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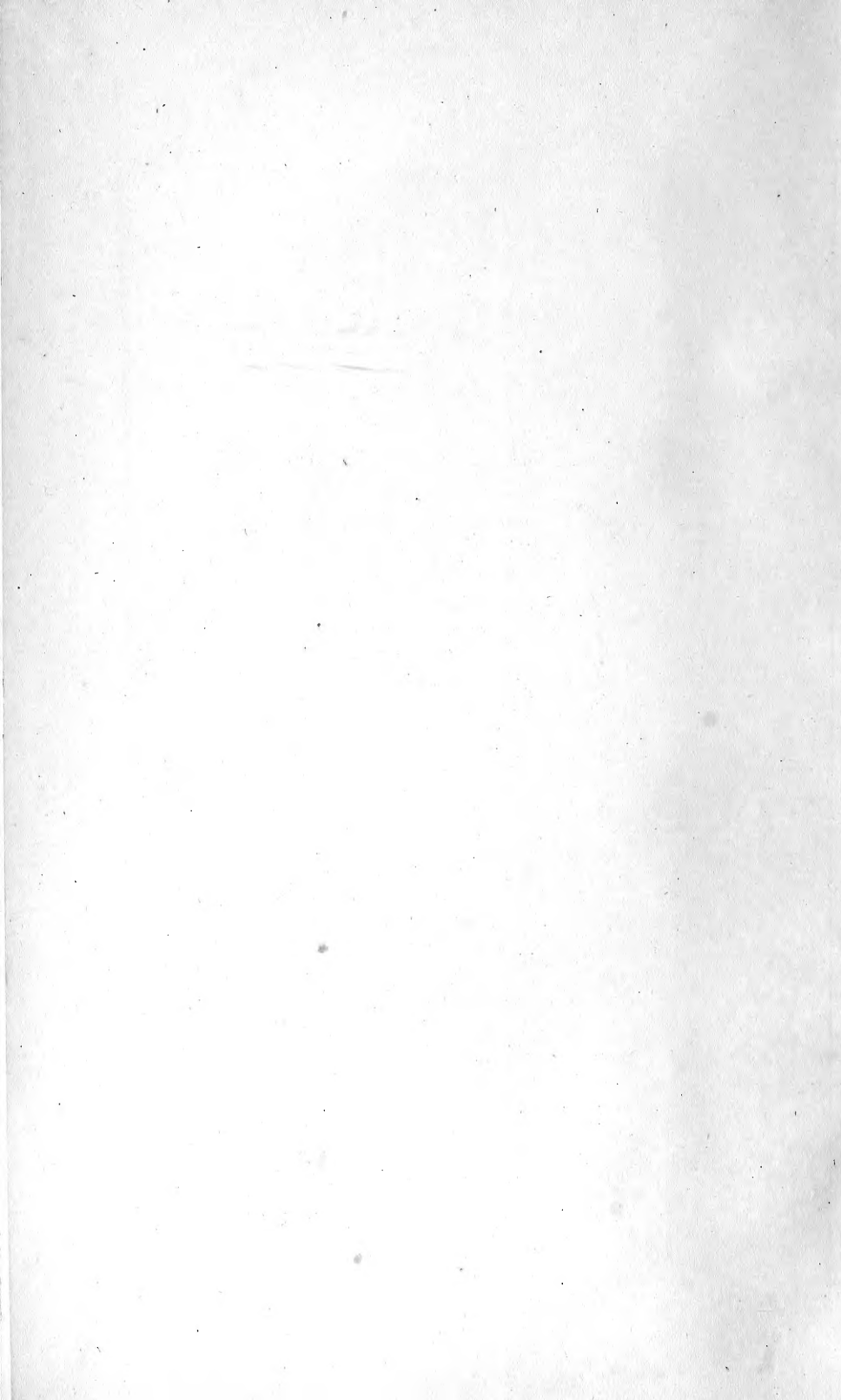


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DEPARTMENT OF THE INTERIOR

ANNUAL REPORT

OF THE

SUPERINTENDENT OF NATIONAL PARKS

TO THE

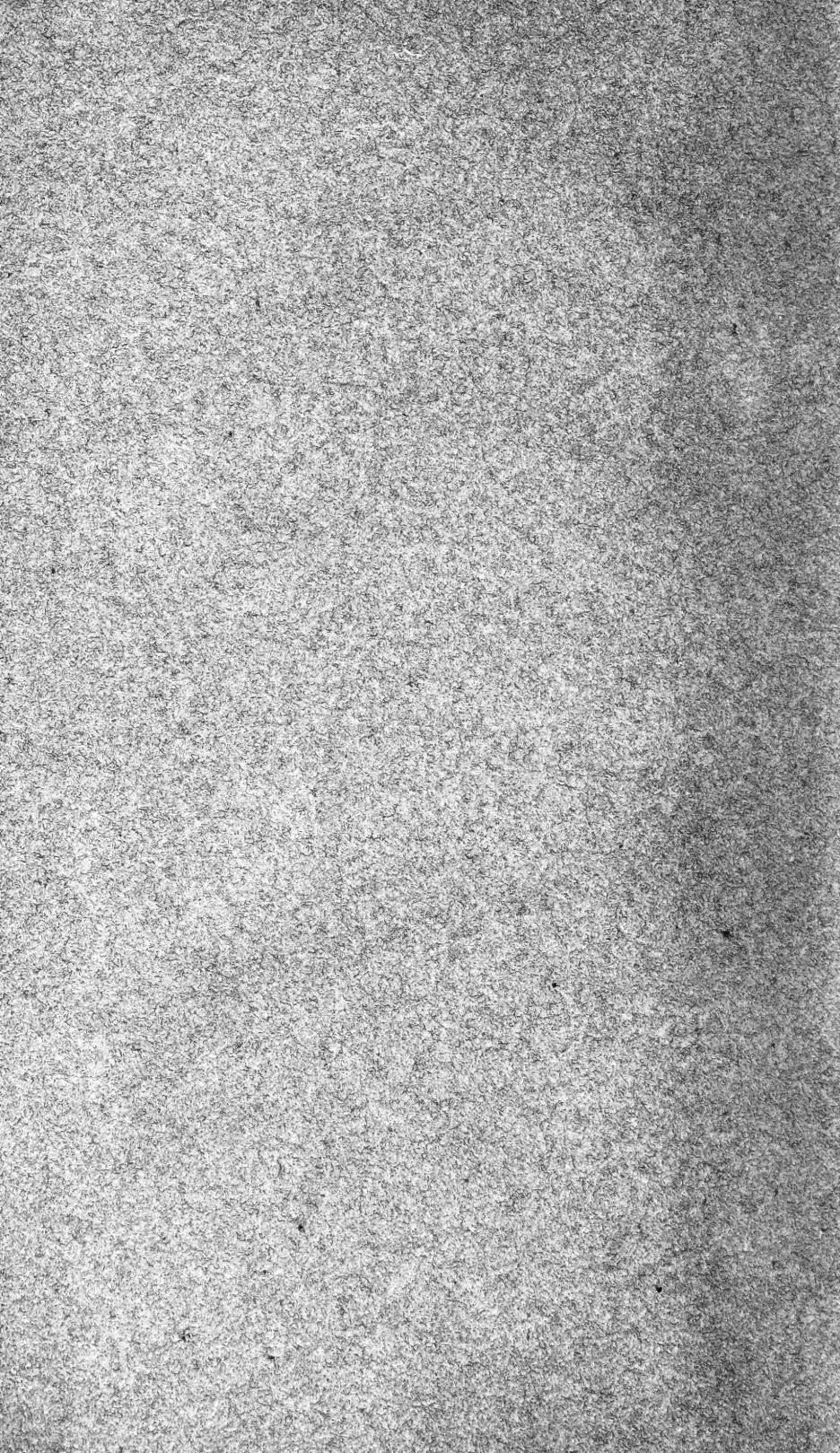
SECRETARY OF THE INTERIOR

FOR THE FISCAL YEAR

ENDED JUNE 30

1916





U. S. DEPARTMENT OF THE INTERIOR
A

ANNUAL REPORT

OF THE

SUPERINTENDENT OF NATIONAL PARKS

TO THE

SECRETARY OF THE INTERIOR

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FOR THE FISCAL YEAR

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CONTENTS.

	Page.
Functions of the national parks.....	1
National park service.....	4
Scenery of the first order.....	5
National parks and national forests.....	6
Each a personality of its own.....	6
Informing the people of the parks.....	6
General public interest in national parks.....	7
National monuments.....	7
Legislation.....	8
New parks and monuments.....	8
Lassen Volcanic National Park.....	8
Hawaii National Park.....	9
Sieur de Monts National Monument.....	9
Capulin Mountain National Monument.....	9
Dinosaur National Monument.....	9
Proposed new parks.....	9
Grand Canyon National Park.....	9
Enlarged Sequoia National Park.....	10
Mount McKinley National Park.....	10
Mount Hood National Park.....	10
Idaho (Sawtooth) National Park.....	11
Mount Baker National Park.....	11
Private holdings.....	11
Ranger force.....	13
Construction work.....	14
Yosemite hydroelectric power plant.....	15
Sanitation.....	15
Admission of automobiles to parks.....	15
Excerpts from reports of supervisors of national parks.....	17
Hot Springs Reservation.....	17
Yellowstone National Park.....	26
Yosemite National Park.....	41
Sequoia and General Grant National Parks.....	47
Mount Rainier National Park.....	52
Crater Lake National Park.....	58
Wind Cave National Park.....	61
Platt National Park.....	64
Sullys Hill Park.....	67
Mesa Verde National Park.....	68
Glacier National Park.....	70
Rocky Mountain National Park.....	73
Appendix A.—	
Appropriations 1906 to 1916.....	76
Visitors to national parks.....	79
Revenues from automobiles.....	79
Appendix B.—An act to establish a national park service.....	81
Appendix C.—An act to establish a national park in the Territory of Hawaii.....	83
Appendix D.—An act to establish the Lassen Volcanic National Park, California.....	86
Appendix E.—National parks at a glance.....	88

90.2.2/26/17.S.L.

ILLUSTRATIONS.

PHOTOGRAPHS.

Yellowstone National Park—Old Faithful Geyser.....	4
Yosemite National Park—Yosemite Falls.....	4
Crater Lake National Park—Cliffs of Crater Lake.....	4
Rocky Mountain National Park—Odessa Lake.....	4
Sequoia National Park—General Sherman Tree.....	4
Mount Rainier National Park—Mount Rainier.....	4
Glacier National Park—Iceberg Lake.....	4
Mesa Verde National Park—Cliff Palace.....	4
Lassen Volcanic National Park—Lassen Peak.....	8
Hawaii National Park—Lava floor.....	8
Proposed Grand Canyon National Park—Grand Canyon.....	8
Proposed Mount Baker National Park—Mount Baker.....	8
Proposed Idaho (Sawtooth) National Park—Stanley Lake.....	8
Proposed Mount Hood National Park—Mount Hood.....	8
Proposed Mount McKinley National Park—Mount McKinley.....	8

MAPS.

National parks and national monuments under the Department of the Interior.....	16
Hot Springs Reservation.....	20
Yellowstone National Park.....	32
Yosemite National Park.....	44
Sequoia and General Grant National Parks.....	48
Mount Rainier National Park.....	56
Crater Lake National Park.....	59
Wind Cave.....	62
Platt National Park.....	64
Mesa Verde National Park.....	68
Glacier National Park.....	72
Rocky Mountain National Park.....	74

ANNUAL REPORT OF THE SUPERINTENDENT OF NATIONAL PARKS.

DEPARTMENT OF THE INTERIOR,
NATIONAL PARK SERVICE,
Washington, November 10, 1916.

SIR: It is with pleasure that I submit to you my first annual report as Superintendent of National Parks. The primary reason for this is that I feel, although we have just begun the solution of many of the numerous questions that have to be dealt with in the national-park work, and for the handling of which we have until recently had no coherent organization, yet a great deal has been attained through the efforts of yourself and the assistant to the Secretary in bringing to the country and to Congress a more intimate knowledge of the national parks and in administering them in an efficient manner and to the end that all of our people may get the greatest possible benefit and enjoyment from them. These efforts have borne fruit in the display this year of more interest by people all over the country in the national parks, and in the enactment by Congress of laws which there is no doubt will have greater results toward the efficient and proper management of the parks than anything that had theretofore been done. The national parks and their possibilities, both in the way of enjoyment by the people and of profit to the Nation, have in the past been greatly neglected. Our scenic domain can and will be made as readily accessible to all of our citizens as are similar scenic and recreation areas in other countries, and much has recently been done to effect this.

FUNCTIONS OF THE NATIONAL PARKS.

The following is an extract from the report made by former Superintendent Daniels last year, which I believe to be worthy of repetition, as it so ably explains the functions of the parks:

That the expenditure of money for the maintenance and development of our scenic reservations has an economic as well as aesthetic justification there can be no doubt, for each year large sums of money have left this country to be spent by tourists in foreign lands in search of scenic beauty. The fact that no material proportion of this sum returns is only less provoking than the knowledge that the money thus taken abroad by Americans is spent to view natural attractions that are inferior to those which may be found at home. In your report of 1913 you stated that land is not always land, but is sometimes coal, sometimes timber. One might add that it is sometimes scenery and, as such, merits the careful study and development that would be extended to other national resources.

The condition of travel in foreign lands has stimulated the interest of our people in the merits of similar pleasures in this country. Never in history has there been so great a volume of travel in the United States. Surely it is the part of wisdom to retain this great advantage and to crystallize upon a general policy for the administration of our national parks.

The first step in the consideration of a general policy for the administration of the national parks is the determination of just what functions they perform. Clearly they are not designated solely for the purpose of supplying recreation grounds. The fostering of recreation purely as such is more properly the function of the city, county, and State parks, and there should be a clear distinction between the character of such parks and national parks. The latter should constitute a class that is of national interest. In the category of national parks should be no reservation that is of local interest only. What, then, are the functions of our national parks as distinguished from State and local parks? As I view this question our national parks should serve three distinct functions:

1. The stimulating of national patriotism.
2. The furthering of knowledge and health.
3. The diverting of tourist travel to the scenic areas of the United States.

NATIONAL PATRIOTISM.

We, as a people, have been accused of lacking in that love of country with which our neighbors in Europe are so plentifully blessed. Whether such a criticism is merited or not, it is certain that local patriotism has rapidly grown in this country more or less at the expense of patriotism for the country as a whole. This condition would not exist if our people knew their country.

To love a thing one must know it. The Belgian knows each hill and dale of his small country and loves it with an intensity that has become proverbial. And so it is with the Swiss, the French, the English. These peoples know their lands and love them. But ours is a great country, stretching from sea to sea, and a knowledge of all its glories is given to but few. What more noble purpose could our national parks serve than to become the instrument by which the people shall be lured into the far corners of their land that they may learn to love it? For one who will encompass the circuit of our parks, passing over the great mesas of Colorado, crossing the painted desert, threading the sparkling Sierra Nevada, and viewing the glaciers and snow-capped peaks of the great Northwest will surely return with a burning determination to love and work for and if necessary to fight for and die for the glorious land which is his.

KNOWLEDGE AND HEALTH.

I have said that it is my opinion the Federal Government is not justified in maintaining a national park for recreation purposes alone, yet it is readily seen from the character of our reservations that each has its recreational feature. I do believe, however, that objects and districts of great educational value should be reserved and placed in the category of national parks. Natural phenomena, great canyons, ruins of antiquity, waterfalls—all are objects of great interest and possess an educational value that can not be estimated.

In Yellowstone are the geysers, in Yosemite the highest of waterfalls, in Sequoia the largest and oldest trees on earth, trees that were 3,000 years old when Christ was born. In Wind Cave National Park is a cave that comprises over 90 miles of sparkling passages. At Arkansas Hot Springs and Platt National Park are medicinal waters that have dispelled the pain of legions of sufferers. In Mesa Verde National Park are the crumbling dwellings of a forgotten race.

Pregnant with mystery and romance, these ancient ruins beckon the traveler across the great green mesa and cast about him the spell of endless conjecture. If for no other reason, the value of these treasures as a medium for the furthering of knowledge and health fully justifies the plea for further aid, both moral and financial, from our Federal Government.

If this aid is granted and a systematic effort is put forth to send our people out into the hinterland of this country, we shall be confronted by the problem of caring for a flood of tourists whose needs must be anticipated.

THE TOURIST.

The first logical step to be taken in an analysis of the conditions of tourist travel is a study of the tourist himself. Primarily, the tourist takes the line of least resistance. This means that he seeks the path that presents the best accommodations for the least cost. From a record of travel in our parks it may be shown that the finest scenery without accommodations will not receive so large a travel as an inferior character of scenery which has a better type of accommodation.

The tourist who, upon the strength of literature issued by the department, travels to our parks is more or less justified in holding the Federal Government responsible for his comforts or discomforts while there. Nor is he backward with criticism. He demands that he be instructed as to the merits of this trail or that, this camp or that. He not infrequently is disappointed in not finding luxuries that he would not expect in similar places under other than Federal control. He invariably overlooks the fact that he, in a way, is part of the Government, and therefore indirectly responsible for the conditions he finds. Nevertheless, his demands must be respected if it is hoped to direct his footsteps to travel in our country.

The three potent factors in influencing tourist travel are publicity, accommodations, and transportation. Obviously, the tourist must be informed of the merits of the district to which it is desired to bring him. He must then be shown that the accommodations at that place are satisfactory; and, last, he must know that the transportation facilities to, through, and from the location are good and may be had at reasonable cost. These three factors should constantly be borne in mind in any planning for the development of tourist travel.

The three general classes of tourists who visit our parks are: Those to whom the expense is of little moment; those who, in moderate financial circumstances, travel in comfort but dispense with luxuries; and, third, those who, fired with the love of God's out-of-doors, save their pennies in anticipation of the day when they may feast their eyes upon the eternal expanse of snow-clad peaks and azure skies. It is of this latter class that I would speak.

Many of our parks are truly vast in area, encompassing within their boundaries innumerable wonders. To reach these the tourist, upon arriving at the park, must hire saddle animals, pack animals, a guide, cook, and other help. The expense of such an outfit is prohibitive to all but the wealthy. Those who have waited and saved their money are denied the fuller enjoyment of our parks, for they can not bear the expense of transporting their supplies over the trails. There is but one solution of the problem of caring for this class of tourists, and that is the establishment of small inns at convenient intervals, so that tourists may travel the trails afoot, purchasing their provisions and other necessities as they go. As you are aware, the first steps in an effort to bring about such a condition have been taken in Yosemite National Park. If this work is carried through a blessing will have been conferred upon those whose lack of money has shut them from the greater part of our national parks. It will also be, in my opinion, the most potent factor in retaining, through the medium of our parks, a material percentage of tourist travel and will necessitate a careful consideration of the problem of a general policy.

Any plan, however, which may be devised for the management of our national parks should not be predicated upon the assumption that their function is solely to accommodate and retain our tourists in this country.

A GENERAL POLICY.

A policy to be efficient must be functional. One for the parks, therefore, must take into consideration the distinctive characteristics of national parks which, as before stated, are relative to the furthering of a national patriotism, public knowledge and health, and tourist travel in the home land. Upon consideration it will be seen that the first two follow as a natural consequence of the last. In the consideration of a general policy we are concerned primarily, therefore, with tourist travel.

To foster tourist travel it will be necessary to develop the roads, trails, and other accommodations in the parks to a point where the traveler will not be subjected to serious discomfort. This means the expenditure of money upon a larger scale than has been the practice heretofore, and the first question that should be settled is, What shall be the source of supply?

There are but two practical sources from which funds may be secured, namely, by Federal appropriation and by revenues from the parks themselves. Both resources are now resorted to, each of which is inadequate. If the Federal Government is to support the parks then they should be operated so as to make the cost to the tourist as low as possible. If not, then the various sources in the parks themselves should be developed sufficiently to supply the needed money.

The sources of revenue from the parks fall into four classes:

1. Automobile permits.
2. Concessions of various kinds.
3. Receipts from public utilities operated by the Government, such as light, telephone, etc.
4. Natural resources, such as timber, stone, fuel, etc.

Of these four sources it will be seen that they may all be classified as taxes in proportion to the benefit received rather than the ability to pay. An analysis of this character may help in the decision of the policy to be pursued, but it can do no more. The decision must be made in the light of public needs, and the park supervisors should know whether they are to develop the park revenues to their maximum or whether the park is to be administered at the lowest possible cost to the tourist.

If the question of finances were settled, in so far as the source is concerned, and a well-crystallized policy looking toward the development of the parks along lines that will foster the increase of tourist travel in this country is established much of the delay and confusion in the field will be eliminated.

NATIONAL PARK SERVICE.

There has heretofore been no service to which the duty of administering the national parks has been delegated. The work has been done by a small and inadequate force in your office, the members of which have had their regular departmental duties to perform and have given such time and overtime as has been possible to the park work. Upon your recommendation Congress has recently enacted a law (Public, No. 235) establishing the National Park Service. This act provides for the appointment by the Secretary of the Interior of a director, assistant director, chief clerk, and other employees of the National Park Service, and puts under the director, subject to the supervision of the Secretary, the supervision, management, and control of the national parks and monuments and of the Hot Springs Reservation in Arkansas, which have heretofore been administered by the Interior Department. The act also provides that the Secretary may make rules and regulations for the use and management of the reservations and prescribes punishment for the infraction of such rules and regulations; it also gives power to the Secretary to grant privileges, leases, and permits for the use of the lands, for the accommodation of visitors in the reservations, for periods not to exceed 20 years and for areas not to exceed 20 acres in any one place, and to grant grazing privileges in any of the reservations except the Yellowstone National Park when such use of the lands does not interfere with the primary purpose for which the park was created. This act, however, carried no appropriation for the organization of the service and no such appropriation has as yet been made. Each of the national parks has been created by a law differing more or less from the law creating each of the other parks, and heretofore they have been administered as individual reservations with no particular relation to each other. This method of handling the parks has, for reasons that are quite apparent, been both inefficient and unsatisfactory.

The work of administering the national parks has been intrusted to the Department of the Interior. On June 5, 1914, you appointed Mark Daniels, a landscape engineer, of San Francisco, Cal., general superintendent and landscape engineer of national parks, and on December 9, 1915, he resigned to continue his private business. On December 10, 1915, I was detailed from the United States Geological Survey to the department as Superintendent of National Parks.



YELLOWSTONE NATIONAL PARK.

OLD FAITHFUL.

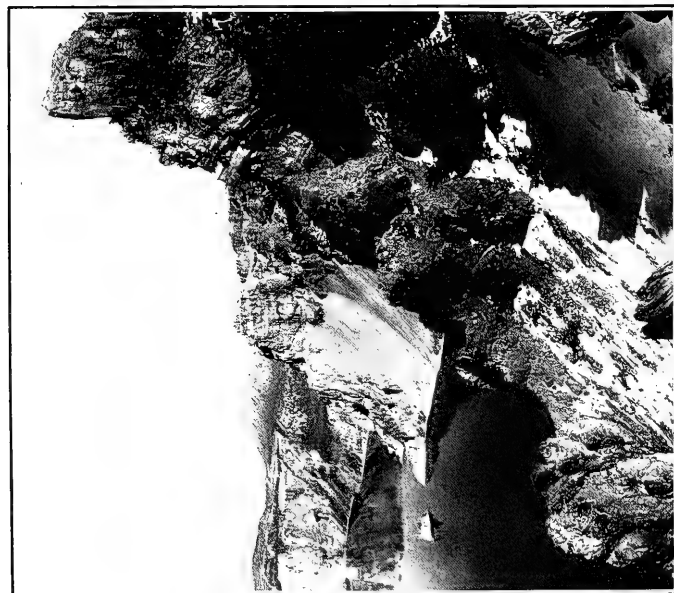
This park, besides its geysers, has many hot springs, which build glistening plateaus of highly colored mineral deposits. It has a canyon, gorgeous with all the colors and shades of the rainbow, and it is literally the greatest wild-animal sanctuary in the world.



YOSEMITE NATIONAL PARK.

THE HIGHEST WATERFALL IN THE WORLD—THE YOSEMITE FALLS.

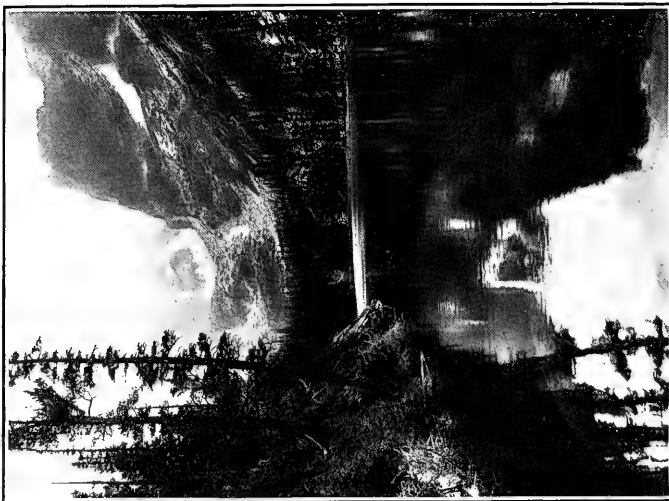
This park, in addition to its celebrated Yosemite Valley and lofty waterfalls, has in the north a river called the Tuolumne, which spouts wheels of water 50 feet and more into the air. It has great areas of snow-topped mountains.



CRATER LAKE NATIONAL PARK.

CLIFFS OF A THOUSAND PEARLY HUES FANTASTICALLY CARVED.

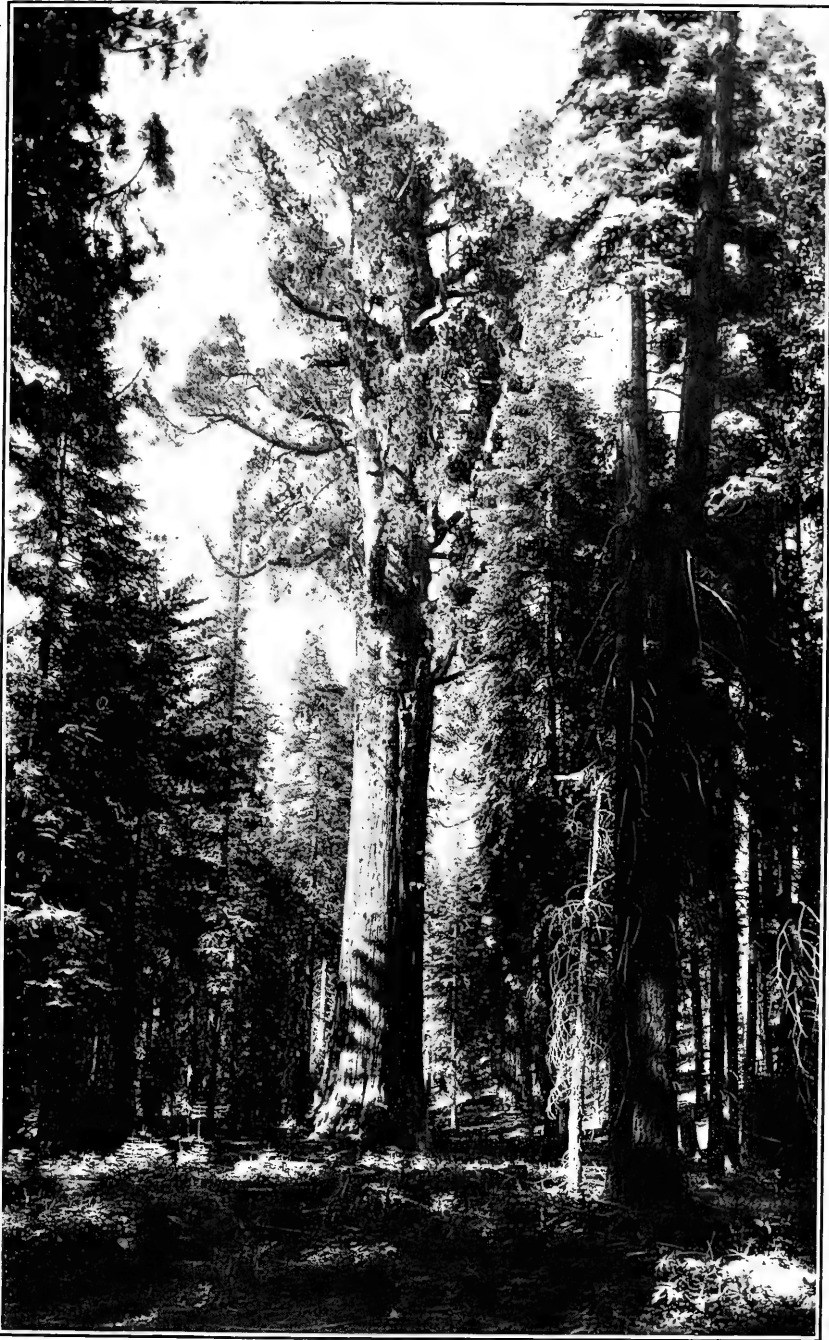
Crater Lake fills with water of astonishing blue the hole left when the top of Mount Mazama, another volcano in the same chain as Mount Rainier, was swallowed up in some far-distant past.



ROCKY MOUNTAIN NATIONAL PARK.

ODESSA LAKE.

This park straddles the Continental Divide at a lofty height, with snow-capped mountains extending from end to end. Its glacier records are remarkable.



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SEQUOIA NATIONAL PARK.

THE GENERAL SHERMAN TREE.

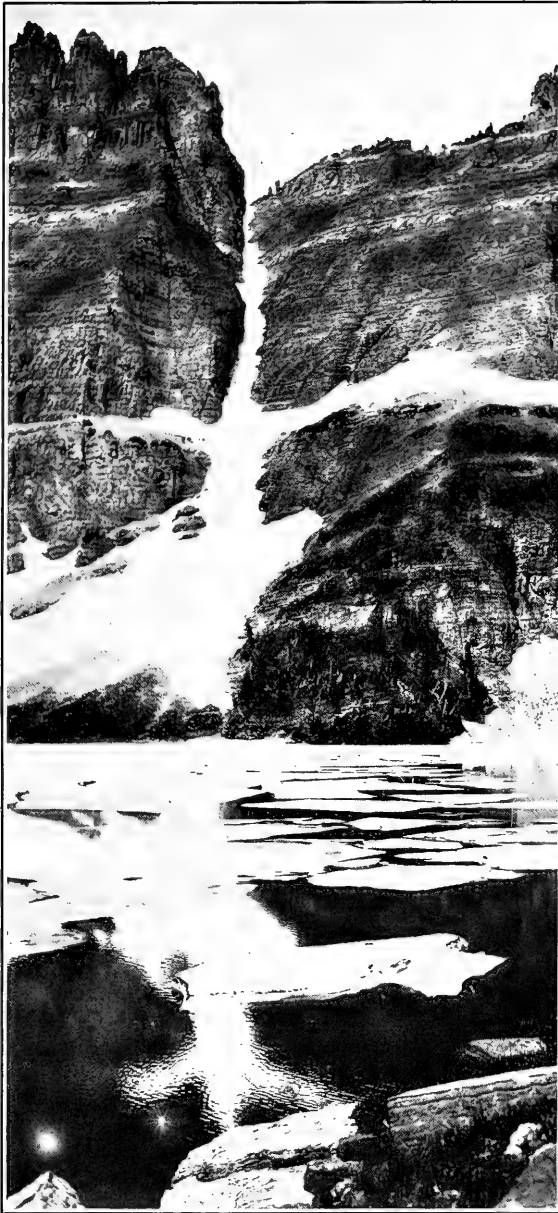
This park contains more than a million sequoia trees, of which 12,000 are more than 10 feet in diameter, and some twice that, and several from 25 to 36 feet through from side to side. Some of these trees are older than human history. As John Muir says of them, "When the storm roars loudest they never lose their god-like composure, never toss their arms or bow or wave like the pines, but only slowly, solemnly nod and sway, standing erect, making no sign of strife, none of unrest, neither in alliance nor at war with the winds, too calmly, unconsciously capable and strong to strive with or bid defiance to anything."



MOUNT RAINIER NATIONAL PARK.

MOUNT RAINIER.

Mount Rainier, the principal feature of this park, is an extinct volcano, down the sides of which flow 28 glaciers, or rivers of ice

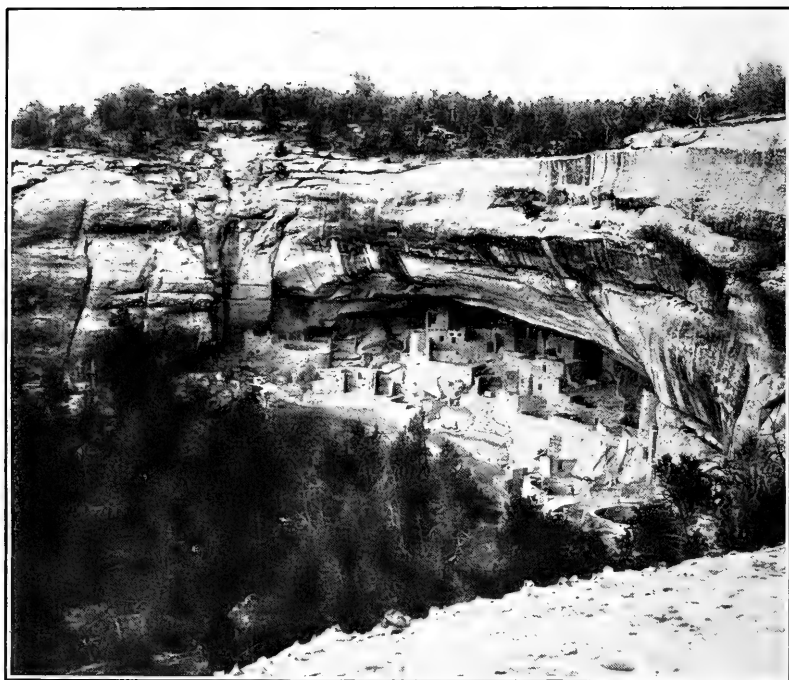


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GLACIER NATIONAL PARK.

ICEBERG LAKE.

This park was made by the earth cracking in some far-distant time and one side thrusting up and overlapping the other. It has cliffs several thousand feet high, and more than 60 glaciers feed hundreds of lakes.



4—6

MESA VERDE NATIONAL PARK.

CLIFF PALACE.

This park hides in its barren canyons the well-preserved ruins of a civilization which passed out of existence so many centuries ago that not even tradition recalls its people.

With a view to securing a more effective administration of the parks, it was deemed advisable in 1914 to provide for a general superintendent, with headquarters at San Francisco, Cal. Experience, however, of over a year under this new system demonstrated the advisability of dispensing with a general superintendent having permanent headquarters away from Washington, and the urgent deficiency bill passed February 28, 1916, authorized the superintendent to remain in Washington, D. C., to June 30, 1916, and the sundry civil act passed July 1, 1916, authorized you to employ in Washington and pay from park appropriations and revenues a Superintendent of National Parks and four other employees, and under this authorization you continued my appointment as superintendent. On July 16, 1916, Joseph J. Cotter, formerly assistant attorney in the department and recently in charge of mails, files, and appointments, was appointed Assistant Superintendent of National Parks. Three clerks were also appointed. While this organization has not been adequate to handle all of the work in Washington, and we are still dependent upon the department for assistance, yet I think I am justified in saying that much has already been done toward coordinating the work, and when Congress shall see fit, which I hope it will early in the next session, to make possible the complete organization of the National Park Service by providing an appropriation for that purpose, the entire work in connection with the administration of these areas may be taken over and done in a much more comprehensive and satisfactory manner than has been possible in past years.

SCENERY OF THE FIRST ORDER.

It has been said that in some respects American scenery is unequaled abroad. There are more geysers of large size in our Yellowstone National Park, for instance, than in all the rest of the world together, the nearest approach being the geyser fields of Iceland and far New Zealand. Again, it is conceded the world over that there is no valley in existence so strikingly beautiful as our Yosemite Valley, and nowhere else can be found a canyon of such size and exquisite coloring as our Grand Canyon of the Colorado. In the Sequoia National Park grow trees so huge and old that none quite compare with them. These are well-known facts with which every American ought to be familiar.

The 10 national parks of the first order are the Mount Rainier National Park in Washington, the Crater Lake National Park in Oregon, the Yosemite, Sequoia, and Lassen Volcanic National Parks in California, the Glacier National Park in Montana, the Yellowstone National Park, principally in Wyoming, the Rocky Mountain and Mesa Verde National Parks in Colorado, and the Hawaii National Park in the Territory of Hawaii. With these must be classed the Grand Canyon of the Colorado in Arizona, which, though still remaining a national monument, is one of the great wonders of the world.

The principal difference between a national monument and a national park is that a national monument has merely been made safe from encroachment by private interests and enterprise, while a national park is also in process of development by roads and trails and hotels, so as to become a convenient resort for the people to visit and enjoy.

NATIONAL PARKS AND NATIONAL FORESTS.

One must not confuse the national forests with the national parks. The national forests aggregate many times the area of the national parks. They were created to administer lumbering and grazing interests for the people; the lumbering, instead of being done by private interests often ruthlessly for private profit, as in the past, is now done under regulations which conserve the public interest. The trees are cut in accordance with the principles of scientific forestry, which conserve the smaller trees until they grow to a certain size, thus perpetuating the forests. Sheep, horses, or cattle graze in all pastures under governmental regulation, while in national parks horses and cattle only may be admitted where not detrimental to the enjoyment and preservation of the scenery. Regular hunting is permitted in season in the national forests, but never in the national parks. In short, the national parks, unlike the national forests, are not properties in a commercial sense, but natural preserves for the rest, recreation, and education of the people. They remain under nature's own chosen conditions. They alone maintain "the forest primeval."

EACH A PERSONALITY OF ITS OWN.

One of the striking and interesting features of the national parks of our country is that each one of them is quite different from all the others; each has a marked personality of its own.

It will be seen that one may visit a new national park each year for more than a decade and see something quite new and remarkable at each visit.

INFORMING THE PEOPLE OF THE PARKS.

Through the cooperation of a number of railroads it has been possible to publish a collection of illustrated booklets known as the "National Parks Portfolio," which became so well advertised and known all over the country that although an edition of 300,000 was printed we were not able to supply the demand for them. It is planned now to issue a sale edition, which may be purchased from the superintendent of documents at the Government Printing Office, and which it is expected will be available this winter. This portfolio was prepared, as was also a smaller publication called "Glimpses of Our National Parks," which described briefly the important features of the various parks, under the direction of Robert Sterling Yard, editorial assistant. It is trite to say that in the absence of information on the part of the public as to what the parks are, where they are, and for what reason created, the end for which they were established will not be attained. Yet it is pertinent, for this lack of information has obtained to a great extent, in fact to the extent that Mr. Yard found it advisable in the "Glimpses of Our National Parks" to explain that the parks are not beautiful tracts of cultivated country with smooth lawns and winding paths like city parks, but are "large areas which nature, not man, has made beautiful and which the hand of man alters only enough to provide roads to enter them, trails to penetrate their fastnesses, and hotels and camps to live in." This condition is rapidly being remedied by the distribution of such publications as the "Portfolio" and the "Glimpses."

GENERAL PUBLIC INTEREST IN NATIONAL PARKS.

The general public interest in national playgrounds may be evidenced by the number of bills now pending in Congress calling for the creation of 16 new national parks, as follows:

Cabinet National Park, in the extreme northwest corner of Montana.
 Cliff Cities National Park, in the northern part of New Mexico.
 Denver National Park, in the north-central part of Colorado, near Denver.
 Mammoth Cave National Park, in the west-central part of Kentucky.
 Mescalero National Park, in the southern part of New Mexico.
 Mount Hood National Park, in the northern part of Oregon.
 Mississippi Valley National Park, in the southwestern part of Wisconsin and northeastern part of Iowa, near McGregor, Iowa.
 Mount McKinley National Park, in the southern part of Alaska.
 Mount Baker National Park, in the extreme northwestern part of Washington.
 Mount Katahdin National Park, in the central part of Maine.
 Olympic National Park, in the northwestern part of Washington.
 Palo Duro National Park, in the northwestern part of Texas.
 Rio Grande National Park, in the southwestern part of New Mexico.
 Sand Dunes National Park, in the extreme northwestern part of Indiana.
 Sawtooth National Park, in the south-central part of Idaho.
 Sierra Madre National Park, in southern California.

NATIONAL MONUMENTS.

By an act approved June 8, 1906, entitled "An act for the preservation of American antiquities," the President of the United States was authorized to declare to be national monuments by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States. Under this authority the President has created a number of monuments, 21 of which, listed below, are administered by the Interior Department:

National monuments administered by Interior Department.

Name.	State.	Date.	Area.
			<i>Acres.</i>
Devils Tower.....	Wyoming.....	Sept. 24, 1906	1, 152
Montezuma Castle.....	Arizona.....	Dec. 8, 1906	160
El Moro.....	New Mexico.....	....do.....	160
Chaco Canyon.....	do.....	Mar. 11, 1907	1 20, 629
Muir Woods ²	California.....	Jan. 9, 1908	295
Pinnacles.....	do.....	Jan. 16, 1908	2, 080
Tumacacori.....	Arizona.....	Sept. 15, 1908	10
Mukuntuweap.....	Utah.....	July 31, 1909	1 15, 840
Shoshone Cavern.....	Wyoming.....	Sept. 21, 1909	210
Natural Bridges ³	Utah.....	Sept. 25, 1909	1 2, 740
Gran Quivira.....	New Mexico.....	Nov. 1, 1909	160
Sitka.....	Alaska.....	Mar. 23, 1910	57
Rainbow Bridge ⁴	Utah.....	May 30, 1910	160
Lewis and Clark Cavern.....	Montana.....	May 16, 1911	160
Colorado.....	Colorado.....	May 24, 1911	13, 883
Petrified Forest.....	Arizona.....	July 31, 1911	25, 625
Navajo ⁴	do.....	Mar. 14, 1912	360
Papago Saguaro.....	do.....	Jan. 31, 1914	2, 050
Dinosaur.....	Utah.....	Oct. 4, 1915	80
Sieur de Monts.....	Maine.....	July 8, 1916	1 5, 000
Capulin Mountain.....	New Mexico.....	Aug. 9, 1916	681

¹ Estimated area.² Donated to the United States.³ Originally set aside by proclamation of Apr. 16, 1908, and contained only 120 acres.⁴ Within an Indian reservation.

During the past session Congress appropriated \$3,500 for preservation, development, administration, and protection of the national monuments, and work is now being undertaken.

LEGISLATION.

The States of Washington and Oregon ceded jurisdiction to the Federal Government over the lands embraced in the Mount Rainier and Crater Lake National Parks, respectively, and by acts of Congress dated June 30, 1916, and August 21, 1916, the cessions of jurisdiction were accepted. The Federal Government now has jurisdiction over these parks.

It is hoped that at the next meeting of the legislatures of the several States in which other national parks are situated jurisdiction will be ceded to the Federal Government, so that it may be able to make uniform rules and regulations that can be locally administered. In this way much more satisfactory results will be obtained than are practicable under present conditions.

Congress also enacted a law (Public, No. 115) amending the act of May 7, 1894, entitled "An act to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," so as to change the penalty for violation of the provisions of the original act from a fine of not more than \$1,000 and imprisonment not exceeding two years to a fine of not more than \$500 and imprisonment not exceeding six months. The original act evidently contemplated that the offenses be dealt with as misdemeanors and the offenders tried and punished by the commissioner of Yellowstone Park, but in view of the term of imprisonment provided—not exceeding two years—the offenses had to be treated as crimes under the Constitution and the offenders tried by indictment in the regular way. The new law makes it possible to treat the offenses as misdemeanors and to try the offenders before the local commissioner in the park. This means a better and more expeditious and inexpensive enforcement of the law.

NEW PARKS AND MONUMENTS.

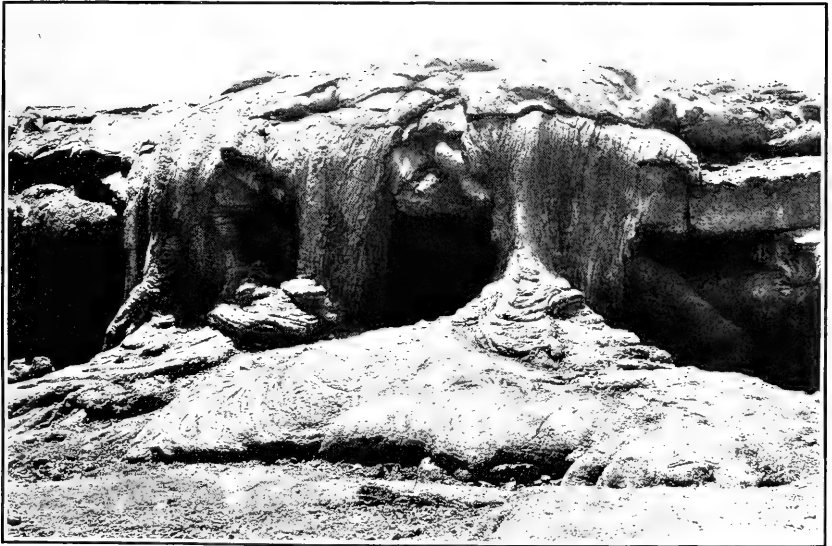
LASSEN VOLCANIC NATIONAL PARK.

The act of Congress of August 9, 1916, established the Lassen Volcanic National Park, in the Sierra Nevada, in the State of California. This park has an area of 79,561.58 acres and includes the only region in the United States exhibiting recent volcanic action. In addition to its numerous volcanoes it contains hot springs and mud guysers, lakes and trout streams, ice caves and lakes of volcanic glass, and beautiful canyons. An appropriation of \$5,000 for the administration of this park was asked for in the last deficiency bill, but this item was not included in the act. Therefore there is as yet no money available for this park, and the Secretary of Agriculture has generously consented to continue the patrol of the lands by the Forest Service, the lands having heretofore been within a national forest, until an appropriation is made and it is practicable for this department to administer the park.



LASSEN VOLCANIC NATIONAL PARK.

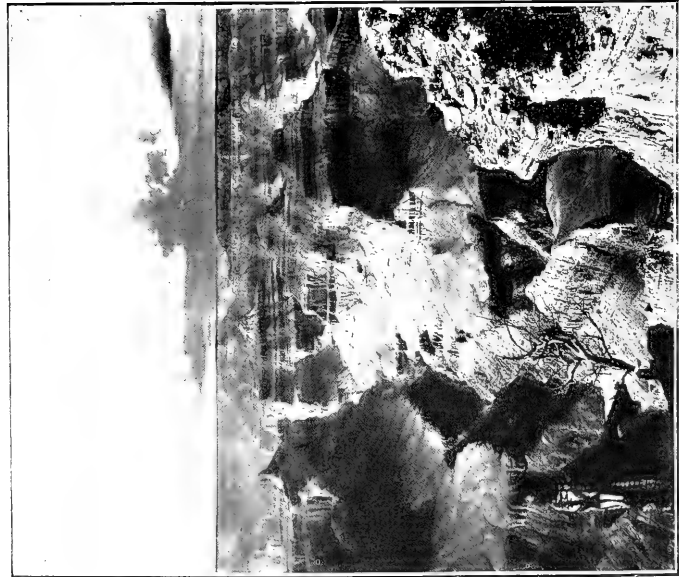
This park contains the only active volcano in the United States, as well as hot springs, mud geysers, ice caves, majestic canyons, numerous lakes, and fine forests. Lassen Peak is 10,465 feet in altitude, while Cinder Cone is 6,879.



9-1

HAWAII NATIONAL PARK.

This park consists of three separate areas, two, Kilauea, which has been continuously active for a century, and Mauna Loa, altitude 13,675, the largest active volcano in the world, erupting every decade, on the island of Hawaii. The third, Haleakala, on the island of Maui, is a volcano which erupted less than 200 years ago. It is 10,000 feet high, with a tremendous rift in its summit 8 miles across and 3,000 feet deep, and contains many cones, gorgeous tropical forests, mahogany groves, and lava caves.



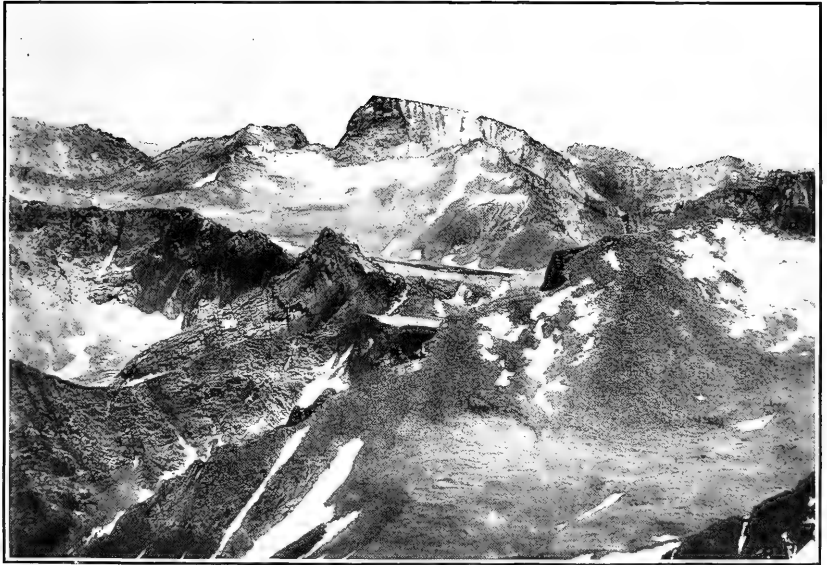
GRAND CANYON, PROPOSED GRAND CANYON NATIONAL PARK.



MOUNT BAKER, IN PROPOSED MOUNT BAKER NATIONAL PARK.



STANLEY LAKE, IN PROPOSED IDAHO (SAWTOOTH) NATIONAL PARK.

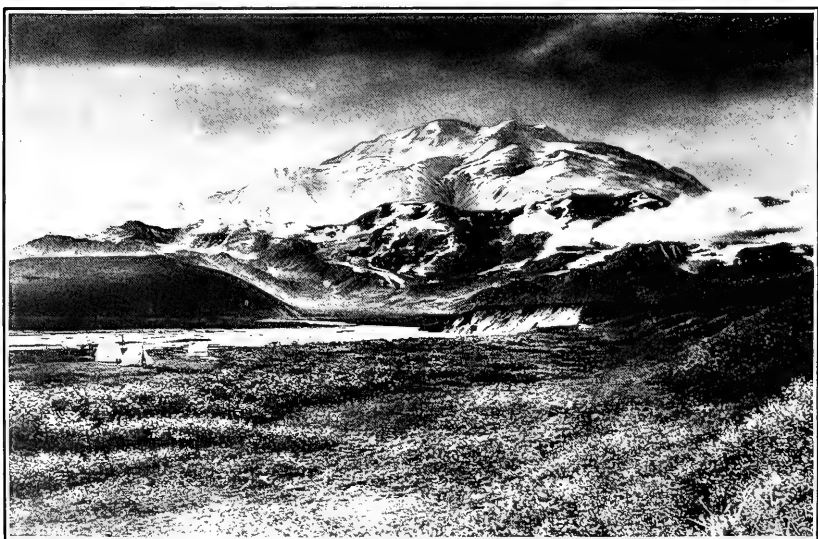


8-3

THE SUMMIT OF MOUNT WHITNEY, NEARLY 3 MILES HIGH, IN THE PROPOSED GREATER SEQUOIA NATIONAL PARK.



MOUNT HOOD, IN PROPOSED MOUNT HOOD NATIONAL PARK.



8-1

MOUNT MCKINLEY, IN PROPOSED MOUNT MCKINLEY NATIONAL PARK.

HAWAII NATIONAL PARK.

The act of Congress of August 1, 1916, established the Hawaii National Park, in the Territory of Hawaii. This park has an area of 75,295 acres and includes two of the most famous active volcanoes in the world and another which erupted less than 200 years ago, in addition to the wonderful lava lake which is a mass of fire 1,000 feet in diameter. The act provides that no appropriations for this park shall be made until conveyance shall be made to the United States of such perpetual rights of way over private lands within the exterior boundaries of the park as the Secretary of the Interior shall find necessary to make it reasonably accessible in all its parts, and that when such rights of way have been conveyed the Secretary shall submit report to Congress. The matter of obtaining definite information as to the conveyance of these rights of way has been taken up through the governor of Hawaii.

SIEUR DE MONTS NATIONAL MONUMENT.

The Sieur de Monts National Monument, in Maine, was created by presidential proclamation of July 8, 1916, and includes more than 5,000 acres on Mount Desert Island, covering 4 lakes and 10 mountains. The lands included in this monument were never a part of the public domain, but were presented to the United States by the owners, the Hancock County Trustees of Public Reservations. This monument is the first created on the Atlantic coast. There is nothing just like it elsewhere on the continent. A noble mass of ancient granite that once bore up an alpine height has been laid bare by time and carved into forms of bold and striking beauty by recent ice-sheet grinding. It is a unique and splendid landscape, revealing the ocean in its majesty as no lesser or more distant height can do, and exhibiting the interest and beauty of the northern vegetation.

CAPULIN MOUNTAIN NATIONAL MONUMENT.

The Capulin Mountain National Monument, in New Mexico, was created by presidential proclamation August 9, 1916, and has an area of about 681 acres. The Capulin Mountain cinder cone is one of the geologically recent cones in the United States which are of exceptional scientific interest.

DINOSAUR NATIONAL MONUMENT.

The Dinosaur National Monument, in Utah, was created by presidential proclamation October 4, 1915, and has an area of approximately 80 acres. This monument contains embedded in its rocks fossils of dinosaurs and other reptilian monsters of great scientific interest which it is believed should be protected from exploitation, at least until the Government is able to obtain a complete collection for the National Museum.

PROPOSED NEW PARKS.**GRAND CANYON NATIONAL PARK.**

The Grand Canyon of the Colorado is one of the greatest natural wonders of America, the gorge itself being one of the largest and

most magnificent in the world, and from its rim the traveler overlooks a thousand square miles of pyramids and minarets rising from the floor of the canyon and ever changing in color. It is at present a national monument, administered by the Department of Agriculture, and the officials of that department and of the Forest Service have agreed that it should be made into a national park, as in this way it would be more practicable to develop the reservation through the construction of roads, trails, and such other improvements as would offer increased attractions for visiting tourists. It is proposed to include in the park an area of greater extent than is at present covered by the monument. The Grand Canyon is now one of the most popular show places of the United States, and if improved and made convenient for tourist travel the number of visitors would be multiplied. I strongly recommend that this national park be established during the next session of Congress.

ENLARGED SEQUOIA.

A bill was introduced in Congress to enlarge the boundaries of the present Sequoia National Park, in California, to include the Kings and Kern River Canyons, and it is hoped this bill will be enacted at the next session of Congress. This would make the area approximately 1,600 square miles, an increase of 1,335 square miles over its present area. The park at present has no exceptional scenery except the three groves of *Sequoia washingtoniana*, which it was originally created to preserve, while just to the east of it lies some of the most magnificent scenery to be found anywhere in the world. I earnestly recommend the proposed extension which includes a portion of the great Western Divide and the crest of the Sierra topped by Mount Whitney, the highest point in continental United States.

MOUNT MCKINLEY NATIONAL PARK.

A bill was introduced in Congress for the establishment of the Mount McKinley National Park, in Alaska. As this is the loftiest mountain in North America (altitude 20,300 feet) and the highest peak in the world above the line of perpetual snow, it is one of the noblest spectacles of its kind in the world. The Government railroad, which is now being built in Alaska, runs within about 45 miles of Mount McKinley, and the creation of this national park would, no doubt, result in additional traffic for this road and additional visitors to Alaska, and would give an impetus to the settling of the country. Also the reservation of this land by the creation of the park would mean the establishment of what would probably be our greatest big game preserve, with moose, caribou, and bighorn sheep. This bill passed the Senate at its last session and it is hoped that it will be enacted during the next session of Congress.

MOUNT HOOD NATIONAL PARK.

A bill was introduced in Congress for the creation of the Mount Hood National Parks, in the State of Oregon. This bill proposed to embody in the parks eight noncontiguous tracts of land. A national park should be made of Mount Hood, but it is not considered

advisable that it consist of these separated tracts of land. You recommended in your annual report to the President in 1915 that this national park be established, and this year you submitted to Congress a draft of proposed legislation creating a park comprising one undivided tract of land.

IDAHO (SAWTOOTH) NATIONAL PARK.

A bill was introduced in Congress to establish the Sawtooth National Park, in the State of Idaho. The land proposed to be included in this park is practically in the center of the State of Idaho, and has an area of about 329,910 acres, less than 4,000 acres of which is affected by any sort of private claim. This State has no national park, and the proposed new park would be readily accessible from various branches of the Oregon Short Line. It is not far distant from the regularly traveled automobile highway through Twin Falls and Shoshone, and could be readily visited, and no doubt would be, by visitors from the Yellowstone National Park. It would constitute a most important link in the chain of national parks, located as it is between the Yellowstone and the Mount Rainier Parks. The proposed park contains an unusually interesting portion of the Sawtooth Range, which shows the characteristics of the three main mountain ranges in the United States. The southern portion reminds one of the Rocky Mountains in Colorado, the middle resembles the Sierra in California, and the northern end exhibits the characteristics of the Cascade Range in Washington. It should be known as the Idaho National Park rather than the Sawtooth.

MOUNT BAKER NATIONAL PARK.

A bill was introduced in Congress for the creation of the Mount Baker National Park in the State of Washington. Mount Baker is the farthest north of America's high mountains, outside of Alaska, and overlooks a scene of wildest grandeur. It is a dome-crowned bulk of vast extent, nearly 11,000 feet high, and is deeply grooved by 12 glaciers. From the mountain itself stretches a bewildering panorama of mountain and valley, forest and field, threaded by numerous clear streams, and on clear days the sea can be seen in the distance.

PRIVATE HOLDINGS.

In several national parks, notably Sequoia, Glacier, Mount Rainier, and Yosemite, there are large tracts of land held in private ownership—property acquired under the general land laws prior to the creation of the parks by acts of Congress. Many of these tracts embrace scenic features of rare charm, and in at least one park—Sequoia—the natural features of greatest importance, the very features that were sought to be preserved forever by the establishment of the park, are in private hands. I refer to the enormous sequoia trees (*Sequoia washingtoniana*) in what is known as the Giant Forest. For many years efforts have been made to acquire title to these timberlands and revest the same in the Federal Government, and measures designed to accomplish this end were introduced in Congress from time to time.

During the season of 1915 the assistant to the Secretary visited the Giant Forest and ascertained the names and addresses of the

owners of the tracts of lands on which most of the giant trees are standing. Some intimation of the price that would be asked for these holdings and the conditions upon which they would be disposed of were also obtained. Subsequently the department recommended in its estimates for the fiscal year ending June 30, 1917, the enactment of legislation authorizing the Secretary of the Interior in his discretion to expend \$50,000 in the purchase of "such private holdings in the park as in his judgment are desirable for the better administration of the reservation."

Later an option on a group of the largest holdings was obtained. The purchase price of these holdings was fixed at \$70,000. An appropriation of \$50,000, as recommended, was made by Congress in the sundry civil act, and the additional \$20,000 will be subscribed by public-spirited citizens and organizations. Thus will be consummated a transaction which will go far toward freeing the wonderful Giant Forest of private holdings. But more remains to be done. There will still remain in private ownership several tracts of land containing numerous big trees, and they will continue a menace to good administration of the Giant Forest if not purchased. Hotels and other concessions might be erected on these holdings and be absolutely free from departmental regulations in the interest of the public; the big trees on the lands would remain subject to the fire hazard, and no provision could be made for clearing away underbrush, dead and down timber, and otherwise making the trees as attractive and accessible as other sections of the Forest under Federal control.

A further appropriation is needed to complete the purchase of these important Giant Forest lands.

In Glacier National Park the private holdings which are sought to be extinguished are practically all on the west side of the Continental Divide. The principal holdings lie on the shores of Lake McDonald and along the road leading to the foot of this lake from Belton, the western entrance point on the Great Northern Railway. This Belton-Lake McDonald road, through its entire course of nearly 3 miles, has been constructed over privately owned lands which are covered with valuable merchantable timber. These holdings extend to the south boundary of the park, the north shore of the Flathead River, and it has thus been impossible to establish the headquarters of the park on public land at a point which would be accessible to the tourists. Several years ago the supervisor's office was located on the southwestern shore of Lake McDonald at a point which has proven to be a most undesirable location from every point of view. The logical location for the park headquarters is the tract of land on the north shore of the Flathead River and across the river from Belton. Fortunately there now exists an opportunity to secure this tract for an administrative site.

We are now developing plans which will enable us to take advantage of this opportunity, but congressional action will be necessary to fully consummate them.

Should Congress make possible the consummation of these arrangements many of the difficulties resulting from private ownership of lands in Glacier Park will be obviated.

It is unfortunate that a tract of land in private hands near the head of Lake McDonald is to be developed as villa sites. The pro-

motion of projects of this character is regarded as inconsistent with the purposes of Congress in setting aside lands for national-park purposes, and they can not be considered as objects worthy of Federal assistance or encouragement.

A bill, S. 778, authorizing the exchange of lands along roads in the scenic sections of the park for lands of approximately equal value in other portions of the park, and in national forests of Montana, passed the Senate recently and is now pending in the Committee on Public Lands of the House of Representatives.

In Yosemite National Park there are numerous tracts of land of extraordinary scenic beauty which are in private hands. Among them may be mentioned the beautiful meadows and alpine park lands near Lake Tenaya, at White Wolf and Aspen Valley, a villa site on the Big Oak Flat road near the north wall of Yosemite Valley, and a number of tracts of timberland with exceedingly heavy growths of large sugar and yellow pine.

All private holdings should ultimately be extinguished, and title to the same returned to the United States. By acts of Congress approved April 9, 1912 (37 Stat., 80), and April 16, 1914 (38 Stat., 45), authority was granted for the exchange of lands of this character along the park roads for lands of equal value in other sections of the park, and under certain specified conditions in the Sierra and Stanislaus National Forests, in the State of California. Under the provisions of these laws, several tracts of private lands have been exchanged for lands in the park and adjacent national forests. Among the private holdings, however, the existing toll roads are the most embarrassing to the administration of the reservation at the present time. These highways should be secured by the Federal Government as soon as possible, and improved and maintained as parts of the general road system.

In Mount Rainier National Park the lands in private ownership at Longmire Springs should be acquired for park purposes. On these there is a hotel which is not subject to departmental regulations, and no control can be exercised over the sanitation and general upkeep of these premises. There are other private holdings of more or less importance in the park, which should ultimately be secured. Acquisition of the Longmire Springs property, however, is very essential to the proper development of this section of the reservation.

RANGER FORCE.

Special attention was given to the ranger force in each park during the season 1916 while discussing plans with the supervisors. Generally it was found that conditions were not conducive to best service. During the coming winter there will be presented for your consideration a plan which I believe will remedy the present situation. I strongly recommend that each member of the corps be appointed in the National Park Service, rather than as at present to the park in which they are to work, so that an employee in one park may be readily transferred to another park, where his training and experience make him more valuable to the service.

The ranger force in reality makes the success or failure in administering the parks, and I feel that there should be a civil-service examination to determine the educational qualifications of the

rangers. While such an examination can not determine the most important requirements, temperament, tact, etc., it would give an assured fundamental base to build upon, and after one season's trial, before a permanent appointment was made, the department would know if the ranger had the desired all-around qualifications for the ranger corps.

The longer a man is in the service the more valuable he is, and, therefore, I think a ranger should enter the service with the desire of making it his life's work, and after the service is once fully organized, promotions to higher positions should be made in the corps, so that each man would have the fullest incentive to give his best service, knowing that advancement would be based solely on character and general efficiency.

CONSTRUCTION WORK.

The apparent policy in the past in making appropriations for road and trail construction has been to give only enough to provide for the most immediate needs. This is most unfortunate and expensive. It adds to the final cost easily 25 per cent, whereas if there were appropriated at one time sufficient to construct the road to final completion, the department would plan in a businesslike way and acquire the necessary machinery, etc., to do the work properly. It must be remembered that on account of the weather conditions in practically all the national parks the summer season is the only time road work can be done, and the appropriations being usually available on July 1 (some years later), the working season is cut in half and part of the appropriation is left to be expended before July 1 of the next year. As the department does not know when the appropriations for the new year may be made, nor the amounts that will be available, it is sometimes impossible to expend economically these appropriations. In fact, in any field service where appropriations lapse on June 30, at least 25 per cent additional is added, because of forced work, to the cost.

I therefore recommend that all appropriations for construction in the national parks be made immediately available and that they continue to be available until expended.

I shall present for your consideration during the coming winter an estimate of the cost for the full development of the national parks, which, in my judgment, is necessary in order to make them easily accessible and available for the fullest enjoyment and benefit of the people.

YOSEMITE HYDROELECTRIC POWER PLANT.

The sundry civil appropriation act approved July 1, 1916, carried an item of \$150,000 for the erection of a new power plant in the Yosemite National Park. This plant is now under construction and will be finished by June 30, 1917. The intake, a small diversion dam, is located at the head of the rapids in the Merced River near Pohono Bridge and the power house will be near Cascade Creek. This seemed the best location and fortunately is below the floor of the valley and does not affect any of the falls and rapids above the lower end of the valley at Pohono Bridge. It is being constructed with special care so as to be as inconspicuous as possible along El Portal Road. The plant when completed will generate approximately 1,500

kilowatts during high water and approximately 750 kilowatts during the low water in the fall. This will furnish sufficient power for lighting all camps and the new hotel under construction, as well as all the main roads and footpaths in the Yosemite Valley, and for heating and cooking at the hotel and permanent camps.

This work is being done by the department under the supervision of the Superintendent of National Parks, through Galloway and Markwart, supervising electrical engineers of San Francisco, Cal.

SANITATION.

Mr. J. A. Hill, of Chicago, who has had wide experience in handling hotels and has made a speciality of sanitary conditions in connection with the operations of hotels, was appointed inspector and assigned to the detailed examination of all hotels and camps in the several national parks. His report is exhaustive and valuable indeed, and his recommendations will be adopted and put into operation as fast as possible, as I believe they will add much to the comfort and safety of the tourists.

During my visit of general inspection to the national parks, during the season of 1916, I was constantly impressed with the total lack of any systematic sanitary arrangements. The national parks, to give full benefit and enjoyment to our people, must be kept in the best possible sanitary condition. There is not an adequate sanitary system in a single park, and the great increase in travel to all the parks in the last two years makes the sanitary problem the most important question in every park.

In the Yosemite, for instance, on July 4 last on the floor of the valley, in an area of about 1 square mile, there were 5,000 people, and during the season of 1916 some 33,000 people—a good sized city—and yet here there is nothing that can be called a sewer system. In the Sequoia, in an area of approximately one-fourth square mile, there were 10,687 people during about four months, and in General Grant during the same time, in an area of approximately one-eighth square mile, there were 15,226 people, and in neither of these parks is there any kind of sanitary system, save the crude dry-box toilets. Crater Lake is no better, Mesa Verde is even worse, and in fact all the parks are in a deplorable condition in this respect, and I shudder at the probability of an epidemic of typhoid fever or some other common epidemic that could be directly charged to the lack of proper sanitation. In connection with the necessity for sanitation there is also need for an adequate water system for each park. Therefore, I can not too strongly urge that the estimates submitted to Congress for the next fiscal year, containing recommendation for appropriations for sanitation and water supply, receive the favorable consideration of Congress and that the funds authorized be made available for immediate expenditure.

ADMISSION OF AUTOMOBILES TO PARK.

All of the parks are now open to motorists and practically all objectional restrictions that were imposed in the past have been eliminated. Automobiles were first admitted to the Mount Rainier National Park in 1908, General Grant in 1910, Crater Lake in 1911, Glacier in 1912, Yosemite and Sequoia in 1913, and Mesa Verde in

1914. Automobiles are permitted in the Rocky Mountain, Platt, Wind Cave, Sullys Hill, and Casa Grande Ruin, and in the Hot Springs under special conditions and on special occasions.

During the season of 1915, private automobiles, used for pleasure purposes only, were admitted in the Yellowstone National Park under schedule that did not interfere at all with the regular horse-drawn stage coaches, and in 1916 free shelter garages were constructed at the principal points of interest. The admission of private automobiles in the Yellowstone has proven a tremendous success during two seasons, and now that the roads have been greatly improved it is planned to discontinue the horse-drawn stage and use automobile transportation entirely in this park beginning with the season of 1917. When this is accomplished, transportation by the concessioners in all of the parks will be by automobile.

The automobile revenues are growing and in time will be the principal revenue from the parks. Every effort is, therefore, being made to give to the motorist every opportunity to use the parks, such as good safe roads, supply stations, camp grounds, shelter garages, etc.

The road leading from Cody, the home of Buffalo Bill, up the Shoshone River to the lake formed by the impounding of the river waters by the great Shoshone Dam, thence up the North Fork of this river to the eastern entrance to Yellowstone Park, which is just below the beautiful Sylvan Pass in the Absaroka Range, was opened this season for the first time as a general highway for tourist travel. More than 3,300 people entered or departed from the park via this route during the summer, and this "Cody Entrance," as it is called, has been described by many who enjoyed its wonders as the "sensation of the season."

The Chicago, Burlington & Quincy Railroad extensively advertised this new entrance to the park, and maintained excellent train service to Cody from various Middle West points. By direction of the department and under permit from it a company was organized to operate an automobile stage line between Cody and the Lake Hotel, where connection was made with the belt-line stages for the regular park tour. This company, which was known as the Cody-Sylvan Pass Motor Co., was organized by the transportation concessioners and camping companies holding concessions in the park, and was thus given a direct connection with long-established park enterprises. New and comfortable automobile busses of the latest model were operated by the Cody-Sylvan Pass Co. and service first class in every respect was rendered.

The large increase in automobile travel to all the parks during the season of 1915 seemed to warrant the issuance of special guide maps and automobile regulations combined for use of automobilists, and an experiment was made in issuing a guide map. For the Yosemite and Yellowstone approximately 17,000 each were distributed through automobile clubs and chambers of commerce and to individuals. The appreciation of the users of these maps was shown by the considerable increase in travel. It is therefore planned to issue similar maps for each park for the season of 1917.

Respectfully submitted,

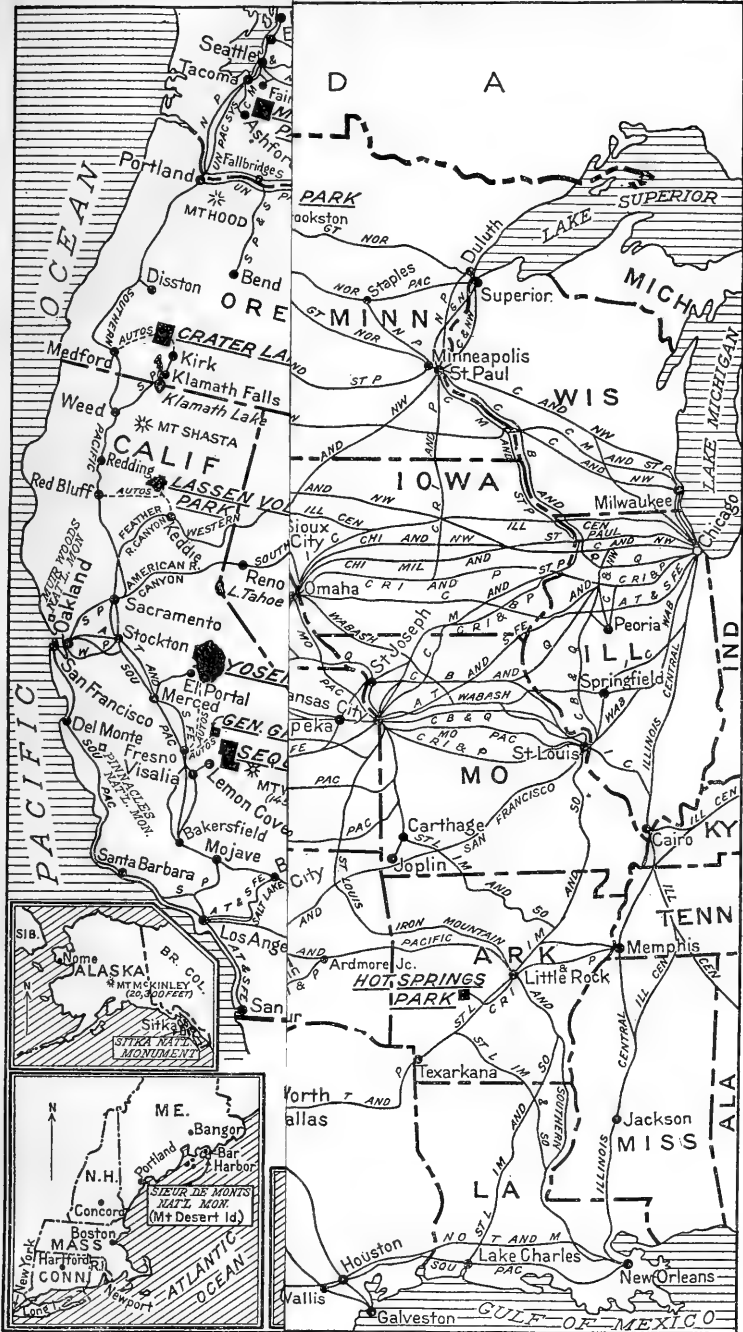
R. B. MARSHALL,

Superintendent of National Parks.

The SECRETARY OF THE INTERIOR,
Washington, D. C.

16 NATIONMENTS

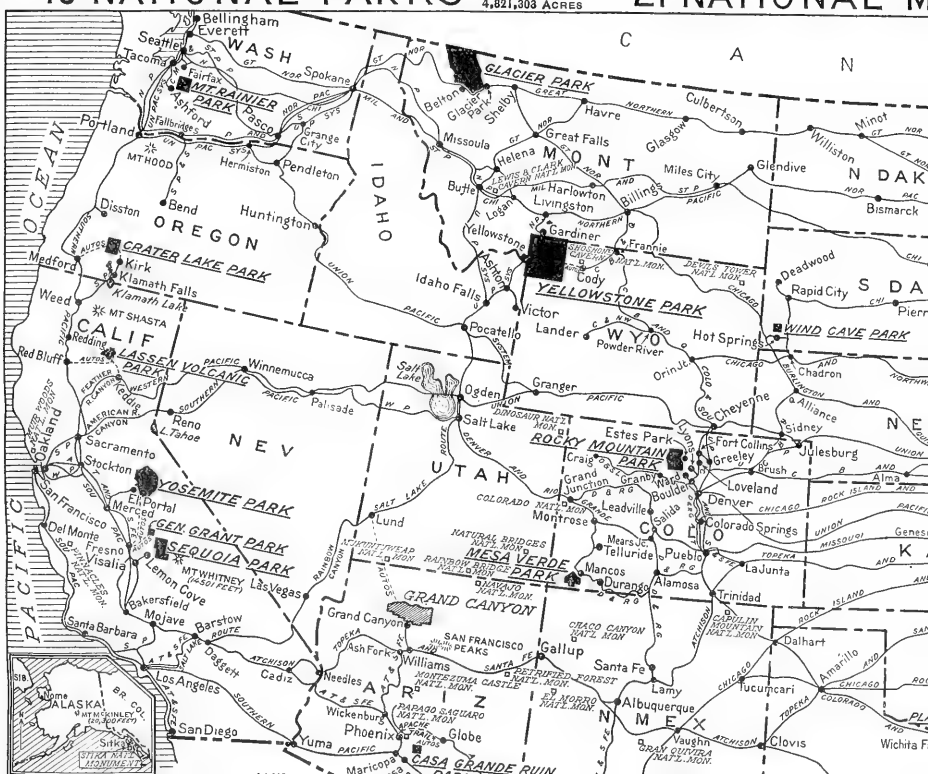
CONTAINING
142.9 Sq. Miles or
91,491 Acres



16 NATIONAL PARKS

CONTAINING
7,534 SQ. MILES OR
4,821,303 ACRES

21 NATIONAL MONUMENTS





EXCERPTS FROM REPORTS OF SUPERVISORS OF NATIONAL PARKS.

The following are excerpts from the reports of the supervisors (whose title was changed from that of superintendent during the past year) of the various national parks:

HOT SPRINGS RESERVATION.

Dr. WILLIAM P. PARKS, Supervisor, Hot Springs, Ark.

GENERAL STATEMENT.

There were given this year 544,371 paid baths in the several bathhouses, which is an excess of 64,144 baths, the total given last year having been 480,227. The total receipts of the different bathhouses this year were \$243,568.29, and the total receipts last year were \$200,629.21, making a net gain of \$42,939.08. During the month of March this year the total receipts of the bathhouses were \$43,062.53, and for the month of March last year, \$28,669.38, making a net gain for the single month of \$14,393.15. The month of March is always considered the banner month of the year. It is estimated that approximately 125,000 persons visited Hot Springs during the past fiscal year.

In addition to the 544,371 paid baths shown above there were given 2,243 complimentary baths in the pay bathhouses, 103,398 baths at the Government Free Bathhouse, and 4,284 baths at the Levi Memorial Bathhouse, making a total of 654,296 baths during the past fiscal year.

LEGENDARY HISTORY.

The Hot Springs of Arkansas are 50 miles southwest of Little Rock, Arkansas's capital. Just how long hot water has been issuing from the earth at this point we do not know, nor can we ever know. Twenty-three hundred years is the minimum estimate of scientists. It is also equally as uncertain when the first human being penetrated the wild and lonely mountain fastnesses and discovered this marvelous gift of a beneficent God. I shall not dwell on the romantic legends which tell us how adventurous Indian tribes battled from time to time for control of the hot waters in which they believed the "Great Spirit" to be ever present, and how a truce was finally declared, under which their benefits were extended to the sick of all tribes.

It is recorded that the Spaniards under De Soto were the first white men to look upon and drink of the waters of the Hot Springs. This leader, with his proud chivalric band of Castilians, reached the springs in the autumn of 1541. Old court records show that the Spaniards when in possession of the country just before it passed to the United States realized the value of the springs and made a futile attempt to wrest them away from the effects of the Louisiana purchase of 1803.

The earliest settlement of which we have any positive information was the building of a cabin at the springs in 1807 by Manuel Prudhomme. Mr. Hempstead, in his history of Arkansas, reproduces a letter written in the year 1829, from "The Hot Springs of the Washita," which says: "Until this season everyone who came here was obliged to provide for himself shelter and provisions as he could. This year a boarding house has been established by a family from Boston, and the accommodations are quite comfortable. I do not doubt but that this will be kept up * * * boarding for man and horse is one dollar per day." The first bathhouse of which we have any knowledge was erected in 1830.

In 1827 application was made for a patent to the land embracing the springs, but it was withheld on the ground that the Indian title had not at that time been extinguished, and afterwards withheld on the advice of the Attorney General that the New Madrid certificates, upon which the claim was based, were not locatable south of the Arkansas River.

In 1832 our Government, believing that the All-Wise Architect of the Universe had a purpose in creating these fountains of health almost midway between our ocean boundaries, and that such a priceless gift should be free from monopoly and exploitation, set aside for the future disposal of the United States, not to be entered, located, or appropriated for any other purpose whatever, the hot springs and four sections of land surrounding them, then making the first national park reservation of the country and preserving forever the waters for the use of all.

But, notwithstanding the act of Congress, the title to the springs remained in dispute. There were three claimants to the property, and litigation over it, which began in 1852, ended in 1876 by a decision of the Supreme Court of the United States in favor of the Government against all claimants.

In 1877 the commissioners of the Government settled the right of possession and purchase as between several thousand different individuals who had settled on the property, holding by lease or purchase. Valuations were placed on the different parcels, and the commissioners decided who were entitled to purchase the same. These adverse claims and resulting litigations retarded the growth of the city of Hot Springs, but the permanent settlement of title and the multitudinous questions involved marked a new era in the city's history, as is now evidenced by a beautiful city.

The Hot Springs Reservation now has an area of 911 acres, consisting of five units—viz, Hot Springs, North, West, and Sugar Loaf Mountains, and Whittington Lake Reserve Park, but the hot waters issue forth only from the west slope and at the base of Hot Springs Mountain which embraces 264 acres, and the 47 springs with an average daily flow of 848,000 gallons and an average temperature of 135° F. are confined within an area approximately 500 by 1,400 feet.

THE CITY OF HOT SPRINGS.

The city of Hot Springs is located in a spur of the beautiful Ozark Mountains, and enjoys ideal climatic conditions similar to those of southern California or southern Italy, abounding in sunshine and balmy weather in the winter and relatively cool summers, all of which tend to popularize it as a resort. It is a municipality governed by State and municipal laws, and the Department of the Interior exercises no control or supervision over any matters connected with the city.

It has a population of 16,000 exclusive of its suburbs, and ranks in size as the fourth city in the State. It is cosmopolitan in character, having visitors at times from all parts of the world, and classes in this respect with other cities many times its size.

The elevation of the central part of the city is 600 feet above sea level, and the surrounding mountain tops 500 to 600 feet higher.

Doctor drumming as now carried on is consummated by first obtaining the confidence of the prospective victim, and later by various means causing the patient to go to some physician who is willing to give up half the fee in order to secure the patient. This is a most vicious practice and should be eliminated root and branch. In taking affidavits in this office it is not an infrequent occurrence that the drummer first steers the patient to some drug store, and through an understanding with the druggist the patient is recommended to the doctor to whom the drummer desires him to go.

Constant and timely investigations of all complaints are made by this office and in this manner the evil has been curtailed to a great extent but not eliminated, as it has been difficult to secure evidence which the department deemed sufficient to take action. The supervisor has spent much time in the investigation of these cases and so far as is in his power has made an earnest effort to carry out the rules and regulations.

EMPLOYEES.

There are at present 30 regular employees engaged in the administration, maintenance, protection, and care of the interests of the reservation. All of these employees were appointed from Arkansas under civil-service rules.

THE OERTEL SYSTEM OF MOUNTAIN CLIMBING.

The Oertel system of graduated exercise laid out in four courses on Hot Springs and North Mountains and completed last year has been the source of much benefit to the visiting public, and a large number of persons avail themselves of these courses for their exercise.

There has been quite a demand for the map showing these courses, and physicians as well as patrons seem highly pleased that these courses have been established. They will be used more from year to year when the public becomes better acquainted with this scientific method of exercise. This being the only course of the kind in this country, the people naturally have to become acquainted with the benefits to be derived from its use.

IMPROVEMENTS.

Roads and bridges have been repaired and rubble-stone retaining walls constructed in various places on the reservation where required.

The necessary repairs have been made to the free bathhouse and various pavilions and to the supervisor's office and residence.

In addition there has been much time and labor spent in the beautification and maintenance of Reserve Park, as well as Whittington Lake Park, in the way of cultivating flowers and shrubbery, planting and trimming hedges, maintaining and cutting lawns, pruning trees, and work generally necessary to promote the beauty of the park, and it is safe to say that the Hot Springs Mountain Reservation never looked better than at the present time.

NEW SPRING.

During the latter part of September, while excavating for the foundation of the Superior Bathhouse, there was developed a flow of hot water from a point near the Superior Reservoir at the northeast corner of the men's bathing hall of the bathhouse. This spring had a flow of approximately 22,000 gallons every 24 hours and the temperature being 147° F. Upon instructions from the department the water was secured and piped into the general supply line connected up with the main impounding reservoir in the rear of the supervisor's office.

ADMISSION OF AUTOMOBILES ON WEST MOUNTAIN ROAD.

The department under date of February 7, 1916, authorized the superintendent to permit automobiles to use the main West Mountain Road, and accordingly, after due notification through the newspapers, this road was opened to automobiles on February 22, 1916, under certain regulations approved by the department January 22, 1916.

GOVERNMENT FREE BATHHOUSE.

The Government Free Bathhouse has been operated during the past year for the indigent in accordance with the acts of Congress of December 16, 1878, and March 2, 1911, with the following results:

Total applications for free baths-----	6,328
Number refused-----	281
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Tickets issued to—	
White males-----	3,793
White females-----	566
Colored males-----	1,053
Colored females-----	635
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Total tickets issued on original applications-----	6,047
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Tickets reissued to—	
White males-----	774
White females-----	122
Colored males-----	219
Colored females-----	57
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Total tickets reissued-----	1,172
	<hr/>
Total tickets to—	
White males-----	4,567
White females-----	688
Colored males-----	1,272
Colored females-----	692
	<hr/>
Total tickets, including reissues-----	7,219
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Baths given :

White males.....	64, 448
White females.....	10, 154
Colored males.....	19, 026
Colored females.....	9, 770

Total baths given..... 103, 398

Average number of persons bathed daily, 336+.

Examination of the above table shows a decrease of approximately 18 per cent in the number of tickets issued, baths given, and daily average, due to the rigid enforcement of the acts of Congress and of the rules and regulations governing the bathhouse and to the investigation of a number of cases resulting in the baths being denied to a number of persons who had been bathing for some time when they did not require the baths or were able to pay for them elsewhere. It is believed that all persons now bathing in this bathhouse are actually indigent within the full sense and meaning of the law and are entitled to the baths.

FREE CLINIC.

In compliance with a request from several of the registered physicians and in accordance with my recommendation the department under date of March 15, 1916, authorized these physicians to use the vacant rooms over the Government Free Bathhouse for clinic purposes, and also granted them the use of the equipment which had heretofore been purchased by the department for the use of the former medical director.

On April 1, following the authority, a free clinic was organized for the purpose of giving medical treatment to patrons of the Government bathhouse who were unable to obtain means to pay for medical treatment, and also to ascertain as nearly as possible the effects of the hot water on cases not under medical treatment.

This work is in its infancy and so far much good has resulted and benefits rendered to these unfortunate people. The clinic is operated between the hours of 1 and 3 p. m. every day except Sundays and holidays, and the physicians who are giving their time to this work are to be commended for their efforts. Upon the reconstruction or remodeling of the free bathhouse it is intended to finish up a modern clinic, and when this shall have been accomplished to fully equip it in such a manner as to better facilitate the work.

The monthly reports from the clinic indicate that they have observed 382 cases from April 1 to June 30, inclusive.

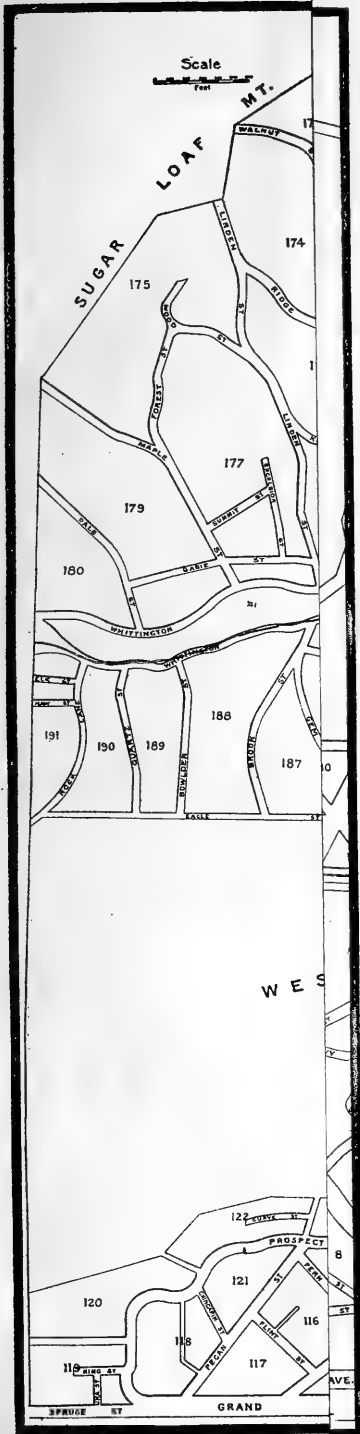
PHYSIOLOGICAL TESTS OF THE WATER.

The purpose of organizing a free clinic at the Government Free Bathhouse was largely to observe the physiological effects of the hot water and its therapeutic value. This is being done to determine the effects of the waters upon the pulse, temperature, and blood pressure, as follows:

1. Determination of atmospheric temperature in the bath hall and the temperature of the water in each pool.
2. Observation of the pulse, temperature, and blood pressure before the bath.
3. Observation of the pulse, temperature, and blood pressure in the bath at various intervals.
4. Recording the duration of the bath.
5. Observation of the pulse, temperature, and blood pressure after the baths at various intervals to determine the degrees of reaction and the duration of same.
6. An observation of the results to determine the influence on the reaction obtained on persons of widely different ages, the number of previous baths, air temperature in the bathhouse, temperature of the water, and duration of the baths; also the rapidity and duration of the reaction.

Also observation is being made on the blood pressure, the effects of the hot water on the leucocytes, the polynuclear cells of the blood, and its phagocytic power.

We hope to be able during the next year by observing closely the above plan to furnish some interesting data concerning the therapeutic value of the waters.

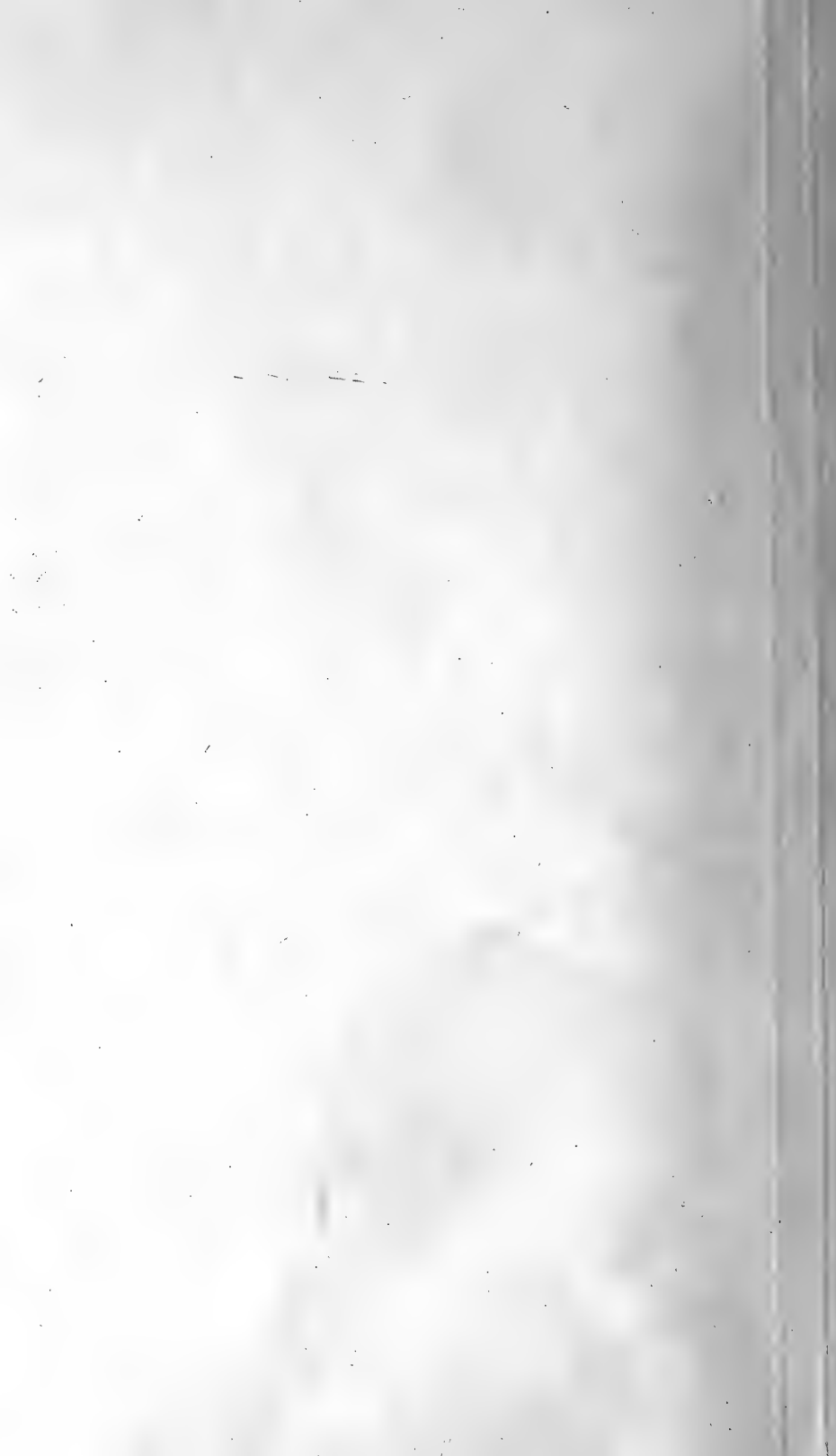


LEGEND.

[The numbers in this list refer to the smaller numbers on the map; the larger numbers on the map are the numbers of the squares.]

1. Superintendent's office.
2. Lamar bathhouse.
3. Buckstaff baths.
4. Ozark bathhouse.
5. Magnesia bathhouse.
6. Horse Shoe bathhouse.
7. Palace bathhouse.
8. Maurice bathhouse.
9. Hale bathhouse.
10. Superior bathhouse.
11. Arlington Hotel and baths.
12. Government free bathhouse.
13. Imperial bathhouse.
14. Hot Springs bathhouse and hotel.
15. Rector bathhouse and Waukesha Hotel.
16. Rockafellow bathhouse and hotel.
17. Majestic Hotel and baths.
18. St. Joseph Infirmary.
19. Great Northern Hotel and baths.
20. Post office.
21. Business Men's League.
22. Rock Island Station.
23. Iron Mountain Station.
24. Ozark Sanitarium.
25. Alhambra bathhouse.
26. Moody Hotel and baths.
27. City Hall and Auditorium Theater.
28. ——— Electric street car line.
29. Main entrance to reservation.
30. Park Hotel and baths.
31. Eastman Hotel and baths.
32. Arkansas National Bank.
33. Security Bank.
34. Citizens National Bank.
35. Elks' Home and Masonic Temple.
36. First Baptist Church.
37. First Methodist Church.
38. Episcopal Church.
39. Catholic Church.
40. First Presbyterian Church.
41. Whittington Lake Park.
42. High-school building.
43. County courthouse.
44. Superintendent's official residence.

North, West, and Hot Springs Mountains and Whittington Lake Park form the permanent Hot Springs Reservation, owned and operated by the Government.



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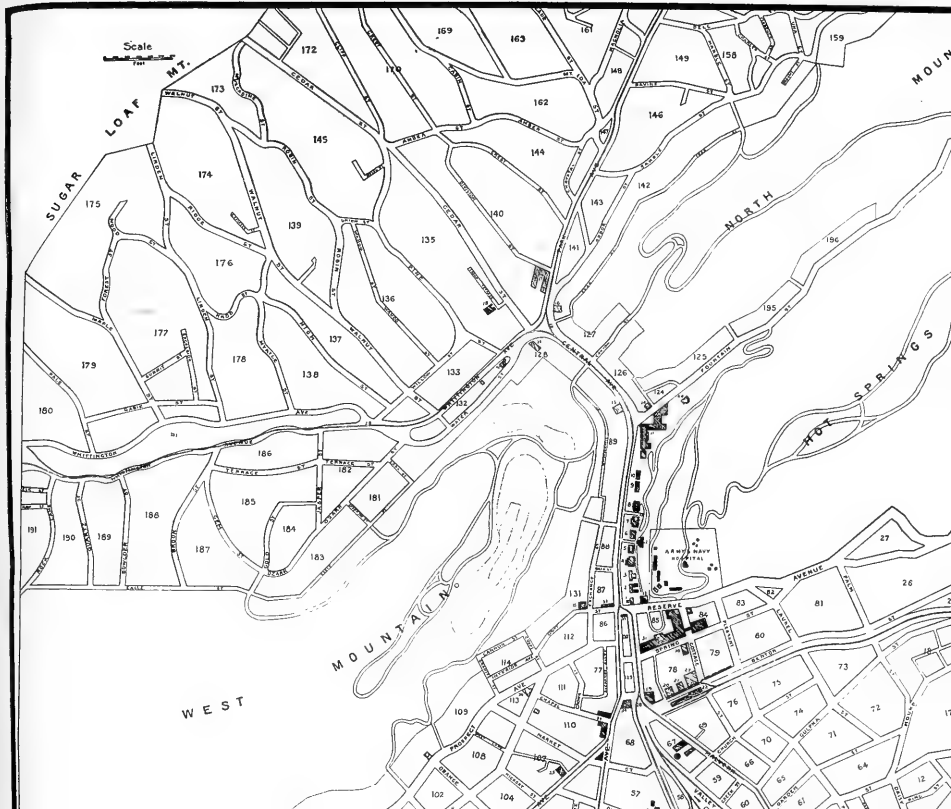
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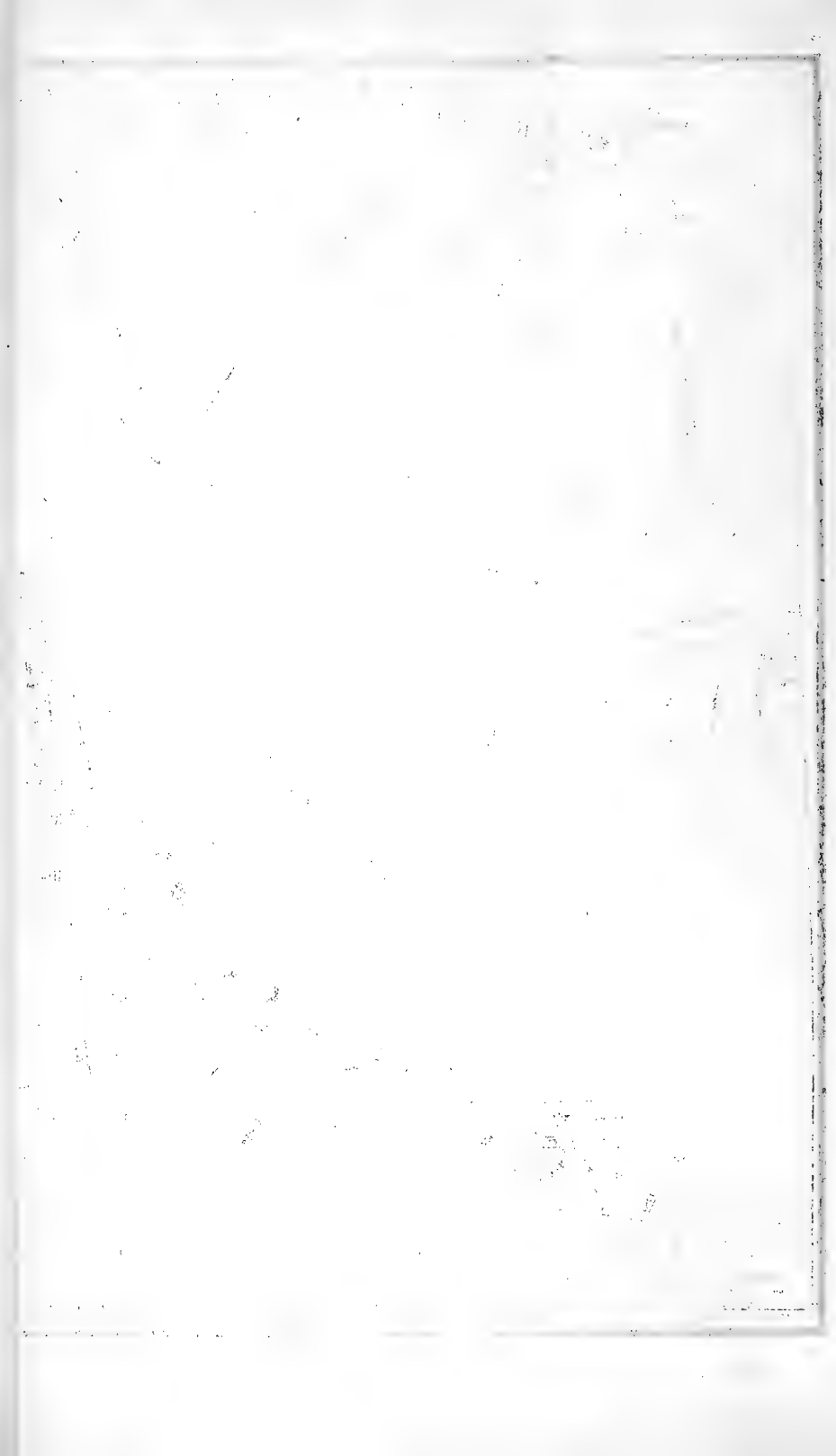
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RADIOACTIVITY OF THE WATERS.

In 1904 the Secretary of the Interior authorized Dr. Bertram B. Boltwood, of Yale University, to report on the radioactivity of the waters. The following résumé of Dr. Boltwood's conclusions appeared in the annual report of the Secretary of the Interior for 1904:

"* * * The results of the electroscopic tests of the gases obtained by boiling the waters were very satisfactory, as they showed that the waters at Hot Springs are radioactive to a marked degree; and from other tests, taken to determine the properties of the emanation from the waters, it was found that the properties of these radioactive gases were identical with those of the radium emanation.

"On the other hand, when water from which the gas had once been taken was boiled a second time, after being allowed to stand, no radioactivity was detected in the gas obtained from the second boiling, and it was therefore concluded that little or no radium salts existed in the waters. This conclusion was strengthened by the fact that a test of the residue of the waters which had been left by evaporation also failed to disclose any sign of radioactivity of this solid substance. A sample from the tufa deposit, formed by some of the springs on issuing from the ground, was also tested, and it was found that the amount of radium contained in 100 grams of tufa was less than one one-millionth of the quantity of radium, associated with an equal weight of uranium in pitchblende. Samples of the gas which arose from the springs were also tested, and its radioactivity was found to be less than of an equal volume of gas obtained by boiling the waters from the springs. The following conclusions are reached by Dr. Boltwood as to the result of his investigations:

"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."

THE PAY BATHHOUSES.

It is with much pride that Hot Springs is enabled to boast of the most magnificent and palatial bathhouses to be found anywhere. There is no question that these bathing facilities are superior to anything of this kind now in existence. A high standard of efficiency is maintained in the operation of practically all of these bathhouses, and the rules and regulations governing their operation are strictly enforced. The supervisor makes frequent inspections of each and every bathhouse receiving hot water from the Hot Springs Reservation and by this means soon ascertains if there is any delinquency on the part of the management or the attendants. Whenever any unsatisfactory condition is observed, no matter how small or trivial it may be, the matter is brought to the attention of the management in order that it may be remedied at once.

This year has been a prosperous one for the bathhouses.

RECEIPTS AND DISBURSEMENTS.

The receipts and disbursements on account of the Hot Springs Reservation during the fiscal year ended June 30, 1916, were as follows:

Proceeds, sale of lots, special fund.

July 1, 1916, balance remaining to credit of fund of \$82,518, derived from the sale of Government lots.....	\$4,972.49
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Protection and improvement, Hot Springs Reservation, indefinite (revenue fund).

July 1, 1915, balance to credit of revenue fund.....	\$63,023.81
Receipts, July 1, 1915, to June 30, 1916, inclusive:	
Water rents.....	\$27,810.00
Ground rents	10,100.00
Sale of 3 bath attendant's badges, at 24 cents, and 39 bath attendant's badges, at 40 cents.....	16.32
Sale of 1,500 Oertel system maps, at \$1 per 100....	15.00
	37,941.32

Protection and improvement, Hot Springs Reservation, indefinite (revenue fund)—Continued.

Receipts, July 1, 1915, to June 30, 1916, inclusive—Continued.

Repay by W. P. Parks, special disbursing officer, of amount disallowed in his accounts for March, 1915 quarter, by Auditor for Interior Department, on traveling expenses of himself, paid in quarter ended Mar. 31, 1915.....	\$2. 85
Total receipts	\$37, 944. 17
Total available	100, 967. 98
Disbursements:	
Salaries of supervisor and reservation employees, July 1, 1915, to June 30, 1916, inclusive.....	\$26, 598. 92
Improvements, repairs, incidentals, and miscellaneous supplies.....	12, 922. 34
Expended by supervisor.....	39, 521. 26
Additional expended by the department.....	739. 88
Total disbursements	40, 261. 14
Available balance, July 1, 1916.....	60, 706. 84

There are at present 19 pay bathhouses in operation in Hot Springs, receiving hot water from the Hot Springs Reservation, with the following rates for baths, approved by the Secretary of the Interior, in effect therein, since January 1, 1916:

Bathhouse.	Single bath.	Course of 21 baths.	Bathhouse.	Single bath.	Course of 21 baths.
Alhambra.....	\$0. 40	\$7. 00	Maurice.....	\$0. 60	\$11. 00
Arlington.....	. 65	12. 00	Moody.....	. 50	9. 00
Buckstaff.....	. 60	11. 00	Ozark.....	. 40	7. 00
Eastman.....	. 55	10. 00	Ozark Sanatorium.....	. 45	8. 00
Fordyce.....	. 65	12. 00	Pythian (colored).....	. 25	4. 00
Hale.....	. 50	9. 00	Rector.....	. 45	8. 00
Imperial.....	. 55	10. 00	Rockafellow.....	. 45	8. 00
Lamar.....	. 45	8. 00	St. Joseph's Infirmary.....	. 50	9. 00
Magnesia.....	. 40	7. 00	Superior.....	. 45	8. 00
Majestic.....	. 55	10. 00			

There are at the present time 26 leases of hot-water and ground privileges in force.

Hot-water and ground leases.

Name of bathhouse, etc.	Lessee.	Tubs.	Date of lease.	Expiration.
Alhambra.....	Alhambra Bathhouse Co.....	18	Mar. 1, 1916	Feb. 28, 1919
Arlington ¹	Arlington Hotel Co.....	68	Mar. 21, 1914	Mar. 3, 1932
Buc ² staff.....	Buckstaff Bath House Co.....	31	Jan. 1, 1912	Dec. 31, 1931
Eastman ¹	New York Hotel Co.....	64	May 13, 1912	May 12, 1932
Fordyce.....	S. W. Fordyce.....	30	Jan. 1, 1915	Dec. 31, 1934
Hale.....	Mercantile Trust Co., trustee.....	25	do.....	Do.
Horse Shoe ³	D. Fellows Platt.....	30	Jan. 1, 1895	Dec. 31, 1909
Imperial.....	Chas. N. Rix.....	27	Jan. 1, 1912	Dec. 31, 1931
Lamar.....	M. C. Tomblor and G. H. Buckstaff.....	30	Jan. 1, 1897	Dec. 31, 1916
Levi Memorial.....	Leo N. Levi Memorial Hospital Association.....	5	Nov. 1, 1914	Oct. 31, 1924
Magnesia ³	Chas. B. Platt.....	30	Jan. 1, 1895	Dec. 31, 1909
Majestic ¹	Avenue Hotel Co.....	23	Jan. 1, 1913	Dec. 31, 1932
Maurice.....	Maurice Bath Co.....	29	Jan. 1, 1912	Dec. 31, 1931
Moody ¹	Nicholas M. Moody.....	16	July 1, 1910	June 30, 1920
Ozark ³	W. S. Sorrells and F. B. Latta.....	26	Jan. 1, 1904	Dec. 31, 1913
Ozark Sanatorium.....	Ozark Sanatorium Co.....	10	Sept. 17, 1912	Sept. 16, 1922
Par ¹	Garland Hotel Co.....	47	May 13, 1912	May 12, 1932
Pythian (colored).....	Knights of Pythias (colored).....	10	Dec. 16, 1914	Dec. 15, 1924
Rector ⁶	Elias W. Rector.....	12	Apr. 16, 1914	Apr. 15, 1924
Rockafellow.....	Mahala J. Rockafellow.....	18	July 1, 1916	June 30, 1918
St. Joseph's Infirmary ¹	Sister superior.....	10	Feb. 1, 1914	Jan. 31, 1924
Superior ⁶	Superior Bathhouse Co.....	20	Feb. 15, 1916	Feb. 14, 1936
Waverly ⁷	New Waverly Hotel Co.....	20	Mar. 24, 1893	Mar. 23, 1913
Horse Pool ⁴	Simon Cooper.....	2	Oct. 30, 1912	Oct. 30, 1917
Arlington Hotel, ground lease.....	Arlington Hotel Co.....	.....	Mar. 21, 1914	Mar. 3, 1932
Hot Springs Mountain Observatory, ground lease.....	Hot Springs Mountain Observatory Co.....	.....	Sept. 1, 1913	Sept. 1, 1923

¹ Water used in private bathrooms in portion of tubs leased.

² Closed Dec. 31, 1915.

³ Tenants holding over.

⁴ Destroyed by fire Sept. 5, 1913.

⁵ Remodeled and reopened Apr. 18, 1916.

⁶ New building replacing old Superior Bathhouse completed and opened to public Feb. 16, 1916.

⁷ Destroyed by fire Jan. 23, 1910.

⁸ Water sufficient to supply 2 tubs.

Total receipts, less redemptions, of bathhouses, by months, for fiscal year ended June 30, 1916.

Bathhouse.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Total.
Alhambra.....	\$673.70	\$681.45	\$711.85	\$640.55	\$646.15	\$533.05	\$1,083.30	\$1,026.85	\$1,202.50	\$1,002.75	\$938.25	\$804.60	\$9,945.00
Arlington.....	994.75	916.10	1,005.30	961.45	1,277.45	1,280.70	2,659.95	4,228.95	4,231.70	2,190.10	1,340.40	985.95	22,082.80
Buckstaff.....	1,430.05	1,162.80	1,169.25	1,091.35	864.50	1,490.95	2,234.85	2,618.40	3,588.20	2,017.15	1,561.20	1,341.80	20,570.50
Eastman.....	1,848.95	2,219.57	1,532.32	1,628.81	1,601.10	1,953.80	2,766.00	3,434.70	4,181.93	2,494.30	2,170.00	2,096.30	27,927.78
Forlyce.....	1,014.65	1,008.45	1,036.00	787.00	612.25	1,266.05	1,415.85	1,691.85	1,610.65	1,011.20	861.00	955.30	13,960.25
Hale.....	1,382.25	361.80	440.40	389.55	416.00	342.50	1,384.40	1,673.80	2,199.40	1,431.20	1,158.80	1,484.40	2,352.50
Horse Shoe.....	1,280.80	907.10	896.75	852.85	814.80	1,110.35	1,066.45	1,262.85	1,528.30	1,181.70	984.50	867.95	15,571.80
Imperial.....	880.80	473.40	708.05	620.80	593.70	830.35	1,451.05	1,397.00	1,680.20	1,347.70	1,143.95	1,172.85	11,422.55
Magnesia.....	314.30	654.30	448.90	322.00	380.95	521.05	1,538.00	2,179.15	2,822.25	1,236.60	1,573.55	811.25	10,532.95
Mailestie.....	1,225.00	996.55	539.10	788.50	596.80	465.10	3,540.45	4,266.45	5,963.90	2,530.10	2,613.30	2,562.55	13,014.90
Maurice.....	1,121.05	443.58	393.22	403.27	1,466.20	1,922.25	3,040.21	4,267.88	1,385.92	660.42	541.16	467.32	28,414.40
Moody.....	1,311.70	1,284.35	982.30	752.60	949.20	1,308.80	1,455.00	1,517.80	1,634.80	1,434.85	1,365.80	883.20	14,689.75
Ozark.....	283.45	298.20	223.40	145.75	189.65	205.65	317.55	328.15	452.75	301.70	375.21	209.25	4,206.59
Ozark Sanatorium.....													
Pythian (colored).....													
Rector.....	1,024.50	833.30	904.90	712.58	680.17	918.03	1,546.35	1,726.47	2,241.60	1,420.02	1,308.87	379.10	1,034.60
Rockafellow.....	289.60	280.80	223.65	249.00	168.00	204.00	493.50	513.00	665.00	301.50	390.70	1,068.42	3,985.13
St. Joseph's Infirmary.....													
Superior.....													
Total.....	14,269.93	14,091.70	11,677.09	11,130.81	11,894.05	15,102.62	24,821.41	33,279.00	43,062.53	24,221.34	21,319.44	18,698.37	243,568.29

Business of bathhouses for the fiscal year ended June 30, 1916.

Bathhouse.	Whole tickets.	Half tickets.	Quarter tickets.	Single tickets.	Total baths sold.	Baths re-deemed.	Net paid baths.	Complementary baths.	Paid for redeemed baths.	Total bath receipts less redemptions.	Receipts from massage, etc.	Total receipts.	Total expenditures.	Net profits.	Net loss.	
Alhambra.....	1,095	666	128	1,306	31,601	2,768	28,833	21	\$968.80	\$9,774.00	\$171.00	\$9,945.00	\$7,151.35	\$2,793.65	.....
Arlington.....	1,269	1,311	.....	2,621	42,380	6,962	35,418	21	3,928.35	19,682.80	2,400.00	22,082.80	11,060.00	11,022.80	.....
Buckstaff.....	1,276	965	664	2,166	41,522	4,226	37,296	605	2,258.05	19,408.65	1,161.85	20,570.50	17,213.09	3,357.41	.....
Eastman.....	253	912	.....	1,167	15,600	1,643	13,957	21	813.80	6,918.05	500.00	7,418.05	4,450.00	2,968.05	.....
Fordyce.....	1,636	1,099	784	2,461	51,727	5,858	45,869	317	3,845.15	24,166.05	3,761.13	27,927.78	18,970.83	8,957.25	.....
Horse Shoe.....	232	304	118	289	8,791	928	7,863	.....	278.40	2,303.75	28.75	2,332.50	2,332.20	.....	30
Hale.....	1,100	1,184	10	2,159	37,149	3,996	33,153	30	1,572.70	12,968.90	291.35	13,260.25	11,310.79	1,949.46	.....
Imperial.....	1,218	910	515	1,945	38,198	3,376	34,822	389	1,708.05	15,156.80	415.00	15,571.80	10,865.18	4,706.62	.....
Lamar.....	886	1,097	529	1,228	32,449	3,449	30,000	25	1,304.45	11,077.80	344.75	11,422.55	6,847.65	4,575.00	.....
Magnesia.....	1,230	781	199	1,344	35,979	5,189	30,790	60	1,816.15	10,413.20	119.75	10,532.95	6,493.05	4,039.90	.....
Majestic.....	1,219	795	.....	1,042	34,591	6,291	28,300	31	2,976.15	13,314.90	300.00	13,614.90	9,016.72	4,598.18	.....
Maurice.....	1,942	1,113	617	1,308	50,305	5,475	50,880	62	2,958.35	26,308.55	2,105.85	28,414.40	28,414.40	.....	.....
Moody.....	729	563	.....	841	21,780	3,176	18,604	.....	1,296.17	7,861.53	.....	7,861.53	4,576.95	3,284.58	.....
Ozark.....	1,712	1,292	584	2,226	54,018	7,630	46,388	565	2,510.65	14,689.75	41.79	14,731.54	7,172.00	7,559.54	.....
Pythian (colored).....	398	358	.....	621	12,559	1,286	11,273	.....	494.00	4,164.80	1,009.70	5,174.50	3,655.42	1,519.08	.....
Rector.....	438	396	97	649	14,232	1,544	12,748	74	107.75	1,018.10	16.50	1,034.60	3,676.07	.....	.....
Rockatlow.....	98	49	48	113	41,360	2,669	37,324	10	1,614.75	13,646.70	733.51	14,380.21	8,677.30	5,702.91	.....
St. Josephs Infirmary.....	1,397	1,084	.....	1,183	41,984	4,036	37,324	.....	4,412.92	3,985.13	.....	3,985.13	2,119.70	1,865.43	.....
Superior.....	1,028	706	385	962	31,835	3,210	28,325	12	1,284.20	10,966.70	94.25	11,060.95	5,331.75	5,729.20	.....
Total.....	19,577	15,753	4,678	24,630	616,667	72,296	544,371	2,243	32,457.74	230,073.11	13,495.18	243,568.29	170,245.53	73,742.78	420.02

Fees received by bath attendants in the bathhouses during the fiscal year ended June 30, 1916.

Bathhouse.	Gross amount.	Redemp-tions.	Net amount.
Alhambra.....	\$6,166.65	\$958.95	\$5,207.70
Arlington.....	4,575.90	415.20	4,160.70
Buckstaff.....	6,081.90	633.90	5,448.00
Eastman.....	2,302.05	246.45	2,055.60
Fordyce.....	7,609.25	878.65	6,730.60
Horse Shoe.....	1,283.85	139.20	1,144.65
Hale.....	5,307.35	599.40	4,707.95
Imperial.....	5,547.00	506.40	5,040.60
Lamar.....	5,017.35	517.35	4,500.00
Magnesia.....	5,212.35	778.35	4,434.00
Majestic.....	5,005.80	823.60	4,182.20
Maurice.....	8,154.45	821.25	7,333.20
Moody.....	3,157.65	476.40	2,681.25
Ozark.....	7,845.90	1,144.54	6,701.36
Ozark Sanatorium.....	1,824.15	192.90	1,631.25
Pythian (colored).....	2,078.10	231.60	1,846.50
Rector.....	418.95	40.20	378.75
Rockafellow.....	5,992.45	581.10	5,411.35
St. Josephs Infirmary.....	1,531.35	147.60	1,383.75
Superior.....	4,576.05	481.50	4,094.55
Total.....	89,688.50	10,614.54	79,073.96

RECOMMENDATIONS.

The supervisor recommends the preparation of a comprehensive plan for the future improvement of the Hot Springs Reservation by a competent landscape engineer under the direction of the Secretary of the Interior, with an appropriation of \$10,000 therefor; the construction of a roadway 30 feet wide and approximately 2½ miles in length through the "Gorge" at the east end of Hot Springs and North Mountains, with an appropriation of \$40,000 therefor; the paving of Fountain Street, from Central Avenue to boundary monument No. 36, and Reserve Avenue, from Central Avenue to boundary monument No. 26, this work to be done under an improvement district now being promoted in the city, with an appropriation sufficient to meet the just assessments for this work; the immediate reconstruction and remodeling of the Government Free Bathhouse, the tentative plans prepared by Mr. Gill, of the department, being satisfactory to the supervisor, with an appropriation of \$75,000 therefor; the construction of a new greenhouse, with an appropriation or allotment of \$3,000 therefor; an appropriation of \$237,840, which figures are based upon scientific estimates, for the construction of a storm sewer and surface drainage system in Hot Springs to care for the drainage from the reservation; an appropriation of \$96,595, also based upon a scientific estimate, for the construction of a sanitary sewer system in Hot Springs to care for the sewage from the reservation; the securing and permanent maintenance of a band on the reservation, in which plan it is suggested that the city might cooperate; and the pursuance of a plan to promote the publicity of the Hot Springs Reservation, on the part of the Government, suggesting in connection with the plan, that illustrated descriptive pamphlets be sent out in large numbers.

YELLOWSTONE NATIONAL PARK.

LLOYD M. BRETT, Colonel of Cavalry, United States Army, Acting Supervisor Yellowstone Park, Wyo., succeeded by Chester A. Lindsley, Acting Supervisor, October 16, 1916.

GENERAL STATEMENT.

The Yellowstone National Park, set aside by act of March 1, 1872 (secs. 2474 and 2475, R. S.; 17 Stat., 32), is located in the States of Wyoming, Montana, and Idaho. It has an area of about 2,142,720 acres and an average altitude of about 8,000 feet.

The military force available for duty in the park consists of a detachment of 200 soldiers of the Cavalry Arm of the service, trained in the different Cavalry regiments and detached therefrom for this special service.

The headquarters is located at Fort Yellowstone, but the command also garrisons 15 soldier stations scattered throughout the park, requiring 128 men during the tourist season and 75 during the remainder of the year.

A telephone system connects the soldier stations and the post.

In addition to the military force which is maintained by the War Department, the Interior Department furnishes certain civilian employees, namely, a clerk, scouts, a buffalo keeper, etc.

The officers and men of the military command, and the civilian employees, performed their duties in a most satisfactory manner.

TRAVEL.

A severe winter with deep snow was followed by a late spring featured by a gale which continued for five days, doing great damage to the telephone system and closing the roads with uprooted trees. The men of the command repaired the telephone lines and made the roads passable for all kinds of travel.

Though there were many obstacles to overcome, such as deep snows and wash-outs, the belt line and the north and west approaches were opened on schedule time. The Cody-Sylvan Pass-Lake Road was opened to wagons on June 27, and to automobiles on June 29. The Cody-Sylvan Pass Motor Co. began operations on July 1, as advertised.

The first vehicle came in from the south on June 26.

The Chittenden Road, from the Canyon to Tower Falls, presented the greatest difficulties, as the snow, from 4 to 30 feet in depth, was packed solid for some 6 miles in Dunraven Pass and its approaches. This road was open to wagons on July 2, and to automobiles on July 6.

The aggregate number of persons making park trips during the season of 1916 was as follows:

Travel during the season of 1916.

Entering via the northern entrance with the Yellowstone Park Transportation Co.....	3, 853	
Entering via the western entrance with Yellowstone-Western Stage Co...	3, 657	
Entering via eastern entrance with Cody-Sylvan Pass Motor Co.....	1, 293	
Wylie Permanent Camping Co.:		
Entering via northern entrance.....	2, 155	
Entering via western entrance.....	2, 879	
		5, 034
Shaw & Powell Camping Co.:		
Entering via northern entrance.....	1, 361	
Entering via western entrance.....	369	
		1, 730
Old Faithful Camping Co. (Hefferlin Camps):		
Entering via northern entrance.....	333	
Entering via western entrance.....	53	
		386
With other licensees of personally conducted camping parties.....		288
Making park trips with private transportation:		
With automobiles, trip tickets.....	12, 926	
With automobiles, season tickets.....	2, 004	
		14, 930
With other private transportation, as "private camping parties".....	2, 325	
		17, 255
Miscellaneous short trips.....	280	
Winter trips—special excursions to view game.....	2, 073	
		2, 353
Grand total.....		35, 849

The Yellowstone Park Hotel Co. reports that 7,876 people were accommodated at the hotels in the park during the season of 1916, of which 3,862 entered at the northern entrance, 3,653 at the western entrance, and 361 at the eastern entrance.

The Yellowstone Park Boat Co. reports that 2,558 people took the boat trip across Yellowstone Lake during the season, of which 1,237 were traveling with Yellowstone Park Transportation Co., 1,021 with Yellowstone-Western Stage Co., 247 with Wylie Camping Co., and 53 with Shaw & Powell Camping Co.

Travel by the different entrances.

From the north, via Gardiner, Mont.....	17, 589
From the west, via Yellowstone, Mont.....	13, 261
From the east, via Cody, Wyo.....	4, 593
From the south, via Jackson, Wyo.....	395
From the northeast, via Cooke, Mont.....	11
Total	35, 849

Automobile travel.

	Auto- biles.	Tourists.
Entering via the northern entrance.....	1, 264	4, 825
Entering via the western entrance.....	1, 291	5, 234
Entering via the eastern entrance.....	754	2, 754
Entering via the southern entrance.....	31	113
Total automobile travel on trip tickets.....	3, 340	12, 926
Automobile travel, season tickets.....	105	2, 004
Total automobile travel on paid tickets.....	3, 445	14, 930
Entering with Cody-Sylvan Pass Motor Co.....		1, 293
Grand total of parties entering with automobiles.....		16, 223

The automobile travel is included in the aggregate number of tourists making park trips as shown on the preceding page.

Attention is invited to the fact that parties traveling in automobiles are not included in the reports of numbers accommodated during the season at hotels and permanent camps.

During the year 1916 202 personally conducted camping permits were issued as follows:

Entering at northern entrance.....	83
Entering at both northern and western entrances.....	37
Entering at western entrance.....	4
Entering at eastern entrance.....	68
Entering at southern entrance.....	10

The travel by way of Tower Falls by regular tourists returning to Mammoth Hot Springs from Grand Canyon was encouraged by some of the transportation companies, the Yellowstone-Western Stage Co. alone transporting over this scenic route 698 tourists. Most of those touring the park in automobiles took the Mount Washburn route and were most enthusiastic over the scenery.

In addition to the transportation furnished by the regular companies, movable camp licenses were issued during the season covering a total of 37 wagons and 309 saddle and pack animals, and one special wagon for livery work.

The columns of the daily papers and the orders of the railroad officials to stop the shipment of perishable goods which could not be delivered before the day set for the strike and other reliable information convinced the president of the hotel company that the railroad strike was inevitable. He, in accordance with this belief, at 11 o'clock p. m. of August 30, decided that all tourists at the hotels be taken direct to the railroad stations. The movement commenced early the morning of August 31, and was so expeditiously managed that the tourists had departed, the help sent away, and the hotels closed by September 2.

The imminence of the railroad strike deterred many from journeying far from home. This is unmistakable, as the travel to the park which was excellent prior to the alarming period of the contention fell to almost nothing for the remainder of the season.

The Wylie Camping Co. closed to tourists early in the month of September. The Shaw & Powell Camping Co. and Old Faithful Camping Co. continued to give tourists full service, as advertised, to the end of the season.

CODY-SYLVAN PASS MOTOR CO.

On June 6, 1916, a concession was granted the Cody-Sylvan Pass Motor Co., authorizing it for the term of one year from January 1, 1916, to establish and

maintain an automobile transportation line for the accommodation of persons desiring to enter the park via the eastern entrance. This company operated from Cody, Wyo., to the eastern entrance, thence inside of the park to the Yellowstone Lake, where they turned their patrons over to the transportation companies operating horse-drawn vehicles. The business of the new company was conducted in a very satisfactory manner. A total of 1,293 passengers entered the park with it, of which 258 were turned over to the Yellowstone Park Transportation Co., 113 to the Yellowstone-Western Stage Co., 710 to the Wylie Permanent Camping Co., 134 to the Shaw & Powell Camping Co., and the balance of 78 were transients. The company also carried a total of 3,109 tourists out of the park from Lake Outlet to the eastern entrance, which were taken from the various transportation companies.

AUTOMOBILES.

There were 3,445 automobiles carrying 14,930 tourists from June 15 to September 30. Of these, 2,004 came in on season tickets and 12,926 on the regular tickets of passage. These tourists came from 40 States, and nearly every known make of automobiles was represented. This includes, in addition to the regularly purchased tickets, complimentary tickets to county, State, and Federal officials in the park on official business.

The automobilists almost without exception adhered closely to the automobile regulations and followed strictly the schedules, which proved quite popular.

As the roads approaching the several entrances of the park improve, the automobile travel will increase, and the park will in time become one of the great resorts of the country.

To make this a possibility, the Park-to-Park Highway Association held a most enthusiastic convention at the Canyon Hotel July 24-25 and started a movement for good roads from all the contiguous States to the parks and within the States.

Mr. Robert I. McKay, of Cooke, Mont., to whom a permit was issued last year to use automobile trucks and trailers for transporting ore and supplies between Gardiner and Cooke, Mont., used but one truck and trailer and one utility car last season, and up to this date he has failed to make arrangements for renewal of his privilege. His reports indicate that he expended \$11,857.63 in repairing the roads under his contract with the department. Similar permits for use of the park roads between Gardiner and Cooke have been given for the present season as follows:

One to Nels E. Solderholm, a merchant of Cooke, for use of one 2-ton truck for hauling his own supplies and employees.

One to G. L. Tanzer, president of the Western Smelting & Power Co., of Seattle, Wash., with mining interests in Cooke, for a 2-ton automobile truck, a 3-ton trailer for same, and a utility or repair car, with privilege of increasing the number to 41 vehicles if desired. These permits were granted under the same requirements as was Mr. McKay's last year—namely, that the licensees pay a fee of \$20 per annum for each truck used, \$10 per annum for each trailer used, and \$10 per annum for the utility or repair car. Mr. Solderholm has had his truck in commission since about July 1. Mr. Tanzer has ordered a truck and trailer, but it has not been received and put into commission.

More than 50 motor cars and trucks have been in use by the different branches of the Government and concessionaires in the park in hauling supplies and work other than transporting tourists.

STREAM GAGING.

Mr. G. Clyde Baldwin, district engineer of the water-resources branch of the United States Geological Survey, with headquarters at Boise, Idaho, who has charge of this important feature, has furnished the following report on this work for the year:

Records were obtained from the following gaging stations, which were established during June, 1913:

Madison River, near Yellowstone, Mont.

Gibbon River, at Wylie Lunch Station, near Yellowstone, Mont.

Yellowstone River, above Upper Falls, near Canyon Station.

Snake River, at south boundary Yellowstone National Park.

During July, 1915, the sum of \$1,000 was apportioned from Yellowstone Park funds to assist in carrying on the stream-gaging work during the fiscal year ending June 30, 1917. In consequence plans were made for the installation of

a water-stage recorder at the station on Yellowstone River and for the purchase and erection of cables from which to secure current meter measurements at this station and also at the one on Snake River.

The installation of this equipment, which was in progress at the end of September, 1916, will make it possible to secure dependable records at these stations for high stages of flow.

The water-stage recorder will be located close to the Upper Falls of Yellowstone River and will be housed in such a manner as to permit inspection by tourists. Later it is proposed to post rating tables in prominent places in order to enable tourists to determine from the observed gage reading the actual quantity of water passing over these falls.

Detailed descriptions of the gaging stations, together with summaries of current meter measurements and gage height and discharge data for each will be published in the annual Water-Supply Papers of the United States Geological Survey, Parts VI to XII, respectively, for Missouri River and Snake River drainage areas.

ROADS.

The road work in the park is in charge of Maj. Amos A. Fries, Corps of Engineers, United States Army, who has furnished the following notes on the work in the park under his department.

The sundry civil bill of July 1, 1916, appropriated money as follows for road work in Yellowstone National Park and the adjacent forest reserves on the east and south:

"Yellowstone National Park: For maintenance and repair of improvements, \$152,500, including not to exceed \$15,000 for maintenance of the road in the forest reserve leading out of the park from the east boundary, and not to exceed \$10,000 for maintenance of the road in the forest reserve leading out of the park from the south boundary, and including not exceeding \$5,000 for purchase, operation, maintenance, and repair of motor-driven and horse-drawn passenger-carrying vehicles to be used for inspection of roads and road work, to be expended by and under the direction of the Secretary of War: *Provided*, That no portion of this appropriation shall be expended for the removal of snow from any of the roads for the purpose of opening them in advance of the time when they will be cleared by seasonal changes.

"For widening to not exceeding eighteen feet of roadway and improving surface of roads and for building bridges and culverts from the belt-line road to the western border from the Thumb Station to the southern border, and from the Lake Hotel Station to the eastern border, all within Yellowstone National Park, to make such roads suitable and safe for animal-drawn and motor-propelled vehicles, \$38,700.

"For completing the widening to not exceeding eighteen feet of roadway and improving the surface of roads and for building bridges and culverts in the forest reserve leading out of the park from the east boundary, to make such roads suitable and safe for animal-drawn and motor-propelled vehicles, \$6,000."

In addition there remained available on October 1, 1915, about \$13,000 of the \$195,000 appropriated for the same purposes in the sundry civil bill of March 3, 1915 (p. 9, report of acting superintendent, Sept. 30, 1915).

On account of early spring and the desire to expedite work in anticipation of record travel through the park during 1915, due to the combined influence of the European war and of the San Francisco and San Diego Expositions, work was vigorously prosecuted during the spring and summer of 1915 under the appropriations for both the fiscal years 1915 and 1916, and consequently almost all crews had either exhausted their apportioned funds or completed their work prior to the date of the last report (Sept. 30, 1915).

The work during the present year included general repair and maintenance of the entire system, including the belt line, the north, west, south, and east approaches, both in the park and in the forest reserves on the east and south, and the Cooke City road; widening and improving the west, south, and east approaches, including the east forest reserve; sprinkling of 100 to 112 miles of belt line and north and west approach road; repair and construction of bridges; construction of concrete, wood, and galvanized-iron culverts; clearing of dead and fallen timber from the roadside; reshaping and ditching roads; maintenance of trees, shrubs, vines, and lawns.

In the following summary the work will be divided into that done on the belt line, the north approach, the west approach, the south approach, the east approach, and the Cooke City road.

BELT LINE.

General road repairs.—Owing to the very heavy snows of the past winter and to the late spring, the road over the Continental Divide, between the Upper Basin and the Thumb, was still impassable on account of snowdrifts as late as June 15, and would have remained so for the first part of the tourist season except for work done voluntarily on the part of the transportation companies and others in shoveling and otherwise breaking a trail through the snow. While this work served to render the road passable for horse-drawn vehicles for the first tourists on June 17, much sooner than would have been the case through the regular seasonal thaw, it also had the effect of permitting the passage of traffic through numerous snowbanks, the continuous melting from which kept the roadbed in wet and poor condition. That, combined as it was with restricting the travel to a narrow, single track, caused very severe rutting of the roadbed, and required considerable urgent repair work to keep the road from becoming impassable. The same was true of the Dunraven Pass road from the Canyon to Tower Falls, and of parts of the east approach road in the park, especially near Cub Creek, although both of these roads were not opened up until somewhat later than the Continental Divide road.

The spring run-off from the deep snows of the winter also caused some washing out of roads over certain stretches, especially along Spring and Dry Creeks, between the Upper Basin and the Thumb, and required the constant attention of a small maintenance crew during the early part of the tourist season.

Early in July two flying-grader squadrons, consisting of about three graders each, with a few extra laborers, were sent in opposite directions around the belt line, starting from Mammoth Springs. These crews shaped up the roads, repaired washouts, cleaned out ditches, and cleaned out and made minor repairs to culverts. In addition, a special crew was necessary to repair the 6 miles of road between Gibbon Meadows and Yellowstone Junction, which had become very badly broken up with ruts and chuck holes. Bad chuck holes between Mammoth Springs and the 15-mile post on the road to Norris were repaired by an emergency crew of about three men sent out from Mammoth Springs in a Ford touring car which was temporarily impressed into service as an emergency repair car.

To assist in maintaining the roads during the tourist season, each sprinkler crew was equipped with a split-log drag; and whenever rainy weather, which was rare during the season of 1916, gave an opportunity for so doing, these drags were used to reshape and smooth out the ruts in the roads. This process is very necessary and would have been more efficacious had there been more rain than was the case during the season just closed.

Sprinkling and dragging.—During the tourist season of 1916 a maximum of 110 miles of road was sprinkled, covering practically the same stretches of road as the previous season, and including a portion of the north and west approaches. Although water for sprinkling purposes was plentiful early in the tourist season, continued dry weather during the summer caused some of the wells from which water for sprinkling was drawn to go dry, so that toward the end of the season it was found necessary to abandon several sprinkler runs, as was the case in 1915. As already stated under "General road repairs," all sprinkler crews were equipped with split-log drags, which were used whenever rainy weather gave an opportunity for doing so, to reshape and smooth out the roads.

Firehole River realignment.—This realignment, which will replace several miles of the road lying between the Madison Junction and the Firehole Cascades, was begun in June, 1915, and completed during the season of 1915 for a distance of about 3,500 feet. Work was resumed about the middle of July of this year, and up to the present time about 1,200 feet additional has been completed, making the total completed distance to date about 4,700 feet. This new location involves very heavy rock-work, but it will greatly improve the grades and will open up a fine stretch of river scenery, replacing with an unusually attractive road one which is quite deficient in such qualities. The construction of this new road has been greatly assisted by the recent installation on the work of a $\frac{3}{4}$ -cubic yard revolving steam shovel, which will serve to materially reduce the cost of handling the rock material after being loosened by blasting. It is expected that the realignment, the total length of which will be about 7,650 feet, will be completed next season.

Gibbon Canyon.—Two miles of the road along the Gibbon River, between the 15 and 17 mile posts from the west entrance toward Norris, was reshaped and

regraded, including two short realignments (300 and 600 feet long, respectively) and the installation of about four corrugated-iron culverts.

Vicinity of Lake Hotel.—The first 5 miles of the road from the Lake Hotel toward the Canyon and the first several miles of the road from the Lake Hotel toward the Thumb was reshaped and regraded. Twenty-six corrugated galvanized-iron culverts, mostly of 24-inch diameter, were installed in connection with this work.

Freight road—Lower Geyser Basin.—The freight road, 4 miles long, which parallels the main belt-line road between the Fountain Soldier Station and the Excelsior Geyser, having been closed by reason of the unsafe condition of the wooden truss bridge over the Firehole River, about 1 mile from the Fountain Soldier Station, it was found desirable to reconstruct the bridge in question, and also to generally put the road in shape for traffic. In addition to the reconstruction of the bridge already named, the trusses of which were so weak that they collapsed during the building of the new 50-foot bridge, there was also reconstructed the 40-foot bridge over Nez Perce Creek, in the immediate vicinity of the Fountain Soldier Station. The putting of this road into commission again makes possible deviating over it considerable heavy freighting traffic, thus reducing the wear on the main road between the Fountain Soldier Station and Excelsior Geyser, and furnishing a shorter route for freight traffic, and also gives opportunity for greater freedom in handling automobile traffic past the Fountain Geyser Basin without interference with the horse-drawn traffic.

Resurfacing.—No resurfacing has been done on the belt line during the present season. Two automobile dump trucks were purchased and recently received, and are now in use on the west approach for hauling surfacing material there. In order to take advantage of the cheaper hauling costs, such surfacing as is contemplated on the belt line has been delayed until such time as these trucks will be free to do the work, as the expense of hauling is much less by truck than by team, and by the use of trucks it is therefore possible to surface well and at reasonable cost stretches of the road system which heretofore it has been impracticable to surface except with the poorer materials immediately at hand.

Bridges and culverts.—In line with the policy adopted several years ago of reconstructing in permanent materials the bridges and culverts on the main Belt line, there were built or installed this spring on the sections of road between the Thumb and the Lake and between the Lake and the Canyon, six reinforced concrete slab culverts, four of which were of 8-foot span and two of 3-foot span; and one double corrugated galvanized-iron culvert, 24-inch diameter, with concrete head walls. All except two of the foregoing structures require to be back filled in order to be placed in commission. Concrete hand-rails were added to the 26-foot double-span reinforced concrete culvert built in 1914 over Otter Creek, about 2 miles from the Canyon Junction on the road to the Lake Hotel. There were also installed some galvanized-iron culverts at other parts of the Belt line, of 12, 18, and 24 inch diameter, as already noted in connection with the reshaping of roads in the vicinity of the Lake Hotel and between the 11 and 13 mileposts from Yellowstone toward Norris; but also in the replacement of small wooden and tile culverts at other parts of the Belt line where they had been broken down and rendered unserviceable by the heavy automobile truck traffic over them this season. In addition, a number of culverts and small wooden bridges were repaired, strengthened, or reconstructed, principally on the road between the Canyon and Tower Falls, many of these being partially or entirely broken down by the automobile traffic. The high steel bridge over the Gardiner River, on the road from Mammoth Springs to Tower Falls, was refloated with lumber.

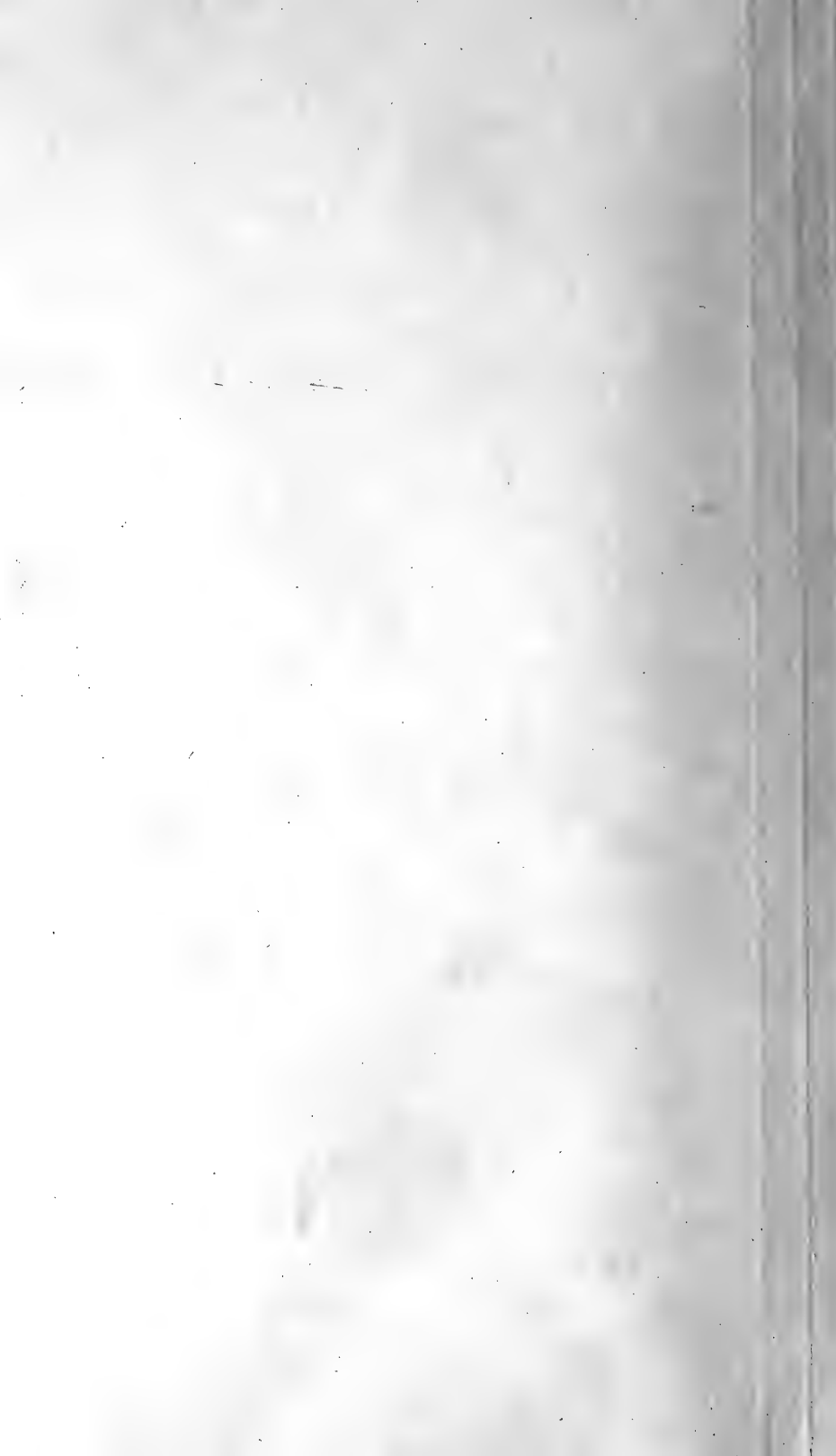
Guard rails.—Log guardrails were installed at the east approach of the Chitenden Bridge over the Yellowstone River, on both sides of the road.

NORTH APPROACH.

On the north approach road, extending from the northern entrance at Gardiner, Mont., to the Belt line at Mammoth Hot Springs, general maintenance and repair work was done, as on the Belt-line road itself, and the first 3½ miles from Mammoth Hot Springs toward Gardiner was sprinkled. The other mile and a half of the road had been treated with a light oil and sand finish in the spring of 1915 and did not require sprinkling during the season just closed.

Gardiner slide.—The slide in the Gardiner Canyon, about 2 miles from the north entrance at Gardiner, Mont., which has given considerable trouble to the



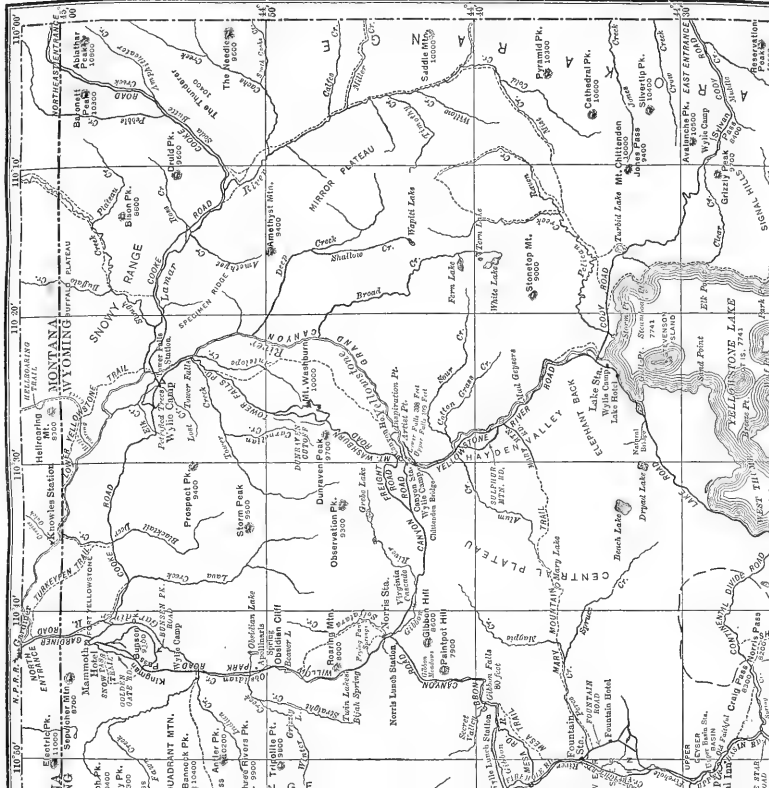


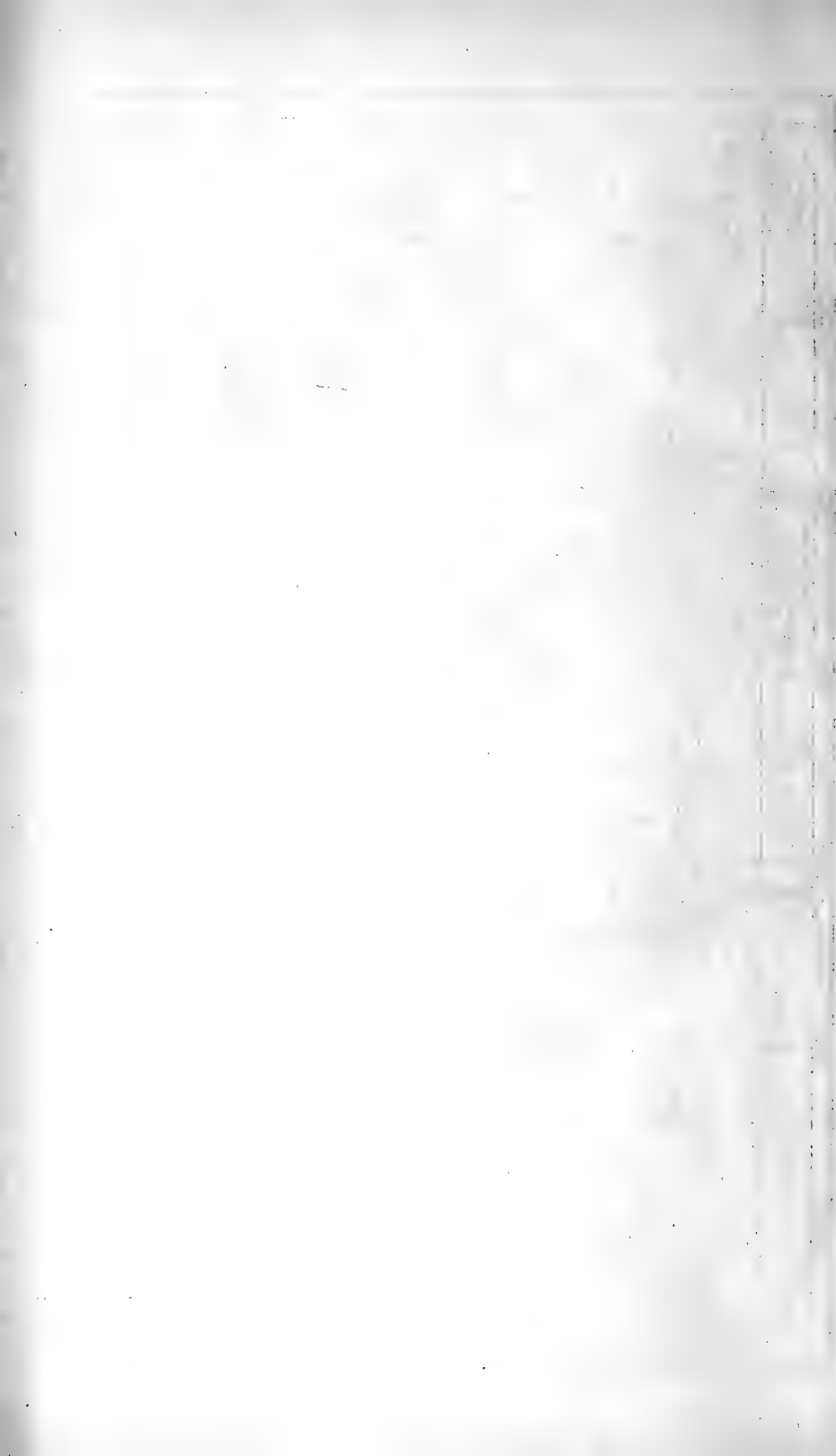
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Gardiner Road for a number of years, was cut back in the fall of 1914 and the spring of 1915, so that at the beginning of the 1915 tourist season the road was broad and in very good shape. During the summer of 1915 and the winter following the slide gradually encroached upon the road, however, so that early this spring the roadway had been reduced to a width of about 9 or 10 feet. In addition to the old or main slide, the encroachment of which is gradual, there developed in the fall of 1915 a new or secondary slide, several hundred yards nearer Gardiner than the main slide. The slumping off of material at this new slide caused the road about $1\frac{1}{2}$ miles from the north entrance at Gardiner to be blocked several times during the fall of 1915, and four times during March and April of the spring of 1916. By means of blasting and the use of graders, the road was reopened within a half day ordinarily after the occurrence of slides. In this work the quartermaster of Fort Yellowstone, Wyo., cooperated by furnishing teams and teamsters. In May the road at the main slide, which, as already stated, had become extremely narrow, was very much widened by blasting and grading, which process had to be repeated along portions of the slide once during the summer. Grader work was also required from time to time to smooth off the road surface, made necessary by the heaving up of the same due to the pressure from the slide above. Considerably more work will have to be done on the slide prior to the opening of the next tourist season.

Retaining wall.—Early in June a section of the concrete retaining wall which protects the road in the Gardiner Canyon gave way, being undermined by the high water in the Gardiner River, due to the melting of the very heavy snows of the preceding winter. The break was repaired without serious injury to the roadway by means of concrete and the free use of sand bags and steel rods. An adjacent section of the wall was weakened later in the summer by blasting operations in connection with the slide removal, but not so seriously as to make advisable any repair work during the tourist season. The wall will be placed in first-class condition during the present fall.

WEST APPROACH.

On the west approach road, which extends from the west entrance at Yellowstone, Mont.; to the Belt line at Madison Junction, a distance of $13\frac{1}{2}$ miles, maintenance work similar to that on the Belt line, including sprinkling the $3\frac{1}{2}$ miles nearest to Madison Junction, was done. In addition, the work of widening and improving the road to make it safe for animal-drawn and motor-propelled vehicles has been prosecuted as rapidly as possible since the funds for the fiscal year 1917 were made available early in July.

Widening and grading.—During the year widening and grading of the west approach has been extended to include the entire distance from Yellowstone to Madison Junction, the work done this season covering about 2 miles between the 11 and 13 mile posts from the west entrance.

Surfacing.—During the season of 1915 oil-macadam surfacing, 18 feet wide, was completed for the first 5 miles of the approach, beginning at the west entrance. During the present season a crushed-rock sub-base, 5 inches deep and 10 feet wide, ready to be given an oil finish, has been constructed a distance of $2\frac{1}{2}$ miles, reaching as far as the bridge over the Madison River, about $7\frac{1}{2}$ miles from the west entrance. The narrowing of the oil-macadam from 18 to 10 feet has been made because the experience to date has shown that practically all traffic on the west approach is concentrated on the 10-foot strip, and the expense of the greater width in further construction on the west approach, at least for the immediate future, is not considered justified. To haul the oil for the oil finish there has been purchased a 1,000-gallon, asbestos-covered oil tank and distributor, which has recently been received and will be temporarily mounted, whenever necessary for oiling operations, on the White 5-ton truck purchased by the engineer department last year. This equipment will permit oiling of roads at considerable distances from the railroad without undue expense of hauling and without the necessity of reheating the oil en route. Two $5\frac{1}{2}$ -ton dump trucks have also been purchased to permit the more economical hauling of crushed rock and other surfacing material on this and other work in the park. Both trucks are for the present in use on the west road.

SOUTH APPROACH IN THE PARK.

In addition to general repairs, such as were made on the Belt line, the work of widening and improving the south approach for combined horse-drawn and automobile traffic, as specially appropriated for by Congress, was continued.

Widening and grading.—The widening and grading of about $1\frac{1}{2}$ miles of road between 6 and 8 miles from the Thumb Soldier station, which was begun during the season of 1915, has now been finished, and, in addition, the road has been widened and graded for a distance of about 4 miles over the Pitchstone Plateau, covering a stretch located between $17\frac{1}{4}$ and $21\frac{1}{4}$ miles from the Thumb Soldier station. This latter work has been extremely difficult, the plateau being strewn with large and small bowlders, and has included several minor realignments where better grades and curves could thus be obtained, or where the road could be built more economically on the new location. In doing this work there was used to advantage a heavy power grader drawn by a steam roller acting as a tractor, both of which machines have been newly purchased this season. To complete the improvement of the south approach there is yet required the widening and grading of about $3\frac{1}{2}$ miles of road ($14\frac{1}{4}$ to $17\frac{1}{4}$ miles south of the Thumb). This work will probably be completed in time for the next tourist season.

Bridges and culverts.—The Moose Falls Bridge, about $1\frac{1}{2}$ miles from the south entrance, was redecked, and two small log bridges were constructed, one about a mile south of the Thumb Soldier station and the other, a 12-foot span bridge, about 4 miles south of the Soldier station. In addition, repairs were made to other log culverts where necessary, and several small log and corrugated-iron culverts were installed in connection with the widening and grading work reported above.

Realignment $\frac{1}{4}$ miles south of Thumb.—A short realignment, 400 yards long, about 4 miles south of the Thumb, was constructed, including the 12-foot log bridge reported above.

SOUTH APPROACH IN THE FOREST RESERVE.

Snake River Bridge.—During the present season the steelwork was erected for the 100-foot span steel bridge over the Snake River, $2\frac{1}{2}$ miles south of the park boundary, and the reinforced-concrete floor was also constructed. To complete this bridge there is still required the construction of two short log bridges at either end of the main bridge to form the approaches to the shores. These log bridges are just now being started. Owing to the very poor condition of the old wooden bridge over the Snake River, it is very urgent that the new bridge be placed in commission at the earliest possible moment.

Dugout realignment.—A realignment, about seven-eighths of a mile long, between approximately 5 and 6 miles south of the park boundary, to replace the very bad stretch of road there known as the dugout, was constructed during the present season. This realignment includes the construction of a 70-foot span log bridge and of a number of small log culverts.

General repairs.—In addition to the more important work in the south forest reserve already noted, considerable work of a general maintenance and repair nature was done to the first 7 miles south of the park boundary.

EAST APPROACH INSIDE THE PARK.

General repairs.—General repairs were made where necessary throughout the entire 26 miles of the east approach inside the park. As already stated under the work on the Belt line, constant attention was required early in the tourist season to keep the east approach passable, owing to the melting of snowbanks and to the single, narrow track which had been opened through the snow and to which traffic was for the time being restricted.

Bridges and culverts.—The so-called Loop Bridge, east of Sylvan Pass, was replaced by a 25-foot span wooden bridge and a large rock fill at the west abutment of the bridge. The bridge over Pelican Creek was refloored, and numerous other smaller bridges and culverts received repairs made necessary by the heavy run-off from the winter snows and by the traffic of automobile trucks and of the heavy transportation autos entering the park from the Cody entrance. There were also installed a number of galvanized-iron culverts in connection with the widening and grading work hereafter described.

Widening and grading.—The work of widening and improving the road to make the same safe for both animal-drawn and motor-propelled vehicles under the special appropriation for this purpose was resumed as soon as the new funds became available in July. The work done during the present season consisted of widening, reshaping, and regrading about $1\frac{1}{2}$ miles of road just east of Sylvan Pass. The improvement of the east approach has now been

brought to completion on all except about $3\frac{1}{2}$ miles of the road, between the $9\frac{1}{2}$ and 13 mile posts from the Lake Junction. Of this $3\frac{1}{2}$ miles, a distance of $1\frac{1}{2}$ miles, between the $9\frac{1}{2}$ and 11 mile posts, had been previously partially widened and improved, and work is now being begun to complete the entire section of $3\frac{1}{2}$ miles.

EAST APPROACH IN THE FOREST RESERVE.

Widening and grading.—The work of improving the road in the East Forest Reserve to make the same safe for both animal-drawn and motor-propelled vehicles under the special appropriation for the purpose was resumed in July, and during the present season the $2\frac{1}{2}$ miles between the 5 and $7\frac{1}{2}$ mile posts from the park boundary was widened and graded, thus completing the work of widening and grading for the entire $27\frac{1}{2}$ miles of the road.

Steel bridges.—Work has been continued on the steel bridge, 100-foot span, over the North Fork of the Shoshone River, $2\frac{1}{4}$ miles from the park boundary, and on a similar bridge over Elk Fork, 23 miles from the park boundary. Both of these bridges, as well as one over the North Fork, $21\frac{1}{2}$ miles from the park boundary, were begun in 1915. During the past year the reinforced-concrete floor of the Elk Fork Bridge was constructed, leaving only the approaches yet to be built for this bridge. At the North Fork Bridge $21\frac{1}{2}$ miles from the park boundary, the erection of the steelwork and the construction of the reinforced-concrete floor and of the approaches remain yet to be done. The steelwork of the bridge over the North Fork, about $2\frac{1}{4}$ miles from the park boundary, known as the Pahaska Bridge, was erected during the year, and the approaches were constructed. This bridge is now complete except for the construction of the reinforced-concrete floor, which it is expected will be constructed the present fall.

General repairs.—General repairs were made to the road in the East Forest Reserve wherever required, including minor repairs to log bridges and culverts. The road was repaired and reshaped more extensively between the park boundary and Pahaska, about $2\frac{1}{4}$ miles from the boundary.

COOKE CITY ROAD.

Bridges and culverts.—Fourteen galvanized-iron culverts and one log culvert were installed on the road leading from Tower Falls Soldier Station to the northeast boundary of the park, between the Lamar River bridge and the Buffalo Farm, about 4 and 12 miles, respectively, from the Tower Falls Soldier Station.

Twin Lakes realignment.—During the present year there has been constructed a realignment, about 3 miles long, of the road just east of the crossing of the Yellowstone River. This realignment, which passes to the south of the so-called Black or Junction Butte, replaces a portion of the road which was replete with bad grades and curves, and some parts of which, during the spring of the year, have at times been all but impassable because of the mud. The work included the installation of a number of galvanized-iron culverts.

Work by Robert I. McKay.—The work done by Mr. Robert I. McKay and associates, who have mining interests at Cooke City, Mont., about 4 miles outside the northeast boundary, was continued last fall until interrupted by the closing in of the winter season. Mr. McKay and his associates are interested in the upkeep and improvement of the road for the benefit of their motor trucks and trailers, for the operation of which between Cooke City and Gardiner, Mont., for the hauling of ore, Mr. McKay has a permit from the Interior Department. The work done last fall by these interests, after September 30, included a very desirable realignment between Fish and Pebble Creeks, obviating the extremely bad grades of the old road, and the construction of two short realignments between the Soda Butte Soldier Station and the Jackson Grade. Some light graveling was also done on portions of the road. During the present spring Mr. McKay reconstructed the log bridge over Pebble Creek, which was originally constructed by him in 1915, and the center pier of which was undermined by the high waters of this spring.

FISH.

Mr. W. T. Thompson, superintendent of the United States fish hatchery at Bozeman, Mont., who also has charge of the summer station on Yellowstone Lake in the park, reports a fairly successful harvest of black-spotted trout eggs,

although his work was hindered to some extent by snow and floods, due to melting of the heavy snows in the early part of the season, and later by the dry, warm weather which lessened the stream flow so as to materially shorten the run of the spawning fish. He also complains of considerable interference by the bears, which were very plentiful and were the source of many complaints during the summer. He reports, however, that notwithstanding these handicaps his total harvest for the summer amounted to 7,435,800 trout eggs, which was nearly 2,000,000 more than the previous year. As usual, most of these eggs were "eyed" and shipped to county, State, and Federal hatcheries throughout the United States, but about 200,000 of them that were taken early in the season were hatched out for restocking purposes in park waters.

The fish hatchery is located close to the Lake Hotel and some of the permanent camps and is of great interest to tourists, who are always welcome to observe and to whom an attendant is always ready to explain the workings of the hatchery.

The eggs that were hatched were planted in Clear Creek, Columbine Creek, Pelican Creek, and Bridge Creek, tributary to Yellowstone Lake, and 60,000 were sent out to be planted in Buffalo Fork of Slough Creek, but did not stand the trip and died before reaching their destination.

Seventeen thousand young eastern brook trout furnished by the United States fish hatchery at Bozeman, Mont., were planted in Nez Perce Creek on June 30.

WILD ANIMALS.

Due to natural conditions, and the fact that wild animals have been protected for many years, the park is rapidly becoming known as the largest wild bird and animal preserve in the United States, if not in the world. In addition to 194 varieties of birds, including many varieties of waterfowl, that have been observed and recorded in the park, antelope, deer (both black-tailed and white-tailed), elk, moose, wild buffalo, bears, mountain sheep, coyotes, gray wolves, and mountain lions are notable, and many of the smaller animals such as beaver, foxes, lynx, otter, marten, mink, marmots, skunks, red squirrels, chipmunks, weasels, badgers, porcupines, etc., are numerous.

ANTELOPE.

Most of the antelope winter in one herd near the north line of the park and are held from leaving to the lower country outside by the high woven-wire fence extending from the mouth of Gardiner River west to Sepulcher Mountain. The antelope, together with the deer and mountain sheep, were fed hay during the winter; 193½ tons that was on hand from the alfalfa field near the north entrance was so fed, and as this was not sufficient, due to the very severe winter, about 7 tons additional of baled hay was purchased for the purpose. Improvements were made of the alfalfa field as follows: About 15 acres were fertilized and the loose surface rock picked off. About 35 acres were disked, reseeded in bare spots, and dragged. The work of irrigating the field, cutting, curing, and stacking the hay, was again done by contract, at a cost of \$5 per ton for the hay in stack. About 120 tons, from two cuttings of the field during the past summer, are on hand for the coming winter.

DEER.

Both the black-tailed and white-tailed varieties are very tame and seem to be thriving. The black-tailed deer are quite numerous, and many of them, like the elk, doubtless stray outside of the park and are killed by hunters in the open season.

ELK.

The snow was very deep and winter very severe throughout the park, and due to this fact the elk, which are by far the most numerous of any kind of game in the park, came down to the lower levels in immense herds in January, February, and March, so that the matter of capturing them for shipment was a comparatively easy one, and there was no trouble in securing all that were wanted for shipment. The unusual number of elk, antelope, deer, and mountain sheep in the immediate vicinity of the northern entrance also attracted many winter visitors. The Northern Pacific Railway Co. ran several special excursion trains to Gardiner from Montana points during January and Feb-

ruary, and a total of about 1,992 tourists made special trips to see the game. As high as 7,000 elk were counted between Fort Yellowstone and a point about a mile west of Gardiner—most of them along the main road—on January 27, a day when the weather was particularly severe.

On account of the very severe weather it was predicted that the loss of game during the spring months would be great, but this prediction did not prove true, and the men who in April made a careful census of the elk reported but few dead animals found, and that most of them were in excellent condition. Due to the deep snows and a rather late spring the elk remained down in the valleys and lower altitudes much later in the spring than usual. Under authority of the department shipments of 618 head of elk were made during the winter, as follows:

Pennsylvania -----	100	Utah -----	50
Alabama -----	50	Louisiana -----	40
Texas -----	20	New York -----	50
Minnesota -----	2	Idaho -----	50
Colorado -----	50	Washington -----	50
Georgia -----	2	Montana -----	50
Department of Agriculture -----	100	North Dakota -----	4

Under authority of the department dated February 15, 1916, representatives of the United States Biological Survey and of the United States Forest Service of the Department of Agriculture were in the park March 2 to 14, inclusive, taking a census of the elk and studying their winter conditions, and such assistance as was practicable was given them here. A copy of their complete report has not been furnished this office.

In accordance with instructions from the department, beginning April 5, 1916, a very careful census was made of the elk belonging to the northern herd in the park and just along its borders outside on the north and northeast; 29,544 elk were found in this herd and 1,958 more were accounted for—namely, 1,000 (estimated) killed in adjoining States during the open hunting season, 611 shipped from the park under authority of the department, 90 shipped from just outside of the park by the authorities of Montana to other points in the State, and 257 counted that had been killed for their teeth in the State of Montana not far from the park line after the close of the open hunting season. An unusual increase in the Jackson Hole herd south of the park, as found by the representatives of the Department of Agriculture referred to above, indicated that a number of the northern herd had probably migrated to the southern herd during the past year.

The severe storms of the last days of December and the month of January drove the elk out of the park in large herds. Certain lawless individuals took advantage of this opportunity and slaughtered them recklessly. The section of Montana where the unlawful killing of elk took place is a strip of rough country from 12 to 15 miles long, measured in the direction of the northern boundary line of the park and extending northerly to a width of 8 miles, lying wholly without the park and embracing the country about Gardiner and Jardine.

The hunting season in Montana closed December 15, 1915, and there were no elk reported outside the park in the section under consideration at that time. So the slaughter took place during the closed season. A fairly careful search by park scouts of the strip of country above mentioned resulted in the finding of the bodies of 257 elk which had been killed for their teeth.

During the past summer more elk than usual have been seen along the traveled roads, and patrols who have seen them in large herds at higher levels state that there are an unusual number of young with the cows.

MOOSE.

Moose are so timid and are so much scattered in many sections of the park that it is practically impossible to get a reasonable estimate of their numbers, but they are frequently seen in small herds, and there is little doubt that they have been on the increase for several years under the protection afforded them by the park and the adjoining States. Last season the State of Wyoming sold special licenses to kill one bull moose to each license during the open season, and limited the number to 50. I am informed that those who bought such licenses had no difficulty in securing their moose.

BUFFALO.

Wild herd.—In July and August a special attempt was made to look up the wild buffalo in the park. Their condition was found very satisfactory. Seventy-two in all were found, of which 10 were this year's calves.

Tame herd.—The main herd is kept on Lamar River, near the mouth of Rose Creek, 30 miles east from headquarters. This herd now numbers 276 animals, as follows:

	Males.	Females.	Total.
Number Oct. 1, 1915 (last report).....	122	117	239
Born summer of 1916.....	34	22	56
Total to account for.....	156	139	295
Died or disposed of during the year.....	10	9	19
Balance now in the herd.....	146	130	276

Of those disposed of, one 5-year-old bull and one 6-year-old bull were shipped to Corpus Christi, Tex.; two 2-year-old bulls and four 3-year-old cows to Wind Cave National Park; one 6-year-old bull to Kansas City, Mo.; and one 4-year-old bull to Denver, Colo., all donated by the department but shipped at the expense of the parties receiving them. An 8-year-old cow and a 4-year-old bull were killed by fighting among the herd. Two young cows that were not in very good condition got into a swamp and were not strong enough to extricate themselves. One of the oldest bulls in the herd was killed, apparently by a poisonous weed; and an old cow died in the same manner and her calf was raised on one of the domestic cows kept for that purpose. A 4-year-old cow was drowned in an irrigation ditch in the lower field. An old bull that was not in good condition was gored to death by the others while they were being "rounded up." A male calf that was born late last fall, and had never been in good condition, also died.

In the cases of those that died, whenever practicable, the heads, skins, skulls, etc., were saved and shipped to the National Museum as specimens.

Sixteen of the old bulls were brought in to Mammoth Hot Springs on June 15, where they were held during the tourist season as a show herd.

About 220 tons of excellent hay was cut and stacked at the buffalo farm on Lamar River for winter use of the tame buffalo herd. The cost of cutting and stacking this hay was about \$4.72 per ton, plus the work of the regular employees and the 4-horse work team used at the buffalo farm. About 400 rods of the woven-wire fence around the upper field on Rose Creek was rebuilt and minor repairs made to the balance of the fence. The roofs and trimmings of the log buildings were painted, the work being done by regular employees.

Due to the increasing herd of buffalo, it will be necessary to plow up, fence, seed, and irrigate additional land for meadows, and arrangements are being made to do this late this fall or early next spring. The buffalo are grazed in the open as much as possible. It was necessary to feed hay beginning January 13 last winter.

A veterinarian of the Department of Agriculture visited the park and vaccinated the young buffalo for hemorrhagic septicemia early in December.

BEARS.

Many complaints were received during the summer of depredations by bears, which were particularly plentiful and very much in evidence during the tourist season throughout the park. Many of those that live around the camps in summer get mischievous, and as they grow older they become bolder and finally are positively dangerous and eventually have to be killed. Six black bears and two grizzlies have been killed for this reason during the past season; one small black cub, with a can stuck on its foot, was killed to prevent further suffering, and two small black bears died near headquarters from unknown causes. One tremendous grizzly bear attacked and injured two men asleep in camp near Indian Pond, on the Cody Road north of Yellowstone Lake, about the middle of August. Efforts were made to locate and kill this bear, but without success. On the evening of September 7 three men in the employ of the United States Engineer

Department were in camp on the Cody Road about 10 miles east from the outlet of Yellowstone Lake. They were attacked in the middle of the night, apparently without provocation, by a bear, which was probably the same one referred to above, and one of their number, Frank Welch, of Electric, Mont., was dragged some distance and so badly mauled and injured that he died a few days later in the hospital at Fort Yellowstone.

Efforts were again made to kill this bear, and on the evening of September 8 a very large grizzly, believed to be the same one, was killed by exploding a charge of dynamite under him by means of an electric battery.

Bears were captured and shipped from the park under authority of the department as follows: On August 10 a pair of grizzlies, male and female, 2 to 3 years old, to the park commission at Virginia, Minn. The same date a pair of yearling brown bears, male and female, to Madison Zoological and Aquarium Society, Madison, Wis., and a young female grizzly to the commissioner of sanitation, San Antonio, Tex. A young male grizzly was also sent to San Antonio, Tex., on September 26. These shipments were all made at the expense of the cities receiving the bears.

COYOTES AND WOLVES.

Coyotes are numerous. From October 6, 1915, to June 30, 1916, two special rangers were employed by advice of the United States Biological Survey for the purpose of exterminating carnivorous animals in the park. They succeeded in shooting and trapping 83 coyotes, 12 wolves, and 4 mountain lions. The skulls and such of the skins as were desired as specimens were sent to the National Museum, and the other skins were sold and the money deposited to the credit of the park revenues. Other park employees succeeded in killing 97 coyotes, making a total killed of 180. Two young male wolves captured in the spring of 1915 by the employees at the buffalo farm were shipped alive on November 16 to the National Zoological Park.

MOUNTAIN LIONS.

Mountain lions are quite in evidence during the winter, when their tracks are found in the vicinity of the large herds of elk. Four were trapped and killed last winter.

MOUNTAIN SHEEP.

The mountain sheep wintered in excellent condition. Signs of sheep scab were noticed on three of them in Gardiner Canyon, and plans were made to dip them, but by the time the arrangements were completed they had gone so far back in the mountains as to make it impracticable to capture them, and later reports indicated that those that were apparently diseased were much improved as the spring advanced and grass was available.

BIRDS.

A number of new names were added to the list of birds observed in the park through the observations of Mr. M. P. Skinner, who made the original list, until it now totals 194 varieties. Several of the varieties of water birds are found in the park the year round, as there is plenty of open water in winter due to hot springs and geysers.

PROTECTION OF GAME.

Extra rangers were employed during the open season for hunting in the adjoining States in order to protect the park boundaries from hunters who might purposely or accidentally stray over the line. The supervisors and other employees of the national forests adjoining the park, as well as the State game authorities, cooperated with the park authorities in protecting game, and several important arrests were made and convictions secured.

On June 28, 1916, an act of Congress was approved amending the act of May '7, 1894, to protect the birds and animals and to punish crimes in the park so as to provide a maximum penalty of \$500 or six months' imprisonment, or both, and costs, instead of \$1,000 and two years as heretofore. This change will greatly simplify the matter of trials for offenses in the park, as under the original law the United States commissioner in the park was not authorized to dispose of cases that came before him, but could only have a hearing, and if the facts justified, hold the offenders to trial before the United States district

court; which made the proceedings tedious and often very expensive for the Government.

Seventeen snowshoe cabins were repaired and supplied for winter use of patrols.

VIOLATIONS OF LAW.

The highway robber who held up the coaches near Madison Junction on July 9, 1915, has not been apprehended. Edward B. Trafton was tried in the United States district court in Cheyenne, Wyo., in December, 1915, and found guilty of holding up the coaches in the park on July 29, 1914. He is now serving a five-year term in the United States prison at Leavenworth, Kans.

Most of the cases of persons found hunting in the park during the open season in adjoining States were apparently accidental, due to ignorance of the whereabouts of the park line, which is not always well marked, and in rough country is sometimes hard to find. The cases of apparent willful violations of law in regard to hunting occurred mostly during the closed season in the adjoining States by professional hunters.

SANITATION.

During the tourist season frequent inspections of hotels and camps were made by officials of the Interior Department and officers of this command.

During July Mr. J. A. Hill made a special inspection of hotels and camps to determine the quality and manner of handling of food supplies. An inspection of the manner of slaughtering and handling the meat supply in the park was made September 6-8 by an expert from the Department of Agriculture on request of the Interior Department.

Two men with a 2-horse team and wagon were kept on the move all summer keeping the camping grounds in a sanitary condition and caring for the earth closets maintained for public use throughout the park.

Special sanitary camps for parties traveling in private automobiles and carrying their own camp equipment, located at Mammoth Hot Springs, Upper Geyser Basin, Grand Canyon, and Lake Outlet, were constructed in the early part of the summer. These camps consist of a large shed for housing of automobiles, with a capacity of 12 cars at each point, toilets for men and women, and cooking grates. Dry wood is provided at each place, and at Mammoth Hot Springs electric lights and running water are also provided, all without charge to the tourist. These facilities were appreciated and should be improved upon and the sheds enlarged to provide for increased travel.

FOREST FIRES.

The latter part of the season was very dry and special attention had to be given to fire patrols.

A forest fire was reported at Upper Geyser Basin, about 500 yards east from Old Faithful Geyser, on August 2. It was controlled by the soldiers stationed at that point, assisted by employees of the near-by permanent camps, after it had burned over about 3 acres. It was kept under control by the soldiers for several days until finally extinguished by a hard rain. It was probably started by a picnic party.

On the afternoon of August 25 a small fire was reported about 7 miles south from Fort Yellowstone and about a mile from the main road. One scout and a detachment consisting of a noncommissioned officer and 10 soldiers were sent out and succeeded in extinguishing it the same evening before much damage was done, although it smoldered and had to be carefully watched for several days afterwards. About half an acre was burned over. The cause of this fire was not determined.

On the evening of September 18 a forest fire broke out on Cougar Creek, about 5 miles from Riverside Station, in down timber and jack pines. Such men as could be spared from a road camp in that vicinity assisted the men from Riverside Soldier Station in extinguishing it after it had burned over about 4 or 5 acres. Under a high wind it broke out again on September 21 and spread rapidly. The men from the road crew were again called upon, and 35 soldiers from Fort Yellowstone, under a commissioned officer, were sent out to fight the fire. The following day the number of soldiers was increased to 70 men, and the fire was well under control by the morning of September 25 and was extinguished completely by a hard storm ending in snow on September 26 and 27. This fire burned over a strip about 2 miles long and in places a half mile

wide, but no material damage was done, as the burning was mostly in down timber and jack pines and in willows in the bottoms along the stream located several miles from the main road.

IMPROVEMENTS.

Four sanitary automobile camps were established at Mammoth Hot Springs, Upper Geyser Basin, Outlet of Yellowstone Lake, and Grand Canyon. At each camp was constructed a shed 60 by 32 feet, 8 feet high at the eaves, frames built of poles cut in the park and covered with 28-gauge corrugated steel roofing, painted. The sheds are divided by rows of supporting posts into six double stalls each 32 by 10 feet, each stall to hold two automobiles, making a total capacity of 12 automobiles to each shed. The sheds cost an average of \$292.81

NATURAL PHENOMENA.

No notable permanent changes were recorded in the action of the geysers and hot springs during the year. Many of them appeared to be more active than usual for a few weeks in the early part of the summer, due to the increased amount of surface water from the exceedingly heavy snows of last winter.

Hymen Terrace, one of the most beautiful of the terraces at the Mammoth Hot Springs, dried up last fall, but started up again the latter part of February and was fairly active until nearly the close of the tourist season, when it dried up again and has broken out in a new place just above the old terraces.

A double vent geyser broke out at the Thumb of the Lake early in May, and at first played every 2½ hours to a height of from 75 to 100 feet, but it gradually dwindled and quit playing entirely the latter part of July.

Under special permit of the department a few parties visited the park during the past winter for the purpose of taking moving pictures of game, and several others visited the park during the summer season for the purpose of securing moving pictures.

Assistant to the Secretary of the Interior, Hon. Stephen T. Mather, and party visited the park officially from July 22 to July 31. The Superintendent of National Parks, Mr. Robert B. Marshall, was in the park from September 3 to 14. Mr. Horace M. Albright, assistant attorney, Interior Department, was in the park September 13 to 18.

The orders from the War Department direct that the military force now guarding the park be withdrawn, Fort Yellowstone abandoned as a post, and the guardianship of the park transferred to the Interior Department, effective October 1, 1916.

The Interior Department is organizing a ranger force to replace the troops.

In 1886 troops of the Cavalry Arm of the military service marched into the park, pitched camp, and took up the important duties of making this magnificent reservation a pleasant place for people to visit and a home for the wild game. Many officers and men look back upon their service here with the keenest pleasure. Their duties have been well and creditably performed, and the 30 years of military control will be memorable ones in the history of the Yellowstone National Park.

YOSEMITE NATIONAL PARK.

W. B. LEWIS, Supervisor, Yosemite, Cal.

GENERAL STATEMENT.

The Yosemite National Park, when created by the act of October 1, 1890 (26 Stat., 650), was situated in Tuolumne, Mariposa, Madera, and Mono Counties, Cal., and covered an area of about 1,512 square miles, being 36 miles wide by about 40 miles long. Under the act approved February 7, 1905, entitled "An act to exclude from the Yosemite National Park, California, certain lands therein described and to attach and include the said lands in the Sierra Forest Reserve," 542.88 square miles were excluded and 113.62 square miles were added to the park, making a net reduction in area of 429.26 square miles, so that the area, after the passage of the above act, was 1,082.74 square miles, the park being situated in Tuolumne, Mariposa, and Madera Counties. By act of June 11, 1906, entitled "Joint resolution accepting the recession by the State of California of the Yosemite Valley grant and the Mariposa Big Tree Grove, and including the same, together with fractional sections five and six, township five

south, range twenty-two east, Mount Diablo meridian, California, within the metes and bounds of the Yosemite National Park, and changing the boundaries thereof," there were added to the park the Yosemite Valley, 48.60 square miles; Mariposa Big Tree Grove, 4 square miles; and a strip lying between the latter and the park proper, 2.13 square miles; and deducted by the change in the southwestern boundary, 13.06 square miles; making a net addition to the area of 41.67 square miles. The present area of the park is 1,124.41 square miles.

ROADS.

Of approximately 103 miles of roads under the control of the Government, there is only about 1 mile of good, hard-surfaced road. There are about 2 miles of water-bound macadam road on the floor of the Yosemite Valley, which it has not been possible to keep in proper repair, with the result that it is becoming badly rutted. About 5 miles of road on the valley floor have been surfaced with river gravel. This gravel is of an inferior quality, which pulverizes rapidly under wear, and necessitates heavy sprinkling to keep down the dust. The remainder of the park roads are ordinary dirt roads, most of them built years ago, and on account of sharp curves, steep grades, and their narrow width, are not adaptable to automobile travel and the heavy trucking of the present time.

The work, just begun, of the reconstruction of El Portal Road should be continued until the entire road is completed, with a maximum of 6 per cent grade. This should be followed by the improvement of the other roads in the park, in the near future, as the increase of travel will soon make demands upon the present roads, which they will in no way be able to meet.

In order to successfully meet this growing demand, it is urgently recommended that appropriations be made available for three years, or until expended to put the roads in first-class condition. This would be a saving to the Government in the long run, in the decrease in cost of maintenance, which cost is at present very high as compared with the results obtained.

BRIDGES.

The question of bridges on the floor of the Yosemite Valley is one that should receive the immediate attention of the department. There is but one bridge at present which has a safe loading capacity of more than 6 tons. This, El Capitan Bridge, a combined steel and wood truss, being safe up to 12 tons, while the Sentinel Bridge, over which the bulk of the traffic passes, was condemned some three years ago for loads exceeding 3 tons.

The inconvenience to the park as a result of this condition is apparent when the question of maintenance is considered, as the heavy road building and sprinkling equipment owned by the park can pass loaded from one side of the valley to the other over El Capitan Bridge only.

The low load capacity of the Sentinel Bridge has resulted in excessive transportation costs to the transportation companies operating in the park, as well as to the park itself, due to the increased length of haul resulting thereby. All freight trucks and heavy passenger trucks en route to points on the north side of the valley are compelled to go via the Le Conte Road and Stoneman Bridge, an extra haul of 2 miles.

The Sentinel Bridge should be first considered and replaced for the accommodation of the transportation of freight and passenger trucks, and should be followed by the replacement of the Pohono, Happy Isles, Stoneman, and Tenaya Bridges with modern structures with load capacities of not less than 15 tons.

TRAILS.

Of approximately 650 miles of trails within the park, 175 miles can be classed as good, requiring small improvements only to put in first-class shape. Some of these, such as the Yosemite Falls Trail, the Nevada Falls Trail, and the Tenaya Canyon Trail, have been constructed through extremely difficult country, and are examples of first-class trail construction.

One hundred and forty-five miles of the park trails are classed as fair, while the remainder, approximately 280 miles, should be reconstructed practically throughout. These latter are located principally in the northern part of the park, north of the Grand Canyon of the Tuolumne. This part of the park, here-

tofore little visited and practically unknown, is beginning to attract attention, and will continue to do so still more with the establishment of lodges, as proposed, for the accommodation of the tourist. It will, therefore, be necessary, in order to popularize that part of the park, which possesses unsurpassed mountain scenery, to reconstruct many of the trails, thereby insuring travelers against danger.

It is urgently recommended that three entirely new trails be constructed during the coming year, viz, the extension of the Washburn Lake Trail to join with the Isberg Pass Trail near Harriet Lake, 3 miles; from the McClure Fork of the Merced, three-fourths mile above its junction with the Merced to Tuolumne Pass, via Babcock and Emerick Lakes, 8 miles, replacing present trail from same initial point to Tuolumne Pass, via Vogelsang Pass, 9 miles.

POWER PLANT.

The marked increase in the use of light and power, as compared with the previous year, is shown by the increase of 65 per cent in the output of the plant. In order to supply this demand, the plant has run practically to capacity during much of the busy season, and it is fortunate that work is in progress for the construction of a new plant which, in addition to supplying electricity for light and power, will also be able to supply electricity for heating and cooking.

BUILDINGS.

The buildings in use for the housing of the Government employees are, for the most part, the cottages formerly used by the War Department, located near the Yosemite Falls Camp. All of these buildings, with the exception of three, have been sealed and are fairly satisfactory as winter quarters. The other three should be sealed before the coming winter, having been constructed, as were the others, for summer use only.

WATER SUPPLY.

The increased demand for water, due to the installation of El Capitan Camp and the laundry and swimming tank at Yosemite Falls Camp, has been such that there have been occasions when it could not be supplied from the regular water supply. In order to fill the Yosemite Falls Camp swimming tank, it has been necessary to turn the river water into the mains at the power house. This has been objectionable, resulting in bursting of pipes in one or two instances, and the mixing of the river water with the domestic supply of pure spring water has brought complaint from water users.

The present headworks at the spring develop probably 60 per cent of the available supply. By additional headworks probably 90 per cent of the available supply could be developed. This amount, to be used for domestic purposes only, would, undoubtedly, suffice for many years. In order that it would do so, however, it would be advisable and necessary to develop a separate supply from the river for use in swimming tanks and baths.

MEDICAL SERVICE.

The present building in use as a hospital is the same, slightly remodeled, as formerly used for that purpose by the War Department, and contains three rooms for patients, a small operating room, a nurse's room, and a reception and consultation room. Three other rooms are utilized as living quarters by the physician and his family.

One hundred twenty-three cases were treated in the hospital during the year July 1, 1915, to June 30, 1916, and 1,566 calls were made outside. As many as seven patients have been cared for at one time in the hospital, necessitating crowding and the utilization of all available space, the surplus being cared for on cots placed in the operating and nurse's rooms.

The heavy tourist travel necessitates not only the maintenance of a medical service and hospital, but the isolation of the park from first-class hospital facilities would seem to demand that such a service be of a high order. With the present facilities nothing but emergency cases can be cared for, and in order to supply the want it will be necessary to replace the present inadequate building with a new one with a capacity of about 25 beds. In connection with this, but separate from the hospital, there should be erected quarters for the physician and his family, as the present condition of maintaining quarters in the hospital is unsatisfactory, both from the view of the patients and the physician.

SANITATION.

Up to the present time nothing has been done toward the installation of a complete sanitary and sewage-disposal system. During the past season there have been as many as 5,000 people in the valley at one time, and for a period of three months the number has averaged close to 3,000. The danger of stream pollution is evident when it is considered that much of the sewage empties directly into the river or its tributary streams. That there has never been a typhoid epidemic in the valley below, where people are dependent on the Merced River as a water supply, as a result of stream pollution in the Yomesite Valley, is nothing short of remarkable.

It therefore appears essential that steps be taken at once to install a complete system of sufficient capacity to take care of the present and future needs of the whole valley. The public camps should be supplied with flush toilets, and a crematory for the proper burning of garbage should be installed to take the place of the present primitive, even though effective, method of burning in pits.

FOREST FIRES.

No serious damage was done by forest fires during the past year, all fires reported having been easily brought under control by the park rangers, assisted by other park employees.

CLEARING OF THICKETS AND UNDERBRUSH.

The existence of thickets and dense growths of underbrush in certain timber areas on the floor of Yosemite Valley and in the Big Tree Groves and the slashings left on the cut-over lands adjacent to the park timberlands along the Wawona Road and along the west and south boundaries of the Mariposa Big Tree Grove constitute a menace of large proportions in the consideration of fire protection. Fires originating in such thickets or slashings, and with a favorable wind, quickly become uncontrollable and large areas are apt to be burned over before they can be stopped from spreading.

Such thickets should be thinned out, and in cases where the slashings adjoin park timberlands fire lanes should be cleared out of sufficient width to obviate any danger of fires spreading to the timbered areas.

INSECT CONTROL.

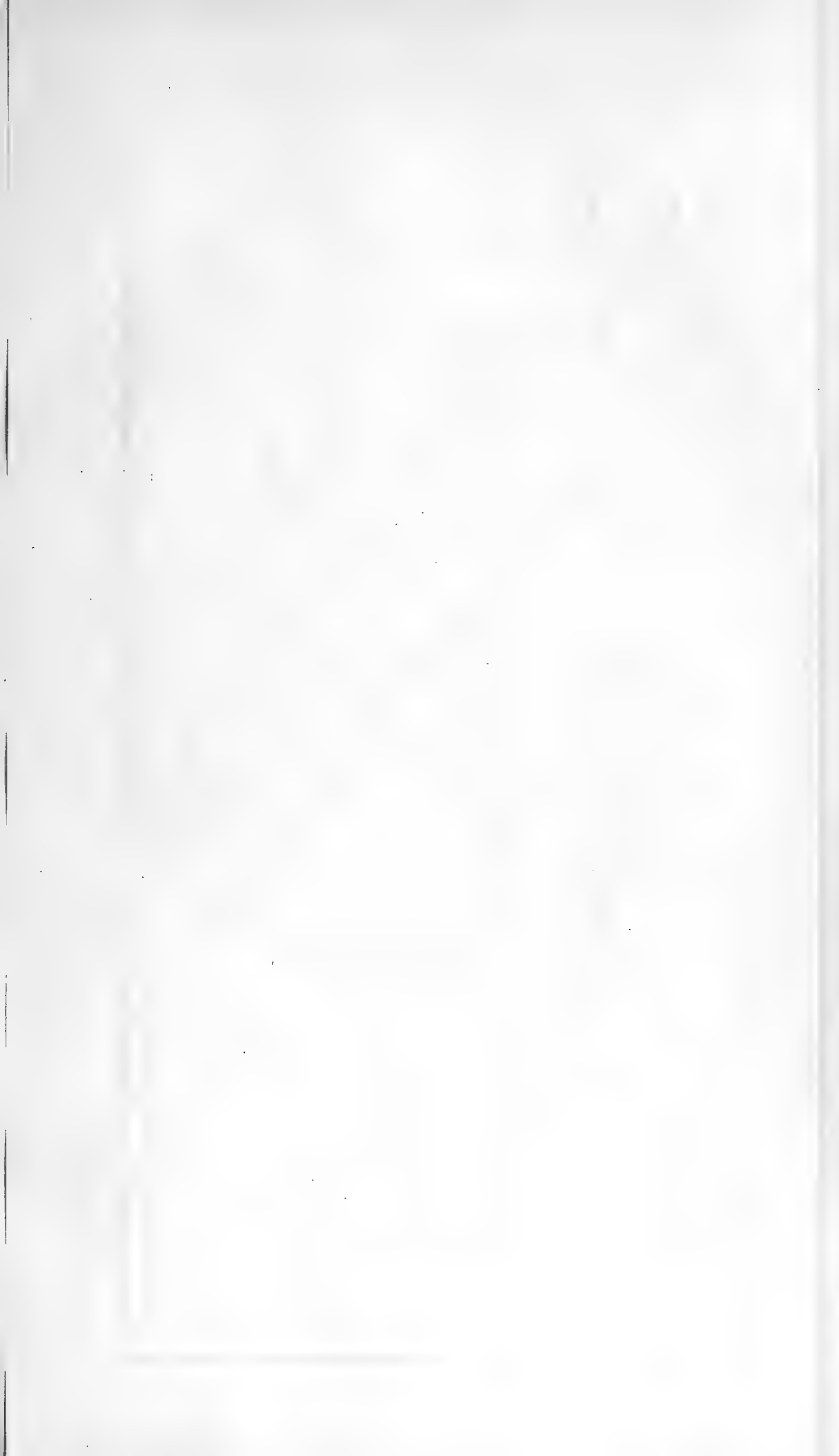
Some three years ago the department realized the necessity of instituting a campaign against the various classes of beetle depredating on the park forests. Since that time much effective work has been done with the result that, with one exception, all of the infested areas have been brought pretty well under control. The one area which has failed to yield to control is located in the Cathedral Basin, near Lake Tenaya. This area is forested almost entirely by lodge-pole pine. While other areas, since control operations were initiated, have shown each year a marked decrease in attacks, this one shows a very marked increase. A recent examination by Assistant Forest Entomologist J. M. Miller, of the Department of Agriculture, indicates that unless severe measures are taken in this area in the near future the entire lodge-pole stand will be exterminated. He estimates that under no condition can more than 50 per cent of the stand be saved, and then only in the event control operations on a large scale are promptly undertaken.

LOGGING OPERATIONS.

Logging operations on private and Government lands within the park have been prosecuted on a large scale during the past year by the city and county of San Francisco in its development of the Hetch Hetchy project and by the Yosemite Lumber Co., but more principally the latter.

The latter company has cut over during the last year about 370 acres of timberland lying within the boundaries of the park. A small percentage (42 acres) of this has been cut under restrictions whereby trees were left for seed and scenic purposes.

The city and county of San Francisco has cut over about 900 acres of a total area of 1,200 acres to be cleared in the Hetch Hetchy Valley. Of the total 1,200 acres to be cleared, about 400 acres is Government land. In addition to this it has cut over 120 acres of its own lands on what is known as Canyon Ranch.



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PATENTED LANDS.

Attention has been called in previous annual reports to the necessity for the abolishment, either by purchase or exchange, of private land and timber holdings within the park. Agreements have recently been made by which the Government acquires from the Yosemite Lumber Co. some 200 acres of timberland along the Wawona Road and 360 acres from the city and county of San Francisco near Hog Ranch. This is in addition to acquisitions immediately following the act of Congress of April 9, 1912. There is also a proposition now being considered for an exchange between the department and the Yosemite Lumber Co. by which the department would acquire the bulk of the lands within the park boundaries in the vicinity of the Merced and Tuolumne Big Tree Groves.

RANGER SERVICE.

The present ranger force consists of 1 chief park ranger, 1 assistant chief park ranger, 1 special park ranger in charge of maintenance of roads, trails, etc., 1 special park ranger in charge of timber cutting in connection with the operations of the Yosemite Lumber Co. and the city and county of San Francisco, and 3 regular park rangers, and 19 additional temporary rangers are employed during the months of heavy travel.

INFORMATION BUREAU.

The bureau of information established last year was continued in operation in charge of one of the park rangers.

The opening of the roads on the floor of the valley at the beginning of the season of 1916 to general automobile travel greatly augmented the interest of motorists in the park, and the consequent increase in motor travel during the 1916 season, as compared with that of 1915, demonstrates the popularity of this action on the part of the department. The rule of one-way travel was rigidly adhered to at the beginning of the season. Later, however, as dangerous curves were eliminated, and narrow stretches of the roads were widened, the roads were gradually opened to two-way traffic until at present the freedom of the roads is given to the motoring public under proper speed regulation. With such regulation of speed the valley roads are reasonably safe, and it is recommended that during the coming season all restrictions as to direction of travel be eliminated, except that of one-way traffic on the Big Oak Flat and Wawona grades. On these grades travel should be restricted, as at present, to going and coming on alternate hours.

The total number of automobiles entering the park during the period October 1, 1915, the date of the annual report, and September 30, 1916, was 4,043, of which 3,843 were from California. This includes, in addition to the regularly purchased tickets, complimentary tickets to county, State, and Federal officials in the park on official business. The travel, segregated as to points of entrance, was as follows:

	Cars.
Alder Creek, Wawona Road.....	2,370
Merced Grove, Coulterville Road.....	426
Crane Flat, Big Oak Flat Road.....	553
El Portal, El Portal Road (cars shipped to El Portal over Y. V. R. R.)..._	6
Aspen Valley, Tioga Road.....	106
Tioga Pass, Tioga Road.....	578
Hog Ranch, Hetch Hetchy Road.....	4
Total.....	4,043
Total for previous year.....	2,270
Increase	1,773
Increase over previous year 78 per cent.	
Entering park in private automobiles during period Oct. 1, 1915, to People.	
Sept. 30, 1916.....	14,527
Entering park in private automobiles during previous year.....	7,377
Increase over previous year.....	7,150

Automobile transportation service on the floor of the valley, initiated during the season of 1915, was continued with increased facilities, running on regular schedules and at fixed rates between camps and hotels and to the various points of interest in the valley.

VISITORS.

Visitors to the park during the period October 1, 1915, to September 30, 1916, reached a total of 33,396, an increase of 1,748, or 5.5 per cent, over the total of the year ending September 1, 1915, the date of last annual report. This increase is largely due to the increased freedom allowed private cars on the park roads, especially on the roads on the floor of the valley.

FISH AND GAME.

Since the beginning of the 1916 season a more determined effort has been made to enforce the park regulations as to fishing. The question of the conservation of fish in the park is an important one since fishing is, particularly in the back country, one of the main attractions which draws the tourist to those parts. The transportation of small fry to high mountain lakes and streams is difficult as well as expensive. It is, therefore, very essential, as a factor in fish conservation, that the regulation limiting the day's catch to 20 be rigidly enforced. In addition to this, the work of stocking lakes and streams and restocking others should go on year by year so far as practicable in order that the demand may continue to be met.

Considerable good work is being done by the park rangers in transplanting fish from streams already stocked to those where none exist. This is a very effective method of stocking and should be encouraged.

Since the month of May the State law requiring a State fishing license has been enforced in the park for the first time in many years.

The regulation prohibiting hunting inside of the park is rendering a great service in the protection of game. The park has become, as a result, a great summer feed ground and breeding place for deer, and it is understood from those who are familiar with the conditions that all classes of game, particularly deer, are on the increase. Unfortunately, however, with all its summer feeding grounds and breeding places, the park has practically no winter feeding grounds, due to the high altitude of all of the areas inclosed by the park boundaries. The result is that much of the good work of protection within the park goes for naught when in the fall the deer drift down to the lower altitudes outside of the park boundaries, where they fall prey to hunters who await their coming not far from the park boundaries. A possible solution of this problem would be the creation of a neutral zone of 5 or 6 miles in width along the southern and western boundaries of the park in which hunting would be prohibited at all seasons of the year. Such a zone would open up winter pastures at low altitudes and would do much for the protection and increase of game life within and adjacent to the park.

FIREARMS.

Approximately 1,500 firearms of various sorts and calibers have been sealed or taken up during the year. At present firearms carried by through automobile passengers are sealed and the owners are permitted to retain possession. In such cases the number of guns sealed is stated on the permit and the seals are broken by the ranger at the point of exit. Those brought into the park by people on foot or horseback are taken up and turned in to the supervisor's office, whence they are shipped to the owner at the latter's risk. This method of handling firearms has proven very satisfactory. There should, however, be incorporated in the firearms regulations a clause stating, in effect, that in cases where arms once sealed are later found with seals broken, or in cases where arms are brought into the park unsealed in direct violation of the regulations, or in cases where there is any attempt to evade the regulations by denial of possession or concealment, said arms shall be promptly confiscated and the party shall forfeit all claim thereto.

RECOMMENDATIONS.

To meet the demand for new circuits next year, a new switchboard will have to be installed.

It is urgently recommended that these lines be replaced by metallic circuits of No. 9 wire, and of uniform construction.

SEQUOIA AND GENERAL GRANT NATIONAL PARKS.

WALTER FRY, Supervisor, Three Rivers, Cal.

GENERAL STATEMENT.

The Sequoia National Park, set aside by act of September 25, 1890 (26 Stat., 478), and act of October 1, 1890 (26 Stat., 650), is located in Tulare County, Cal. It has an area of 161,597 acres and ranges in altitude from 1,100 feet to 11,900 feet. The General Grant National Park, set aside by act of October 1, 1890 (26 Stat., 650), is located one-half in Tulare County and one-half in Fresno County, Cal. It has an area of 2,536 acres and ranges in altitude from 5,250 feet to 7,631 feet. The Sequoia National Park derives its name and much of its interest from the presence of many large groves of "big trees" (*Sequoia washingtoniana*), and the General Grant National Park was thus named by reason of the "General Grant tree," so widely known for its size and beauty. Both of these parks are situated on the western slope of the Sierra Nevada and contain some of the most rugged alpine scenery to be found on the continent. The magnificent forests within their borders can not be considered their only striking feature. There is much to be seen that is unique among the marvels of nature. The combination of rivers and lakes with forest-covered mountains and here and there snow-capped summits reaching far above timber line may well hold the traveler spellbound, for in but few countries in the world may be seen its equal. Hidden in the fastness of their towering mountains are found many wonderful and awe-inspiring scenes, many of them equaling in grandeur and impressiveness those found in the world-renowned Alps which for years have attracted the gaze of multitudes.

GENERAL CONDITIONS.

The rainfall and snowfall during the winter of 1915-16 were far above the normal, resulting in much damage to roads and trails and delay in traffic through high altitudes. Owing to deep snow and high waters in the higher elevations traffic above the 7,500-foot level was not accomplished until July 1. Repair and improvement work was commenced on roads, trails, and telephone lines on April 15 and completed by June 30. The parks were opened for accommodation of the public on May 25, at which time all park concessionaires began active operations. There are hotels, stores, feed yards, post offices, telephone stations, and photograph galleries in each of the parks, and physician and surgeon in the Sequoia Park. Regular automobile transportation service is operated between Lemon Cove Railroad Station and Giant Forest in the Sequoia Park and between Sanger and General Grant Park. The distance from Lemon Cove to Giant Forest is 40 miles and from Sanger to General Grant Park 46 miles.

REPAIRS AND IMPROVEMENTS.

A new road 3,900 feet in length has been built to take the place of that portion of the Mineral King Road at Lookout Point just inside the western boundary of the park, thus doing away with that portion of the old road which was too steep of grade to admit traffic feasible thereover. The new road is of easy grade and good width.

Twenty-seven miles of the Giant Forest Road were graded and right of way cleared of fallen timber, rocks, and landslides.

Sixty-seven miles of the Alta, Seven-Mile Hill, Black Oak, Colony Mill, Hospital, and Middle Fork Trails have been improved by their being widened from 3 feet to 5 feet and the building of retaining walls on their lower side along the steep mountain sides, thus insuring more safety to travel.

Fifty-four miles of the South Fork Trail and intersecting trails have been repaired and are in good condition.

The old Marble Fork Bridge that collapsed during winter storms has been repaired.

General Grant Park.—Three and one-half miles of the Stephens Grade Road were widened from 10 feet to 16 feet. Four and one-half miles of the North Park and Millwood Roads were graded and five additional passing points for vehicles constructed.

GUARDING THE PARKS.

The supervisor is assisted throughout the year by three permanent park rangers and during the summer months by eight additional park rangers in the Sequoia Park, and by one permanent park ranger, and during the summer months by one additional park ranger in the General Grant Park. Regular and constant patrols are made by these men in all parts of the reservations. Four of the above temporary park rangers were detailed to various road and trail entrances to the Sequoia Park, whose principal duties were the issuing of automobile permits, checking of traffic, taking up of firearms, and the issuing of instructions to and the registration of park visitors.

PARK VISITORS.

Visitors throughout the season showed a gratifying disposition to observe the park rules and regulations, and they seemed to enjoy the parks thoroughly. More persons visited the parks this season than during any previous year. Between March 1 and September 30 there were 10,780 visitors to Sequoia Park, of whom 5,019 remained for a period of three days or more, and 5,668 were transient tourists.

Travel to Sequoia Park by different entrances.

Giant Forest Road.....	4, 808
Mineral King Road.....	1, 053
Elk Park Road.....	1, 531
South Fork Trail.....	442
Quinn-Little Kern Trail.....	443
Kings River Trail.....	535
Black Oak Trail.....	350
Halstead Meadow Trail.....	423
Hockett-Tar Gap Trail.....	240
Seven-Mile Hill Trail.....	355
Total.....	10, 780

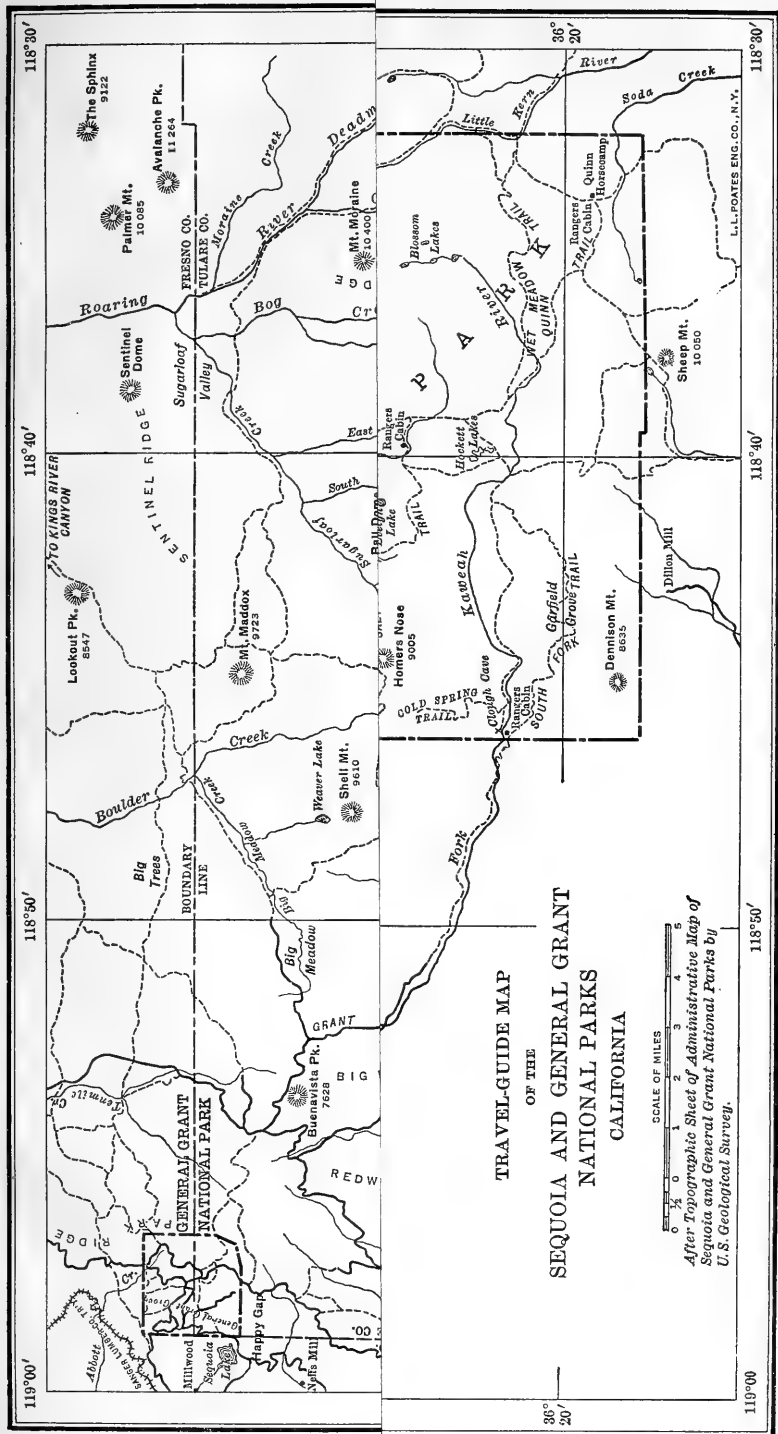
Means of transportation to Sequoia Park.

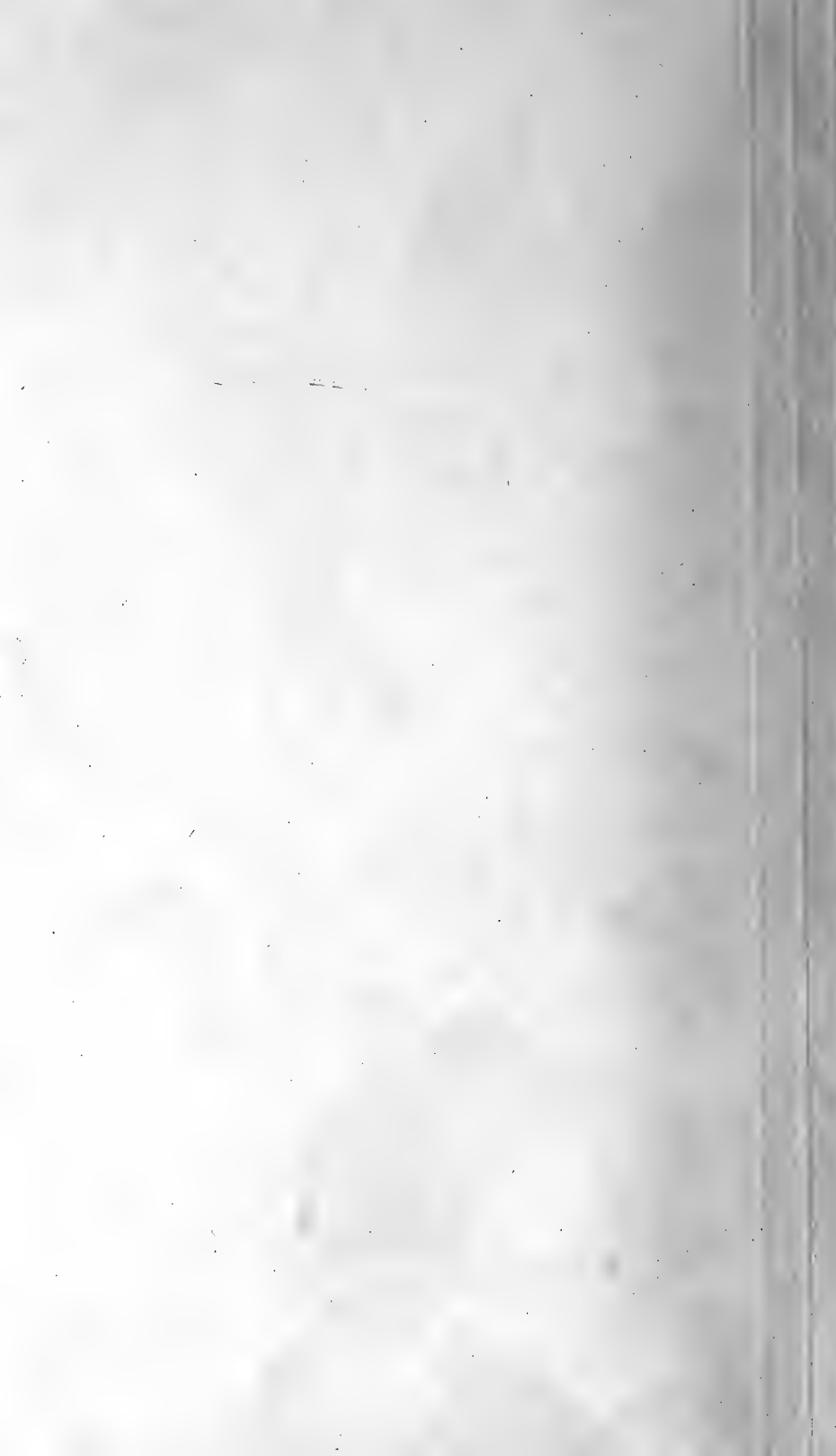
Sequoia National Park Transportation Co., automobile stage.....	293
Automobile.....	3, 541
Motorcycle.....	6
Wagon.....	2, 846
Mounted on horse.....	3, 605
Afoot.....	399
Total.....	10, 780

Residence of visitors to Sequoia National Park.

United States:		United States—Continued.	
Arizona.....	6	Oklahoma.....	12
Alaska.....	8	Texas.....	7
California.....	10, 521	Washington.....	21
Colorado.....	11	Wisconsin.....	6
Connecticut.....	14	Total.....	10, 755
District of Columbia.....	12		
Georgia.....	9	Foreign countries:	
Hawaii.....	2	Australia.....	6
Illinois.....	21	China.....	8
Iowa.....	7	England.....	5
Kansas.....	14	France.....	2
Michigan.....	11	Japan.....	4
Missouri.....	14	Total.....	25
Nebraska.....	10		
New York.....	18	Grand total.....	10, 780
Ohio.....	12		
Oregon.....	19		

Between May 1 and September 30 there were 15,360 visitors to General Grant Park, of whom 6,298 remained for a period of three days or more, and 8,928 were transient tourists.





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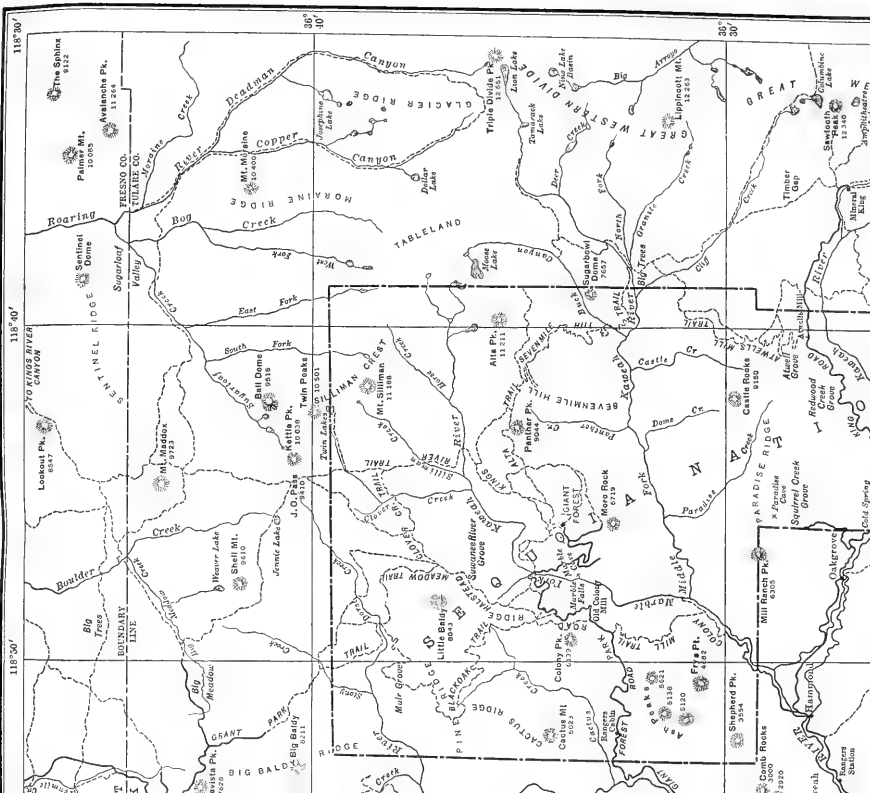
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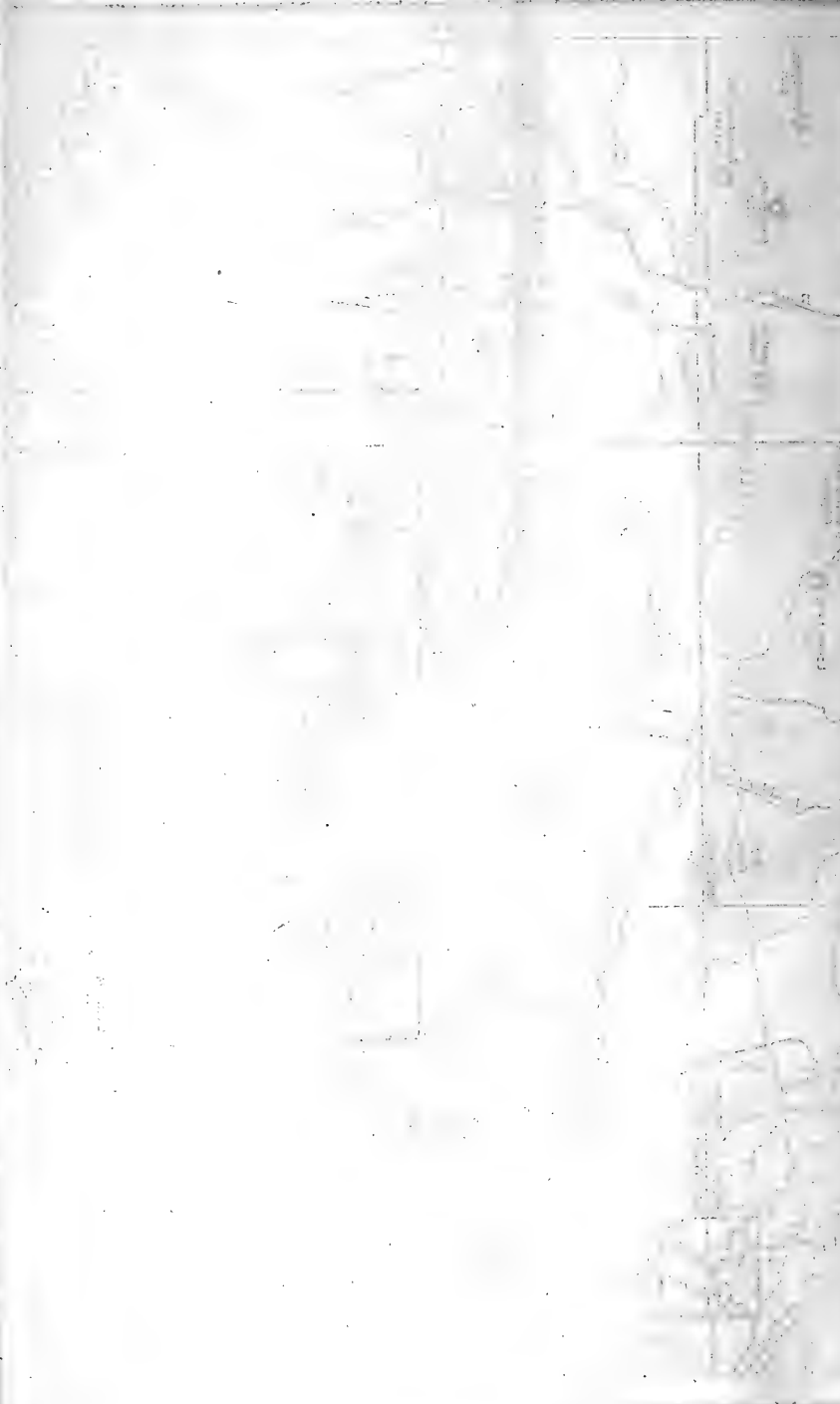
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----- 203
----- 3, 541
----- 6
----- 2, 846
----- 3, 635
----- 399
----- 10, 780

----- 12
----- 7
----- 21
----- 6



ed.



Travel to General Grant National Park by different entrances.

Stephens Grade Road.....	10,464
Millwood Road.....	1,879
Lake Road.....	2,075
Halstead Meadow Trail.....	942
Total.....	15,360

Means of transportation to General Grant National Park.

Kings River-Hume Auto Service Co.....	1,336
Calvin Marple, automobile stage.....	251
Peter Haux, saddle and wagon transportation.....	199
Automobile.....	8,551
Motorecycle.....	45
Wagon.....	2,531
Mounted, horse.....	853
Afoot.....	1,494
Total.....	15,360

Residence of visitors to General Grant National Park.

United States:		United States—Continued.	
Alaska.....	4	Nebraska.....	46
Arizona.....	15	New York.....	38
Arkansas.....	4	Oregon.....	7
California.....	14,992	Total.....	15,208
Connecticut.....	5		
Colorado.....	16	Foreign countries:	
District of Columbia.....	14	Australia.....	10
Georgia.....	13	Canada.....	8
Illinois.....	71	Total.....	18
Indiana.....	12	Grand total.....	15,360
Iowa.....	46		
Kansas.....	32		
Missouri.....	27		

ROADS.

The following is a report of the roads in the Sequoia and Gen. Grant National Parks:

Sequoia Park.—The three roads entering the park are the Giant Forest, the Elk Park, and the Mineral King, all of which lead out from the one county road in the vicinity of Three Rivers west of the park and terminate at the following points in the high Sierras: The Giant Forest Road terminates at Wolverton, in the northeastern portion of the park; the Elk Park at Moro Creek, in the east central portion of the park; and the Mineral King at Mineral King, 6 miles east of and through the southern portion of the park. Of the Giant Forest Road there are 29 miles within the park, of the Elk Park 10 miles, and of the Mineral King 11 miles; thus aggregating a total of 50 miles of road system within the park.

All the above-mentioned are earth roads located over a very rough mountainous country, and the two former are what may be termed good mountain roads but are yet lacking in proper width and drainage system, and in a few localities their location should be so changed as to eliminate therefrom certain sections that are too steep of grade. About one-half that portion of the Mineral King Road within the park is too steep of grade to admit traffic feasible thereover, and in such places the road should be relocated and a new road built to take the place of the old road.

The difficult problems that obtain over all these roads are due to the fact that each road runs to a certain different scenic portion of the park, where they terminate; thus in every instance traffic is forced to return over the same route as that of their entry, a fact undesirable. In order to obviate the foregoing condition it is essential that these roads all be united by a road system from north to south through the eastern portion of the park, the said

system to begin at a point on the county road at Big Meadow north of the park, thence to Wolverton, a distance of 16 miles; thence from Giant Forest to Moro Creek, 7 miles; thence to Mineral King Road at eastern park boundary, 9 miles. Thus it will be seen that by the construction of this 32 miles of road system the Sequoia and Gen. Grant National Parks would be united by same, separate routes for travel would be created, and it would make accessible to travel 210 miles of roads between Sanger in a northerly direction and Lemon Cove in a southerly direction over the most scenic portion of the high Sierras, a fact that will never be acquired otherwise.

Gen. Grant Park.—There are 13½ miles of earth roads within the park, with names and different entrances as follows: The Stephens Grade Road enters the park from the south, the North Park Road from the north, and the Millwood and Lake Roads from the west. These roads should all be improved in manner of their being widened and the construction of additional drain culverts. The Stephens Grade-North Park Road, 4 miles in length, should be macadamized, as this road forms the only connecting link from all county roads from the San Joaquin Valley west of the park to the Kings River Canyon State Highway to the east of the park, hence it is assured that traffic over the road will always be very great and increase with enormous rapidity from year to year.

DEATH.

With sincere regret I record the accidental death near Visalia, Cal., on April 22, 1916, of Charles Willard Blossom, chief park ranger of the Sequoia National Park, which was caused by the overturning of his automobile in which he was riding and driving. Mr. Blossom had taken the day on annual leave and was returning from Visalia to duty in the park when the accident occurred.

Mr. Blossom had served as park ranger in the Sequoia National Park for a period of over 13 years, and I do not know of a man in the service with a better record. His intense love for the mountains and passion for the splendors of nature lured him to the parks and fitted him for the work. He was a man of understanding and a full sense of high honor. To his love for the out of doors was added a love for his fellow man, which endeared him to all who knew him.

FISH.

Fishing in the parks was seemingly better during the 1916 season in all the waters other than that of Wolverton Creek and Marble Fork River in the Sequoia Park, upon both of which streams there has been heavy drain from year to year by patrons of the Giant Forest tourist camp in the near-by vicinity.

Conceding the importance in bringing this class of sport to a higher degree of attractiveness, a consignment of 78,000 rainbow trout was procured, by donation, by the California board of fish and game commissioners, and liberated in waters of the Sequoia Park as follows: Middle Fork Kaweah River, 62,000; Wolverton Creek, 16,000.

GAME.

All game in the parks is protected, except predatory animals and harmful species of rodents which are permitted to be killed by the park rangers. Deer and bear are numerous and usually very tame. Elk are occasionally seen, but more often outside than within the parks. Their range has been materially extended of recent years. They now roam to the headwaters of Tule River to the south, Sheep Creek to the north, Redwood Meadow to the east, and Manikin Flat to the west; thus comprising a range area of some 195 square miles. Wild turkeys are fairly abundant in the Sequoia Park in the vicinity of the junction of the Middle Fork and Marble Fork of the Kaweah Rivers, and there is every indication of their having become firmly established. Of the three different types that were placed in the park during the seasons of 1909-10, viz, Mexican gray, Arizona bronze, and Texas black, the two former species seem to have entirely disappeared. This fact is attributed to their either having died, been caught by predatory wild animals, or blended to such extent as to form intergradation to the latter mentioned species. It would seem, however, the latter to be the most feasible of the three causes given. The turkeys range in two separate groups; one that ranges at the mouth of the Marble Fork is quite tame like most other birds of the parks but the other has a higher altitudinal range several miles in extent and are so wary it is difficult to ever see them. Grouse

and quail are abundant, although quail are not so numerous as last year. Last winter severe weather drove the quail to lower altitudes and many of them west of the parks, where hunting parties killed a great many of them. Squirrels, rabbits, and wild pigeons seem to be about holding their own, but there is marked decrease in the number of doves. Owing to the refilling with water again last winter of the Tulare Lake region west of the parks, thus providing ample water and food for all species of ducks and geese, but few of such ever drifted into the parks.

GAME PRESERVE.

The Sequoia and General Grant National Parks are of particular importance as a game preserve because, of all American possessions, they are among the ones in which frontier conditions promise to last the longest. Notwithstanding their vast wealth in forests and scenic attractions, their territory will never be populated, and as a consequence all animal and bird life will prosper.

Even if game remained abundant in some portions of the United States, still the game of these parks would be of special interest because they include many species of animal and bird life quite different in kind and habits. The wholesome interest in nature study and outdoor life recently awakened in the United States is likely to be permanent, and future generations, whether hunters, naturalists, animal photographers, or simply lovers of nature, will set a high value upon the possession of this undespoiled territory furnishing primitive haunts for many species of birds and wild animals.

FAUNA AND FLORA.

The number of species of fauna and flora in the Sequoia and General Grant National Parks proves to be very large. This is accounted for practically by reason of the very great variety of climate they possess, greater than occurs in any other park in the Union, grading all the way from the upper austral zone of the San Joaquin Valley to the arctic climate of perpetual snow on the summits of the high Sierras. They possess a range of climate comprising four different life zones of habitation, and in some portions a climate peculiar to the region alone.

POST OFFICES AND MAIL FACILITIES.

On December 23, 1915, the name of the Ranger post office in the Sequoia National Park was changed to that of Giant Forest.

No contract has yet been awarded for supplying mail to this office, and under the present system mail is carried thrice a week between the park office and Lemon Cove, Cal., a distance of 40 miles, the first-class mail being carried for two-thirds the cancellation thereon and the parcel-post matter at the rate of 2 cents per pound. The present system is very unsatisfactory and bids should be solicited whereby the office be supplied with a daily mail service under contract, Sundays excepted, for the period June 1 to September 30 of each year.

The thrice-a-week mail route that applied between General Grant National Park and Badger, Cal., was discontinued and a new contract put into effect on June 10, 1916, for daily service, Sundays excepted, between Sanger, Cal., and the park. Nothing more appropriate could have been accomplished than this change looking to the welfare of the park visitors.

FOREST CONDITIONS.

The forests of the parks are in healthy condition. The past season has been the most favorable in the past 10 years for the rapid growing and the prolific germinating of all species of the coniferæ family. The restocking with seedlings over former burnt areas has made rapid progress. There is heavy undergrowth everywhere. The rate of growth varies greatly, not only according to soil and moisture, but also according to exposure and the influence of surrounding vegetation. Almost invariably the restocking has been with the same species that occupied the ground before. The cold, freezing weather that prevailed in the parks all above the 3,000-foot elevations, covering a period May 18 to 21, inclusive, destroyed practically all the 1916 seed crop of the coniferæ species other than that of the sequoia; also many species of

the oak seed were destroyed from the same cause; hence but little or no reproduction may be expected next year from those affected species.

FOREST INSPECTION.

During the months of July, August, and September of the present year inspection was made of practically all the coniferous forest belt of the parks, comprising an area of approximately 133,920 acres. This inspection was performed by the park rangers and in connection with their regular patrol duty. No new outbreaks of insect or disease enemies of the forests have been detected.

FOREST FIRES.

Three forest fires were started in the Sequoia Park during the season, two set by lightning and one cause of origin unknown, but were detected and extinguished by park rangers before damage was done. Two fires that started in the vicinity west of the park and threatened serious damage thereto were extinguished prior to their entering the park by park and forest rangers, volunteer and paid fire-fighting men.

TRANSFER.

Mr. Oliver R. Prien, park ranger, Yosemite National Park, was transferred to duty in the Sequoia National Park, effective May 15, 1916, to fill the vacancy of Charles W. Blossom, deceased.

WEATHER CONDITIONS.

The past season was a dry one; only upon three occasions after May 18 was there precipitation over the park areas, and that practically of no consequence. The weather was generally clear and the atmosphere cool and pleasant.

RECOMMENDATIONS.

(1) That United States Congress be requested to provide measures whereby title to the deeded land within the Sequoia and General Grant National Parks be acquired by the United States Government; (2) that the State of California be requested to cede to the United States Government entire jurisdiction of the Sequoia and General Grant National Parks; (3) that the boundaries of the Sequoia National Park be extended to conform to those suggested by Mr. R. B. Marshall, Superintendent of National Parks.

MOUNT RAINIER NATIONAL PARK.

D. L. REABURN, Supervisor, Ashford, Wash.

GENERAL STATEMENT.

Mount Rainier National Park was created by act of Congress approved March 2, 1899, and exclusive jurisdiction of the territory so set aside was ceded to the United States by act of the Legislature of the State of Washington approved March 16, 1901. Exclusive jurisdiction of the reservation was accepted by act of Congress approved June 30, 1916.

The park is located in the western part of the State of Washington, immediately west of the summit of the Cascade Mountains, and about 40 miles southeasterly from the southern end of Puget Sound. It is situated largely in Pierce County, but a portion lies in Lewis County. The main entrance to the park is located near the southwest corner, distant by automobile road 93 miles from Seattle, 56 miles from Tacoma, and $6\frac{1}{2}$ miles from Ashford, on the Tacoma Eastern Railroad, a branch line of the Chicago, Milwaukee & St. Paul Railway.

Longmire Springs, distant $6\frac{1}{2}$ miles by automobile road from the main entrance, is the headquarters within the park of the park supervisor, the Rainier National Park Co., and other concessioners. Longmire Springs is connected by telephone to Seattle, Tacoma, and the principal camps and ranger stations within the park.

Mount Rainier National Park is in charge of a supervisor, who is assisted throughout the year by a clerk-stenographer and three permanent park rangers.

During the summer season the local force was increased by 6 temporary park rangers, a construction foreman, a locating engineer, and from 50 to 150 men.

The local post-office address is Ashford, Wash.

TOPOGRAPHY.

The northwest corner of the park, by road and trail travel, is about 45 miles southeast from the tidewaters of Puget Sound, an arm of the Pacific Ocean, from which waters and the country surrounding the main object of interest in the park, Mount Rainier, appears during the prevalence of ordinary clear weather as a most imposing spectacle—an ice and snow clad dome 14,408 feet high.

The park reserve is a nearly perfect square, the sides of which are 18 miles in length, and contains, therefore, 324 square miles, or sections of 640 acres each (207,360 acres), and is completely surrounded by lands embraced within the Rainier National Forest.

Near the center of the park is the summit of Mount Rainier, from which radiates a system of glaciers, ranking in importance with any similar system or group of glaciers in the world. There are more than a score of these glaciers, from which originate four important rivers—the Nisqually, the Puyallup, the White, and the Cowlitz—the three first named having large electric-power generating plants located on them at points outside the park, but all dependent upon this glacial system and the waters originating therein. The Cowlitz is as important as the others in this respect, but as yet completed development of power-generating plants has not been accomplished.

The general elevation at the boundary lines of the park of the glacial valleys is 2,000 feet above sea level. From the boundary lines these valleys afford a comparatively easy grade to the lower ends or "snouts" of the various glaciers, approximately an average additional elevation of 2,000 feet. At these glacial snouts the real Alpine nature of Mount Rainier National Park territory is thrust upon the traveler, and from, over, around, and alongside the glaciers trails have been constructed with a view to making the wonders of nature within the park easily accessible as well as to provide patrol routes for the protection of the forests and game. These trails lead to the camps or park known as Paradise Valley (Camp of the Clouds), Indian Henrys Hunting Ground (Wigwam Hotel), Van Trump Park, Cowlitz Park, Ohanapecosh Valley, and Silver Spray Falls, Moraine Park, Grand Park, Elysian Fields, Spray Park, Natural Bridge, Cataract Basin, St. Andrews Park, Glacier Basin, etc.

The main wagon road to this vast wonderland leads out from Tacoma and Seattle and is a highly improved thoroughfare for a greater part of the distance from these cities to the park entrance, near the southwest corner of the park, a distance of 56 miles from Tacoma and 93 miles from Seattle. At the park gate this road is met by the road built and maintained by the Government within the park. The Government end of this road is 20.4 miles in length, leading from the entrance gate (elevation, 2,003 feet) to Longmire Springs (6.6 miles; elevation 2,750 feet); thence to foot of Nisqually Glacier (5.3 miles; elevation 3,909 feet); thence to Narada Falls (4.1 miles; elevation 4,572 feet); thence to the Camp of the Clouds, in Paradise Valley (4.4 miles; elevation 5,557 feet). To this point the road is open to automobiles during the summer months. The road above Nisqually Glacier was opened to automobiles for the first time on June 20, 1915.

FOREST CONDITIONS.

More than 200 square miles of the park lands are densely timbered. Douglas fir, white cedar, Alaska cedar, and hemlock are the predominating varieties. In addition to those named, the following varieties are found at various points within the park: Lovely fir, Noble fir, Alpine fir, silver fir, Alpine hemlock, spruce, white pine, black (or lodge pole) pine, alder, cottonwood, quaking aspen, broad-leaf maple, vine maple, and smooth-leaf maple.

At an approximate general elevation of 4,500 feet the density of timber growth gradually diminishes until the extreme timber line is reached. The intervening areas, which are usually benches or plateaus on the long, sloping ridges separating the various glacial basins, form beautiful natural parks, in some of which tent camps or hotels are established and to which tourists resort in large numbers for rest and recreation. These natural parks and tent camps serve as bases for the arduous task of ascending to the summit of Mount Rainier, and for exploring the lesser mountain peaks, the glaciers, snow fields, and canyons so numerous within the park areas and in the areas surrounding.

These upland meadows, benches, plateaus, or natural parks are beautifully adorned by nature with flowers and shrubs of infinite variety and color and furnish to the most skilled botanist, not to speak of the amateur and the mere lover of the beautiful, problems in nature study never ending. Nearly 400 varieties of plant life are known to grow within the park.

ROADS.

South Side Road.—The Government road from the southwest corner of the park to Paradise Valley, 20.4 miles long, was constructed under direction of the War Department at an original cost of \$240,000, and was opened for travel in 1910.

The section of road above Nisqually Glacier was opened to automobiles on June 20, 1915. It is operated on a one-way schedule, by which automobiles leave Nisqually Glacier and Paradise on each hour, passing at Narada Falls on the half hour. This traffic is controlled by three park rangers in telephone communication. The system has proved very satisfactory, and seems to have met with the approval of the public.

During the past two seasons about 9,000 automobiles and 50,000 people have passed over this section of road without an accident.

White River Road.—During the seasons of 1914, 1915, and 1916 the Mount Rainier Mining Co., under a permit from the department, has constructed a wagon road up the north bank of White River from the ranger station at boundary post No. 62 to Glacier Basin, a distance of about 12 miles.

The road was built for use by the company in connection with its mining operations in Glacier Basin. It follows practically the water grade of White River, which runs from 2½ per cent in the lower sections to 13½ per cent at the extreme upper end. Only one or two short sections are over 11 per cent. It is a single track wagon road, graded to a uniform grade, 12 feet wide inside of ditches. The bridges and culverts are 16 feet wide and are well constructed. A considerable portion of the road has been surfaced and the company is now operating an auto truck over it.

After the completion next year of the McClellan Pass Highway to the ranger station, there will be a strong demand from tourists and park visitors to the north side to use the road.

ROAD IMPROVEMENT.

During the past three seasons the following amounts have been expended on maintenance and improvement of the South Side Road:

July 1, 1914, to June 30, 1915	\$32,364.19
July 1, 1915, to June 30, 1916	17,865.94
Since July 1, 1916 (approximately)	11,000.00
Total	61,230.13

The work has included general repair and maintenance, consisting of widening, construction of wood and concrete culverts, reshaping and ditching, constructing rock and timber crib retaining walls, guard rails, construction and repair of concrete and wooden bridges, clearing of dead and dangerous timber from the roadside, and surfacing with 6 inches of cement gravel.

During the season just ending the old horseshoe bridge above Narada Falls, which was partially destroyed during the winter by a snow slide, was replaced by a high rock fill constructed on a sharp curve. This work cost about \$1,000, which included grading and surfacing the approaches for a distance of about 500 feet.

The timberwork in the old truss bridge over Van Trump Creek at Christine Falls is badly decayed and the bridge has been condemned for the 1917 season. A new 60-foot span bridge is now being constructed across the box canyon close in to the falls, which involves some heavy excavation in solid rock on the approaches.

ROAD SURVEYS.

Carbon River Road.—During the months of October and November, 1915, location surveys by a party in charge of Engineer J. G. Morgan were made for an automobile road up the Carbon River Valley, in the northeast corner of the park.

The line follows practically a water grade up the south bank of the Carbon River to Cataract Creek near the snout of Carbon Glacier. The grade varies from 2½ per cent at the lower end to 6 per cent at the upper end.

This road when constructed and connected with the State and county highway system will shorten the distance to the national park boundary from Tacoma 21 miles and from Seattle 41 miles under the present traveled route through Ashford, and will open up and make accessible to tourist travel the most rugged side of the mountain.

East Side Road.—Location surveys by Engineer Morgan are now under way for an automobile road, starting from the south side road at Inspiration Point (elevation 4,850) above Narada Falls and following via Reflection Lakes, Stevens Canyon, south end of Cowlitz Divide, Ohanapecosh and Chinook Rivers, to connect with the McClellan Pass State Highway in Cayuse Pass (elevation 4,600). The survey is being made on a maximum grade of 6 per cent and the total length is about 26 miles.

When completed it will open up the park to the Yakima Valley and the entire eastern part of the State and make it possible for automobilists west of the Cascades to completely encircle the mountain, entering the park via the south-west gate and leaving by the White River entrance, or vice versa.

The park trail system, which now entirely encircles the mountain, has a total length of about 150 miles.

The trip around the mountain can be made in about seven days, and with proper advertising should become a very popular feature. By making camp each night at certain points in the natural parks and upland meadows the tourist can travel on foot by the shortest route between camps, crossing the glaciers, well above timber line, and obtain a magnificent view of the mountain and surrounding country from all angles, affording one of the most interesting scenic trips in the world.

FIRES.

No fires occurred within the park during the season of 1916, but there were numerous fires outside the park, and the smoke drifted into the park at times to such an extent that sight-seeing was impossible except in the early morning hours.

GAME.

Hunting is absolutely prohibited in park territory, and every precaution is taken by park officers to prevent poaching, but the densely wooded nature of the territory adjacent to the park boundary makes it impossible to entirely stop the practice. A great many deer are driven down into the lower elevations by the fall and winter snows. They find their way across the boundary into the favorite hunting grounds, where they are killed in large numbers.

It is recommended that steps be taken to create a game preserve surrounding the park.

A great many deer and bears have been observed in the park during this season. Bears have broken into the meat houses in the construction camps on several occasions and carried away considerable quantities of fresh and cured meats.

MINING CLAIMS.

Mining operations are confined to claims located prior to the act of Congress of May 27, 1908, prohibiting the location of mineral claims within the national parks.

The Mount Rainier Mining Co. have been operating for several years, under permit from the department, on the development of its claims in Glacier Basin. During the past three seasons it has constructed a wagon road up the valley of White River to Glacier Basin and has installed a sawmill, a power and light plant, an aerial tramway, and have driven several hundred feet of tunnels in addition to the construction of several permanent buildings. Its working force has consisted of from 40 to 50 men working the year round.

In the vicinity of Longmire Springs the Eagle Peak Copper Mining Co. is working toward the development of two claims, and Sherman Evans and Ike Evans two claims. The Eagle Peak Copper Mining Co. has driven a tunnel 410 feet long and installed a power plant, consisting of a 14-inch turbine wheel, operating under a head of 55 feet and generating about 20 horsepower.

Water is conveyed from Paradise River through a flume to the wheel. The power is used to operate an 8 by 8 inch Ingersoll Rand compressor with a capacity of 90 cubic feet per minute. Fifty feet of tunnel was driven this year and about 100 feet last year.

The Mount Rainier Mining Co. has made several shipments of ore, which assays about \$60 per ton. No shipments except for test purposes have been made by the Eagle Peak Co.

MINERAL SPRINGS.

The principal mineral springs, and the only ones of easy access to the tourist, are those located on the patented land at Longmire Springs. Several kinds of mineralized water spring from the ground on this tract. Some of this water has a temperature of 70° F. on reaching the surface. It is heavily charged with sulphur, and a swimming tank is provided in order that visitors may take a "sulphur plunge." Other waters are charged with iron, and still others are sweet, cool, and sparkling.

But little care has been exercised in the past to prevent pollution of these springs. During the past season the property was leased to a company known as the Longmire Springs Hotel Co. This company has constructed 16 new cottages and has done considerable work toward cleaning up the springs and grounds. A new two-story hotel building 50 by 100 feet is now under construction, and they plan to construct a new garage for use next season.

The Ohanapecosh hot springs, near the southeast corner of the park, are very hot and are noted for their curative qualities. Very little development work has been done on them, and they are accessible by trail only, 13 miles from Lewis, Wash., or 15 miles from Narada Falls. They are located just south of the park boundary in the national forest. The small amount of land involved should be added to the park, so that it may be properly developed by the park service and made available for use of visitors.

Fine mineralized water has been discovered along the recently constructed West Side Trail on the South Fork of the Puyallup River, near boundary post No. 16.

TRAVEL.

The tourist season began at a very late date owing to the heavy snowfall during the past winter, which prevented opening the road to automobiles until the following dates:

To Longmire Springs, May 18; to Nisqually Glacier, June 15; to Narada Falls, July 14; to Paradise Valley, August 24.

Up to July 31 only 5,597 visitors registered at the park gate, as compared with a total of 16,057 for the season of 1915.

During the period August 1 to September 15, 14,572 people entered, against 16,031 for the corresponding period last year. The total registration for the season, up to September 30, was as follows:

At the main entrance	22, 189
At the Ohanapecosh	100
At the Carbon River and the White River	1, 700

Total 23, 989

Distribution of visitors registering at the main entrance:

From Tacoma	6, 968
From Seattle	6, 718
From other points in the State of Washington	4, 762
From points outside the State of Washington	5, 541

Total 23, 989

Number entering in private automobile	17, 795
Number entering by Ashford stage	2, 274
Number entering by Seattle and Tacoma stage	1, 586
Number entering by motorcycle	150
Number entering by horse-drawn vehicle	1, 600
Number entering on foot	584

Total 23, 989

It is estimated that 3,000 people came into the park for camping purposes.

Legend



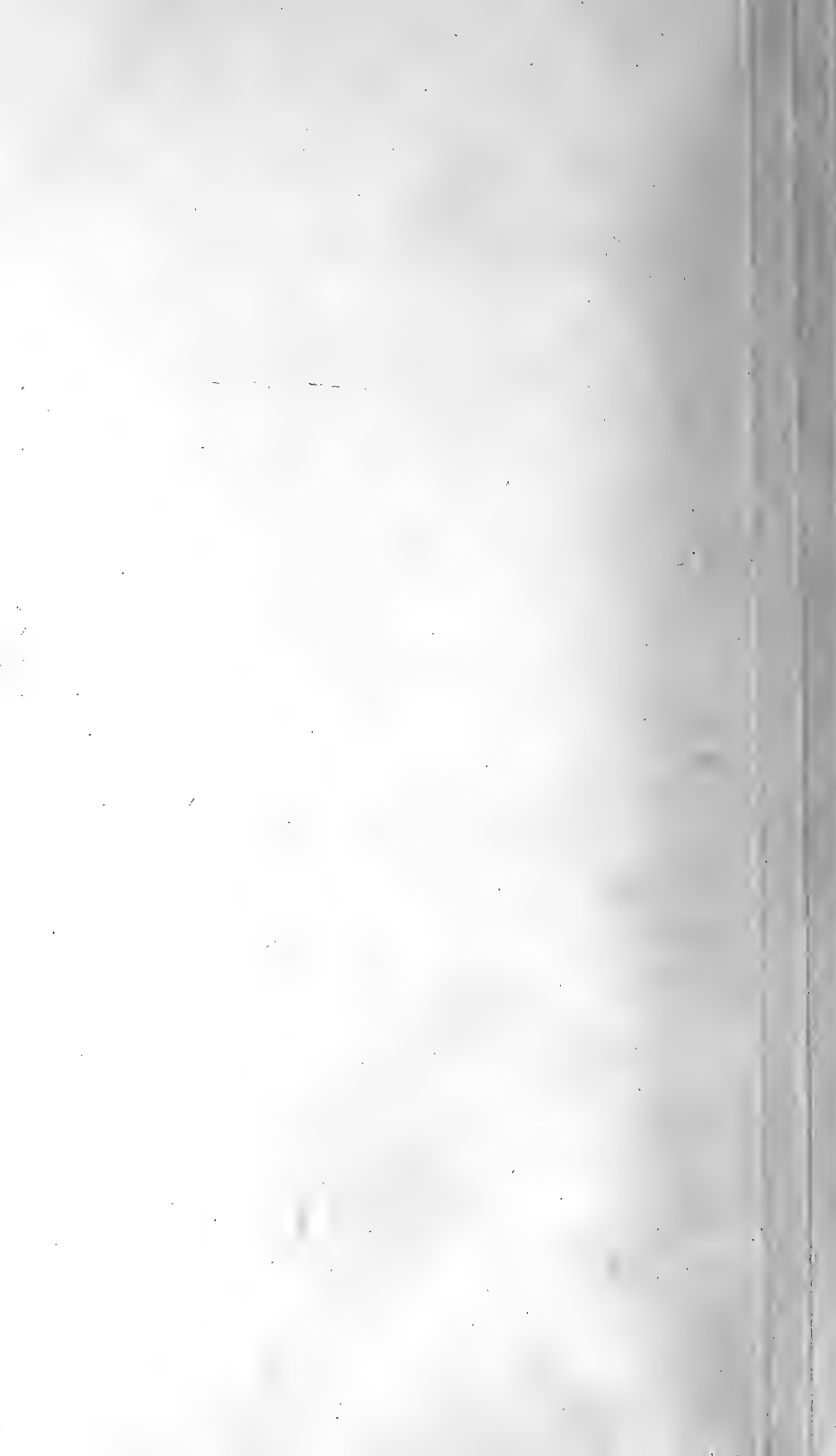
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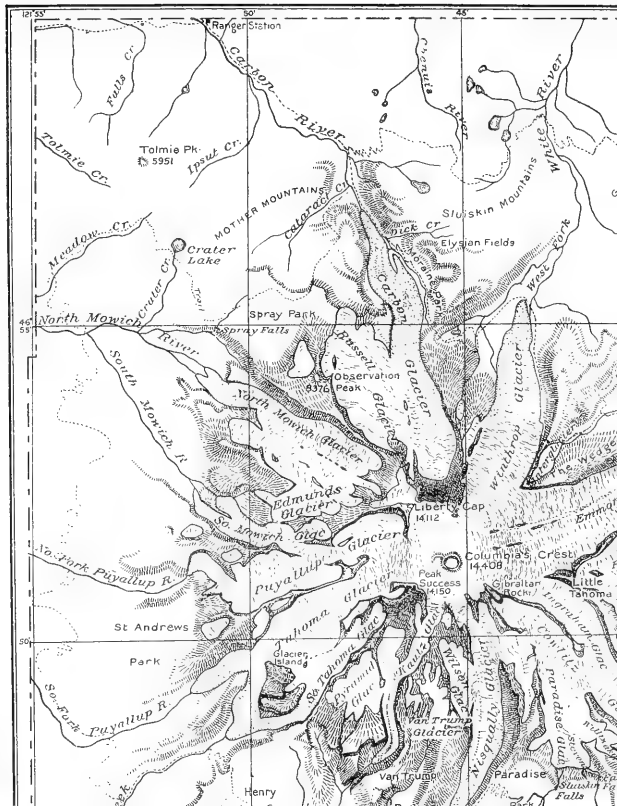
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AUTOMOBILES AND MOTORCYCLES.

During the year ended September 30, 1916, 2,926 automobile entrance permits and 97 motorcycle permits were issued.

HOTELS AND CAMP ACCOMMODATIONS.

Rainier National Park Co.—This has been the first season of operation for the Rainier National Park Co. This organization was formed in March, 1916, accepting a 20-year concession from the Government for hotel, camp, and transportation privileges in Mount Rainier National Park. The company is capitalized at \$200,000.

Operations of the company for 1916 season have been camps at Paradise Valley, Nisqually Glacier, and park entrance; automobile and auto-stage transportation from point to point within the park; also from Tacoma and Ashford to points within the park, and a garage in Paradise Valley. The company is constructing a hotel at Paradise Valley, to be known as Paradise Inn.

The extreme lateness of the season, on account of heavy snowfall in the park, has seriously interrupted all operations undertaken by the company. This has been especially true in regard to the construction of Paradise Inn. Some of the heavy material for this structure was placed on the ground last fall, hence it was possible to begin operations on the building before the roads were opened for travel. Foundation work was begun about July 20. Timber work was begun on August 23. Notwithstanding these serious delays, the officials of the company feel confident that the new hotel will be completed this fall and opened to the public on July 1, 1917.

Paradise Inn is of unusual construction. The frame is made entirely of weathered logs from the silver forest near by. These logs show entirely to the ridgepole in the big lounging room, which is 50 by 112 feet. The dining room is practically the same size. The hotel will accommodate about 400 guests. Cost will be very nearly \$100,000.

The camp at Paradise Valley has been operated by the company under great disadvantages; snow conditions prevented automobile travel to the valley until August 25. Prior to that date passengers were transported over the pony trail from Narada Falls to Paradise Valley. All supplies had to be transported in the same manner. Notwithstanding these difficulties, some 4,000 guests have been accommodated at Paradise Camp during the past season.

The company's camp at Nisqually Glacier was completed and opened to the public July 7, fully 30 days later than contemplated. Snow conditions made earlier opening impossible. This camp consisted of a lunch pavilion, where meals were served à la carte. Sleeping accommodations were provided by a group of 10 bungalow tents. These were heated and lighted by electricity furnished by the company's new hydroelectric plant. Glacier Camp was favorably considered by the public, and the company now plans increasing the bungalow tent equipment so that there will be 20 double bungalow tents at this location next year. The tent lunch pavilion, in use during the past season, is now being replaced by a neat structure, using weathered logs from the Silver Forest.

The camp installed and operated by the company at Park Entrance consisted of a waiting room and lunch pavilion, also three double bungalow tents for use as sleeping quarters. This camp was installed to serve those who might be delayed at this point on account of independent automobile service operating to Park Entrance only. Changes in the plan of admitting independently operated automobiles to the park made the camp at Park Entrance unnecessary, and it was closed on August 7.

The company's transportation service from Ashford and from point to point within the park employed six 12-passenger automobile stages and three 7-passenger touring cars. The service from Tacoma to points within the national park employed from four to six 7-passenger touring cars.

To serve Paradise Inn, Glacier Camp, and its other developments later on the company has installed a 250-horsepower hydroelectric plant on Van Trump Creek at Christine Falls. This location is approximately 1 mile from Glacier Camp and 2½ miles from Paradise Camp. The plant has been in operation since July 15 and has been giving satisfactory service.

National Park Inn.—The franchise to operate this hotel, located at Longmire Springs, is held in the name of the Tacoma Eastern Railroad and expires May 1, 1921.

The building is a 2½-story frame structure 125 feet long and 32 feet wide. There are 36 guest rooms in the main building, and through the use of tents 250 guests may be accommodated. There is in addition a very attractive clubhouse or assembly room built of pine logs. Water is taken from the Nisqually River for the operation of an electric light and refrigerating plant, which also supplies electric light to all Government buildings at Longmire Springs.

INFORMATION BUREAU.

A bureau of information in charge of Prof. J. B. Flett, park ranger, was maintained at Longmire Springs for the purpose of keeping visitors informed in regard to points of interest in the park, assigning parties to the public camp grounds, etc.

Prof. Flett's intimate knowledge of the flora, trees, and points of scenic interest in the park was a source of much interest. This information was sought by large numbers of visitors.

CRATER LAKE NATIONAL PARK.

WILL G. STEEL, Supervisor, Medford, Oreg.

GENERAL STATEMENT.

Crater Lake National Park was created by act of Congress, approved May 22, 1902, and is located on the crest of the Cascade Mountains, in southern Oregon, about 60 miles from the California line. It is approximately 13½ miles east and west and 18 miles north and south, and contains 249 square miles, including the wreck of Mount Mazama, at one time a giant among the mountains of the earth. Subsequently all that portion above 8,000 feet elevation disappeared—sank into the bowels of the earth, leaving a vast crater 5½ miles in diameter, which gradually filled with pure, crystal water to a depth of 2,000 feet, on all sides of which the walls of the caldron still tower to a height of from over 500 to nearly 2,000 feet.

It was first discovered by white men on June 12, 1853. There were 22 prospectors in the party, of whom the leader, Mr. John W. Hillman, then of Jacksonville, Oreg., was the last survivor. Mr. Hillman died in Hope Villa, La., February 19, 1915, at the advanced age of 83 years.

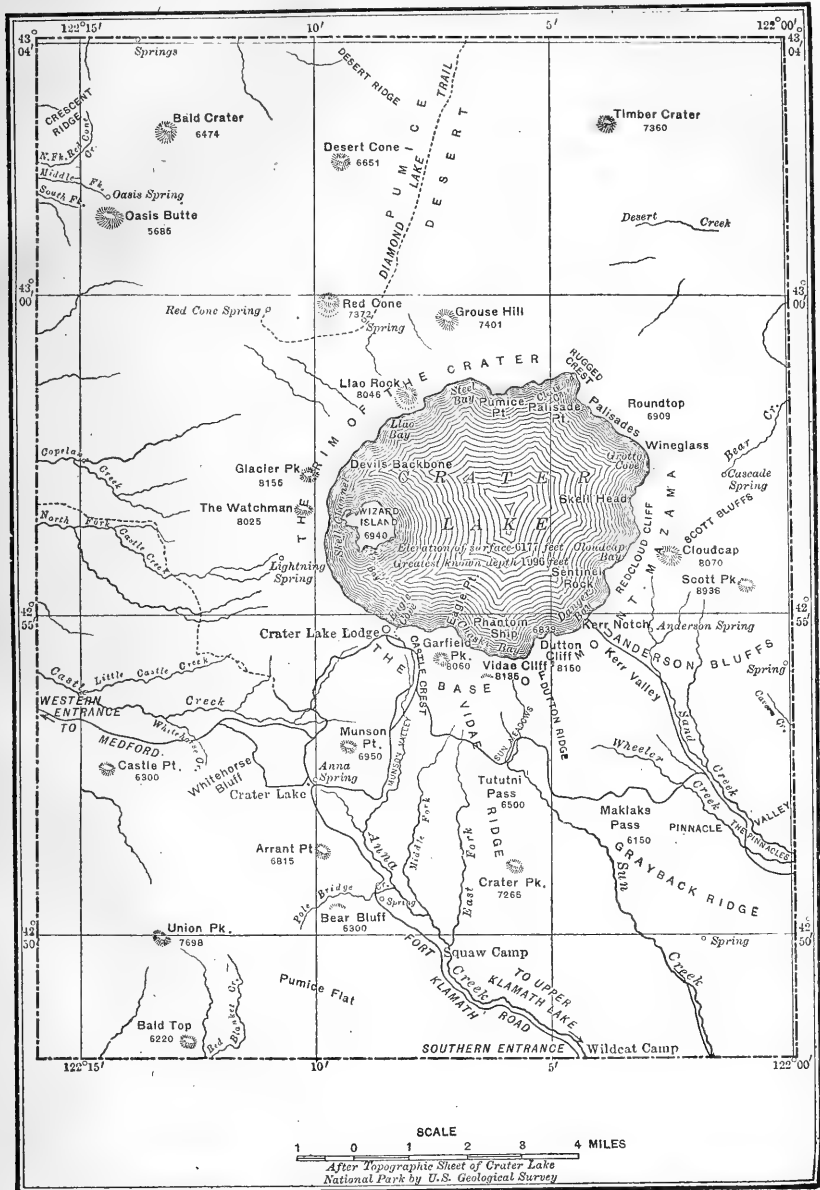
It was but little known, even among residents of southern Oregon, when the present supervisor, Will G. Steel, on August 16, 1885, started a movement for the creation of a national park, which was successful only after 17 years of strenuous labor. Then came a long struggle for development, which is just now beginning to bear fruit. Probably the first step in that direction consisted in stocking the lake with rainbow trout in 1888, when the supervisor carried a few minnows nearly 50 miles and got them into the waters of the lake in good shape. The fishing now is unsurpassed and the fish are of excellent quality.

ROADS AND TRAILS.

About 47 miles of excellent dirt roads have been constructed in the park under the direction of the Secretary of War, which consist of 8 miles from the Klamath, or southern entrance, to park headquarters; 7 miles from the Medford, or western entrance, to the same point; 5 miles from park headquarters to the rim of the lake at Crater Lake Lodge; 6 miles from the Pinnacles, or eastern entrance, to the rim of the lake at Kerr Notch; and 22 miles from Cloud Cap, on the eastern side, to a point about 1½ miles south of Llao Rock, to the west of the lake, thus leaving 12 miles to complete the circle of the lake, which latter it is hoped will be finished during the season of 1917, thus affording one of the most wildly beautiful automobile drives in the world. These roads have had ample time to settle and it is now proposed to pave them, which work should be completed in about three years.

In addition to the foregoing a system of trails has been outlined that will appeal irresistibly to visitors who delight in wandering over the bluffs, through the forests, and into uncanny spots where goblins dance by night and shadows linger by day. Chief among these is one to be constructed to the summit of Mount Scott, on a grade that can subsequently be widened for automobile use. When this is done one can ride in comfort to a point nearly 3,000

feet above the waters of the lake and nearly 5,000 above the plains of eastern Oregon, over which the eye can wander, intoxicated with the glory of a view from the Columbia River region to the mountains of California.



Map of Crater Lake National Park.

In addition to the roads and trails of the park a road has been recently surveyed from Medford to the western entrance that will be constructed jointly by the General Government and the State of Oregon. The maximum grade of this road is 4 per cent, with 500-foot radius for curves. The cost is to be

\$1,500,000, \$700,000 of which is for grading and \$800,000 for paving. The work of construction will probably be completed in about five years.

An investigation has recently been completed by the State of Oregon as to the feasibility of constructing a road from a point on the northern boundary of the park to Lake Waldo, a distance of approximately 50 miles, along the crest of the Cascade Mountains, and no serious obstacles were encountered.

WATER SYSTEM.

No provision whatever has been made to supply the public with water on the rim of the lake. This is of the first necessity and should be done as soon as possible. The Crater Lake Co. has established a water system for its own use and is constantly importuned for water by camping visitors, who do not understand conditions and take it for granted that it is a public supply, so resent any limitation. At times the supply is barely sufficient for hotel purposes, and it is necessary to refuse these requests, in consequence of which friction occurs and the Crater Lake Co. is abused without cause. The management has been extremely obliging in the premises and has suffered many times because of its desire to serve the public in this matter.

TELEPHONE SYSTEM.

Telephone service within the park is good. Excellent service has been maintained to Prospect, 30 miles distant, but beyond that point the service is unsatisfactory. It is extremely difficult to communicate with Medford from Prospect, in consequence of which practically all the outside business has been sent by way of Fort Klamath and Klamath Falls, over which line we have had good service. For fire protection more lookout stations should be provided, for which purpose a few additional miles of line should be constructed.

TRANSPORTATION.

A line of automobile stages is maintained by the Crater Lake Co. from Medford, on the main line of the Southern Pacific Railway, and from Kirk, on the Crater Lake cut-off, 40 miles north of Klamath Falls, that has rendered eminently satisfactory service. Tickets between Portland and California points may be purchased at any Southern Pacific station and be made good via Crater Lake by a small additional payment. Private automobiles and vehicles will find good roads from eastern Oregon by way of the Pinnacles entrance, which was recently opened to the public.

FISH AND GAME.

There are no fish in any of the waters of the park except the lake itself and Annie Creek, below the falls. Crater Lake is abundantly supplied with a fine quality of rainbow trout, and one year ago 15,000 black spotted fry were placed in the lake that will soon be available. No fishing is permitted except with hook and line, and a limit of five in one day is maintained. The fish are large, and the flesh is firm. A few have been taken 28 inches long, weighing 6 or 7 pounds.

The park abounds in black and brown bear, black-tailed deer, cougar, lynx, timber wolves, coyotes, pine marten, fisher, and several varieties of squirrels. Ring-tail grouse, the common pheasant, Clark crow, and numerous varieties of birds are common to the country at large.

FOREST FIRES.

There were a few forest fires in the park during the season, but they were all controlled, so that the damage was merely nominal. On one occasion there was a severe thunderstorm, immediately following which 14 forest fires were reported, 4 of them in the park, all started by lightning.

DRIVING LOOSE STOCK THROUGH THE PARK.

Six permits were issued during the season for driving loose stock through the park.

VISITORS AND AUTOMOBILES.

The season of 1916 was remarkable for the fact that the opening was delayed more than a month by very heavy and late snows, and at the close of July the travel was only 50 per cent of the previous year. However, at the close of the season the record was broken, as shown by the following statement of the number of visitors and automobiles:

Visitors in 1916.....	12,265	Automobiles in 1916.....	2,649
Visitors in 1915.....	11,371	Automobiles in 1915.....	2,244
Gain in 1916.....	894	Gain in 1916.....	405

This is deserving of special mention for the reason that in 1915 there were two world's fairs on the Pacific coast that greatly stimulated travel, causing the number of visitors that year to jump from 7,096 in 1914 to 11,371 in 1915, and automobiles from 1,062 in 1914 to 2,244 in 1915, a gain in one year of 4,275 visitors and 1,182 automobiles. Under ordinary conditions it was not supposed that 1916 would equal 1915, but, under the most adverse conditions, it has been surpassed. The number of automobiles includes, in addition to those entering on regularly purchased tickets, those entering on complimentary tickets furnished to county, State, and Federal officials in the park on official business.

WIND CAVE NATIONAL PARK.

T. W. BRAZELL, Supervisor, Wind Cave, via Hot Springs, S. Dak.

GENERAL STATEMENT.

The act of Congress approved January 9, 1903 (32 Stat., 765), made reservation of a tract of land in South Dakota, comprising 10,522 acres, to be known as the Wind Cave National Park. When this act was passed there were several tracts of patented lands within the boundary, all of which have since been acquired by the Government.

The park is almost square and is situated in a semimountainous region on the southern slope of the Black Hills, in the southwestern corner of South Dakota, about 36 miles from the southern boundary and 24 miles from the Wyoming line.

The altitude at headquarters is 4,030 feet and portions of the mountains west of the cave 4,700 feet.

The park is in charge of a supervisor, the only employee on regular salary. During the summer months one or two park rangers are employed for guide and general service.

THE CAVE.

The chief attraction is the cave, entrance to which is somewhat north of the center of the park and about 11 miles north of Hot Springs, the most accessible town of any importance.

The main road through the park, comprising 6 miles, constitutes a portion of the Denver-Deadwood Highway, the Black Hills part of which is famed for its beautiful and varied scenery. This road is rapidly gaining the favor of the automobile traveling public, and a substantial increase of this class of traffic is quite noticeable this season.

The Burlington and Chicago & Northwestern have regular service, with east and west connections, to Hot Springs, and a majority of the visitors to the park come from this town.

Hot Springs is the post office and shipping point.

The cave has been made accessible to the public by the working out of passageways to admit of easy travel; it has also been necessary to build several stairways, landings, railings, and bridges within the cave. The lower levels to which visitors are conducted are possibly 480 feet below the entrance, and the aggregate length of all routes now open to the public is approximately 3 miles.

There is a spring and miniature lake in one place, and aside from this the cave is without moisture, except from condensation of a heavily laden air and seepage from surface here and there. In this way moisture gathers on the ceilings of some caverns and drops to the floors, causing wet spots, though in very few places.

The various formations within the cave are most wonderful exhibitions of diversified beauty and the inimitable work of nature.

The extent and number of the various crevices, cross passages, and chambers which make up the cave no one knows and no one can intelligently guess,

though we do know that the part open to the public is a very small fraction in extent to that part which has been explored and not surveyed; beyond this the wildest guess is admissible.

VISITORS.

For the year ended June 30, 1916, the total number of registered visitors to the cave was 2,815. Of these, 1,701 came during the three summer months—July and August, 1915, and June, 1916. During four weeks in July and August, 1915, it was impossible to travel by automobile on a few miles of the road to the north of the park, and the effect on the number of visitors to the park is quite apparent.

Only those who go in the cave register, and it is estimated that approximately three people visit or go through the park for each one making the cave trip. For instance, 805 automobiles came to or through the park in July, 1916, and the number of visitors going through the cave was 987. Nearly all cars passing through the park stop for a little time, at least. From the above comparison or apportionment, it is estimated that the total number of visitors to the park for the fiscal year 1916 is approximately 9,000.

It is the custom for authorized guide (or guides) to conduct visitors through the cave, and as a trip requires about three hours, but two trips each day are made. The established time of entrance is at 9 a. m. and 2 p. m. As a great many auto tourists do not know of the established time for cave trips, they can not manage to get here in the right time, and often do not wait for the trip, and can not be accommodated unless extra guides are available. The widest publicity should be given as to time of entrance to the cave, which would result in eliminating a great deal of disappointment, and a very substantial increase in the number of visitors to the interior of the cave.

Beginning June 1, 1916, the fee for entrance to the cave was reduced to 25 cents per capita. All entrance fees are remitted to the department, the guides being on a salary basis.

Many camping parties pass through the park, some with team and wagon, but vastly more by automobile; no camping parties have stopped longer than one day in the park.

Of the 1,974 visitors to the cave for the months of June, July, and the first 15 days in August, this season, 52 per cent were from South Dakota; Nebraska, 26 per cent; Iowa, 6 per cent; Minnesota, 4 per cent; Illinois, 3 per cent; Wyoming, 2½ per cent; North Dakota, 2½ per cent; and most of the other States were represented by from 1 to 15 visitors.

ROADS.

The main park road, about 6 miles in extent, is in very fair condition for automobile travel, but calls for continuous attention to keep it so. The general direction of the road is north and south, though it deviates therefrom on account of buffalo fence and lay of land.

The road is of soil interspersed with gravel and rock, and requires considerable work to maintain in good condition. Much work was done during the past year on the park road. The entire way was shaped, smoothed, and cleared of loose rock, grades reduced in many places, curves reduced or eliminated where practicable and repeatedly dragged.

It is planned to some time have a permanent good road through the park, and with that end in view, each parcel of road built or repaired is, as far as possible, a direct contribution thereto. Until recently no provision for drainage of road has been made, but the work of installing culverts where necessary, and otherwise caring for drainage, is well started and will be pushed to completion as funds are available.

Diverging from the main park road at a point one-half mile south of headquarters, there is what is called the Martin Valley and Buffalo Gap Road. This road is being used more now than heretofore, and promises to be quite extensively used in the future. The park part of this road is in fair condition, and with but little work by those interested a very good road from the park to Buffalo Gap would result.

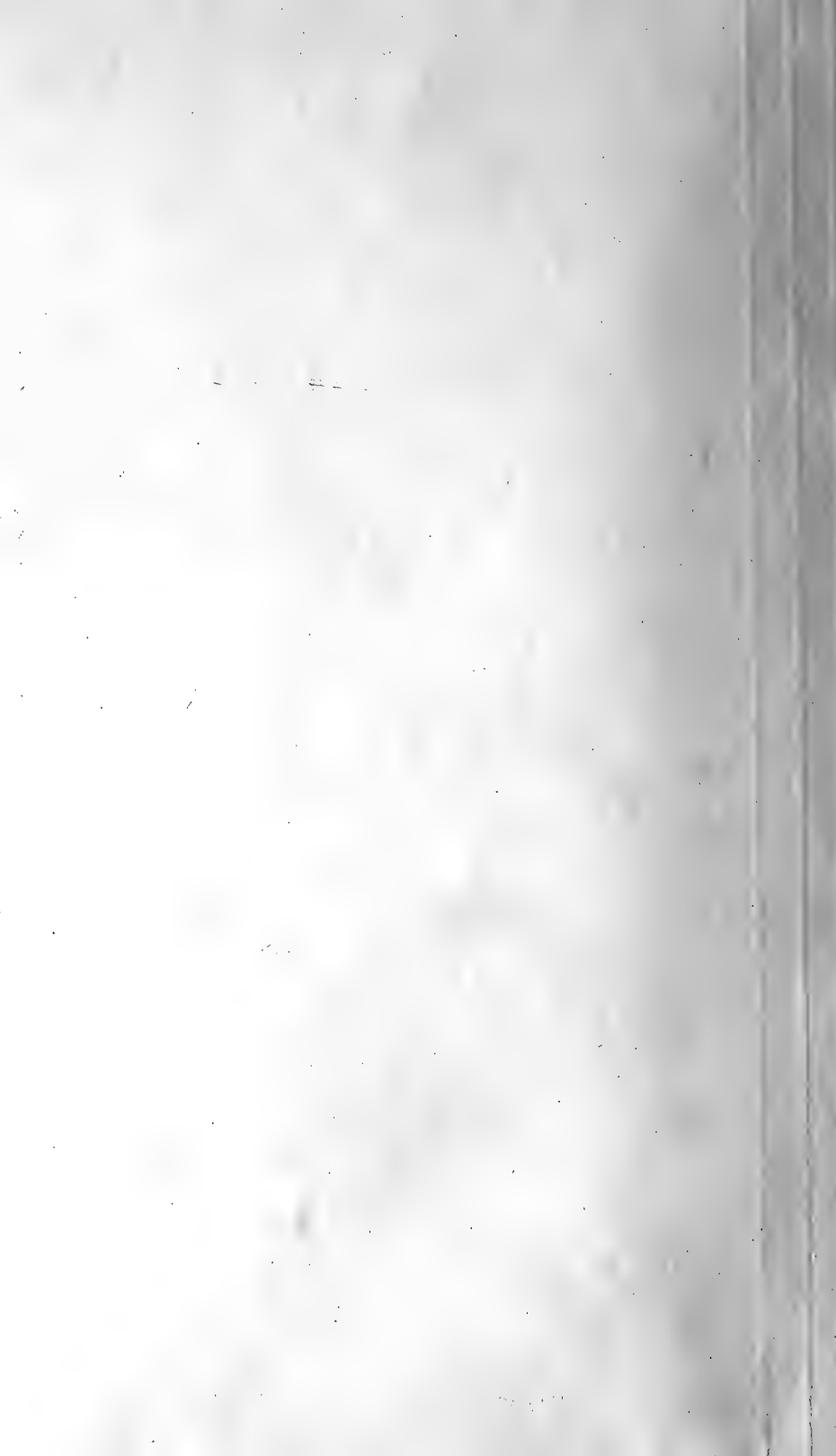
BRIDGES.

One log and plank bridge was installed near the north line of the park, crossing the Wind Cave Creek, and 3 culverts (of rock) have been built. Some rock has been hauled to sites for other culverts, 8 or 10 more of which should be built.

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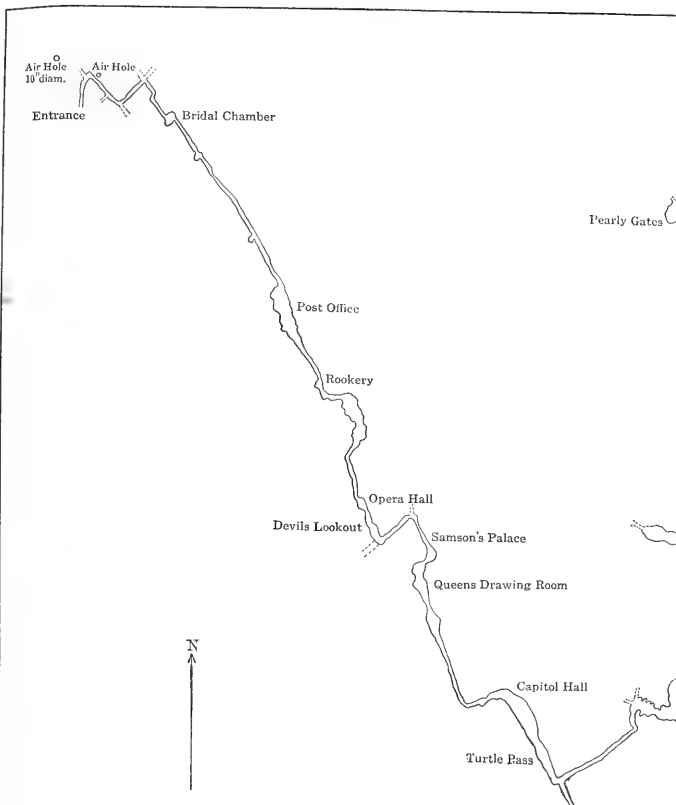
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WATER SUPPLY.

The source of water supply is a spring about a half mile west of and 150 feet higher than the park residence. An old pipe line serves to conduct the water from the spring to the recently installed supply or storage tank. This storage tank or reservoir has a capacity of 450 barrels, is built in the ground, of rock and cement, and is situated at an elevation of 70 feet above the park buildings.

The water is conducted from reservoir by gravity through galvanized pipe to the various outlets in the yard and street, and a sanitary drinking fountain at the public building. The water system is in good condition and has given no trouble since installing, except that in warm weather the temperature of the water at the fountain gets a little too warm to be in the highest class as drinking water. This is due to the conductor pipe from spring to reservoir being not sufficiently deep, the water passing through being affected by surface temperature. This should be remedied and the system extended to the barn.

The old wooden supply tank, now unused, should be repaired to afford additional storage capacity.

The capacity of the spring has remarkably increased since being allowed to run continuously, tests made at various times during the past 15 months indicating a minimum flow of 50 barrels in 24 hours and an average of 76 barrels a day. The water is excellently pure.

STREAMS.

There is a running stream which skirts the northern boundary, meandering on and off the park. This stream is suitable for trout propagation and steps have been taken to have it stocked.

BIRDS.

More than 60 varieties of birds are found here at some time of the year, and all, more particularly those classed as game birds, are noticeably tamer than they are outside of the park. Many kinds of birds stay the year round, but most of them are migratory.

The bobwhite, yellow-legged prairie chicken, and pin-tailed grouse are present within the park, and are increasing.

The prairie chicken and grouse are of a migratory trend, and at times leave the park; many of these do not return. Though it seems impossible to identify individual birds, it is thought that some prairie chickens stay here all the time.

There are not so many broods of grouse and prairie chickens this season as last, but the broods are larger. None have been observed with less than 12 birds.

PREDATORY ANIMALS.

Coyotes and bobcats (lynx) are common and an occasional gray wolf is seen. The combined efforts of forest service, game preserve, park management, and settlers have tended to materially reduce the number of predatory animals in this vicinity the past year.

SMALLER ANIMALS.

Weasel, mink, skunk, and porcupine are found here; the first two are rare, the latter numerous. The weasel, mink, and coyote are a menace to bird life, though the magpie, a most beautiful bird itself, is the most destructive of all to bird life and should be exterminated.

NATIONAL GAME PRESERVE.

A national game preserve has been established in the Wind Cave National Park under the provisions of "an act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1913," approved August 10, 1912 (37 Stat., 293), as follows:

"For the establishment of a national game preserve, to be known as the Wind Cave National Game Preserve, upon the land embraced within the boundaries of the Wind Cave National Park, in the State of South Dakota, for a permanent national range for a herd of buffalo to be presented to the United States by the

American Bison Society, and for such other native American game animals as may be placed therein, the Secretary of Agriculture is authorized to acquire, by purchase or condemnation, such adjacent lands as may be necessary for the purpose of assuring an adequate, permanent water supply, to inclose the game preserve with a good and substantial fence, and to erect thereon all necessary sheds and buildings for the proper care and maintenance of the said animals, \$26,000 to be available until expended."

The establishment on this preserve of herds of bison, elk, and antelope has resulted in an added interest, by the public in the park. It is particularly adapted to this purpose and the animals are doing well. The inclosure is about the western portion of the park and creates a pasture of nearly 4,000 acres.

WILD ANIMALS.

As a natural game preserve there is but one animal, the whitetail deer, that has come under the protection of the park. These are present in small numbers throughout the year, with more in the autumn season on account of the hunting to the northward, which drives them to the park for refuge.

PERMITS FOR TRANSPORTATION BY AUTOMOBILE.

For the year, January 1, 1916, to December 31, 1916, nine permits for transportation of passengers by automobile were issued.

RECOMMENDATIONS.

Finishing of supervisor's residence upstairs, and installing bath.
Cement crossing in street, and curb at public building.
Shed and yard built at barn, for convenience of visitors who come horseback or with team, and for use as catch pen when inspecting stock brands.
Building to easy grade and surfacing with gravel 1 mile of road.
New building over entrance to the cave, of rock, with cement floor.
The erection of a shelter for cars while parties are in the cave.

PLATT NATIONAL PARK.

R. A. SNEED, Supervisor, Sulphur, Okla.

GENERAL STATEMENT.

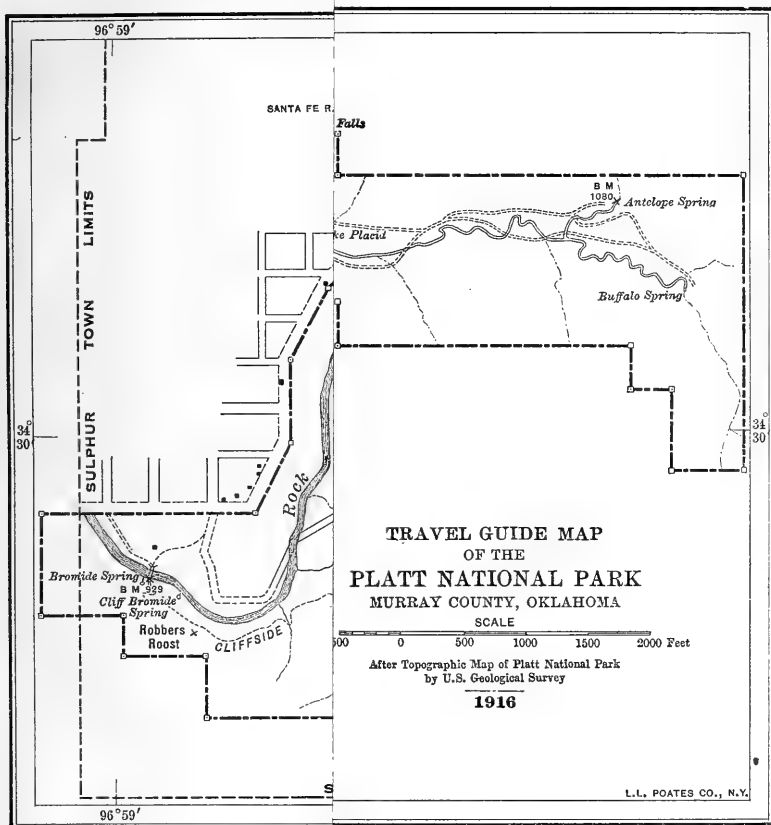
By the acts of Congress of July 1, 1902 (32 Stat., 641), and April 21, 1904 (33 Stat., 220), 629.33 and 218.98 acres, respectively, at the town of Sulphur, Okla. (then Indian Territory), were segregated as the Sulphur Springs Reservation, which designation, by joint resolution approved June 29, 1906, was changed to Platt National Park.

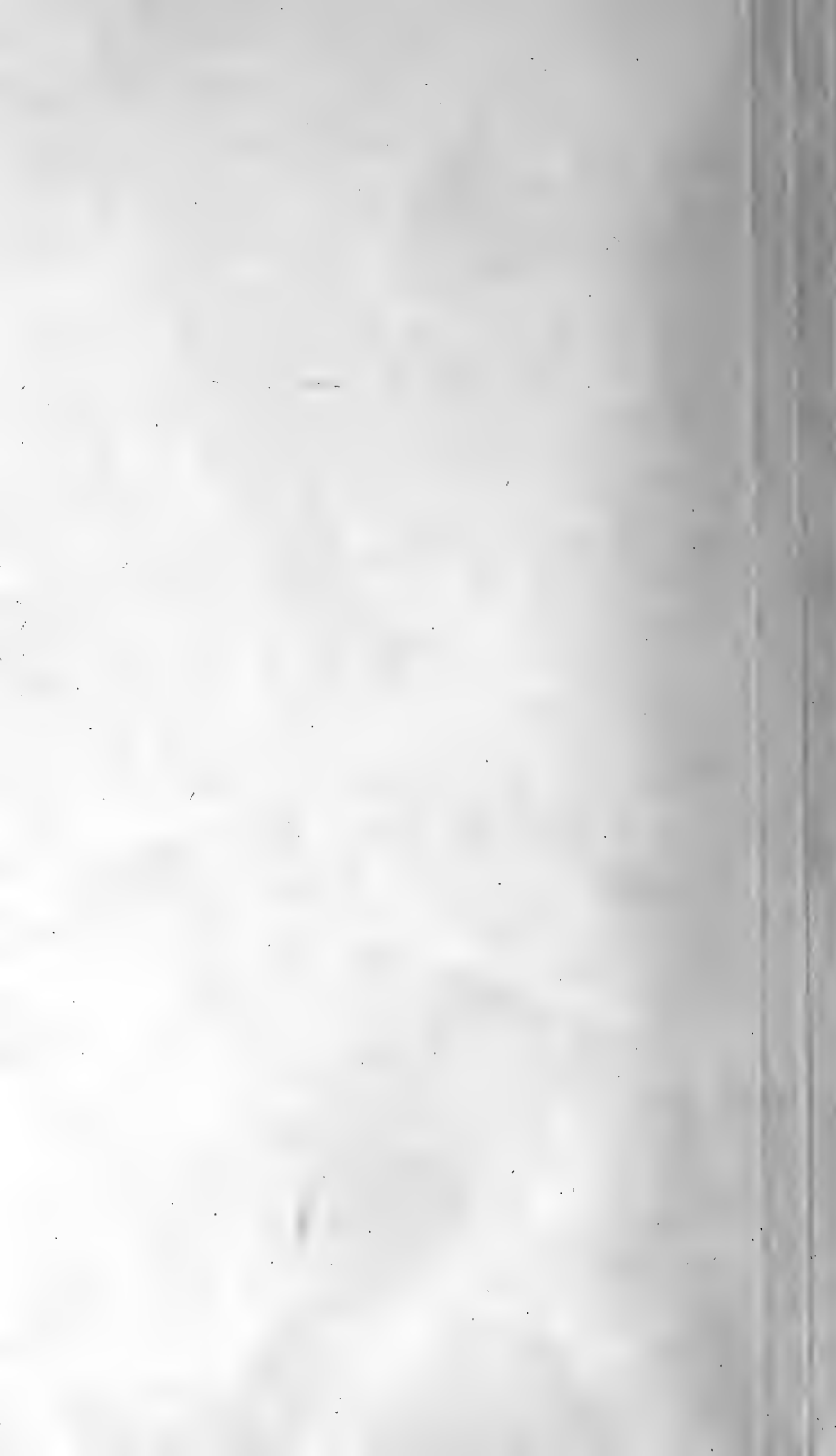
The park, with a total area of 848.22 acres, extends in irregular form a distance of approximately 3 miles from northeast to southwest along Travertine Creek, including a portion of Rock Creek, into which the Travertine empties, and it has a circuit of 9 miles.

There are within the part a number of known mineral and three nonmineral springs. The principal groups of these springs are the Bromide and Medicine Springs, in the extreme western portion of the park; the Beach, Pavilion, and Hillside Springs, in the north-central portion of the park; and the Bromide, Black-Sulphur, and Wilson Springs, in the south-central part of the park. Sulphur springs predominate.

The Antelope and Buffalo Springs, nonmineral in character, are situated at the extreme northeastern end of the park, with an elevation of 1,080 feet above sea level at the Antelope Spring and 1,078 feet at the Buffalo. They have an approximate discharge of 5,000,000 gallons daily into Travertine Creek, and are the source of this beautiful creek. A number of other springs in the bed of the creek add to the volume of water which glides down this stream and forms its pretty waterfalls.

The Medicine Spring was discovered within the last few years, and while it has been confined, it is still subject to overflows by Rock Creek, and the matter of its proper improvement will very likely be taken up during the present fiscal year.





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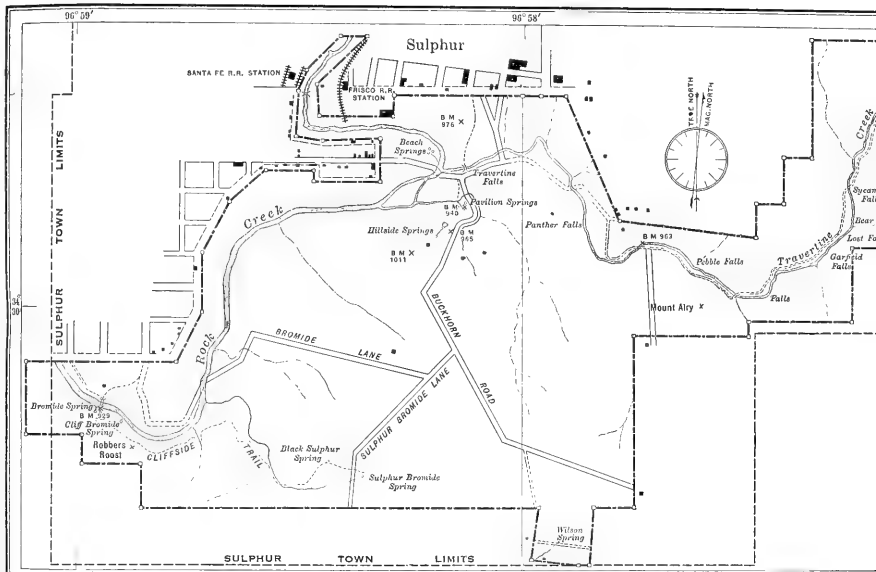
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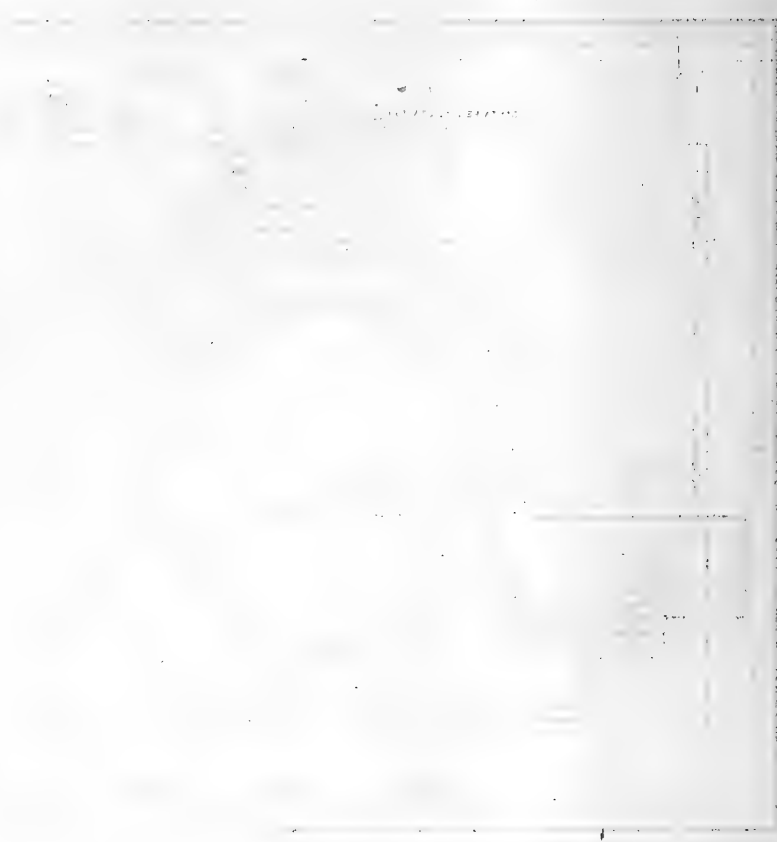
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VISITORS.

The summer months constitute the season for visitors to this park, although the climate is such as to make it an admirable resort the year around. There are very few days during the summer when a cool breeze is not stirring, and the winter months are as a rule very mild, while the spring and fall seasons are the most delightful and beautiful of the entire year. During the present summer of 1916 there have been more visitors here than for a number of years past, and I estimate that during the fiscal year ended June 30, 1916, there were at least 30,000 visitors to the park.

There were registered in the park office during the fiscal year 547 persons who came into the park and camped for three days or more.

As shown by the records of the watchman at the Bromide Spring, the visitors there during the year just ended numbered 100,337. This total is made up from day to day of visitors and resident citizens who make frequent trips to the springs, and does not represent as many individuals.

There were 154 orders issued during the year from this office, on physician's prescriptions, for the shipment of the Bromide Spring and Medicine Spring waters in 5-gallon quantities to persons outside of the city. These shipments were made to points in Kansas, Oklahoma, Texas, Illinois, Missouri, Minnesota, and Nebraska. A total of 7,829 gallons of Bromide Spring water was shipped and 2,205 gallons of Medicine Spring water. During the year a total of 58,090 gallons of these waters (including the water shipped) were taken from the springs. Out of this total 42,762 gallons were from Bromide Spring and 15,328 gallons from Medicine Spring. This record shows an increased demand for these waters over the records of last year, and only five days of the record for January, 1916, is included in these figures for the reason that the flood of January 21, 1916, washed the keeper's records down the stream, and both of these springs were out of commission from that date until the morning of January 26. During a part of the season for visitors no orders were issued for the shipment of these waters for the reason that the supply was not equal to the demand made upon it by visitors here.

FLOOD.

Between 12 o'clock (midnight) and 1 o'clock a. m. of January 21, 1916, the greatest overflow of Travertine and Rock Creeks ever known to the oldest citizen of this community completely devastated that part of the park which lies along the banks of these streams. This necessarily greatly damaged the Travertine Road, which follows the meanders of the Travertine Creek, and the new Bromide Road, which runs along the banks of Rock Creek. It also completely destroyed the Bromide Bridge and damaged the Washington and Lincoln Bridges. The high waters also destroyed 6,500 feet of fencing which had just been completed and damaged about 2,000 feet of other fencing. At the Bromide Spring, where the water rose about 9 feet higher than ever recorded, the Bromide pavilion was practically destroyed, and the residence of the keeper was torn from its foundation and washed down the stream, lodging between two large oaks, which wrenched and tore the house until it was utterly unfit to attempt further repairs.

Other minor damage occurred, and debris from the town was brought down the streams and lodged in the tree tops and along the creek banks in quantities. This consisted of old quilts, wearing apparel, broken trunks, matting, parts of houses, old trees; and tons of hay hung from the tree tops like moss.

The damages done by this flood have been the cause of a great deal of inconvenience in the administration of this park during the present season, especially because of the fact that there are a greater number of visitors here this year than at any previous season for the past eight years, and the absence of the Bromide Bridge and the lack of conveniences at the spring during the construction of the new pavilion have been great handicaps at this location.

Appropriation for repairs to storm damages.—The deficiency act of March 31, 1916, carried an appropriation of \$10,000 for repairs to bridges, roads, buildings, etc., in this park necessitated by damages resulting from storm of January 21, 1916.

ROADS.

Allotments were made from the regular annual appropriation of \$1,099.97 for repairs and maintenance of park roads, and with these allotments all the roads in the park were kept in good repair, and a new road leading south to Wilson

Spring from its intersection with Buckhorn Road was graded to a 5-inch crown and graveled with the park native gravel. This road is 1,750 feet in length and extends to the southwest boundary of the park. One large culvert near the Wilson Spring was constructed.

The Bromide Lane has been graded and constant attention given to the proper maintenance of the Buckhorn and Travertine Roads and to the new road leading to the Bromide along the bank of Rock Creek. Repairs were also made to the "Y" road which leads up from Travertine Creek into the town of Sulphur, and the Sulphur-Bromide Lane has been repaired and graveled and all of the creek fords repaired.

After the flood of January 21, 1916, it was necessary to completely rebuild a part of the new road to Bromide Spring along Rock Creek and to make extensive repairs to the remainder of this road. The same was true of the Travertine Road, although the damages to this road were not so great. In all, 1,400 linear feet of road were rebuilt in the park and 6,800 feet repaired. The road repaired consisted of parts of the new Bromide and the Travertine Roads, the Buckhorn and Wilson Roads, and the Bromide and Sulphur-Bromide Lanes.

TRAILS.

The flood completely washed out a short trail leading from Lincoln Bridge to the entrance to the park at the foot of Fourth Street west, and this trail was completely rebuilt and regraveled. It also washed out a great part of the Cliff-side Trail, which had to be regraveled for a distance of 900 feet and new bridges put in across ravines. These small footbridges were made of lumber.

BRIDGES.

The northeast wing wall of the Washington Bridge was replaced. It was built of rock and cement, 32 feet long by 8 feet high and 30 inches thick. The northeast and northwest wings of the Lincoln Bridge were replaced and ripped, and the graveled floor to the bridge, which had been washed out at the north end, was filled in with new gravel. These damages were the result of the flood, and repairs were made from the deficiency appropriation.

Under date of June 26, 1916, formal contract was entered into between the department and the Illinois Steel Bridge Co., of Jacksonville, Ill., for the construction of a steel-truss bridge, including concrete piers and abutments, superstructure, flooring, electric-lighting fixtures, and all appurtenances, for the total sum of \$4,353. This bridge is to replace the wire suspension bridge at the Bromide Springs, which was destroyed by the flood, and its dimensions, as indicated by the plans, are to be 120 feet in length by 10 feet in width, outside measurements.

Thirty-six new benches were built to replace benches which had been washed down the stream in the flood of January 21, 1916, and these were placed at various points. A few of the benches which were washed away were returned to the park by farmers who reside down the stream below the park.

During the present summer one of the most popular amusements which the visitors have indulged in has been swimming in Travertine Creek in several deep pools below various falls.

RECOMMENDATIONS.

The following recommendations for maintenance and improvement of this park are submitted for the fiscal year which will end June 30, 1918:

There are now about 7 miles of roads in the park, and these require constant repairs to keep them in good shape. The trails are in the same class, and it is frequently necessary to mend them and to repair small bridges and culverts along these and the roads.

The Beach Springs (three in number), located just north of the Coney Island Ford, are submerged with every flood stage of Rock Creek. The waters of these springs are preferred by many visitors to the park, and they should be improved and a pavilion erected over them. The proposed improvements at these springs consist of a large inverted funnel-shaped inclosure, confining the three springs so as to make a combined flow of the three springs from one outlet, the funnel to be constructed of galvanized iron, over which a cement covering should be laid, the approximate measurement of the inclosure to be 600 feet. Surrounding this inclosure to the springs proper should be built a

square inclosure to prevent overflow of these springs by the creek. This second inclosure should be about 6 feet high at the creek edge and should bed back into the hill, the depth of the side walls gradually decreasing as the hill rises, but the top of the wall remaining level with the wall along the creek edge, the approximate measurement of this entire wall being 540 square feet.

On the bottom of the outer inclosure should be laid a cement floor, rising with the hill in a succession of 4-foot steps with 6-inch risers, the approximate surface feet of this floor measuring about 720 feet.

On the top of the outer inclosure to this group of springs, supported by conglomerate columns, should be erected a pavilion, size 24 feet by 30 feet by 9 feet, with pagoda roof with a small dog house on the top, supporting a flag-pole. The probable cost of labor on this entire improvement, including the pavilion, would be about \$410, with a total cost of \$1,000.

The most popular swimming pool, "Sylvan Cove," at a location near the Panther Falls, is a naturally deep hole, but there are large, sharp rocks in the bottom which should be removed in order to make it an ideal place for swimming, and if a cement dam could be built just below this pool and a slight excavation made at the lower end where the water is shallow, it would increase the size of the pool to about 20 by 300 feet by 2 to 6 feet deep. The upper end of this pool is a natural ledge of travertine rock which forms a beautiful waterfall, and just above this fall is a more shallow pool which could be used by inexperienced swimmers and children.

This location is the most accessible on the creek to visitors who are lodging in the city of Sulphur, or who are camped in the park camping grounds, by reason of its nearness; and during the present summer there have been but few hours during each day when this pool has not been filled with people to its capacity. Further up the creek at Bear Falls and just above Cold Springs are other pools which have been used extensively, but at both of these places there are cold-water springs coming up in the bed of the creek, which makes the water too cold except for experienced swimmers.

It is estimated that the cost of the entire work of building the dam below "Sylvan Cove" at the downstream end of the pool, removing the sharp rocks, and making the necessary excavations in the pool will not exceed \$250—the dam to be 6 feet deep, 4 feet thick, by 20 feet in length. The probable cost of the labor in building the dam and doing the other work necessary would be about \$120, while the cement and other material would likely cost as much as \$130.

Around the East and West Central Parks, and around the park at Bromide Springs, there should be constructed a 2-rail iron fence of 1½-inch pipe with 2-inch posts set in cement, with ornamental conglomerate rock gate posts at the entrances—the whole cost not to exceed \$1,500. This character of fencing around these parks is desirable for the reason that these parks are near the city of Sulphur and are much frequented by visitors to the park, and the old method of fencing with wire fencing, especially for these portions of this park, is not in keeping with what might be expected of a national park. Without fences of some kind around these parks, it is impossible to keep campers from stopping over night in them, or for a noon meal, and leaving them littered up.

SULLYS HILL PARK.

CHARLES M. ZIEBACH, Acting Supervisor, Fort Totten, N. Dak.

GENERAL STATEMENT.

This reservation, set aside by Executive proclamation dated June 2, 1904, under the act approved April 27, 1904 (33 Stat., 319), contains about 780 acres. It is located on the south shore of Devils Lake, N. Dak., having about 2 miles of shore line, with its western boundary 1 mile east of the Fort Totten Indian School. Inasmuch as no appropriation has been made for the care and protection of this reservation, Mr. Charles M. Ziebach, in charge of the Indian industrial school (Fort Totten), has been continued as acting supervisor, and required to exercise the necessary supervision and control over the park until appropriation is made therefor by Congress.

There are two ways in which the public may reach the park—by wagon road around the south shore of Devils Lake and into the eastern or western side of the park, or by launch across Devils Lake, to the north side of the park.

MESA VERDE NATIONAL PARK.

THOMAS RICKNER, Supervisor, Mancos, Colo.

GENERAL STATEMENT.

The park was established by the act of June 29, 1906 (34 Stat., 616). It is situated in the extreme southwestern portion of Colorado, in Montezuma County, and embraces an area of 66.2 square miles, or 42,376 acres, but by the act of Congress approved June 30, 1913, the boundaries of the park were so changed as to include an aggregate area of 76.51 square miles, or 48,966.4 acres.

The park is under the direct control of the Secretary of the Interior, who is empowered by law to prescribe rules and regulations for its government.

CHARACTER OF THE COUNTRY.

Mesa Verde is a high table-land dividing the Mancos and Montezuma Valleys. This mesa is elevated above the valleys some 2,000 feet, and rises abruptly from their floors, with precipitous sides, like the walls of a canyon. The northern extremity of this great mesa terminates in Point Lookout, which juts out between the two valleys, a landmark for miles in all directions. The surface of this table-land is broken by innumerable canyons, which start from the very edge of the mesa on the northern and western sides, and, growing deeper and more rugged as they descend, finally open out into the Mancos Canyon. These canyons have many great caverns in their side walls, with the overhanging rock for roofs, and in these caverns are found the ruins of the cliff dwellings. The principal ruins are found in Navajo, Cliff, Soda, Long, and Rock Canyons, though there are hundreds of lesser ruins in all the canyons in the park. Spruce Tree House is in Spruce Canyon, a branch of Navajo; Cliff Palace is in Cliff Canyon; Balcony House is in Soda; Peabody House and Inaccessible are in Navajo; Long House is in Rock Canyon; and a recently discovered ruin is in Long. These ruined houses, or villages, are found in the recesses of the canyon walls and, protected from the weather, are remarkably well preserved. Some of them are small, with only a few rooms, while others are large and must have accommodated a large population. The ruins found on the mesas, without the protection of the overhanging cliffs, have not withstood the ravages of time and are now but mounds of stone and earth.

Park Point, near the northern boundary of the park, is the highest point, with an altitude of 8,574 feet.

At a point in Long Canyon, just below the ruin known as Spring House, has recently been brought to notice a natural bridge, spanning the small gulch that runs down from under Spring House. The bridge is some 90 feet in span, and about 25 feet high to the bottom of the arch. To reach this natural bridge one has to go over a rough country and do a good deal of climbing, but the bridge is there and is proving to be of much interest to tourists.

CUSTODIANSHIP.

The custody of the park is delegated by the Secretary of the Interior to a supervisor, whose office is maintained at Mancos, Colo., the nearest railroad point to the park. The supervisor is assisted by a limited number of rangers, whose duty it is to act as guides through the ruins and to police the park.

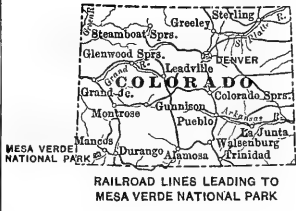
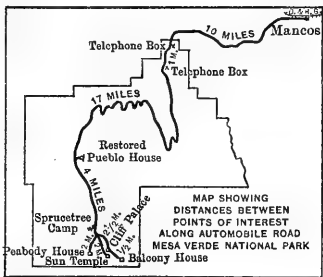
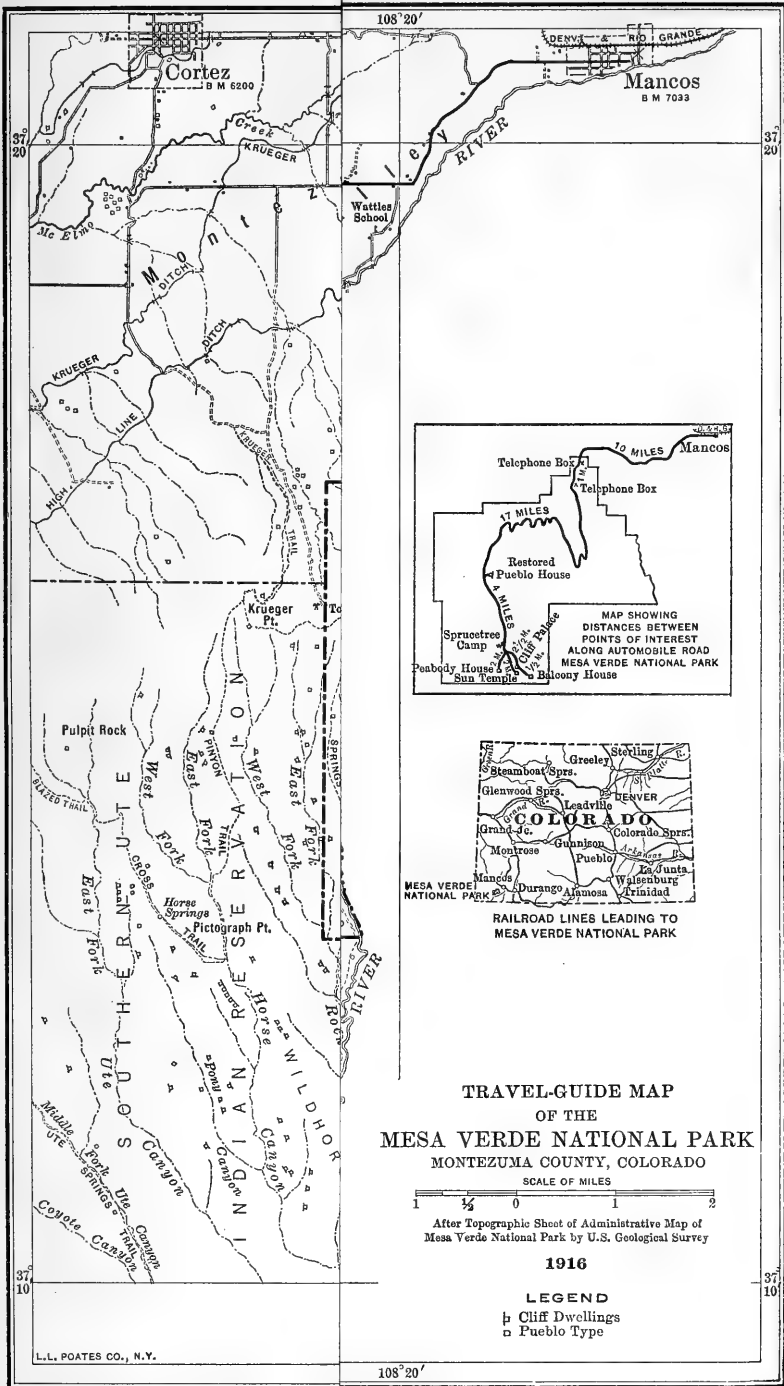
The best of order has been maintained within the park, and the ruins have been protected from vandalism; in fact, no attempts have been made to evade the rules and regulations.

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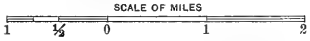
It has been the custom for the department to lease the grazing lands to owners of patented lands within the park, and at present there are three leases or permits for the grazing of 1,335 head of cattle. The lessees are required to assist in maintaining order and to guard against fires within the park.

ROADS AND TRAILS.

All the roads in the park have been worked and kept in shape for automobile travel. The road under Point Lookout has given rather more trouble than usual owing to heavy rains. These wash down earth and stone and often great boulders that greatly damage the roadbed and require the use of giant



TRAVEL-GUIDE MAP
OF THE
MESA VERDE NATIONAL PARK
MONTEZUMA COUNTY, COLORADO



After Topographic Sheet of Administrative Map of Mesa Verde National Park by U.S. Geological Survey

1916

- LEGEND**
- Cliff Dwellings
 - Pueblo Type

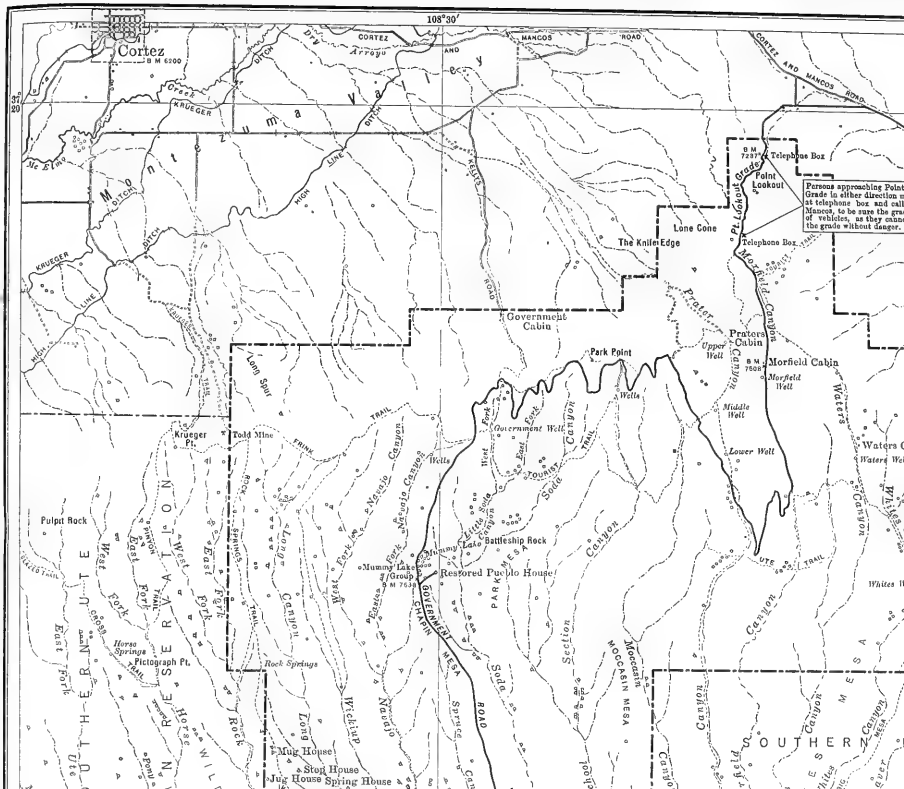
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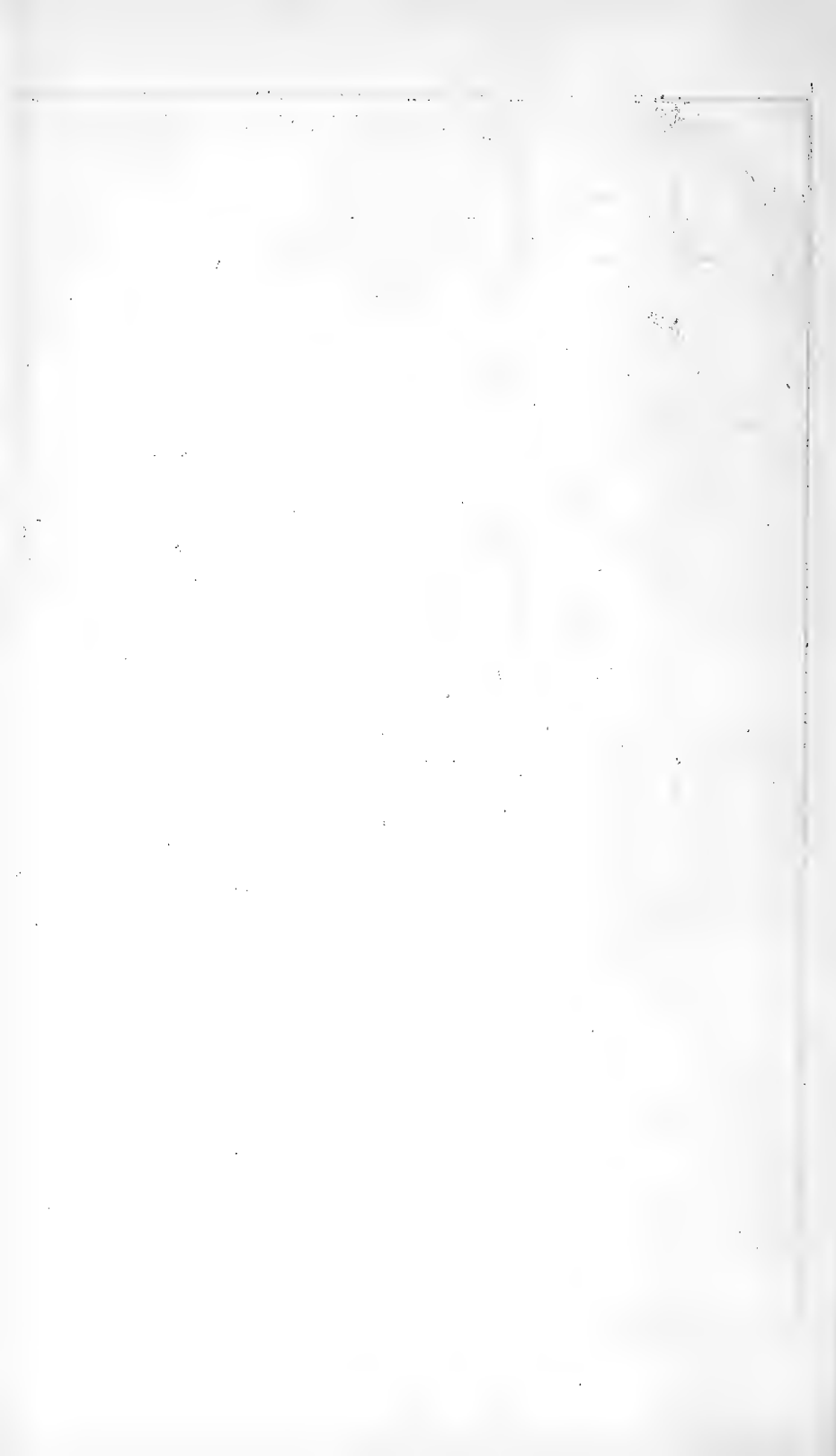
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powder to remove them. The roads from Spruce Tree Camp to the various ruins have been very much improved and now take place with the good roads of the park.

WATER SUPPLY.

The water supply varies very little from year to year, as most of the water in the park is derived from springs and wells. The spring at Spruce Tree House holds out at all times and has thus far furnished all the water required, though with building and the increased number of tourists the demand has been much greater than usual.

TRAVEL.

From July 1, 1915, to July 1, 1916, the number of tourists registering at Spruce Tree Camp was 1,170, almost double the number of those of the year before. The opening of the road from Denver to this section has brought many automobile parties from the East, and as the road, which now is new and rough, becomes better a great many parties from eastern points will make this trip. The scenery through which the road runs is the finest in the State, and the ride through Mesa Verde Park is unequalled.

RUINS.

During the summer of 1915 Dr. J. Walter Fewkes, of the Smithsonian Institution, of Washington, uncovered a ruin on the mesa between two branches of Cliff Canyon, 3 miles from Spruce Tree Camp, and heretofore known as Fewkes Mound. He found a type of building new to this park and one showing advanced ideas in building. The ruin is now one of the most interesting to strangers in the park, and during the fiscal year 1917 Dr. Fewkes will uncover another mound near Mummy Lake. Dr. Fewkes's report on his last year's work, "Excavation and Repair of Sun Temple," may now be purchased from the Superintendent of Documents, Washington, D. C., for 15 cents.

GAME.

Game is increasing with every year, and there are many deer now making their home in the park for the entire year. Mountain lions, too, are on the increase, and several pairs are known to live within or near the park. These animals should be killed off, for they keep the deer from increasing as they would otherwise do.

AUTOMOBILES.

Automobiles are now the most employed, though the horse still makes the trip, and some parties still go in on horseback, following the more romantic trails instead of the road.

MINES.

George S. Todd operates the only mine in operation on Mesa Verde, but his workings have been, for the entire year, on the land of the Southern Ute Indians.

LANDS.

There are 720 acres of patented lands within the park, and these lands should be acquired by the Government at as early a date as possible, especially the four claims that lie on the mesa, in the heart of the park—the two Prater claims, the Armstrong claim, and the Waters claim.

RECOMMENDATIONS.

The department can not be too strongly urged to authorize the construction of a new road ascending the mesa. The present road is cut out of a smooth hill of shale with overhanging rocks, and every rain, even a shower, brings down into the road dirt and rock, making it a constant expense to keep the road in good condition, and, above all, is at all times dangerous. At times great rocks come down into the road and carry away the roadbed or are left to be removed by blasting. Thus far no traveler has been caught on the hill in time of danger, but it is always possible. The proposed road would ascend the mesa on the other side of Point Lookout, traversing a country on which is

a heavy growth of scrub oak, pinyon, and juniper, with no overhanging rocks to endanger the traveler. The view is equally as fine as on the other side, and the distance is no greater.

GLACIER NATIONAL PARK.

S. F. RALSTON, Supervisor, Belton, Mont.

GENERAL STATEMENT.

The Glacier National Park was established by the act of Congress approved May 11, 1910 (36 Stat. L., 354), and is located in northwestern Montana. It embraces over 1,400 square miles of the Rocky Mountains and adjacent territory, extending north from the main line of the Great Northern Railway to the Canadian border. The eastern boundary is the Blackfoot Indian Reservation, and the western boundary is formed by the Flathead River. The park, which is irregular in shape, has an area of approximately 915,000 acres. Its greatest length in a northwesterly-southeasterly direction is about 60 miles with a maximum width approaching 40 miles.

Within its borders are attractions for the scientist, nature lover, and tourist unsurpassed in any country in the world, tourists of world-wide experience pronouncing it the Switzerland of America. The elevations in the park range from 3,100 feet to over 10,400 feet. The central portion of the area on the northwestern-southeastern axis is high and rugged and in sharp comparison with the open plains of the east and the valley of the Flathead River on the west. Within its confines are 60 active glaciers, these ice sheets being the sources of beautiful cascades and roaring mountain streams flowing into innumerable clear placid lakes for which the park is famed, the most noted of these being Lake McDonald, Lake St. Mary, Lake Ellen Wilson, Iceberg Lake, Red Eagle Lake, Kintla Lake, Bowman Lake, Waterton Lake, Logging Lake, Quartz Lake, Harrison Lake, and Two Medicine Lake.

Lake McDonald, the southern end of which is situated 2½ miles from Belton, a station on the main line of the Great Northern Railway, is one of the most beautiful lakes in America. It is about 3,150 feet above sea level, nearly 10 miles long, 2 miles wide, and surrounded by mountains covered with virgin forests of western larch, cedar, white pine, Douglas fir, spruce, and hemlock. Upper Lake St. Mary is on the eastern side of the mountains about 32 miles northwest of Glacier Park station. It is about 10 miles long, with a maximum width of 1 mile, and toward the upper end the mountains rise in rugged walls not far from the water's edge. Its elevation is about 4,470 feet above sea level. The principal glaciers in the park are Blackfoot, Grinnell, Harrison, Pumpelly, Red Eagle, Sperry, Kintla, Agassiz, Chaney, Rainbow, and Carter. In most of the lakes of the park there is excellent fishing at certain times of the year, and at others many streams afford fine sport with hook and line. Within the park boundaries there are many varieties of game which are indigenous to this section of the country, such as bear, elk, moose, deer, bighorn sheep, mountain goat, mountain lion, as well as the smaller furred animals, of the forest.

VISITORS.

From June 1, 1916, to October 1, 1916, there were 12,839 visitors registered at the two main entrances to the park, Glacier Park, and Belton. It is estimated conservatively that 1,000 people entered the park at points where there are no stations and failed to register, making a total of 12,839 visitors.

Visitors by different entrances.

Belton, western entrance-----	5,941
Glacier Park entrance-----	6,898

ROADS.

There are now approximately 83 miles of road within the park boundaries available for vehicle transportation, and approximately 50 miles outside the boundaries but under park supervision, including the Blackfoot Road from Glacier Park station to the park line, 26 miles; the St. Mary-Babb Road, from near park line at St. Marys through the Blackfoot Indian Reservation to the park line near camp 5, 16 miles; the Cut Bank Road, which extends from the main automobile highway, or Blackfoot Road, to the park line, 4 miles; and Two Medicine Road, from main automobile highway to park line, 4 miles.

St. Mary-Babb Road.—During the year this road was repaired by removing slides, installing 18 new culverts, and graveling 640 yards. The road has a minimum width of 14 feet and a maximum of 20 feet.

Blackfeet Road.—This road was repaired during the season its entire distance. Thirty new culverts were installed for drainage purposes. The road for a distance of 8 miles was widened to a minimum of 12 feet and a maximum of 16 feet, and for a distance of 6 miles it was widened to a minimum of 10 feet and a maximum of 16 feet. There has been placed upon the road 10,680 yards of gravel.

Cut Bank Road.—This road was improved by cleaning out drain ditches, installing two new culverts, and running grader over it to smooth it up.

Two Medicine Road.—Two new culverts were installed and the road was dragged. Three hundred and twenty yards of gravel were used for filling in soft spots in the road.

Two Medicine Road within park boundary.—Two miles of this road has been rebuilt, cleared through timber to an average width of 35 feet, and graded to an average width of 16 feet. Four miles of the old road was repaired by dragging and filling in soft spots with gravel.

Many Glacier Highway.—This road was repaired by removing slides, installing 17 new culverts, and spreading 10,668 yards of gravel on the road.

Divide Creek Road.—Eleven new culverts were installed, 287 yards of gravel were placed upon the road, drain ditches opened up, slides removed, and 2½ miles of the road recrowned.

Belton-Lake McDonald Road.—Distance, 3 miles. The road was repaired by removing fallen timber and slides, filling in ruts, and dragging the road to keep it in repair.

Fish Creek Road.—Distance, 1.9 miles. This road was cleared of fallen timber, rock and earth slides were removed, and the road was repaired.

Flathead River Road.—Distance, 48 miles. Fallen timber was removed from this road from Lake McDonald to the Canadian line. Eight new culverts were installed, and rocks and stumps removed from the road for a distance of 5 miles.

Fish Creek-McGee Meadow Road.—Length, 25,080 feet. The right of way of the road was cleared through the timber to an average width of 35 feet, and graded to an average of 14 feet.

Lake McDonald Road.—Timber was cut and refuse burned over the right of way for a distance of 8,700 feet, and the stumps removed and burned for a distance of 2,700 feet; after which work was suspended.

TRAILS.

All old trails were cleaned of fallen timber and kept in repair during the summer months. The following new trails were built:

Grinnell Glacier Trail.—Two miles 1,870 feet completed. Cleared to an average width of 10 feet; graded to an average of 4 feet.

New Trail from Lake McDonald to Granite Park.—Approximately 7 miles of this trail has been completed, cleared to an average width of 10 feet, and graded to an average width of 3½ feet. Bridges across streams and corduroy over wet ground were made 6 feet in width.

New Sperry Glacier Trail.—One and one-half miles completed. Graded to an average width of 4 feet. One thousand two hundred feet of trail is through rockwork, balance is sidehill graded over slide rock and shale.

Triple Divide Trail.—Between Triple Divide and Red Eagle Lake. Seven and one-half miles cleared of timber to an average width of 10 feet, graded to an average width of 3½ feet.

Appekunny Basin Trail.—This trail was cleared to an average width of 10 feet, and graded an average width of 3½ feet.

Snyder Lake Trail.—This was built from Crystal Ford to Snyder Lake, a distance of 3½ miles. Right of way was cleared to an average width of 10 feet, and graded to an average width of 3½ feet.

Baring Basin Trail.—Four miles cleared of timber to an average width of 10 feet, graded to an average width of 3½ feet.

Little St. Marys Trail.—From Glacier Hotel to Little St. Marys Lake, a distance of 7 miles. Trail was cleared to an average width of 8 feet, graded to an average width of 3 feet.

BRIDGES.

Two Medicine.—A new bridge was built over Two Medicine River to replace old one which was washed out by high water. It is 95 feet long with a roadway 16 feet wide.

Divide Creek Bridge.—A new bridge was built over Divide Creek to replace the old one washed out by high water. It is 75 feet long with a roadway 16 feet wide.

Quartz Creek Bridge.—The old bridge across Quartz Creek was carried away by high water in June and was replaced by a new bridge 78 feet long and 12 feet wide.

Bridges on Fish Creek-McGee Meadow Road.—There were seven bridges built on the Fish Creek-McGee Meadow Road, all 16 feet wide and of the following lengths: Bridge No. 1, 183 feet; No. 2, 165 feet; No. 3, 12 feet; No. 4, 28 feet; No. 5, 50 feet; No. 6, 68 feet; No. 7, 20 feet.

FISH.

One hundred and forty-two cans of fish were distributed in the lakes and streams of Glacier National Park during the past season. A large supply will be received during the month of October.

GAME.

Owing to the extreme cold weather and the unusually heavy snowfall during the past winter, there was some loss among the deer in the valley of the Flathead. In other sections of the park deer and all other game wintered in fairly good condition.

Deer.—There are both blacktail and whitetail deer in Glacier Park. The latest conservative estimates place their numbers at 11,000.

Elk.—Elk are found over almost all sections of the park, but the largest herds range around Park, Ole, Coal, and Nyack Creeks. A conservative estimate places their number at 900.

Moose.—It is estimated that there are 100 moose in the park, most of which are found in the valley of the Flathead River.

Sheep and goats.—Bighorn sheep and Rocky Mountain goats are found principally in the higher altitudes along the main range and along the eastern slope of the Rockies. The country over which they roam is extremely rough, making it very difficult to estimate their numbers, but from the latest and most reliable information available the estimate of the sheep in the park is placed at 1,500 and of the goats 1,200.

Bear.—There are three varieties abounding in considerable numbers throughout the park—the grizzly, the brown or cinnamon, and the common black bear. In many instances they become troublesome by going into construction camps and taking camp supplies.

Predatory animals.—There are a few wolves in the park, mostly found east of the main range of the Rockies. Coyotes abound in large numbers throughout the park. They are the principal menace to animal life in the park. During the heavy snows of the past winter they killed a great many deer. Their numbers have been depleted to some extent by the regular park ranger force and many have been killed by settlers in the park. The method of extermination has been principally by the use of strychnine, although some are caught in traps. There are a few mountain lions in the park, but their number is so small that the damage done by them to the game is very slight.

Fur-bearing animals.—Large numbers of mink, lynx, weasel, and martin are found throughout the wooded sections of the park. They are very destructive to bird life. Large numbers of beaver are to be found in almost every stream in the park.

Wild fowls and birds.—Grouse of the blue, ruffed, and pin-tailed varieties are found in the park. There are a few ptarmigan along the main range. Many ducks and geese nest around the lakes and along the streams. Many varieties of small birds are found.

Game protection.—Park rangers have afforded as much protection to the game as was possible over such a large area. There was one arrest during the year for game poaching. The person was taken before the United States commissioner, where he pleaded guilty, paid his fine, and was discharged.

RECOMMENDATIONS.

In this report I wish especially to call your attention to the importance of good roads, and in order that they may be dependable, it is necessary that they be surfaced either with native gravel or crushed rock. The unusually wet weather which has prevailed here the past two seasons has made this apparent. The graveling which was done on the Many Glacier Highway during the fall of 1915 and spring of 1916 put this road in first-class condition, and it was





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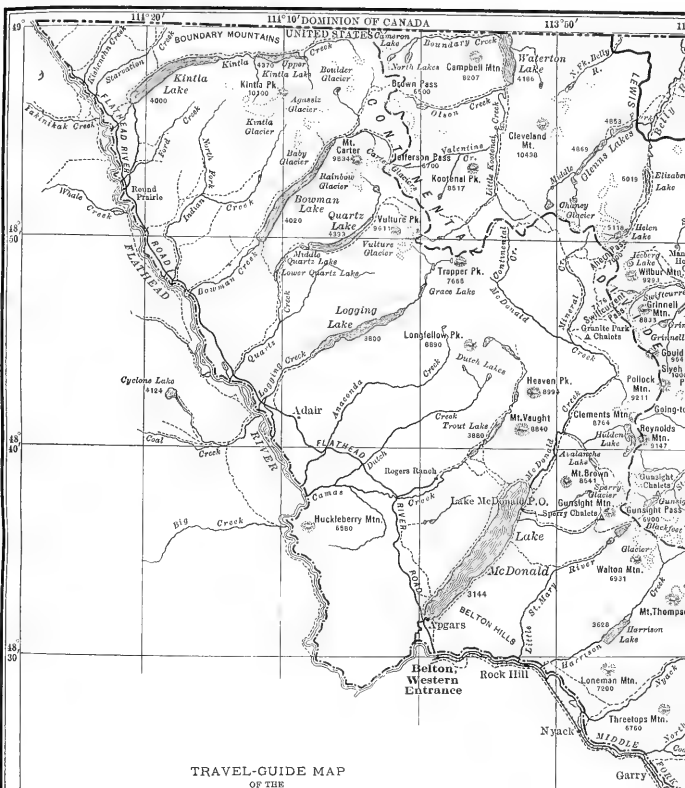
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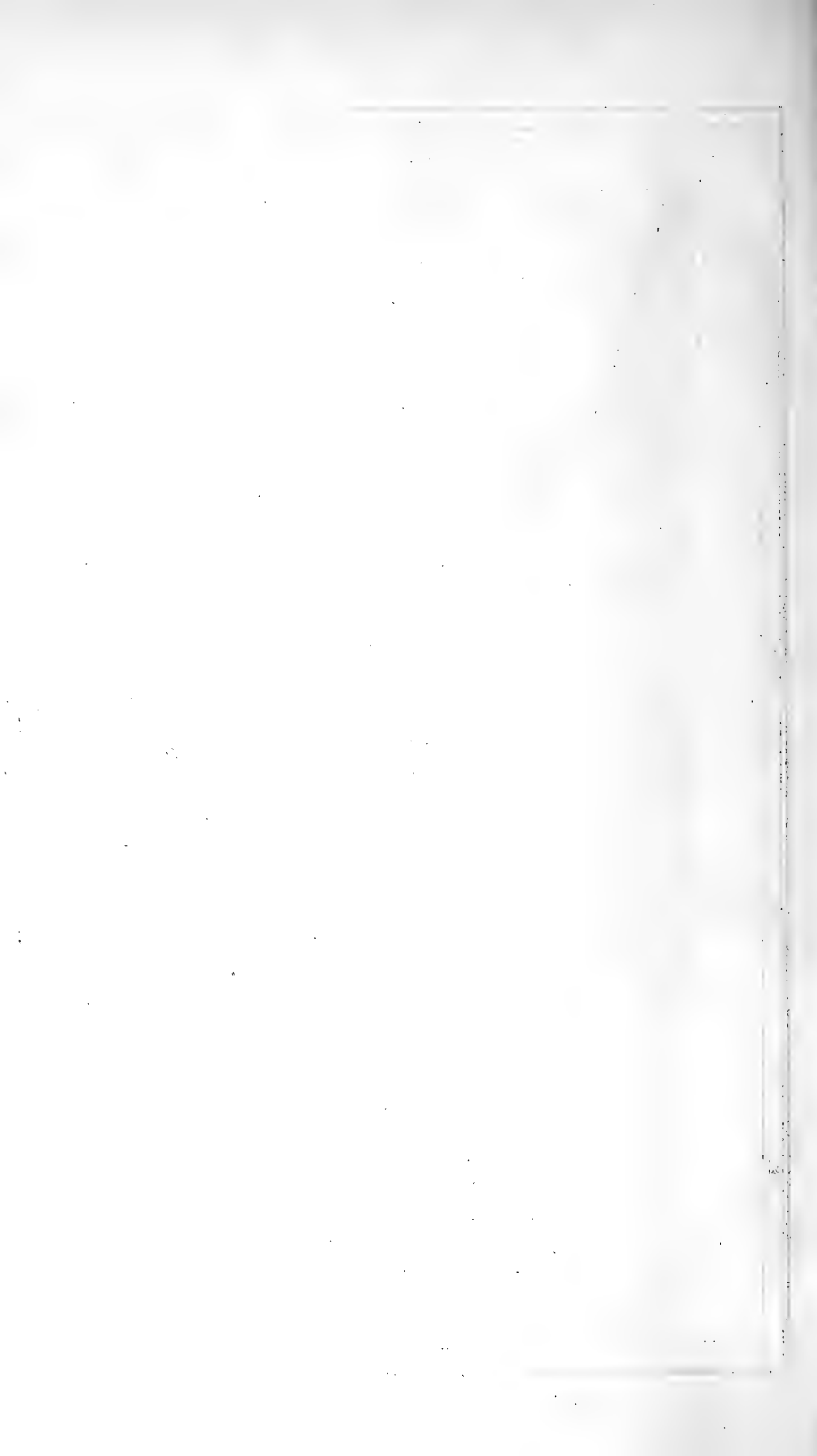
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absolutely dependable during the entire season. Portions of the St. Mary-Babb and Divide Creek roads were graveled, which has greatly improved them. There are still long stretches on these two roads which should be surfaced with gravel in order to make them dependable in all kinds of weather. The road from Glacier Park station to the park line, known as the Blackfoot Road, was taken over by the department in June, since which time it has been under the supervision of the park and has been greatly improved by graveing 4 miles of the worst sections of the road, widening and draining it, but much yet remains to be accomplished. A liberal appropriation should be allowed for its maintenance and improvement.

In recommending the building of the road from the foot to head of Lake McDonald, I again wish to call your attention to the fact that this road, when built, will be the first link in a road connecting the east and west sides of the park. It matters not which of the various passes the road goes over in crossing the mountains from east to west, the only practicable route in approaching any of the available passes from the west is by way of Lake McDonald.

The telephone system of the park deserves careful consideration. The system which is conducted by the hotel company does not in any way connect with the system owned by the Government on the west side of the park. It is very important that a first-class telephone system be maintained throughout the park.

ROCKY MOUNTAIN NATIONAL PARK.

C. R. TROWBRIDGE, Acting Supervisor, Estes Park, Colo.; succeeded by L. C. WAY, Chief Ranger in charge, September 19, 1916.

GENERAL STATEMENT.

The Rocky Mountain National Park was created by the act of January 25, 1915 (Public, 238, Sixty-third Congress). The park is located in northern Colorado and embraces an area 25 miles in length in a northerly and southerly direction, with a maximum width of 17 miles, covering in all 358½ square miles. It is accessible for automobiles at four different points, and numerous trails lead to the various places of interest within its boundaries, the most central points of entrance being on the eastern slope from the village of Estes Park, and on the western from the village of Grand Lake.

The village of Estes Park, distant approximately 7½ miles from the main entrance to the national park, is 22 miles from Lyons, Colo., 33 miles from Loveland, and 42 miles from Fort Collins, the three nearest railroad points, and is connected by automobile stage lines making scheduled trips. There are also automobile stage lines running direct from Denver, Boulder, and Greeley to Estes Park. This region, under the present schedule of railroads and automobiles, is only four hours distant from Denver. From the village of Estes Park many picturesque roads and trails extend toward the park boundaries, most of them entering the national park.

During the winter of 1915-16 the administrative office was located in the Federal Building in Denver, but is now located in the village of Estes Park. If the bill for the proposed extension of the national park becomes a law and the park boundaries are extended to closer proximity to the village of Estes Park, an office and residence for the supervisor should be constructed by the department within the boundaries of the park.

ROADS.

Fall River Road.—The Fall River Road, which is now under construction by the State of Colorado, extends into the park a distance of approximately 7 miles, and work is now in progress under a contract made by the State highway commission for the further construction of 2 miles, which the contractor expects to complete in the fall of 1916.

According to a survey of this road completed in July, 1916, by surveyors of the Geological Survey, there still remains to be constructed 16.13 miles to a point where the proposed road will join the county road from Grand Lake, in section 13, township 5 north, range 75 west, distant approximately 10 miles from Grand Lake.

That part of the road now completed is in fairly good condition for a mountain road when the small amount expended for maintenance is taken into consideration. The 3 miles of road constructed in 1915 should be dragged and surfaced in many places. During the spring thaws there were a number of "washouts" which destroyed stone embankments and the roadbed at different

points. Under verbal instructions of May 20, 1916, from the Superintendent of National Parks that this was considered a State road until completed and that no park funds were to be expended for maintenance, authority was obtained from the State highway commissioner to employ laborers at the expense of the State to place this road in proper condition for the traffic of 1916.

In order to properly maintain this road for travel, two men and a team should be employed during the months of June, July, and August, and I doubt that the State authorities will take this necessary action.

That part of the road constructed in 1914, and known as the "Convict Road," is entirely too narrow, and in order to prevent accidents should be widened in a great many places. During May and June, 1916, 26 corrugated iron culverts were placed on this section of the road, and gutters opened to connect with them, expense paid from the park appropriation.

Grand Lake County Road.—The roadway running north from Grand Lake and which will eventually connect with the present Fall River Road, has not been extended this year, no work having been done by Grand County on this road since 1915.

Road to Sprague's.—The road to Sprague's resort on Glacier Creek, entering the park from the Young Men's Christian Association conference grounds, is now in good condition, considerable work having been done in June, 1916, from the park appropriation.

Bear Lake Road.—What is now known as the Bear Lake Road, commencing at a point on the Sprague Road in section 1, township 4 north, range 73 west, was reconstructed in July and August for a distance of 1.3 miles to a point in section 12, township 4 north, range 73 west, at the junction of the Bierstadt Lake Trail. This road crosses Glacier Creek, over which a bridge was constructed, and there has been considerable automobile traffic since it was completed in August. At a comparatively small outlay of money this road can be extended to within one-half mile of Bear Lake, and eventually to Loch Vale. This will provide rapid and easy transportation by a new and scenic route for a great number of tourists who would not undergo the hardship of a horseback trip.

Copeland Lake Road.—This road enters the park in section 22, township 3 north, range 73 west, a short distance west of Copeland Lake, following for a distance of approximately $1\frac{1}{2}$ miles the North St. Vrain Creek. A small amount of work was done on this road this season, making it passable for automobiles. This road should be extended whenever funds are available, and thereby open up a part of the wildest section in the park, commonly known as "Wild Basin."

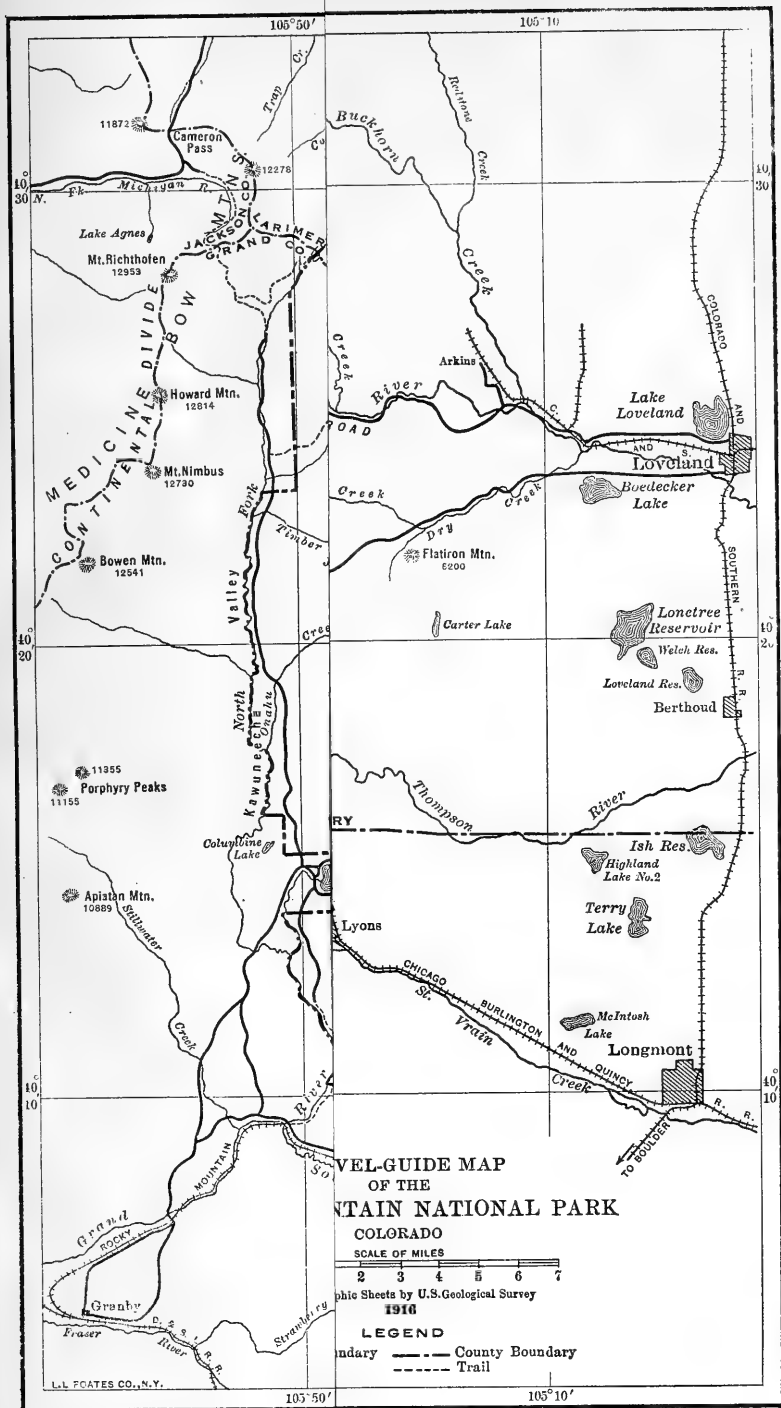
Sand Beach Lake Road.—This road enters the park approximately a half mile north of the Copeland Lake Road, and runs parallel to it for a distance of approximately $3\frac{1}{2}$ miles to Sand Beach Lake. The greater part of this road is nothing more or less, at this time, than a trail, no work having been done on it for several years. The property owners in the locality of Allens Park desire that this road be opened up, and are anxious to contribute their share on that part which lies outside the park boundary.

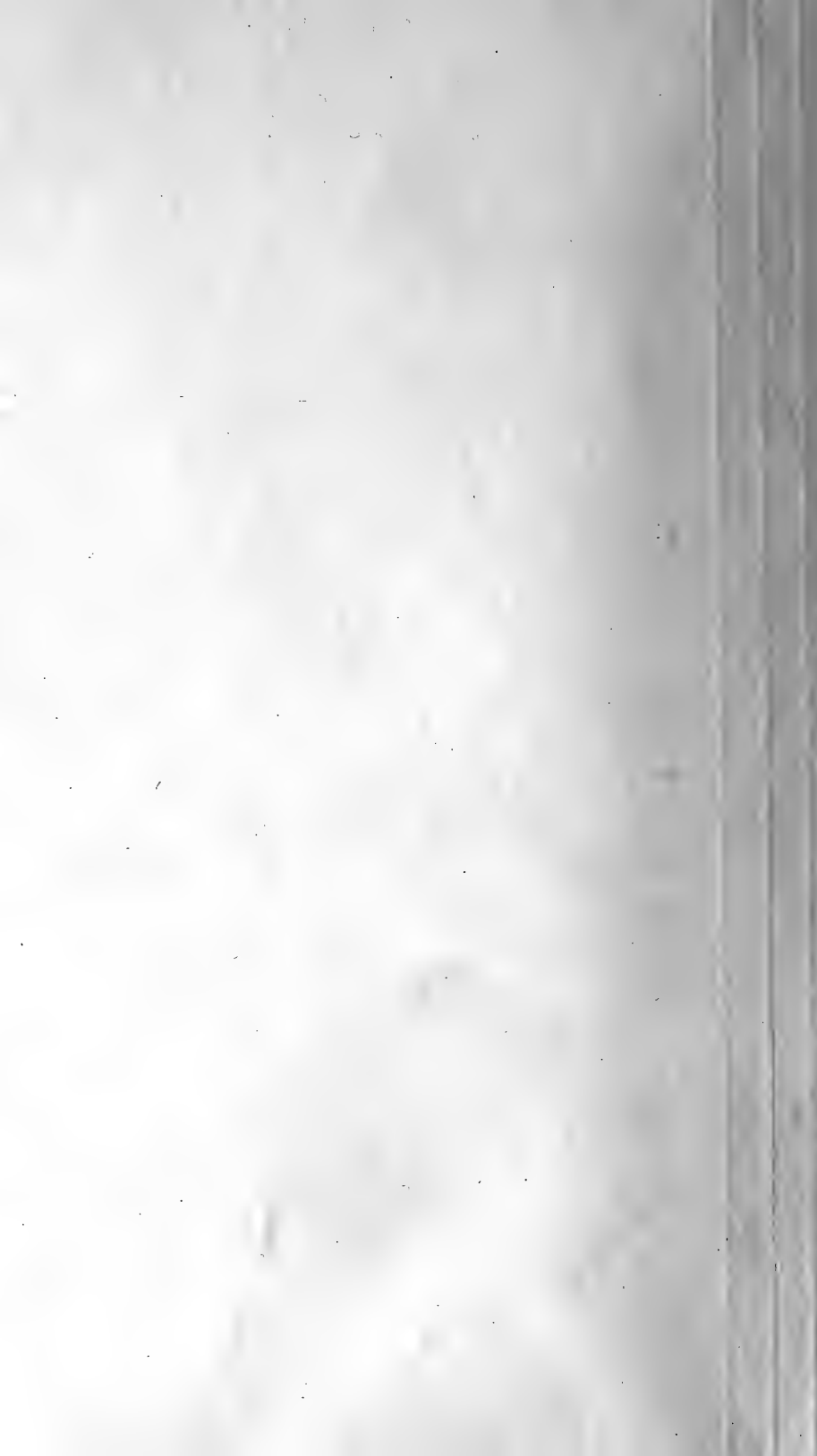
Mill Creek Road.—This road runs parallel to Mill Creek, and extends approximately a half mile into the park to the Mill Creek ranger station. The road is in poor condition, and unless it is made passable for automobiles outside the park, I do not believe it advisable to make any expenditures on that part which is within the boundaries. In entering the park over this road it is necessary to pass over several tracts of private property. Most of the traffic at this point consists of hauling firewood by the inhabitants of Estes Park.

Beaver Creek Road.—This road commences at the highest point of the "High Drive" in Horseshoe Park, and enters the national park in section 19, township 5 north, range 74 west, and extends for a distance of approximately $1\frac{1}{4}$ miles, some parts of which pass over private land. It is in fair condition, but unsuitable for automobiles at the present time.

TRAILS.

The most interesting and scenic parts of this park can be reached by trail only, the majority of which are in good condition. New trails have been constructed since the park was created. Commencing June 1, most of the existing trails were cleaned of fallen timber and kept in repair during the summer. Considerable work was done on Flat Top Trail, extending from Grand Lake to Mill Creek ranger station, a distance of approximately 18 miles. Small bridges and culverts were constructed where necessary and on the summit of





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and a team should be used. There is no doubt that the

Convict Road," which is to be widened in order to connect with

from Grand Lake. The proposed road, has not yet been constructed

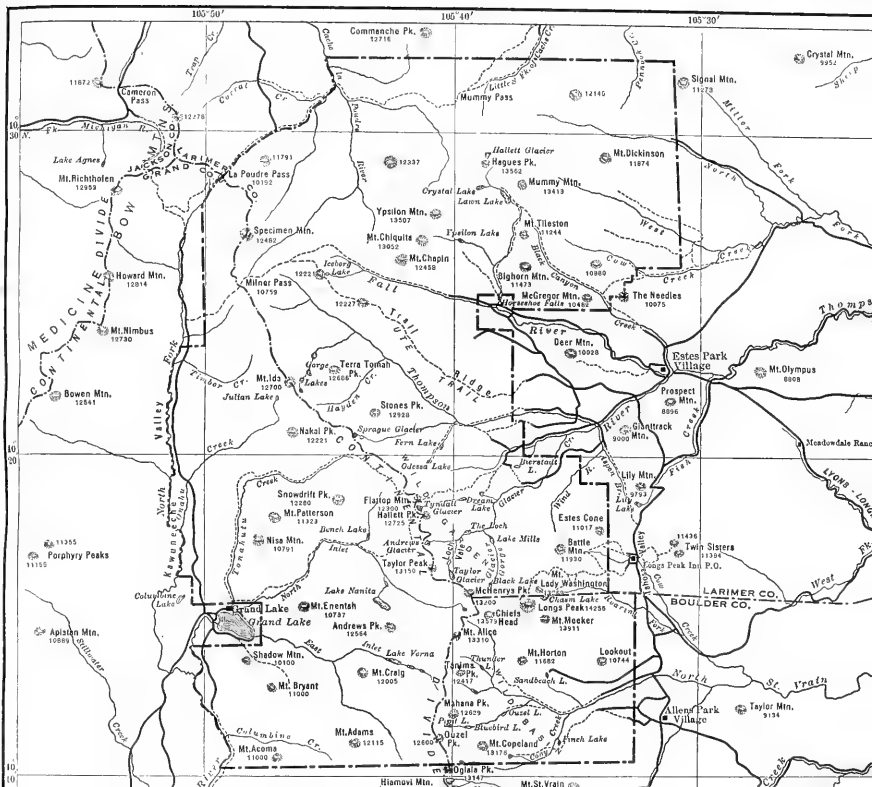
Creek, entering the national game grounds, is now, June, 1916, from

and, commencing at the west end of range 73 west, to a point in the Bierstadt National Park. It was conceived that this road can be used to reach Loch Vale, a scenic route for a horseback

22, township 3 north, range 73 west, following for a distance of about 10 miles. A small amount of money was appropriated for automobiles and thereby open up the road as "Wild

approximately a half mile for a distance of about 10 miles. This road has been done on it and is desired for a share on that

extends approximately 10 miles outside the national park which it is necessary to do at this point



Flat Top Mountain, extending about 4 miles, a line of cairns was constructed, numbering 163. These cairns average 5 feet in height, the tips of which are painted white and black in order that they may be distinguished under all conditions.

CATTLE GRAZING.

Under instructions of the department no permits are issued for cattle grazing in the park, but straggling cattle have crossed the boundary on both the eastern and western slopes and caused considerable damage to roads and trails.

Only one permit was issued during the year for the transporting of cattle over park lands.

VISITORS.

There were more visitors in this region than ever before in one season, and during the months of July and August the hotels were filled and for several weeks tourists were turned away owing to the lack of accommodations. The different hostelries are now arranging to enlarge, in order to handle the anticipated increased patronage next season. The threatened railroad strike in the early part of September prevented a great many from visiting the park and had a tendency to shorten the stay of those that were there; otherwise the tourist business for September would have been as heavy as that of the previous two months.

It is impossible to report the total number of persons entering the park, but a conservative estimate would place the number of visitors in Estes Park and vicinity on the eastern slope and Grand Lake on the western slope at 70,000. Over two-thirds of this number entered the national park, or, in round numbers, 51,000.

TIMBER CUTTING.

No permits are issued for the cutting of timber, except "dead and down" timber in different localities, which have been burned over in past years, and on the right of way of the Fall River Road.

Timber for firewood is given free to residents of Estes Park and vicinity for their own use with the understanding that they volunteer their services when necessary to suppress forest fires. These permits are issued for timber located in the "Pole Patch," near Mill Creek ranger station. Residents near Grand Lake are allowed firewood under the same conditions, to be obtained in section 18, township 3 north, range 75 west.

FOREST FIRES.

On October 31, 1915, a large fire occurred in section 14, township 5 north, range 74 west, covering an area of approximately 325 acres, a part of which was on private land. The fire originated in a pile of sawdust on the site of a dismantled sawmill. With the assistance of volunteers from the village of Estes Park and vicinity, the fire was suppressed after burning two days. During the summer of 1916, owing to the scarcity of rainfall, the park area was exceedingly dry and the danger from fire was extreme, but fortunately none occurred within the park. A number of fires occurred just outside the boundaries, but proper action was taken to prevent their spreading. During the past year 11 fire-tool boxes, fully equipped, have been installed in different parts of the park. There are at present 18 fire-tool stations—13 on the eastern slope and 5 on the western slope.

EMPLOYEES.

There are at present employed one chief ranger and four other rangers. Also one temporary clerk-stenographer, whose term of service expires October 15, 1916.

GAME.

There is no evidence of the slaughter of game during the past year in the park, a strict vigilance having been kept during the winter months for hunters and trappers. Mountain sheep are plentiful and no doubt increasing, and have been seen more frequently by tourists than in former years. It is now possible to approach them quite closely, and one instance is known where an automobile came within 30 feet of a group which did not disturb them. One ranger reports seeing 182 in one group near Specimen Mountain.

Firearms are not allowed in the park and a notice to this effect is posted at all entrances.

APPENDIX A.

Statement of appropriations made for, and revenues received from, the various national parks, and expenditures made therefrom under supervision of the department, during the fiscal years 1906-1916, inclusive.

Name of the national park.	Appropriations.		Revenues.	
	Appropriated.	Expended.	Received.	Expended.
Hot Springs Reservation:				
1907.....			20,165.00	19,938.41
1908.....			28,090.00	21,115.56
1909.....			34,475.00	19,699.27
1910.....			36,540.00	28,401.97
1911.....	2,935.00	2,935.00	36,060.00	56,375.33
1912.....			82,518.00	3,267.96
			35,279.16	42,957.18
1913.....			40,711.00	29,438.25
			1,287.90	34,581.57
1914.....			38,380.00	41,273.70
1915.....			37,877.66	36,658.62
1916.....			37,926.32	36,941.95
1917.....				40,261.14
	2,935.00	2,935.00	429,310.04	370,910.91
Yellowstone:				
1907.....	7,500.00	7,498.64	1,838.96	3,647.04
1908.....	8,000.00	7,999.40	4,699.65	4,228.37
1909.....	8,000.00	7,997.44	4,790.20	3,661.47
	2,500.00	1,962.53		
1910.....	8,000.00	7,999.71	5,110.05	3,359.80
1911.....	8,500.00	8,499.96	23,420.13	7,998.47
1912.....	8,500.00	8,500.00	16,476.38	8,103.41
1913.....	8,500.00	8,500.00	21,980.10	6,449.97
1914.....	8,500.00	8,500.00	15,439.23	13,843.24
1915.....	8,500.00	8,500.00	20,307.40	12,884.18
1916.....	8,500.00	8,491.41	46,628.49	26,350.96
1917.....	8,500.00			
	93,500.00	84,449.09	160,690.59	90,526.91
Sequoia:				
1907.....	10,000.00	9,919.82	159.50	
1908.....	15,550.00	15,333.50	43.15	18.97
1909.....	15,550.00	15,373.96	46.57	
1910.....	15,550.00	15,514.19	121.78	
1911.....	15,550.00	15,543.34	255.65	31.25
1912.....	15,550.00	15,549.20	305.16	48.25
1913.....	15,550.00	15,549.52	353.85	70.81
1914.....	15,550.00	15,549.27	4,094.21	83.94
1915.....	15,550.00	15,549.65	1,975.03	3,498.23
1916.....	15,550.00	15,549.75	5,169.86	4,740.75
1917.....	22,300.00			
	50,000.00			
	222,250.00	149,432.20	12,524.76	8,492.20
Yosemite:				
1907.....	5,750.00	5,705.24	9,193.04	1,000.00
1908.....	30,000.00	29,508.58	14,390.06	7,131.37
1909.....	30,000.00	29,969.86	15,851.17	5,024.84
1910.....	30,000.00	29,983.82	21,373.18	34,486.09
1911.....	62,000.00	62,000.00	35,765.48	19,050.39
	12,000.00	11,646.37		
1912.....	50,000.00	49,999.68	23,855.77	35,970.68
1913.....	80,000.00	80,000.00	19,495.83	16,431.16

¹ Proceeds from sale of Government lots (lot fund).

² Expenditure from lot fund.

³ Includes \$1,272.71 expended in making survey and preparation of plans, etc., for sewer system, city of

Hot Springs.

⁴ Contributed by city of Hot Springs on account sewer system; \$14.20 returned to city.

⁵ Includes 99 cents expended on account of survey sewer system.

⁶ Administration and protection.

⁷ Marking unmonumented portions of park boundaries.

⁸ For purchase of private holdings.

⁹ Appropriation, without year, for examination of water supply for city of San Francisco.

APPENDIX A—Continued.

Statement of appropriations made for, and revenues received from, the various national parks, and expenditures made therefrom under supervision of the department, during the fiscal years 1906-1916, inclusive—Continued.

Name of the national park.	Appropriations.		Revenues.	
	Appropriated.	Expended.	Received.	Expended.
Yosemite—Continued.				
1914.....	\$125,000.00	\$124,798.49	\$23,406.14	\$9,903.58
1915.....	100,000.00	99,235.22	37,019.20	40,699.30
1916.....	75,000.00	74,992.54	49,878.42	52,961.53
1917.....	250,000.00			
	599,750.00	597,839.80	250,228.29	222,658.94
General Grant:				
1907.....	2,000.00	1,988.75		
1908.....	2,000.00	1,914.76	63.75	
1909.....	2,000.00	1,999.93		
1910.....	2,000.00	1,999.90	50.00	
1911.....	2,000.00	1,999.89	210.64	18.88
1912.....	2,000.00	1,998.60	173.54	.99
1913.....	2,000.00	1,939.20	158.68	503.01
1914.....	2,000.00	2,000.00	429.64	1.59
1915.....	2,000.00	2,000.00	560.89	355.68
1916.....	2,000.00	19,99.36	1,795.50	481.46
1917.....	2,000.00			
	22,000.00	19,900.39	3,442.64	1,361.01
Mount Rainier:				
1907.....	12,500.00	2,407.91	205.22	
1908.....	3,000.00	2,965.59	170.00	8.96
1909.....	3,000.00	2,961.61	1,104.79	27.65
1910.....	3,000.00	3,000.00	9,053.79	2,763.86
1911.....	3,000.00	2,998.90	7,748.48	5,342.47
1912.....	5,400.00	5,399.99	5,370.36	9,363.33
1913.....	20,000.00	19,989.70	7,301.62	6,791.80
1914.....	23,400.00	23,347.05	9,040.10	6,089.42
1915.....	51,000.00	50,907.79	12,893.29	5,513.46
1916.....	30,000.00	29,999.77	19,317.99	15,026.08
1917.....	30,000.00			
	174,300.00	143,978.31	72,205.64	50,877.03
Crater Lake:				
1907.....	3,000.00	2,989.75	10.00	(2)
1908.....	7,315.00	7,314.65		
1909.....	3,000.00	2,999.21	15.00	
1910.....	3,000.00	2,999.97	11.00	
1911.....	3,000.00	2,999.77	30.00	
1912.....	3,000.00	2,998.75	323.00	
1913.....	3,000.00	2,978.41	784.18	
1914.....	7,540.00	7,483.61	793.00	
1915.....	8,040.00	7,884.59	1,359.50	
1916.....	8,000.00	7,835.25	2,402.04	
1917.....	8,000.00			
	56,895.00	48,483.96	5,727.72	
Wind Cave:				
1907.....	4,400.00	4,398.08		
1908.....	2,500.00	2,433.54	200.00	
1909.....	2,500.00	2,335.37	450.00	220.80
1910.....	2,500.00	2,500.00	523.25	62.88
1911.....	2,500.00	2,413.60	340.00	562.26
1912.....	2,500.00	2,499.86	675.00	278.56
1913.....	375.00	132.50	528.26	1,197.39
1914.....	2,500.00	2,500.00	246.17	366.72
1915.....	2,500.00	2,496.97	2,342.90	606.16
1916.....	2,500.00	2,463.51	2,590.89	981.57
1917.....	2,500.00			
	27,275.00	24,173.43	7,896.47	4,276.34

¹ No appropriation made for Mount Rainier prior to 1907 fiscal year.

² Expenditure of revenues of Crater Lake and Mesa Verde Parks for park purposes therein not authorized by existing statutes enacted by Congress.

APPENDIX A—Continued.

Statement of appropriations made for, and revenues received from, the various national parks, and expenditures made therefrom under supervision of the department, during the fiscal years 1906-1916, inclusive—Continued.

Name of the national park.	Appropriations.		Revenues.	
	Appropriated.	Expended.	Received.	Expended.
Platt:				
1907.....	(1)	.....	178.00	7,082.25
1908.....	.....	.....	7,021.00	10,552.26
1909.....	.....	.....	272.00	15,764.27
1910.....	.....	.....	164.50	11,734.74
1911.....	5,000.00	4,994.64	422.75	779.06
1912.....	10,000.00	9,999.34	165.50	219.84
1913.....	8,000.00	7,999.95	49.95	100.11
1914.....	217,500.00	210,120.73	217,500.00	210,119.06
1915.....	8,000.00	7,988.55	282.81	67.48
1916.....	8,000.00	8,000.00	241.76	178.87
1916 (deficiency, \$10,000).....	18,000.00	17,060.49	301.11	44.35
1917.....	8,000	.....	.....	.....
	82,500.00	66,163.70	26,599.38	56,624.29
Mesa Verde:				
1907-8.....	7,500.00	7,455.82	.....	(3)
1909.....	7,500.00	7,348.33	.....	.....
1910.....	7,500.00	7,443.09	.....	.....
1910-11 (for examination of coal lands in park).....	2,000.00	947.75	.....	.....
1911.....	20,000.00	19,808.63	100.00	.....
1912.....	7,500.00	7,351.54	898.92	.....
1913.....	15,000.00	14,956.91	615.21	.....
1914.....	10,000.00	9,880.30	679.00	.....
1915.....	10,000.00	9,786.05	637.42	.....
1916.....	10,000.00	9,643.47	946.38	.....
1917.....	10,000.00	.....	.....	.....
	107,000.00	94,621.89	3,876.93	.....
Glacier:				
1911.....	15,000.00	14,998.59	326.88	.....
1912.....	69,200.00	69,117.94	1,490.94	.....
1913.....	75,000.00	74,568.24	4,677.14	428.84
1914.....	100,000.00	99,999.49	4,010.71	477.07
1915.....	75,000.00	74,994.27	4,218.51	9,735.44
1916.....	75,000.00	74,963.78	10,011.76	844.58
1917.....	110,000.00	.....	.....	.....
	519,200.00	418,642.31	24,735.94	11,485.93
Rocky Mountain:				
1915.....	3,000.00	2,910.80	.....	(6)
1916.....	8,000.00	7,941.56	501.93	.....
1917.....	10,000.00	.....	.....	.....
	21,000.00	10,852.36	501.93	.....
Protection of Nat. Monument:				
1917.....	3,500.00	.....	.....	.....
Improvement of Mukuntuweap Nat. Monument, Utah:				
1917.....	15,000.00	.....	.....	.....

¹ No appropriation for Platt Park prior to 1911 fiscal year. Land prior to creation of park included in Sulphur Springs Reservation.

² Construction sanitary sewer, like amount being contributed by the city of Sulphur, Okla.; \$7,380.94 returned to city.

³ Expenditure of revenues of Crater Lake and Mesa Verde Parks for park purposes therein not authorized by existing statutes enacted by Congress.

⁴ \$21.30 on contract account construction ranger cabin included in this amount and not yet paid.

⁵ Expenditure of revenues from Rocky Mountain Park not authorized by existing statutes for park purposes therein.

APPENDIX A—Continued.

Visitors to national parks, 1909 to 1916.

Name of park.	1909	1910	1911	1912	1913	1914	1915	1916
Hot Springs Reservation.....	(²)	120,000	130,000	135,000	¹ 135,000	¹ 125,000	¹ 115,000	118,740
Yellowstone National Park..	32,545	19,575	23,054	22,970	24,929	20,250	51,895	35,849
Casa Grande Ruin	(²)	(²)	¹ 450	¹ 450	¹ 450	¹ 500	500	1,909
Sequoia National Park.....	854	2,407	3,114	2,923	3,823	4,667	7,647	10,780
Yosemite National Park.....	13,182	13,619	12,530	10,884	13,735	15,145	33,452	33,390
General Grant National Park.	798	1,178	2,160	2,240	2,756	3,735	10,523	15,360
Mount Rainier National Park.	5,968	8,000	10,306	8,946	13,501	15,038	35,166	23,989
Crater Lake National Park...	4,171	5,000	¹ 4,500	5,235	6,253	7,096	11,371	12,265
Wind Cave National Park...	3,216	3,387	3,887	3,199	3,988	3,592	2,817	9,000
Platt National Park.....	25,000	¹ 25,000	30,000	¹ 31,000	¹ 35,000	¹ 30,000	¹ 20,000	¹ 30,000
Sullys Hill National Park...	190	190	¹ 200	¹ 200	300	500	1,000	¹ 1,500
Mesa Verde National Park...	165	250	206	230	280	502	663	¹ 1,385
Glacier National Park.....			¹ 4,000	6,257	12,138	14,168	14,265	12,839
Rocky Mountain National Park.....							¹ 31,000	¹ 51,000
Hawaii.....								(²)
Lassen Peak.....								(²)
Total.....	86,089	198,606	224,407	229,534	252,153	240,193	335,299	358,006

¹ Estimate.² No record kept.

Receipts collected from automobiles and motorcycles admitted into the national parks during the period from Nov. 17, 1915, to Oct. 10, 1916.

Name of national park, and fee charged.	Number of permits issued.		Receipts.		
	Automobiles.	Motorcycles.	Automobiles.	Motorcycles.	Total automobiles and motorcycles.
Yellowstone: 105 season permits at \$10, 3,238 single trip at \$7.50. Deduction of transmission fees.....	3,343		\$25,335.00 42.87		
			25,292.13		\$25,292.13
Sequoia: 130 season permits at \$3, 599 single trip at \$2, 4 motorcycles at \$2..... Deduction of transmission fees.....	729	4	1,588.00 5.75	\$8.00	
			1,582.25		1,590.25
Yosemite: 52 in Mariposa Grove at \$1, 73 season permits at \$8, 3,788 single trip at \$5..... Deduction of transmission fees.....	3,913		19,576.00 59.07		
			19,516.93		19,516.93
General Grant: 8 permits in 1915 at \$1, 34 season permits at \$2.50, 1,672 single trip at 50 cents, 39 motorcycles at 50 cents..... Deduction of transmission fees.....	1,714	39	929.00 3.62	19.50	
			925.38		944.83
Mount Rainier: 1 single trip at \$5, 1,984 single trip at \$4, 790 season permits at \$6, 128 rent cars at \$1, 97 motorcycles at \$1..... Deduction of transmission fees.....	2,903	97	12,809.00 38.81	97.00	
			12,770.19		12,867.19
Crater Lake: 209 season permits at \$3, 1,540 single trip at \$2, 26 motorcycles at \$1..... Deduction of transmission fees.....	1,749	26	3,707.00 1.38	26.00	
			3,705.62		3,731.62

APPENDIX A—Continued.

Receipts collected from automobiles and motorcycles admitted into the national parks during the period from Nov. 17, 1915, to Oct. 10, 1916—Continued.

Name of national park and fee charged.	Number of permits issued.		Receipts.		
	Automobiles.	Motorcycles.	Automobiles.	Motorcycles.	Automobiles and motorcycles.
Mesa Verde:					
2 season permits at \$2, 176 single trip at 50 cents,					
2 motorcycles at 50 cents.....	178	2	\$92.00	\$1.00	
Deduction of transmission fees.....			.80		
			91.20		\$92.20
Glacier:					
31 season permits at \$2, 416 single trip at 50 cents,					
11 motorcycles at 50 cents.....	447	11	270.00	5.50	
Deduction of transmission fees.....			.47		
			269.53		275.03
Total.....	14,976	179	64,153.23	157.00	64,310.23

APPENDIX B.

[PUBLIC—No. 235—64TH CONGRESS.]

[H. R. 15522.]

An act to establish a National Park Service, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby created in the Department of the Interior a service to be called the National Park Service, which shall be under the charge of a director, who shall be appointed by the Secretary and who shall receive a salary of \$4,500 per annum. There shall also be appointed by the Secretary the following assistants and other employees at the salaries designated: One assistant director, at \$2,500 per annum; one chief clerk, at \$2,000 per annum; one draftsman, at \$1,800 per annum; one messenger, at \$600 per annum; and, in addition thereto, such other employees as the Secretary of the Interior shall deem necessary: *Provided*, That not more than \$8,100 annually shall be expended for salaries of experts, assistants, and employees within the District of Columbia not herein specifically enumerated unless previously authorized by law. The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

SEC. 2. That the director shall, under the direction of the Secretary of the Interior, have the supervision, management, and control of the several national parks and national monuments which are now under the jurisdiction of the Department of the Interior, and of the Hot Springs Reservation in the State of Arkansas, and of such other national parks and reservations of like character as may be hereafter created by Congress: *Provided*, That in the supervision, management, and control of national monuments contiguous to national forests the Secretary of Agriculture may cooperate with said National Park Service to such extent as may be requested by the Secretary of the Interior.

SEC. 3. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the National Park Service, and any violations of any of the rules and regulations authorized by this Act shall be punished as provided for in section fifty of the Act entitled "An Act to codify and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine, as amended by section six of the Act of June twenty-fifth, nineteen hundred and ten (Thirty-sixth United States Statutes at Large, page eight hundred and fifty-seven). He may also, upon terms and conditions to be fixed by him, sell or dispose of timber in those cases where in his judgment the cutting of such timber is required in order to control the attacks of insects or diseases or otherwise conserve the scenery or the natural or historic objects in any such park, monument, or reservation. He may also provide in his discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations. He may also grant privileges, leases, and permits for the use of land for the accommodation of visitors in the various parks, monuments, or other reservations herein provided for, but for periods not exceeding twenty years; and no natural curiosities, wonders, or objects of interest shall be leased, rented, or granted to anyone on such terms as to interfere with free access to them by the public: *Provided, however*, That the Secretary of the Interior may, under such rules and regulations and on such terms as he may prescribe, grant the privilege to graze live stock within any national park,

monument, or reservation herein referred to when in his judgment such use is not detrimental to the primary purpose for which such park, monument, or reservation was created, except that this provision shall not apply to the Yellowstone National Park.

SEC. 4. That nothing in this Act contained shall affect or modify the provisions of the Act approved February fifteenth, nineteen hundred and one, entitled "An Act relating to rights of way through certain parks, reservations, and other public lands."

Approved, August 25, 1916.

APPENDIX C.

[PUBLIC—No 171—64TH CONGRESS.]

[H. R. 9525.]

An act to establish a national park in the Territory of Hawaii.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tracts of land on the island of Hawaii and on the island of Maui, in the Territory of Hawaii, hereinafter described, shall be perpetually dedicated and set apart as a public park or pleasure ground for the benefit and enjoyment of the people of the United States, to be known as HAWAII NATIONAL PARK. Said tracts of land are described as follows:

First. All that tract of land comprising portions of the lands of Kapapala and Keauhou, in the district of Kau, and Kahaualea, Panaunui, and Apua, in the district of Puna, on the island of Hawaii, containing approximately thirty-five thousand eight hundred and sixty-five acres, bounded as follows: Beginning at a point on the west edge of the Keamoku Aa Flow (lava flow of eighteen hundred and twenty-three), from which point the true azimuth and distance to Government survey trigonometrical station Ohaieka is one hundred and sixty-six degrees twenty minutes, six thousand three hundred and fifty feet, and running by true azimuths: (First) Along the west edge of the Keamoku lava flow in a northeasterly and northwesterly direction, the direct azimuth and distance being one hundred and ninety-eight degrees ten minutes, fourteen thousand seven hundred feet; (second) two hundred and fifty-six degrees, eleven thousand four hundred feet, more or less, across the land of Kapapala and Keauhou to a marked point on the Humuula trail; (third) three hundred and twenty-eight degrees fifteen minutes, eight thousand seven hundred and twenty-five feet across the land of Keauhou to the top of the fault north of the Kau road; (fourth) along the fault in a northeasterly direction, the direction azimuth and distance being two hundred and fifty-one degrees and thirty minutes, four thousand three hundred and thirty feet; (fifth) two hundred and forty-five degrees, six thousand feet, to a point near the southwest boundary of the land of Olaa; (sixth) three hundred and thirty-seven degrees ten minutes, eight thousand six hundred and fifty feet, more or less, to the junction of the Hilo and Keauhou roads; (seventh) three hundred and thirty-three degrees and twenty minutes, three thousand three hundred feet, more or less, to the southwest corner of the land of Keaau; (eighth) three hundred and thirty-two degrees and ten minutes, seven thousand feet, along the land of Kahaualea; (ninth) two hundred and eighty-one degrees, thirty thousand three hundred and seventy-five feet, more or less, across the land of Kahaualea, passing through the north corner of the land of Panaunui, to the north corner of the land of Laeapuki; (tenth) thirty-one degrees thirty minutes, thirteen thousand two hundred feet, more or less, along the land of Laeapuki and across the land of Panaunui; (eleventh) eighty-nine degrees and ten minutes, thirty-two thousand nine hundred feet, more or less, across the land of Panaunui, Apua, and Keauhou to Palilele-o-Kalihipaa," the boundary point of the Keauhou-Kapapala boundary; (twelfth) fifty-one degrees and thirty minutes, five thousand and five hundred feet, across the land of Kapapala; (thirteenth) one hundred and two degrees and fifty minutes, nineteen thousand one hundred and fifty feet, across the land of Kapapala to a small cone about one thousand five hundred feet southwest of Puu Koae trigonometrical station; (fourteenth) one hundred and sixty-six degrees twenty minutes, twenty-one thousand feet, across the land of Kapapala to the point of beginning.

Second. All that tract of land comprising portions of the lands of Kapapala and Kahuku, in the district of Kau, island of Hawaii; Keauhou second, in the district of North Kona; and Kaohe, in the district of Hamakua, containing seventeen thousand nine hundred and twenty acres, bounded as follows: Beginning at Pohaku Hanalei of Humuula, a small cone on the brow of Mauna

Loa, and at the common boundary points of the lands of Humuula, Kapapala, and Kaohe, from which the true azimuth and distance to Government survey trigonometrical station Omaokoili is one hundred and ninety-five degrees twelve minutes eighteen seconds, seventy-eight thousand two hundred and eighty-six feet, and running by true azimuths: First, two hundred and ninety-eight degrees, five thousand two hundred and forty feet; second, twenty-eight degrees, thirty-six thousand nine hundred and sixty feet; third, one hundred and eighteen degrees, twenty-one thousand one hundred and twenty feet; fourth, two hundred and eight degrees, thirty-six thousand nine hundred and sixty feet; fifth, two hundred and ninety-eight degrees, fifteen thousand eight hundred and eighty feet, to the point of beginning.

Third. A strip of land of sufficient width for a road to connect the two tracts of land on the island of Hawaii above described, the width and location of which strip shall be determined by the Secretary of the Interior.

Fourth. All that tract of land comprising portions of the lands of Honuaula and Kula, in the district of Makawao, and Kipahulu, Kaupo, and Kahikinui, in the district of Hana, on the island of Maui, containing approximately twenty-one thousand one hundred and fifty acres, bounded as follows: Beginning at a point called Kolekole, on the summit near the most western point of the rim of the crater of Haleakala, and running by approximate azimuths and distances: First, hundred and ninety-three degrees forty-five minutes nineteen thousand three hundred and fifty feet along the west slope of the crater of Haleakala to a point called Puu-o-Ili; second, two hundred and sixty-eight degrees twenty-three thousand feet up the western slope and across Koolau Gap to the point where the southwest boundary of Koolau Forest Reserve crosses the east rim of Koolau Gap; third, three hundred and six degrees thirty minutes seventeen thousand one hundred and fifty feet along the southwest boundary of Koolau Forest Reserve to a point called Palalia, on the east rim of the crater of Haleakala; fourth, along the east rim of the crater of Haleakala, the direct azimuth and distance being three hundred and fifty-four degrees fifteen minutes eighteen thousand three hundred feet to a point on the east rim of Kaupo Gap, shown on Hawaiian Government survey maps at an elevation of four thousand two hundred and eight feet; fifth, eighty-eight degrees forty-five minutes three thousand three hundred feet across Kaupo Gap to a point called Kaumikaohu, on the boundary line between the lands of Kipahulu and Kahikinui; sixth, one hundred and two degrees and thirty minutes forty thousand seven hundred and fifty feet along the south slope of the crater of Haleakala to the point of beginning.

SEC. 2. That nothing herein contained shall affect any valid existing claim, location, or entry under the land laws of the United States, whether for homestead, mineral, right of way, or any other purpose whatsoever, or shall affect the rights of any such claimant, locator, or entryman to the full use and enjoyment of his land. Whenever consistent with the primary purposes of the park the act of February fifteenth, nineteen hundred and one, applicable to the location of rights of way in certain national parks and the national forests for irrigation and other purposes, shall be and remain applicable to the lands included within the park. The Secretary of the Interior may, in his discretion and upon such conditions as he may deem wise, grant easements or rights of way for steam, electric, or similar transportation upon or across the park.

SEC. 3. That no lands located within the park boundaries now held in private or municipal ownership shall be affected by or subject to the provisions of this Act.

SEC. 4. That the said park shall be under the executive 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, birds, mineral deposits, and natural curiosities or wonders within said park, and their retention in their natural condition as nearly as possible. The Secretary may in his discretion grant leases for terms not exceeding twenty years, at such annual rental as he may determine, of parcels of land in said park of not more than twenty acres in all to any one person, corporation, or company for the erection and maintenance of buildings for the accommodation of visitors; but no such lease shall include any of the objects of curiosity or interest in said park or exclude the public from free and convenient approach thereto or convey, either expressly or by implication, any exclusive privilege within the park except upon the premises held thereunder and for the time granted therein; and every such lease shall

require the lessee to observe and obey each and every provision in any Act of Congress and every rule, order, or regulation of the Secretary of the Interior concerning the use, care, management, or government of the park, or any object or property therein, under penalty of forfeiture of such lease. The Secretary may in his discretion grant to persons or corporations now holding leases of land in the park, upon the surrender thereof, new leases hereunder, upon the terms and stipulations contained in their present leases, with such modifications, restrictions, and reservations as he may prescribe. All of the proceeds of said leases and other revenues that may be derived from any source connected with the park shall be expended under the direction of the Secretary, in the management and protection of the same and the construction of roads and paths therein. The Secretary may also, in his discretion, permit the erection and maintenance of buildings in said park for scientific purposes: *Provided*, That no appropriation for the maintenance, supervision, and improvement of said park in excess of \$10,000 annually shall be made unless the same shall have first been expressly authorized by law: *And provided further*, That no appropriation shall be made for the improvement or maintenance of said park until proper conveyances shall be made to the United States of such perpetual easements and rights of way over private lands within the exterior boundaries of said park as the Secretary of the Interior shall find necessary to make said park reasonably accessible in all its parts, and said Secretary shall when such easements and rights of way have been conveyed to the United States report the same to Congress.

Approved, August 1, 1916.

APPENDIX D.

[PUBLIC—No. 184—64TH CONGRESS.]

[H. R. 348.]

An act to establish the Lassen Volcanic National Park in the Sierra Nevada Mountains in the State of California, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all those certain tracts, pieces, or parcels of land lying and being situate in the State of California and within the boundaries particularly described as follows, to wit: Beginning at the northeast corner of section three, township thirty-one, range six east, Mount Diablo meridian, California; thence southerly to the southeast corner of said section; thence easterly to the northeast corner of the northwest quarter of section eleven, said township; thence southerly to the southeast corner of the southwest quarter of section fourteen, said township; thence easterly to the northeast corner of the northwest quarter of section twenty-four, said township; thence southerly to the southeast corner of the southwest quarter of section twenty-five, said township; thence westerly to the southwest corner of section twenty-six, said township; thence southerly to the southeast corner of section thirty-four, said township; thence westerly along the sixth standard parallel north, allowing for the proper offsets, to the northeast corner of section three, township thirty north, range six east; thence southerly to the southeast corner of section twenty-seven, said township; thence westerly to the southwest corner of the southeast quarter of section twenty-eight, said township; thence northerly to the northwest corner of the southeast quarter of said section; thence westerly to the southwest corner of the northwest quarter of said section; thence northerly to the northwest corner of said section; thence westerly to the southwest corner of the southeast quarter of section twenty, said township; thence northerly to the northwest corner of the southeast quarter of said section; thence westerly to the range line between ranges five and six east; thence southerly along said range line to the southeast corner of township thirty north, range five east; thence westerly along the township line between townships twenty-nine and thirty north to the southwest corner of section thirty-three, township thirty north, range five east; thence northerly to the northwest corner of said section; thence westerly to the southwest corner of the southeast quarter of section twenty-nine, said township; thence northerly to the northwest corner of the southeast quarter of said section; thence westerly to the southwest corner of the northwest quarter of said section; thence northerly to the northwest corner of said section; thence westerly to the southwest corner of the southeast quarter of section twenty, township thirty north, range four east; thence northerly to the northwest corner of the southeast quarter of section eight, said township; thence easterly to the northeast corner of the southwest quarter of section nine, said township; thence northerly to the township line between townships thirty and thirty-one north; thence easterly along the sixth standard parallel north, allowing for the proper offsets, to the southwest corner of section thirty-three, township thirty-one north, range four east; thence northerly to the northwest corner of section twenty-one, said township; thence easterly to the range line between ranges four and five east; thence northerly along said range line to the northwest corner of fractional section eighteen, township thirty-one north, range five east; thence easterly to the southwest corner of section twelve, said township; thence northerly to the northwest corner of section one, said township; thence easterly along the township line between townships thirty-one and thirty-two north to the northeast corner of section three, township thirty-one north, range six east, the place of beginning, are hereby reserved and withdrawn from settlement, occupancy, disposal, or sale, under the laws of the United States, and said tracts are dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of

the people of the United States under the name and to be known and designated as the Lassen Volcanic National Park; and all persons who shall locate or settle upon or occupy the same, or any part thereof, except as hereinafter provided, shall be considered trespassers and be removed therefrom: *Provided*, That nothing herein contained shall affect any valid existing claim, location, or entry under the land laws of the United States or the rights of any such claimant, locator, or entryman to the full use and enjoyment of his land: *Provided further*, That rights of way for steam or electric railways, automobiles, or wagon roads may be acquired within said Lassen Volcanic National Park under filings or proceedings hereafter made or instituted under the laws applicable to the acquisition of such rights over or upon the national forest lands of the United States when the construction of such roads will not interfere with the objects of the national park, and that the United States Reclamation Service may enter upon and utilize for flowage or other purposes any area within said park which may be necessary for the development and maintenance of a Government reclamation project; that no lands located within the park boundaries now held in private, municipal, or State ownership shall be affected by or subject to the provisions of this act: *And provided further*, That no lands within the limits of said park hereby created belonging to or claimed by any railroad or other corporation now having or claiming the right of indemnity selection by virtue of any law or contract whatsoever shall be used as a basis for indemnity selection in any State or Territory whatsoever for any loss sustained by reason of the creation of said park.

SEC. 2. That said park 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 not inconsistent with the laws of the United States as he may deem necessary or proper for the care, protection, management, and improvement of the same. Such regulations being primarily aimed at the freest use of the said park for recreation purposes by the public and for the preservation from injury or spoliation of all timber, mineral deposits, and natural curiosities or wonders within said park and their retention in their natural condition as far as practicable and for the preservation of the park in a state of nature so far as is consistent with the purposes of this Act. He shall provide against the wanton destruction of the fish and game found within said park and against their capture or destruction for purposes of merchandise or profit, and generally shall be authorized to take all such measures as shall be necessary to fully carry out the objects and purposes of this Act. Said Secretary may, in his discretion, execute leases to parcels of ground not exceeding ten acres in extent at any one place to any one person or persons or company for not to exceed twenty years when such ground is necessary for the erection of buildings for the accommodation of visitors and to parcels of ground not exceeding one acre in extent and for not to exceed twenty years to persons who have heretofore erected, or whom he may hereafter authorize to erect, summer homes or cottages. Such leases or privileges may be renewed or extended at the expiration of the terms thereof. No exclusive privilege, however, shall be granted within the park except upon the ground leased. The regulations governing the park shall include provisions for the use of automobiles therein and the reasonable grazing of stock.

SEC. 3. That the Secretary of the Interior may also 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.

SEC. 4. That the Secretary of the Interior may exact such charges as he deems proper for leases and all other privileges granted hereunder.

SEC. 5. That no appropriation for the maintenance, supervision, or improvement of said park in excess of \$5,000 annually shall be made unless the same shall have first been expressly authorized by law.

Approved, August 9, 1916.

APPENDIX E.

THE NATIONAL PARKS AT A GLANCE.

Number, 16; total area, 7,534 square miles; chronologically in order of creation.

Name.	Location.	When established.	Area (miles).	Private lands (acres).	Visitors, 1916.	Special characteristics.
Hot Springs Reservation.....	Middle Arkansas.....	Apr. 20, 1832	1½	None.	118,740	{46 hot springs possessing curative properties—Many hotels and boarding houses—20 bathhouses under public control.
Yellowstone.....	Wyoming, Montana, and Idaho.	Mar. 1, 1872	13,348	.....	35,849	More geysers than in all rest of world together—Boiling springs—Mud volcanoes—Ferried forests—Grand Canyon of the Yellowstone, remarkable for gorgeous coloring—Large lakes—Waterfalls—Vast wilderness inhabited by deer, elk, bison, moose, antelope, bear, mountain sheep, etc.—Greatest wild bird and animal preserve in world. These ruins are one of the most noteworthy relics of a prehistoric age and people within the limits of the United States. Discovered in numerous condition in 1694.
Casa Grande Ruin.....	Arizona.....	Mar. 2, 1889	3	None.	1,909	The Big Tree national park—12,000 sequoia trees over 10 feet in diameter, some 25 to 36 feet in diameter—Towering mountain ranges—Stardling precipices.
Sequoia.....	Middle eastern California.....	Sept. 25, 1890	252 237	3,716.96	10,780	Valley of world-famed beauty—Lofly cliffs—Romantic vistas—Waterfalls of extraordinary height—3 groves of big trees—Large areas of snowy peaks—Waterwheel falls.
Yosemite.....	.....do.....	Oct. 1, 1890	1,125	19,827	33,390	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
General Grant.....	.....do.....	.....do.....	4	160	15,360	Largest accessible single peak glacier system—28 glaciers, some of large size—Forty-eight square miles of glacier, 50 to 500 feet thick—Wonderful subalpine wild-flower fields.
Mount Rainier.....	West central Washington.....	Mar. 2, 1899	324	18.2	23,989	Lake of extraordinary blue in crater of extinct volcano, no inlet, no outlet—Sides 1,000 feet high.
Crater Lake.....	Southern Oregon.....	May 22, 1902	249	2,458.11	12,205	Well known by reason of a cavern therein having many miles of galleries and numerous chambers of considerable size containing many peculiar formations.
Wind Cave.....	South Dakota.....	Jan. 9, 1903	16	160	9,000	{Many sulphur and other springs possessing medicinal value, under Government regulation.
Platt.....	Southern Oklahoma.....	July 1, 1902	1½	None.	230,000	{Small rugged hill containing prehistoric ruins—Practically a local park.
Sullys Hill.....	North Dakota.....	Apr. 21, 1904	1½	None.	21,500	{Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Mesa Verde.....	Southwestern Colorado.....	June 29, 1906	77	{ 880 993	{ 1,385 12,839	{Rugged mountain region of unsurpassed Alpine character—250 glacier-fed lakes of romantic beauty—60 small glaciers—Peaks of unusual shape—Precipices thousands of feet deep—Almost sensational scenery of marked individuality.
Boundary changed.....	.....do.....	June 30, 1913	.....	.....	.....	Heart of the Rockies—Snowy range, peaks 11,000 to 14,250 feet altitude—Remarkable records of glacial period.
Glacier.....	Northwestern Montana.....	May 11, 1910	1,534	16,668.11	.....	.....
Rocky Mountain.....	North middle Colorado.....	Jan. 26, 1915	358	2,745	251,000	.....

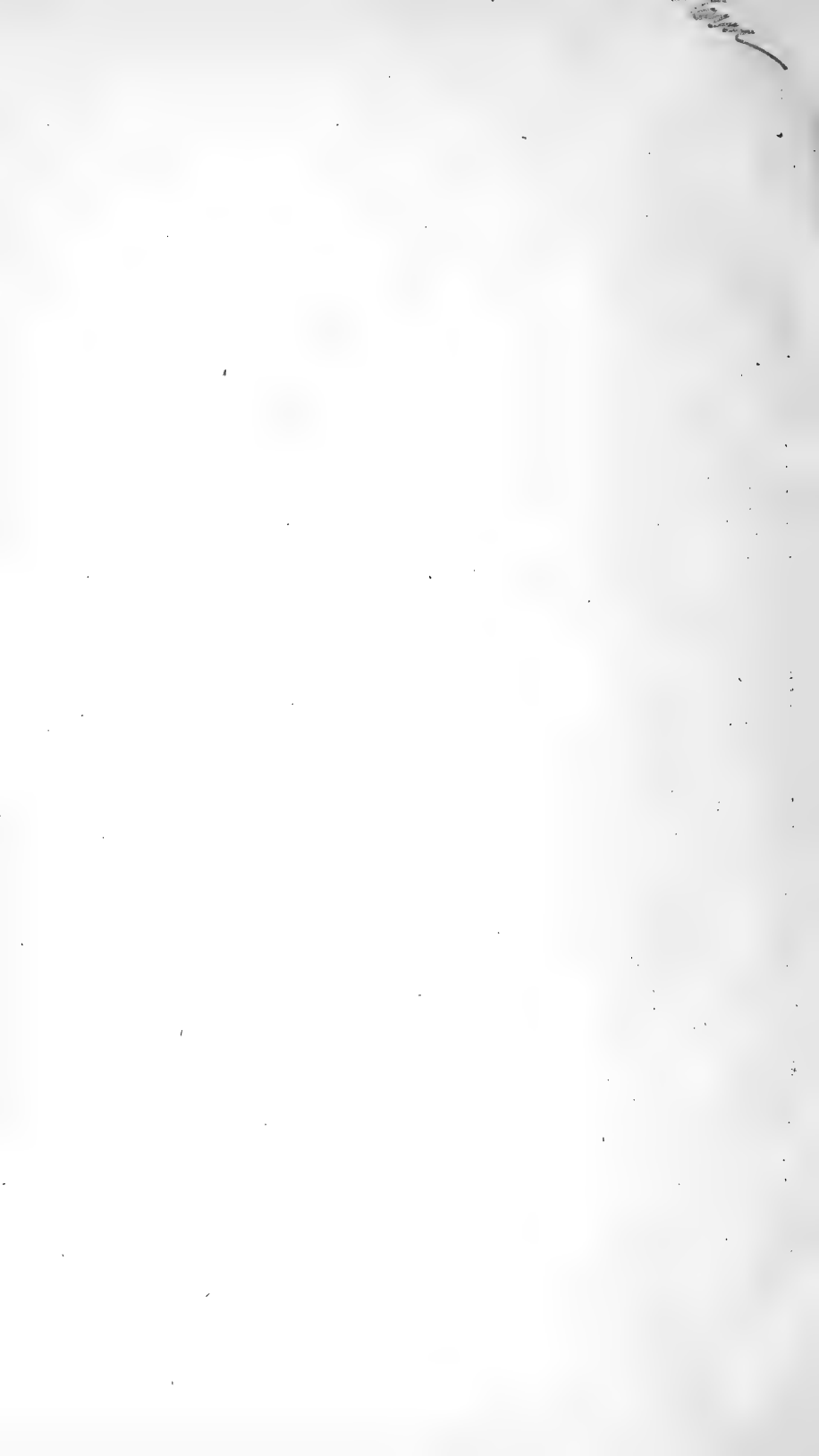
Hawaii.....	Hawaiian Islands.....	Aug. 1, 1916	118	\$ 41,000	(*)	<p>Three separate areas 2—Kilauea, continuously active for century, and Mauna Loa, altitude 13,675 (largest active volcano in world, erupting every decade)—are on Hawaii; Haleakala, on Maui, 10,000 feet high, with tremendous rift in summit 8 miles across and 3,000 feet deep; contains many cones, gorgeous tropical forests, mahogany groves, and lava caves; erupted 200 years ago. Only active volcano in United States proper—Lassen Peak 10,465 feet in altitude—Cinder Cone 6,879 feet—Hot springs—Mud geysers—Ice caves—Majestic canyons—Numerous lakes—Fire forests.</p>
Lassen Volcanic.....	Northern California.....	Aug. 9, 1916	124	880	(*)	

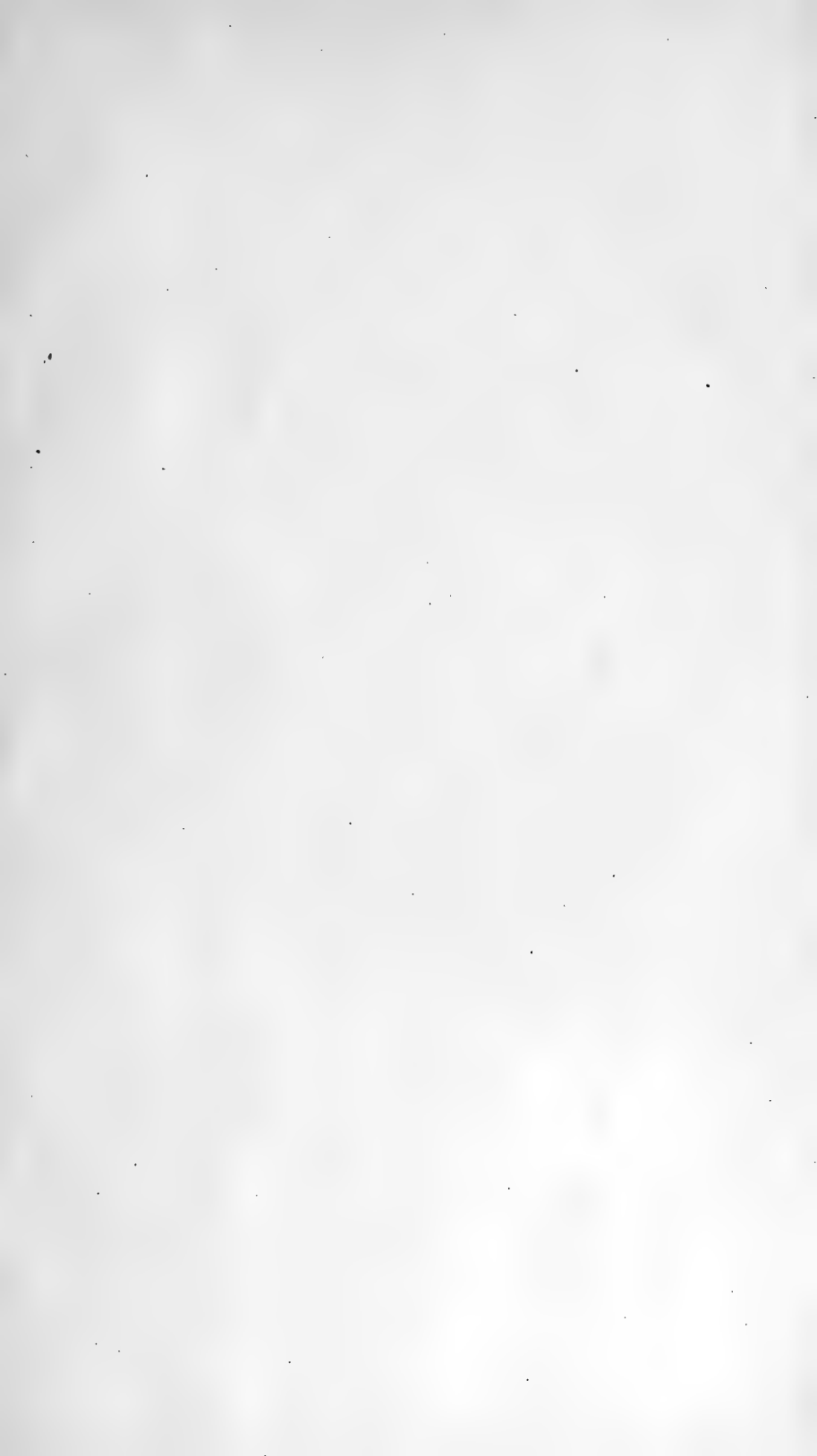
¹ In Wyoming, 3,114 square miles; in Montana, 198 square miles; in Idaho, 36 square miles.

² Estimated.

³ No record kept.

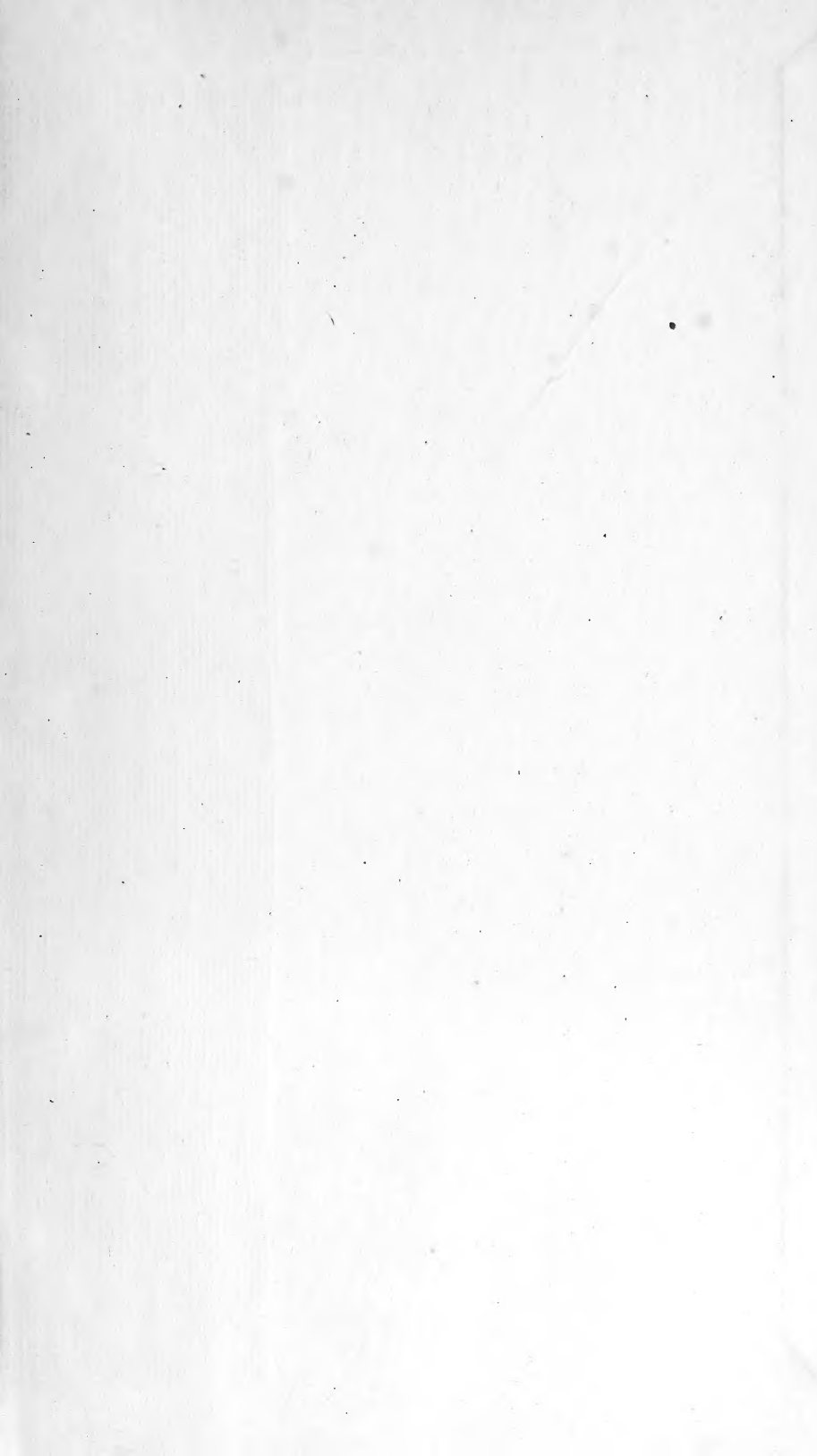












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