earliest white settlement was made about the year 1800. From that time to the present day, faith in the restorative and curative properties of the water has steadily increased. By the year 1832 the belief had become so strong and so universal that Congress passed an act reserving four sections of land with the hot springs in the center, thus establishing the first national park. The purposes of this act were to secure to the people the use of the water free from commercial exploitation, and to provide room for the development of an adjacent settlement under the same government as the springs, for the safe harboring of those who might come for treatment. The wisdom and foresight in providing for a single government has been amply demonstrated by subsequent events.

In the year 1880 the Federal Government relinquished control over a large part of the original reservation, and upon this territory contiguous to the springs the settlement anticipated by the act of 1832 has been made, and is now represented by a city of 15,000 inhabitants. The divided jurisdiction resulting from this session is largely responsible for

the existence and continuance of certain conditions and practices that have a marked influence in lessening the benefits to be derived from treatment here, and for the failure to provide those adjuvants to the baths which are important factors in the complete development of a health resort. The objectionable features referred to are the various forms of graft (commonly known as "drumming"), gambling, and an excessive number of saloons, with other usually concomitant evils.

Commercialism is the basis of drumming. It has been practiced for years. It has been tolerated by the community and sanctioned by influential citizens. It is essentially different from the solicitation of the commercial salesman. It is practiced on the unsuspecting invalid of limited means, who is unable to work, and who often comes believing that the advertised control of the Federal Government extends to all features of the resort and is absolute and complete. In its ultra refinement the system of "fruiting," as formerly practiced, aimed to convey to an accomplice definite knowledge of the amount of money in a patient's possession, that it might all be secured at once. This information was conveyed by mentioning to a confederate in the course of ordinary conversation, the name of some common fruit, each variety representing a given sum which the unsuspecting patient had told the drummer he had provided to defray the expenses of his sojourn. Patients deprived of their money within a few days of their arrival have been forced to leave the town before they were able to test the cure.

This entire practice is founded upon deceit and falsification. It has been relied upon to procure patronage to the exclusion of that form of competition based on the best service. It has been a fruitful source of grievance, and at least indirectly, of acts of lawlessness and of violence. It has caused large numbers of patients to spread in their home neighborhoods unfavorable reports of local conditions, and it has impaired the confidence of the medical profession throughout the country in the benefits to be derived from treatment at the springs. While it is not so frequently or so openly practiced as formerly, it still persists, and will tend to continue so long as the financial returns of the bath houses, the druggists, and the doctors are based upon the number of patients treated. While it is possible to devise means for its reasonably satisfactory control, its extinction can only be expected through a development of the ethical sense of all who profit by the practice, or by the removal of the incentive out of which it grows.

The only physicians who are allowed to prescribe the water of the springs are those licensed practitioners of the State of Arkansas who have been examined by the Federal board of medical examiners appointed by the Secretary of the Interior. While there are a number of physicians of the highest professional attainments and moral standing enengaged in the practice of medicine in Hot Springs, there are others who

disregard the ethics of the profession. Quacks, charlatans, and venders of secret remedies thrive on the credulity of the visitor.

The evil effects of gambling houses and of an excessive number of saloons are too well realized to require comment. It is sufficient to say that they are tolerated, if not encouraged, because the city needs the revenue that is derived from them. The expenses of the local government last year were $119,291.43. There was a deficit of $30,397.90. The principal sources of revenue were, from taxation, $33,380.52; from saloon licenses, $36,800; from police-court fines and gambling, $15,545.25. Eighty per cent of the taxes go to the State, county, and schools, leaving but 20 per cent for city purposes proper. There is no prospect for immediate betterment, and greatly needed municipal improvements can not be made. Endeavors to increase the city revenues are subject to diverging influences. A business tax is favored by local interests, that the money so collected may be spent within the city, while the State inclines to an increase in general taxation to augment the State revenues.

At watering places abroad, where the same government exercises jurisdiction over both the springs and the adjacent municipality, it is customary to tax the visitor for the support of public-utility services, for it has long been recognized that with the large nontaxable floating population of a "cure" it is impracticable to maintain satisfactory civic conditions, to enforce law and order, and to provide the other features of a health resort on the same basis of revenue that pertains to other cities. It would appear practicable to adopt this system here; or increased revenue could be secured by diverting a part of the proceeds from the baths were it not for the divided jurisdiction and the leasing of the water privileges to private interests.

A marked and general awakening has occurred in all civilized countries within the last decade or two, finding expression through local, State, national, and international organizations, as well as through the public press, to the importance of hygiene, sanitation, and preventive medicine. Knowledge of these subjects has been so widely spread that the average citizen has come to more fully realize the value of scientific methods in medicine and the fact that many diseases are preventable. He is more critical and exacting, and has increasing fear of contracting disease wherever the laws of sanitation are not enforced. For these reasons bath-house service that was acceptable a few years ago is no longer so.

The general conditions surrounding the visitor coming to Hot Springs gave rise to so much dissatisfaction and to so many complaints that within the past few years four separate reports by specially qualified commissioners have been prepared by direction of the Secretary of the Interior with a view to determining what steps were practicable for bettering both the treatment and the environment. In each the conditions already referred to were treated at length, as was also the service of the bath-houses, and the recommendation made that the medical and sanitary

work be placed directly under medical supervision. As a result of these recommendations and of a realization of the essentially medical character of the service the office of medical director was created September last, with the following duties:

(1) Full supervision of sanitation, hygiene, and hydrotherapy—in short, all that pertains to the bathing of patients in the leased bathhouses both on and off the reservation.

(2) Full charge of the Government free bathhouse and the employees therein.

(3) Maintenance of a clinic for the education of bathhouse operators and their attendants.

(4) Determination of the fitness of all attendants, physically and otherwise, for employment in bathhouses, both those operated by lessees and the Government bathhouse.

The work so far has been formative and constructive. Matters of sanitation and hygiene have been dealt with by inspection of the bathhouses and by class instruction of the attendants. The principles of sanitation have been applied in approving plans for the erection of new bathhouses and in determining what improvements shall be required in the old houses on the renewal of leases; in devising means for a sanitary laundry service, and for the cooling of hot water without contamination; in abolishing sources of infection, and in many minor details.

Many of the bathhouses are old, poorly planned, cheaply constructed, and insanitary. Some should be condemned, others remodeled and equipped with hydrotherapeutic apparatus and modern ventilating, heating, and plumbing systems. The windows and doors should be screened and the cellars and courts cemented.

The feature of bathhouse administration most open to criticism is the management. A foreman is provided for a gang of workmen, a head waiter for a hotel dining room, and a floorwalker for a dry-goods store; but the bathing of patients, which constitutes the service that forms the basis of the lease, has been practically intrusted to the attendants, while the manager, who is the only person in a supervisory capacity, is occupied at his desk with matters of administration of a totally different character. Nearly all complaints and unfavorable reports, both from physicians and from patients, relating to the bathhouse service in any way may be traced to this source.

The bath attendants, about 200 in number, although expected to carry out the bathing directions of physicians and to display reasonable intelligence in their ministrations to the sick, have heretofore never received any instructions in their duties from a competent source, nor have they been required to qualify in any way. They are all negroes. Upon examination a few were found to be illiterate and unable to read the bathing directions, while others were so nearly so that it is doubtful if they could render intelligent service. The majority, however, have a common-school education and are appreciative of the benefits to be

derived from the department's policy of affording them an opportunity to fit themselves for their work. Class instruction has been given to 178 attendants, with the result that 119 have been accepted and granted certificates of qualification authorizing their employment for the period of one year in any of the bathhouses receiving water from the hot springs. Fifty-nine have been rejected for varying degrees of illiteracy, alcoholism, lack of attention to duty, and persistent uncleanliness in person and clothing. This class work marks the first step in the development of a corps of selected and trained attendants. It will require considerable time to produce satisfactory results, but by persistently following out a policy of instruction for those who are willing to learn, and the elimination of those who are unfit, the efficiency of the service will ultimately be greatly increased.

By the act of December 16, 1878, free baths for the indigent were authorized, and in 1890 Congress made an appropriation for the erection of the present free bathhouse. Since it has been in use nearly 4,000,000 baths have been administered. The action of Congress practically amounted to an invitation to the sick to come to the springs for treatment, and they have come and are still continuing to come from every part of the country. The building is utterly unfitted for its purpose. It is inadequate in size, and only accommodates the patients by the use of pools, in which many sick bathe at the same time, and by reason of the fact that no space is devoted to many necessary adjuncts, such as hydrotherapeutic apparatus, examining rooms, a dispensary, an emergency ward, and office accommodations. The building is insanitary and in need of extensive repairs. It can not possibly be made into what would, in any just degree, represent the desire of Congress or the ability of the Government. A new, modern house, equipped with the latest and most approved facilities, is imperatively needed. Such an establishment under Government control would have a marked influence in bringing about improved conditions in the service of all the bathhouses.

Contact with the medical profession personally, and through the County Medical Society on the one hand, and with the bathhouse interests and the Business Men's League on the other, combined with the work as secretary of the Federal Registration Board, and the treatment of many patients at the Government free bathhouse, has afforded an unusual opportunity to view from different points the many diverging interests and opinions, and to note the deleterious effects of commercialism in a humane profession.

Public faith in the therapeutic value of the water itself has never wavered and despite unfavorable conditions the popularity of the resort has increased from year to year. This is a sound argument for bettering the service. An unusually strong foundation unquestionably exists in the water, in the climate, and in the faith of the people, for the development of a great health resort the equal of any in the world. A judicious

and far sighted policy successfully carried out is all that is required. With better service and conditions the resort would be visited by a constantly increasing number of foreigners, as places of like character abroad are now patronized by Americans. Symptomatic treatment of existing evils and objectionable conditions will result in improvement, but there are certain fundamental causes for their existence, the removal of which would be marked by a great and immediate advance. Development in certain lines already referred to can only be effected through legislation. It may be impracticable at the present time to adopt such radical changes as would be necessary to produce ideal conditions, but there is value in having an ideal, and its consummation is worthy of untiring effort.

The improvements that are not only necessary, but entirely practicable, can not be expected within a day, or within a year. They will necessarily require time, patience, and the constant and intelligent study of conditions as they must and will change. Thoroughly satisfactory results must await the continuing development of a public opinion on the part of all interested, that the best is not only none too good, but that it has the promise and the certainty of the most assured and permanent financial returns.

As an invitation has been extended to present the more difficult problems of administration for consideration at this conference, it is suggested that the following subjects might be discussed in connection with the affairs of Hot Springs, all of which are necessarily closely related to and vitally involved in the proper treatment of the sick.

(1) Federal jurisdiction over the city of Hot Springs.

(2) Government ownership and operation of the baths.

(3) The extinction or effective control of drumming.

(4) The procuring of funds for the development in the city of Hot Springs of the usual adjuncts to treatment at a spa.

(5) The elimination of gambling and objectionable resorts.

(6) The appointment of a health officer whose whole time may be given to the work of his office, and of a sanitary squad for the city of Hot Springs.

(7) The establishment of an emergency hospital service.

CONSTRUCTION WORK IN THE YOSEMITE NATIONAL PARK, BY D. A. SHERFEY, Resident Engineer.

As a preliminary to the subjects which have been assigned to me, I desire to speak of the general conditions governing construction work in the Yosemite National Park, some of which may be peculiar to Yosemite, but I imagine that many of them are common to more than two of the national parks.

Laborers are mostly drawn from the small mining towns in the vicinity of the park, there being no permanent community of laboring people

within the park, because of the impossibility of renting or building homes on Government ground. Hence the force is of a transient nature, and consists largely of unmarried men or those who have left their families to seek work at a distance. Ordinarily there are enough of these men to meet the needs of the park, but in case of a good demand for labor outside or an extraordinary demand within the park it becomes necessary to engage men from Merced or other towns of the San Joaquin Valley, and to pay the expense of their transportation to Yosemite, which amounts to about $10 per man one way. It is the custom of the most of our laborers to come into the park at the opening up of the work, usually afoot, and to leave before the winter weather sets in. They are housed in tents, which may be rented of the local store. They board themselves, there being no public boarding house where a laboring man can obtain meals within his means. These conditions do not operate to obtain or hold either a high class of men or efficient service. Most of them make good common laborers or teamsters, and a few who have been miners are quite skilled in rough rock work and the use of explosives. Common labor is paid $2.50 per day; teamsters and rock and powder men receive $3 per day; foremen of gangs get $3.50 per day.

The force of skilled labor immediately available consists of two carpenters, and only one of these remains in the park throughout the year. It is necessary to send at least 90 miles for brick masons, stonemasons, tinners, machinists, boiler makers, painters, plumbers, etc. These men usually demand high wages and their expenses for work done in Yosemite. And to avoid this expense, most all kinds of work other than carpenter work is done with common labor and often at the expense of good workmanship.

Construction materials are bought by proposals, and are usually furnished by firms in San Francisco. San Francisco depends upon the East for manufactured articles, and Yosemite is some 220 miles from San Francisco. This distance from the market, together with the method of purchase, prove always an embarrassment, and sometimes a veritable obstacle to the prosecution of a piece of construction work. The statements of bidding firms as to the time of delivery can not always be depended upon, and often after the acceptance of a bid, and perhaps the delivery of a part of the order, it is learned that the rest can not be delivered until the next ship comes into port. It is not possible for one remaining in Yosemite to be well enough posted on the conditions of the San Francisco market to make designs and plans calling for those materials which can be immediately delivered.

The Yosemite Valley Railroad has its terminal at El Portal, about three-fourths of a mile from the park boundary. The first-class freight rate over this railroad and its connecting lines from San Francisco to El Portal is 96 cents per 100 pounds. The Government does its own

hauling from El Portal to Yosemite, a distance of 14 miles, at a cost of about $6 per ton, which makes the cost of the transportation of a ton of first-class freight from San Francisco to Yosemite of about $25, with other classes in proportion. Because of this high freight rate it is desirable to buy in car load lots, thereby saving both in freight and price. A large stock of the common construction materials should be kept on hand. The practice of making separate purchases for each separate allotment should be avoided in as much as it is possible.

As it is not practical to meet each shipment at El Portal, unpack it, and inspect it before hauling to Yosemite, unsatisfactory materials are often delivered at Yosemite, and if rejected the Government is out the cost of unloading and hauling, and must put up with the inconvenience and delay of awaiting a new shipment from San Francisco.

The working season of about 8 months begins in April and ends in December. The best months are July, August, and September, but because of the fiscal year beginning on July 1 a large job done under a congressional appropriation must be started after the working season is one-half over, stopped during the winter, and started again in the spring with a new organization, and then rushed that it may be completed before the end of that fiscal year.

Yearly appropriations have not been large enough to attempt to complete within one year a job of even ordinary magnitude, so that but a small piece of road work has to be strung out over a number of years. These stops and starting again with new organizations have to be repeated year after year. Often because of limited appropriations an important improvement must be stopped and held in abeyance due to the emergency of some other project.

Most of the work done in Yosemite is by day labor, very little contract work having been attempted. As a general proposition I am in favor of the contract system of doing public works, and hope it may become more the practice in Yosemite. It is almost a necessity to enter into contracts for those works requiring skill in special lines. During this season a rock-crushing plant and a water wheel have been installed in a most satisfactory manner. Because of the conditions I have heretofore mentioned, I am strongly of the opinion that any project requiring the use of materials that must be shipped in can be more advantageously handled by a contractor who has an office close to the supplying market than by the park officials in Yosemite, who must handle their business through the mails with the lowest bidder, whose reputation and business habits are unknown.

Yosemite National Park is almost an undeveloped field so far as roads are concerned. Nine-tenths of the points of interest are accessible only by horseback over rough mountain trails and some are difficult of access even by these means. As the parks are set aside for the enjoyment and

pleasure of the public it is the duty of the Government to make easy the means of access to all places that a tourist would be invited to go. The United States Government has done no original road work in the Yosemite National Park, its only work of this nature has been the improvement and maintenance of existing highways. All of the present roads were at first built by private enterprise, and two of the most important ones are at this time toll roads. It seems to me that in a public park a toll road is an anomaly. I hope that the time is not far away when all private-owned roads in Yosemite will be taken over by the Government.

I would recommend that a complete road survey of a road system through the entire park be made. These surveys should be thorough, consisting of profiles, cross sections, lines permanently staked out, and adjacent topography. Investigations of available road material should be made, bridges and culverts should be designed, and an estimate of cost made. After this system has been laid out and approved by the proper authorities, construction should be carried on systematically and continuously from year to year until all are completed. Appropriations should be ample and should not be confined to any one fiscal year.

Although the principles of good road construction are general and well known, yet each locality presents its peculiar problem, and this problem in Yosemite is not a simple one. There is rock everywhere, but little of it is suitable for road metal. We have found but one place in the Yosemite Valley where a hard rock can be obtained. A No. 4 Gates gyratory crusher has been installed at this point, and we are just getting into position where we hope to build a system of first-class roads on the floor of the valley. This rock is very hard and consists of an immense slide of bowlders, which are to be broken by blasting into sizes suitable for the admission to the crusher. The crusher is driven by electric power conveyed over a transmission line 7½ miles in length from the Yosemite Valley lighting plant. The method of construction at present adopted is that known as the Telford road, which has been selected, not because of any preference for the Telford construction, but for economical reasons. Rocks of a suitable size for the Telford base can be gathered at most places along the foot of the walls of the valley and conveyed to the road with an average haul of about one-half mile. These rocks while suitable for a bottom course are too soft to make a good wearing surface. The surfacing metal is to be obtained from the rock crusher with an average haul of about 4 miles. It is hoped that we can build these roads at an average cost of $15,000 per mile. The greater portion of this cost is due to high cost of maintaining teams in Yosemite and the length of haul. It would be economy to adopt some method of power hauling, but the present bridges across the Merced River are too light for this purpose.

The roads we are now building are 22 feet in width, and are finished along the edges with a curb of large bowlders. This furnishes a very

pleasing road, suitable to the surroundings. As the floor of the valley is comparatively level and we are improving an old road there is very little grading to be done.

The roads leading into and out of the valley all have heavy grades, and in many places have almost perpendicular precipices both above and below the roadbed. These roads are generally so narrow that teams pass with difficulty. I believe that these roads should be made wider and safer. This means heavy and expensive construction, which may run as high as $30,000 to $40,000 per mile. The magnitude of an extensive road-building project in Yosemite National Park would justify the organization of a permanent road-building force and equipment. Effort should be made to keep together a trained body of men through the work.

The present road-building equipment is entirely inadequate, especially so in reference to transportation. It is the present custom to rent horses and wagons for this work. We are now hiring horses at $10 per head per month. Forage costs about 50 cents per head per day.

The national parks are places where nature has produced its grandest and most beautiful works, and I can not think of any excuse that justifies man to erect in such places buildings of ugly architecture and poor construction. This is the condition to-day in Yosemite. There is scarcely a building in the Yosemite Valley that even approaches the standards of good construction and the architecture of most of them is far from being artistic. Even those buildings that have been built by the United States Government are far below the standards of Government construction, due to the lack of sufficient funds. The only hotel in the Yosemite Valley was built some 30 years ago. It is a frame structure, a fire trap, without modern conveniences, and ill suited to the purpose. The buildings used by concessioners were constructed before the United States obtained control of the valley, and are of the cheapest and most flimsy construction.

Yosemite partakes of the nature of a small municipality. It has its water system, electric lighting system, and should have a sewer system. In order that it may be consistently and properly developed a comprehensive scheme should be prepared that would provide for reasonable growth in the needs of the valley. Plans of roads, walks, water pipes, sewers, pole lines, telephone lines, and building sites should be made and after approval by the department should be followed in all future work. A high standard of design and construction should be adopted. In reference to those buildings used by concessioners I am inclined to the opinion that it would be much better for the Government to construct and maintain the buildings and rent them to the concessioner.

The needs of the Government in Yosemite in the building line are extensive. There should be an administration building, a superintendent's residence, quarters for the permanent employees, laborers' quarters, storehouses, machine shop, workshops, blacksmith's shop, wagon sheds,

and modern stables. All should be of good construction and a pleasing style of architecture.

We have in Yosemite an electric lighting system. Current is furnished by two 75-kilowatt two-phase generators operating at 2,300 volts and driven by two Pelton wheels. The generators are of an out-of-date type but in good condition, and are giving good service and have a sufficient capacity to meet the needs of the park for some years to come unless an unexpected demand for electric power should develop. Our present lighting load is at its maximum about one-third the capacity of the plant. We have just replaced one of the water wheels with a new one of more modern construction, and should replace the other one as soon as funds are available. The transmission lines are in fair condition with the exception of some of the branch lines that were poorly constructed. All are overhead lines, and it would be very desirable to place them underground both for esthetic reasons and for ease of maintenance during heavy snow storms. The intake and penstock of the plant have been lately improved and are now in good condition. This plant furnishes power for driving the rock crusher and for driving two pumps that deliver water to tanks for use in road sprinkling.

Current is furnished to concessioners at the following rates: From April 1 to October 31 for 79 lamps or less, 66⅔ cents per month per 16-candle-power lamp; for 80 lamps, $50 per month; 81 to 160 lamps, 50 cents each; 161 to 240 lamps, 40 cents each; all above 240 lamps, 30 cents each. For the other months of the year the rate is 33⅓ cents per lamp per month. These rates are said to be rather high and the concessioners use as few lights as possible. There has been but little yearly increase in the number of lights used. We have under consideration the installation of a meter system instead of the above flat-rate system. It is hoped that such a method will induce the concessioners to adopt more elaborate schemes of illumination, lower the rates, and increase the revenues of the plant. Fuel in Yosemite is becoming more scarce and expensive each year, and it may be possible to develop a use for electricity for heating and cooking purposes. We are fortunate in having two good electricians employed throughout the year. All ordinary work of installing and wiring is attended to by them. Large installations of new equipment is done under contract.

THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS, BY WALTER FRY, Ranger.

CREATION AND SITUATION.

The Sequoia National Park was created by act of Congress approved September 25, 1890, and October 1, 1890, and the General Grant National Park was created by act of Congress approved October 1, 1890. The Sequoia Park is situated in the county of Tulare, State of California, and

the General Grant Park is situated in the counties of Tulare and Fresno, of the same State.

OBJECT FOR WHICH CREATED.

The principal object for which these parks were created was for the preservation of the wonderful forests of "Big Trees," *Sequoia gigantea*, they contained. The trees of which also furnished an important factor in their naming, the Sequoia Park being named after its magnificent groves, and the General Grant Park was given the name because of the General Grant Tree contained therein, so widely known for its size and beauty.

TOPOGRAPHY AND AREA.

These parks as a whole are in a mountainous country, on the western slope of the Sierra Nevada, and extend between the elevations of from 1,200 to 11,211 feet above the level of the sea. The Sequoia Park contains an area of 169,605 acres and the General Grant Park an area of 2,560 arces, or a total acreage of 172,165 acres for the two reservations.

CONTROL AND ADMINISTRATION.

These parks are under the exclusive control of the Secretary of the Interior, and by his direction are at present administered by a detail of troops, and a force of civilian rangers; the former remaining on duty from three to four months each season, and the latter being employed throughout the year.

FOREST FIRES.

Prior to, and at the time of the creation of the parks the forest within them sustained a heavy annual loss from fires. Fires that originated were permitted to burn indefinitely, and thus the territory bid fair to become depleted of one of its most important natural resources and rendered a barren waste. Since the creation of the parks the forests within them have sustained but little loss from the above specified cause, as fires starting have been quickly extinguished, and the park lands have improved in condition and productiveness, and the flora growth is far superior in beauty and natural dignity as much of the former growths have been restored. Since the creation of the parks 67 forest fires have originated within them, prior to July 1 of the present year. Of these fires two were set from blasting; 14 from smoking, 8 carelessness of campers, 29 by lightning, and 14 causes unknown. A conservative estimate of cash valuation sustained in loss of timber by these fires is set at $2,743.

IMPROVEMENTS.

Owing to the inaccessibility of the parks at the time of their creation, due to lack of roads and trails, but few tourists could visit the parks; but since their creation much has been accomplished in the manner of their

improvements, and tourists come in increased numbers. The following has been accomplished in their improvement and development:

Forty-five and one half miles of wagon roads, 226½ miles of trails, 112 miles of telephone line, 16 miles of fencing, 8 miles of firebreak, 6 rangers' dwellings, 4 rangers' barns, and 2 post-office buildings have been built; 94¼ miles of boundaries have been surveyed, defined and marked, 10 miles of old wagon road have been widened and brought to a uniform grade, 159 miles of virgin streams and 5 important lakes have been stocked with fish. Tourist camp grounds have been cleared, piped with water, provided with kitchen sinks and outhouses. Many springs and water sources have been developed along the public thoroughfares. Some work of reforestation and growing of forest nursery stock has been accomplished. A herd of elk, wild turkeys and Japanese pheasants have been successfully propagated.

NATURAL RESOURCES.

The park lands and their best utility having been segregated into four different classes, are as follows:

	Acres.
Merchantable timber belt	92,160
Woodland territory	62,768
Grass land	5,760
Waste or desert land	11,477
Total	172,165

The merchantable timber comprises that area situated between and including the elevations of 4,500 and 8,500 feet above sea level. The woodland belt comprises the area above the 8,500 feet elevation to upper timber line, and the foothill territory below 4,500 feet elevation. The grass land consists of high mountain meadows scattered at intervals throughout the parks. The waste land or desert land constitutes that portion above upper timber line in the higher elevations.

The parks form an important watershed that supplies the stream flows of many rivers from whence comes the water for irrigation and power purposes. Their entire water output being consumed for irrigation purposes during the dry summer months in the valley below.

The forests of the parks are in healthy condition and fair state of preservation and reproductiveness, and are noted for their magnificent grandeur. Embodied within them are 13 different groves of sequoia timber comprising approximately 9,410 acres, containing 1,166,000 trees, 12,100 of which have attained a size exceeding 10 feet in diameter, and many of the latter exceeding 24 feet in diameter. The General Sherman Tree, the largest, has a height of 286 feet and base circumference of 107 feet, and is computed to contain 980,000 board feet of lumber in addition to 27 cords of wood.

The park lands contain no mineral properties of merchantable value other than that of stone, of which there is abundance of both marble and granite.

BIRDS.

The parks are an important bird refuge, in which 216 different species are known to exist. Millions of these creatures inhabit the parks, and since having found such a place they continue to come in ever increasing numbers and have a tendency to spread out from the locality.

GAME AND FISH.

There is a marked increase of both large and small game within the reservations.

Six different varieties of trout fish inhabit the waters of the parks, the rainbow being the most plentiful and the golden being the most noted.

PARK ADMINISTRATION.

ROAD CONSTRUCTION.

Owing to the topography of the country and composition of earth formations, there are many difficult conditions to be met with. In addition to the conditions of the soil, there is the economic condition to be considered. The important points that are continuously observed in this connection are as follows: (1) As to location, (2) As to grade, (3) As to avoid solid-rock formations, (4) As to drainage, (5) In procuring individual laborers who have a thorough knowledge of the work to be performed. All of the roads are built on steep mountain sides, through hard earth, shale, and solid-rock formation. The roads of the parks are built of good width and easy uniform grade, and in general are better than other mountain roads throughout the States, but are yet lacking in ballast, sufficient drainage system, and team-passing points. I would respectfully recommend that this work be accomplished just as soon as funds can be procured for this purpose.

The roads, being situated as they are in a mountainous country, are subject to much damage during the winter months by rain creating washouts and landslides, but are put in good condition during the early spring months after the storm period ceases while the ground is moist and in a favorable condition for work. This repair work is usually sufficient to maintain the roads in good condition throughout the summer months.

TELEPHONE CONSTRUCTION.

The system of telephone construction within the parks consists of what is known as the ground system, built of No. 12 candee insulated wire and equipped with 2,500-ohm bridging telephones. During this and prior

years much trouble and inconvenience has been experienced in the transmission of messages due to the system now in use. For an efficient service an aerial system is necessary. The wire at the present time for the greater part of the mileage of the system is strung on trees, resulting in much damage to the line by the falling of same. It is recommended, even if the aerial system is not adopted, a sufficient allotment of funds be made to string the entire line on poles.

HANDLING OF PARK VISITORS.

Tourists enter the parks by both public and private conveyances; upon entering the park they are required to register their names and are given copies of the park regulations; after which they are permitted to roam about at their own free will throughout the parks. A tourist camp for the accommodation of visitors in the Sequoia Park is conducted by the River Inn Hotel Co., working under concession of the department. At present this company conducts a tent camp, but it is expected that it will soon be in a position to give building facilities.

At the General Grant Park Mrs. Mattie Cooksey, to whom concessions have been awarded, is maintaining a tent camp.

A general supervision is kept over tourists by system of military and ranger patrols, principally for the purpose of enforcing the regulations in regard to the starting of forest fires, sanitation, and shooting or molesting game.

METHODS EMPLOYED IN SECURING COOPERATION OF RESIDENTS ON LAND ABUTTING THE PARK IN PREVENTING DEPREDATIONS.

The general sentiment of residents on lands contiguous to the parks is favorable to the Government, and the present rules and regulations governing the parks and their administration. The friendly feeling existing between these people and the park rangers is the means of obtaining certain information of violation by outsiders of rules and regulations of the parks and identifying said persons, thereby securing the means of bringing such individuals to account for said misdemeanor or taking such action against them as each case may warrant.

GENERAL PARK ADMINISTRATION, BY MAJOR JAMES B. HUGHES, Acting Superintendent, Sequoia and General Grant National Parks.

This year is the first in which a conference of park superintendents has been called, the purpose of which is, as I understand it, to establish a bureau of national parks. This scheme I believe to be a move in the right direction. By such conferences an interchange of ideas may be had, a discussion of the various problems that each year present themselves for solution, and a uniform method of making decisions, granting certain privileges, concessions, and favors, applications for which are constantly being made, and at the same time doing justice to the appli-

cants, and not giving others any occasion to make a charge of discrimination or showing of favoritism on the part of the superintendents. The rules and regulations for all the parks should be as uniform as possible, and practically the same as far as location, climate, natural resources, and the general needs and wishes of the public will admit. It seems to me that an annual conference would be desirable; but as this conference is the first one to be held, it may develop that a conference each year is not necessary, but undoubtedly a periodical conference is desirable, and the period may be determined at the present session.

ADMINISTRATION OF THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS BY CIVILIANS.

I recommend that the administration of the Sequoia and General Grant Parks be placed in the hands of a civilian appointee (a retired Army officer, qualified by experience, knowledge, and interest would, in my opinion, make an admirable superintendent). I believe a similar appointment in the other parks to be equally desirable. A force of permanent park rangers should be appointed sufficient to properly patrol the parks, enforce police regulations, protect game and forests, and prevent violation of park regulations. I believe some permanent arrangement could be made by which a sufficient number of able-bodied men could be assembled on short notice to fight fires, which are of such frequent occurrence in the mountain forests. The large majority of these fires are due to lightning. The men proposed to fight fires should be paid from a fund set aside for this particular purpose.

This scheme I believe to be in the interest of both economy and efficiency. One good ranger is in my opinion more valuable in park work than a dozen soldiers. He is working in his chosen profession; he is interested in the park, its successful administration, and the enforcement of the park rules and regulations; it is his livelihood, and he is permanent, whereas most soldiers do their work in a perfunctory manner, and do it simply because they are ordered to do it, but not from any sense of interest they have in the park or its workings. Their work is temporary at the best, and there is a great probability of one season in the park being their first and last park duty.

These remarks are to a certain extent applicable to an Army officer detailed as acting superintendent. I believe the best interest of the parks are neglected by these practically annual changes of superintendents. One superintendent will become more or less interested in certain improvement work requiring several years in completion. He will get this work started, and at this time the season closes. Next year a new superintendent is appointed, and he is in no way interested in the work commenced by his predecessor, and probably this work will be abandoned for a new scheme deemed more important by the new superintendent, and consequently so much money uselessly expended. A permanent

superintendent, such as I have suggeted, would avoid this waste of energy and funds, and the consequent retardation of the general development and improvement of the parks. In my opinion park duty for enlisted men in the Army is more or less detrimental to discipline and military training. From the necessities of the park work a large number of the men are on detached duty, not subject to the personal observation and frequent inspection of their officers, and they become lax in discipline during this prolonged absence from proper military control. Under present conditions a large number of the enlisted men are recruits, and a recruit commencing his service and getting his initial insructions under the above conditions it is doubly hard to make a good soldier of him and disabuse his mind of the impressions he acquired while on outpost duty early in his career with only a noncommissioned officer to direct and discipline him. There are a number of noncommissioned officers at the present time with a too limited experience.

I have not been able to obtain figures on the subject, but at a glance it seems to me that it would be a matter of great economy to have the parks administered by a civilian force. I do not mean that it would be more economical to the Interior Department, for the present arrangement, with a military police force, saves the Interior Department the amount it would require to employ the number of rangers necessary in the absence of the military. The expense to the War Department I believe to be much greater than would be the necessary expense incurred by the Interior Department in employing the proper number of civilians. As before stated, under this scheme, I believe more efficient park work would be accomplished and the military now engaged on park duty would be in a position to pursue the course of instruction, which I believe to be more in line with the training necessary to make competent and excellent soldiers of them.

It is recommended that the department supply a competent clerk for the acting superintendent, from the Washington office, who is perfectly familiar with all returns, reports, vouchers, and forms connected with the administration of the parks. This clerk to be present for duty in the park from May 15 to October 1 of each year, or for such period as his services will be desirable by the acting superintendent. It is practically impossible to secure a competent clerk on short notice for such a short period suitable for this work at a reasonable rate of compensation, and the result is, that the acting superintendent has to perform the clerical work or have it done by an enlisted man without any compensation whatever therefor.

PURCHASE OF DEEDED POSSESSIONS.

This subject I know has been under discussion and investigation by the Government for a number of years, and I can say nothing new on the subject, still I might repeat some few of the facts and the advantages gained should such a policy be adopted.

The nation would be that much the gainer. The individual owners would receive a fair compensation for their property, which, held under the present conditions, can be nothing more than a source of annoyance and a constant demand on the Government for certain privileges connected with such holdings, in order that they may develop the same, or manipulate it, so as to derive the greatest pecuniary benefit therefrom, and as I understand the present ruling, the Government is not so disposed. The purchase of said lands would eliminate the possibility of any trouble or friction between present land owners and Government forces, and would materially aid in the general and natural development of the parks.

SALES OF COMMODITIES BY INDIVIDUALS HOLDING CONCESSIONS.

I recommend that the department regulate the price of commodities sold by individuals who acquire concessions, allowing a certain percentage on all commodities. I am also in favor of granting a similar concession to two or more individual parties desiring the same. This will have a tendency to induce concessioners to observe more strictly the conditions imposed upon them and will give the public a better return for their money.

DEVELOPMENT OF WATER POWER.

I believe it to be a good policy for the department to encourage the development of the water power in the parks by responsible corporations. This, of course, when such development would not be detrimental or injurious to the parks. The public would indirectly be benefited thereby and the parks to the extent of having new roadways constructed and maintained, and would receive a certain revenue from said corporations that should be devoted to the general improvement of the parks.

INCREASED APPROPRIATIONS.

The annual appropriations should be materially increased in order that the development work could progress more rapidly, thereby giving a material aid in the preservation of the forests.

BEAR NUISANCE.

Authority should be given to kill bears in the parks by certain authorized persons; so far as I have observed or have been able to learn the bear is absolutely useless as an ornament or for any good purpose; on the other hand, he has proven himself to be a general nuisance, pilfers the storehouses and refrigerators and frightens tourists (women and children), and on occasions is very bold.

ESTABLISHMENT OF FISH HATCHERY AND STOCKING OF STREAMS.

Although the number of tourists in the Sequoia and General Grant National Parks is not very great, the majority of the streams are pretty

well fished out each year, and this notwithstanding that a number of the streams are voluntarily stocked each year by the fish and game commission of the State of California. I recommend that a fish hatchery be established and maintained in the Sequoia Park and the streams and lakes in the parks be well stocked each year. This measure, if adopted, would certainly make the parks more popular, and draw a greater number of visitors each season, the desire, as I understand it, of the department.

PROPAGATION OF GAME.

Foreign and domestic game should be propagated in the parks, and the necessary funds appropriated to purchase desirable species, also an appropriation for the extermination of certain predatory animals that prey upon the game.

CONSTRUCTION AND IMPROVEMENT WORK TO BE DONE BY CONTRACT.

I recommend that all improvement and construction work in the parks be done by contract, instead of the present method of employment of day labor. I believe equally good if not better work can be done, and certainly it can be done cheaper if honest competition in the securing of contracts can be secured.

SANITATION.

As long as the military are in charge of the parks the surgeon of the command should be appointed sanitary inspector of the various tourist camps and make frequent inspections of them.

A list of simple sanitary rules should be drawn up by the surgeon and these posted or distributed among the tourists, and all the officers on duty and all park rangers should promptly report any violation of them.

FIRE BREAK FOR GIANT FOREST.

As the Giant Forest contains what is probably the largest and most numerous group of *Sequoia gigantea* (including the Sherman tree), a firebreak should be extended around it for its protection.

DEVELOPMENT OF SEQUOIA NATIONAL PARK.

As the development of the Sequoia Park is in its infancy, I recommend that effort be made to interest sufficient capital to advertise the park and open hotels and camps for the accommodation of tourists and that a liberal policy to concessioners be carried out.

THE SULLYS HILL NATIONAL PARK, NORTH DAKOTA, BY C. M. ZIEBACH, Acting Superintendent.

In taking up the subject of the past, present, and future of the Sullys Hill National Park I must confine myself almost entirely to the past.

Under the act of Congress of April 27, 1904, the President was authorized to set aside a tract of land embracing Sullys Hill, not to exceed 960 acres, as a public park. This was done by a proclamation of the President under date of June 2, 1904. In tracing back the history of Sullys Hill, I find that as far back as 1790 the land in the near vicinity of the hill was the gathering point of the traders of the Hudson Bay Fur Co., who sent representatives to this point to trade with the Indians that consisted almost entirely of Chippewa or Cree half breeds, and a settlement of rude cabins were built and used during the winter months within the shadow of the hill, which was then known as the Crow Hill. This point was used as a trading point for many years until the Sioux Indians began to send hunting parties into the territory claimed and used as the hunting ground by the Cree half breeds. The invading of their hunting country by the Sioux was the cause of frequent and bloody battles, which finally terminated in the Sioux driving the Chippewas and Crees north of the Devils Lake.

In 1863, a year after the Minnesota outbreak of the Sioux Indians, Gen. Sibley left St. Paul, coming from the east, and Gen. Sully following up the Missouri River, with the understanding to meet on the south shore of the Devils Lake, with the hope of rounding up and bringing to justice the Indians taking part in the 1862 outbreak. The command under Gen. Sully arrived at the point now known as Sullys Hill and left messages for Gen. Sibley by planting a post on the hill and placing the messages in the hollow post. He then retraced his march back down the Missouri River. Gen. Sibley, arriving a few days later, camped on the Cheyenne River, a few miles south of the present site of Fort Totten, sent his scouts to locate the command of Gen. Sully, found the messages left in the post.

In talking over the early history of the country in the vicinity of Sullys Hill with Chief Littlefish, who is now in his 92d year and the only remaining chief of the Sisseton and Wahpeton tribe of Indians located on the Devils Lake Reservation, he informs me that he located within a few miles of the hill in 1867, at which time the Indians called the hill the "Crow Hill," and that the construction of Fort Totten was then underway, the logs for the quarters being cut on the land now confined within the park limits. I am unable to state when or how the name of the hill was changed to "Sullys Hill," but it is likely that the name was changed by the soldiers who were aware of the previous visit of Gen. Sully in 1863. Many bloody stories have been circulated of a big battle lasting a number of days which was fought by Gen. Sully and a large party of Sioux Indians, but a thorough investigation brings to light the facts that the story was merely a frontier yarn which has been added to from time to time until now the story is nearly as famous as the battle of the Little Big Horn.

This is practically all of the past of the park as near as I can learn. As to the present, the park lies on the south shore of the Devils Lake, its western boundary being r mile east of the Fort Totten Indian School, which is conducted in the buildings of the old Fort Totten military post.

The "Sullys Hill" is located on the eastern boundary of the park, and the remainder of the territory covered by the park is covered with rough hills, and in the southwestern part is a small lake covering 30 or 40 acres known as "Sweet Water." Almost the entire portion of the park is covered with small timber and brush consisting of oak, elm, poplar, ash, birch, boxelder, willow, and hazel brush. There is also an abundance of small fruit, such as raspberries, gooseberries, strawberries, plums, high-bush cranberries, June berries, etc. A number of very fine springs empty into the Sweet Water Lake. A number of prehistoric mounds can be found on the hilly portion of the park which have been explored and trinkets of ivory, stone, and copper have been found. The Indians of the Devils Lake Reservation ceded the 960 acres for park purposes in a treaty negotiated by Maj. James McLaughlin in April, 1904. This fact has been the cause of many councils and trips to Washington on the part of the Indians who had become convinced that the land was valuable for coal and that Sullys Hill contained valuable minerals, and, as the land was ceded without compensation, it was a choice matter to discuss, and many eloquent speeches have been made on the subject. In order to adjust the matter an appropriation was made by Congress in 1910 of $3,120, or at the rate of $3.25 per acre for the 960 acres, and this amount was expended in a payment of about $3 per capita to the Indians in February, 1911.

In taking up the subject of the future of the park I wish to say that the State of North Dakota furnishes only a very few wooded tracts, and the expenditure of a few thousand dollars in walling up of springs, road making, and clearing out underbrush for camping places would give the people an ideal spot in which to resort to for a few days' recreation. As a majority of the people living in the State follow agriculture as an occupation, the short work season demands the greatest effort to be put forth in spring. When seeding is done and during the months of July and part of August they have time to take an outing while waiting for the harvest to come, and if the park could be maintained and improved it would soon become a popular resort and a great benefit to the State at large.

If no appropration for the improvement of the park is made in the near future, I would recommend that the park be turned over and made into a forest reserve, as nearly every tree known to grow in this northern climate is found within the park limits.

CRATER LAKE NATIONAL PARK, BY W. F. ARANT, Superintendent.

The territory embraced within the Crater Lake National Park is largely of volcanic formation, and although Crater Lake is the chief attraction of the reserve, there are many other very interesting natural features, such as beautiful and almost ice-cold springs and creeks, deep canyons, magnificent and lofty peaks, vertical cliffs almost 2,000 feet high, fine water-

falls, beautiful and interesting pinnacles (some of which are 125 to 175 feet high), great caves, and many other beautiful and unique volcanic formations.

No picture ever does this beautiful lake justice. I have often heard this remarked by persons who for the first time were viewing the beauties, magnificence, and grandeur of Crater Lake. I have seen many fine photographs and beautiful paintings, but I have never seen a picture of Crater Lake; and this is true of almost every one who sees it; no photograph or picture of any kind ever fully portrays its marvelous beauty and magnificence; there is a certain grandeur and sublimity about it that can not be brought out in a picture.

Crater Lake was first discovered by white people on June 12, 1853, by a Mr. John Hillman and his party of gold hunters; the Indians of southern Oregon had told them of a mountain of gold high up in the Cascades, and it was while hunting for this that the party accidentially came upon this beautiful lake.

The lake is situated on the summit of the Cascade Mountains in Oregon, in the crater of an extinct volcano, which, as the geologists tell us, many centuries ago destroyed the giant peak of the Cascade Range of mountains. It is 62 miles from Klamath Falls, 83 miles from Medford, and 97 miles from Ashland.

This lake has no outlet nor inlet; the supply of water is kept up by the precipitation, which is more than 72 inches annually; there is an average annual rise of about 3 inches; the snow at the lake and in other portions of the park falls each winter to a depth of from 15 to over 20 feet.

The lake is 6 miles long and 4 miles wide, and the water is 200 feet deep; is of a beautiful ultramarine color and is so beautifully clear and transparent that the bottom may be easily seen at a depth of more than 100 feet.

The walls of the crater are almost vertical and stand from 1,000 to 2,000 feet above the water of the lake, and some are more than 8,000 feet above sea level; the elevation of the surface of the lake above sea level is 6,177 feet. The rim of the lake is described by Prof. Diller as the base of a truncated conical mountain hollowed to a shell.

While this "Gem of the Cascades" was known to the officers and enlisted men at Fort Klamath, Oreg., as early as 1865, it did not come into much prominence as a resort until the early eighties.

There is little doubt but that the Indians had known of the existence of this lake for many ages, but owing to its peculiar awe-inspiring effect they were very superstitious concerning it, and would not go near it nor would they tell anyone about it. It was their belief that there was a great sea monster living in it; some sort of a great sea devil that would sometimes rise to the surface of the water, its horns extending several feet high, and would spout the water in the air and in its awful fury would lash the waters of the lake into a foam.

They believed it was the abode of the evil spirits—the Llaos, and at the base of Llao Rock, a prominence on the wall of the crater standing 1,909 feet above the water, 1,400 feet of which is a vertical wall of rock, was the home of the Llaos, the evil spirits.

It was their belief that if any young member of their tribe ever looked upon this lake that his usefulness to his tribe as a warrier was forever destroyed; but in recent years through the advantages of education and enlightenment they have laid aside all such superstitions and legends and often make visits and camping trips to the lake and go out upon it on boating trips and excursions.

The Crater Lake National Park was established by act of Congress, approved May 22, 1902, and comprises 249 square miles or 159,360 acres. It is about 18¾ miles long, north and south, by 13¾ wide, east and west.

Being new, and until recently remotely situated, so far as railroad transportation is concerned, there has never yet been sufficient appropriations made by Congress for its proper protection and improvement, so that the development which is warranted by its merits as a resort has not been accomplished.

The Crater Lake National Park is an ideal summer resort; the altitude is from 4,500 to nearly 9,000 feet above sea level, mostly above 6,000 feet. In the summers, when it is hot and sickly in the valleys, this ideal camping resort is above the heat and smoke and the impurities of the atmosphere, and is clear, cool, and pleasant, and the atmosphere is healthful and invigorating, and the water is the perfection of purity.

The water of some of these springs as it gushes from the base of this Crater Lake mountain has a temperature of 35° the year around.

The park is in a timbered section, and portions of it are very heavily timbered. It is also situated in what is known as the semiarid section of the State.

Taking these two conditions together, that of being timbered and in the dry belt, increases at all times during the dry season the danger of forest fires.

The handling of the forest fire question in the national forests and other timbered sections of Oregon has been done on scientific principle, although I believe some improvements could still be made upon it, but as at present handled the damages resulting from such fires have been reduced to the minimum.

The main trouble in this respect in the Crater Lake National Park is the small appropriations made for the protection and improvement of the reserve, and the impossibility of placing a sufficient number of men on duty as park rangers and fire guards. These men should also be empowered and authorized to act as game wardens in the park. At the present time there is but one park ranger in the whole of our reserve, a territory of 249 square miles, having 65 miles of boundary line. It

seems to me that it would be very apparent that such a small force is impossible to maintain a proper protection over the park; but with sufficient funds provided, and the employment of a sufficient number of park rangers and guards, any question concerning the administration of the affairs of the reserve would be solved. It would not be difficult to maintain perfect control over the situation in every portion of the park with sufficient help.

As I have before stated, there is now and never has been but one park ranger in the Crater Lake National Park; but from the urgent necessities of the case I would advocate and recommend the employment of 6 park rangers in our reserve. There should be one permanent ranger whose duties should be at and in the vicinity of the headquarters in the park, and 5 temporary park rangers stationed upon the lines in different portions of the reserve. In this manner there could be a constant patrol kept up on all the roads and trails. This is the only means by which the forests may be protected from forest fires and the game in the reserve protected from poachers. In this connection I am pleased to say that there is very little if any poaching done in our park, presumably, partly at least, because game is quite plentiful upon the mountains outside of the reserve; but as game becomes more scarce on the outside and more plentiful in the park, as it soon will under proper protection, there will be a greater inclination on the part of some to steal in across the lines and hunt inside, if there is not a sufficient guard kept up in all parts of the reserve.

In our park there should be a better system inaugurated for the protection of our game animals and birds.

The principal game animals are the black-tail deer, the black and brown bear, the silver-gray squirrel, and several other varieties of timber squirrels. The birds are the grouse and timber pheasant. There are few water fowl about the lake, presumably by reason of its great elevation above the sea level and its isolation from any other body of water.

In winter the snow falls so deep—15 to 20 feet—and lies upon the ground so long a time—from November to July—that all the animals and birds are compelled to migrate to a lower and warmer climate. They go down on the western slopes of the Cascade Mountains, a great many of them never to return.

The lines of the park should be extended to the north 12 miles and to the west 20 miles so as to include Diamond Lake on the north and a portion of the lower mountain elevations and foothills on the western slopes of the Cascade Mountains as a wintering ground. At the very least one good range station should be established and maintained the year round in the added territory on the western slopes to maintain a constant and vigilant protection of the game during the winter as well as the summer. Such a move properly carried out would result in making the Crater Lake National Park the ideal game preserve of the Pacific coast.

There is also great need of more roads and better roads in our reserve. The roads and trails have been kept in the best possible condition with the very small appropriations made for repairs and improvements, but since the inauguration of the move for the location and survey of a complete system of roads in the park, under the supervision of the Secretary of War, I have not deemed it advisable to expend large sums of money upon the old roads that apparently will soon be abandoned. The soil over which all of the roads in the reserve run and are to be constructed is of a very light and porous lava formation. Travel soon makes a fine and deep dust, which is the least pleasant condition of traveling in or through the park; and while I would not favor expending large sums of money upon any of these old roads, I believe it would be money judiciously expended if Congress would take a sufficient appropriation for the proper construction of a small section of road and the experimenting upon the same with sprinkling and with treating it with an oil finish to the end that we might be better prepared for the construction and finishing of our better system of roads when they shall come.

At the present time there are two permanent camps or hotels furnishing accommodations to the visitors and tourists in the reserve; one of these is at Camp Arant, 5 miles down from the rim of the crater, and one is immediately upon the brink of the crater. These hotels are operated by the Crater Lake Co. and are both doing a fairly good business and giving the people a good and satisfactory service.

This same company has a good equipment of launches and row boats on Crater Lake and a great many avail themselves of the pleasures of a trip across or around the lake under the gigantic wall of this great caldera in which the lake is situated.

The Crater Lake Co. also has a good automobile transportation line running into and through the reserve and to the lake.

In addition to the commercial transportation cars, there have been 223 private automobiles licensed to run in the park July 10 to September 1. The license fee for a single round trip through the reserve is $1 and a season license is $5. Some automobile owners and drivers object to paying this fee unless it be used for the benefit of the roads which, under existing laws can not be done. The amount thus collected would be sufficient to pay the salary of one good man during the whole season in the park, but under existing conditions the reserve gets no benefit whatsoever of this money.

This matter should be taken up at the next session of our Congress and a law enacted authorizing the Secretary of the Interior to allot the funds arising from the collection of these fees for the benefit of the roads in the parks.

The tourist season in this park is little more than three months—July, August, and September, and sometimes part of October—but during the season of 1909 more than 5,000 people visited the reserve, and during

the season of 1910 there would have been as many or more, only the erroneous impressions regarding the danger from forest fires kept a good many out. There was not much travel in the park after August 24 last year. This year the number of visitors is as good or better than during the preceding seasons.

Now, referring again to the matter of appropriations for the Crater Lake National Park, I would say that with a sufficient amount appropriated for the purpose there would be no difficulty in maintaining a good administration over the affairs of the reserve. The appropriations that are made are for the protection and improvement of the park, but the funds provided are not sufficient for either the protection or the improvement. There has been no more than $3,000 appropriated any year excepting one, and that amount must cover every expense of the reserve, including all salaries as well as all other expenses.

The amount available for the roads, trails, and bridges in the park this year is $850. Exclusive of any consideration for the construction of new roads, there should be an appropriation of at least $20,000 for the proper protection of the reserve.

That, of course, would include the protection of the game; of the timber from forest fires, and other damages; the establishing of a sufficient number of ranger camps upon the lines of the park, and the maintaining a constant patrol throughout the reserve; the protection of the natural objects and curiosities in the park, and a general administration over all of the affairs of the reserve.

PLATT NATIONAL PARK, BY W. J. FRENCH, Superintendent.

By the acts of Congress of July 1, 1902 (32 Stat., 641), and April 21, 1904 (33 Stat., 220), 629.33 and 218.89 acres, respectively, at the town of Sulphur, Okla. (then Indian Territory), were segregated as the "Sulphur Springs Reservation," which designation, by joint resolution approved June 29, 1906, was changed to "Platt National Park."

The park, with a total area of 848.22 acres, extends in irregular form a distance of approximately 3 miles from northeast to southwest along Travertine and Rock Creeks.

Within the park are 33 known mineral and 3 nonmineral springs. The principal groups are the Bromide, Medicine, Bromide Sulphur, and Black Sulphur Springs, in the southwest part of the park, Beach and Pavilion Springs in the northwest corner, and the Wilson Springs in the south part.

The sulphur springs predominate, but bromide, medicine, soda, and iron springs are in evidence and very popular and effective as curatives. Many, many gallons of the bromide and medicine waters are shipped to patients on physicians' prescriptions monthly.

The Antelope and Buffalo Springs, nonmineral in character, are situated in the extreme northeastern end of the park, with an elevation of

1,080 feet above sea level and an approximate normal flow of 5,000,000 gallons daily into Travertine Creek.

The Antelope and Buffalo Springs have been affected by the drouth of the past two and one-half years to a considerable extent.

Cold Spring, situated midway between Pavilion and the east end of the park, is nonmineral in character and affords water for many of the families of the city living immediately north of same.

The following is a statement of the mineral springs which have been developed:

Flow of springs.

	Gallons.
Bromide Springs (3)	300
Bromide Sulphur	250
Medicine Spring	528
Taff or Black Sulphur	500
Hillside	129,600
Pavilion Springs (7)	200,600
Beach Springs (3)	125,000
Wilson	1,000
Jerico	200

The amount of water per capita used on the premises and taken away for individual use averages three-fourths gallon per day. This statement applies to all mineral springs, except Wilson and Jerico, from which the amount taken is inconsiderable

Visitors partaking of the waters of Bromide and Medicine Springs during the fiscal year ending June 30, 1911, numbered 124,078. Many of these made visits from day to day while remaining at the springs, and many of them were residents of the city who visited the springs and were enumerated on each occasion.

The approximate number of actual visitors to the springs during the fiscal years 1910 and 1911 were 30,000 persons.

There were 877 campers in the camp ground within the park during this year for a longer period than 3 days.

Temperature.

	Hottest.	Coldest.	Mean.		Hottest.	Coldest.	Mean.
1910.				1911.			
July	98	74	83	January	70	40	49
August	96	71	77	February	78	18	44½
September	90	64	79	May	82	56	73
November	74	36	50	June	96	76	86
December	58	29	43				

It is evident that Platt National Park would make a delightful winter resort. With those that are acquainted with its advantages as a delightful and pleasant place to tarry during the extreme warm and sultry summer months there is no question of their choice, it being from 10° to 12° cooler than the surrounding country.

The trails and driveways leading to the most attractive points have been improved as much as possible with the limited means at hand. The trails leading from the city to the different springs and pavilions, and Cliffside Trail leading from Pavilion Springs and following Rock Creek and winding along the mountain, give many picturesque scenes, overlooking the city and surrounding country.

The trail leading to Antelope and Buffalo Springs, at the east end of the park, follows the meanderings of the Travertine Creek and is shaded almost the entire length by a heavy growth of healthy timber.

Anyone endowed with a love for the beauties of nature, looking into the faces of these picturesque falls and listening to the music of the songs they sing, will truly be impressed that this is a spot ordained by the Creator for health giving and life restoring of mankind, worthy the protection of our good Government.

The permanent bridges are the Washington, Lincoln, and Bromide. The Washington Bridge is a structure of first-class material and workmanship, combining strength, durability, and beauty. It is apparently in as perfect a condition as the day it was completed except that it should be painted in the near future to protect the material from rust.

Lincoln Bridge, a foot bridge over Travertine Creek where the Roberts Trail leading from second street west to the Pavilion Springs crosses the creek, is a stone structure very beautifully designed and graceful in every feature.

Bromide suspension footbridge, which spans Rock Creek at Bromide and Medicine Springs, is a beautiful and unique wooden structure of the arch type suspended by wire cables. This bridge is in very fair preservation except the floor and possibly a portion of the underdecking, which will be clear for inspection when there is a new floor laid, which should be done during the next year.

The pavilion just being completed over Hillside Spring is built of heavy timber, with good red cypress shingle roof. It is supported on rock posts laid in cement, is 20 feet square, substantial, and well proportioned. With one more coat of paint it will be complete.

Medicine Spring has been developed and improved during the last year. It is located about 200 feet west of Bromide Spring and Pavilion and protected and confined by a cement cistern built around it after blasting away the rock. This spring discharges 528 gallons of water daily.

As Platt National Park is small, compared with many of the other national parks, the problems of protection are not so large and varied. This factor, however, makes it all the more important that the roads and drives be maintained and improved as rapidly as possible, and that the natural beauties of the park be developed as rapidly as possible in a natural way.

The presence of an unusual number of medical springs, to which people come in increasing numbers, calls for close watchfulness against any possible source of bacterial contamination of the waters. The importance of this will grow as the park is more extensively used, and may ultimately call for very close supervision of the water.

Platt National Park ultimately should be covered with a most beautiful velvety turf in the untimbered portions. It is located in a region where Bermuda grass, if given an opportunity, quickly heals over the scars on the face of the earth and transforms rough and wasted slopes into grass-grown hillsides. Judicious planting of the roots of this grass wherever washes begin developing will not only add to the beauty of the place, but will make unnecessary expensive labor later to overcome the damage caused by unrestrained erosion. This grass possesses another advantage that it thrives with use. No unwelcome signs reading "keep off the grass" are necessary where it grows.

The principal necessities of the Platt National Park are the following:

(1) The protection of the waters of the springs and streams from pollution. The protection of the health of the residents and visitors requires the installation of a sanitary sewer system. There is seemingly no outlet for the sewerage of the town of Sulphur other than through the park. A trunk-line system should be installed at the earliest possible date, with laterals at the most convenient and natural points of drainage. This trunk line should be built by the Government under direction of the Secretary of the Interior, with permission granted the city of Sulphur to build the laterals under direction of the Secretary, or the city of Sulphur should be compelled to install the entire system at the city's expense, under the direction of the Secretary of the Interior.

(2) Steps should be taken to increase the number and power of the lights in the park. There should be one light installed at Hillside Spring; one between Hillside Spring and the Pavilion Group; and one in the superintendent's office.

(3) A comprehensive plan of improvement of the driveways and trails should be adopted.

(4) A pavilion should be built at Beach Spring, and a footbridge constructed over Rock Creek at this point, making the spring accessible from West Central Park.

(5) A new Government building should be erected, with vaults to protect the records of the office. I suggest that this building be located at a point just within the park and facing or in front of Second Street west.

(6) The work of fighting off weeds and thistles should be kept up, especially in the park adjacent to the city and springs. The weeds and underbrush in the woodland should be cleaned out in order to preserve the desirable timber. It has been suggested that a flock of goats would

effectually accomplish this part of the labor, and at a profit rather than an expense.

(7) Forest trees should be planted in East and West Central Parks.

(8) The residences in the park should be repaired and painted.

(9) There should be built a barn in which to keep forage and feed; the so-called barns within the park are totally inadequate. There is no room for feed in the shed at the superintendent's residence, and but little at any other of the residences, save at the old Robinson residence, where the teamster Milligan resides.

(10) Where the roads cross the creeks there should be constructed small concrete culverts with sufficient openings to carry four or five times the normal flow of the stream. If these culverts were built the grades of the approaches would be lightened, and it would not be necessary to drive over the very rough bottoms of the creek.

(11) I recommend the installation of a bathhouse on and in the reservation, either by and under the management of the department or through concession. I think a bathhouse would add as much or more to the interest of the park and the convenience and welfare of the visitors than any one thing that could be installed. The people can get baths here in the city, but this does not satisfy them. They want baths from the water of these springs, and desire to see the spring water running direct into the tubs.

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