ANNUAL REPORTS
FOR
YELLOWSTONE NATIONAL PARK

ANNUAL REPORT

FOR

YELLOWSTONE NATIONAL PARK

1919

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October 29, 1919.

The Director,
National Park Service,
Department of the Interior,
Washington, D. C.

Dear Sir:

The Yellowstone Park Camping Company has furnished the missing data regarding meals and lodgings served during the past season, which was wanted for my annual report. Please complete the paragraph on page 23, which follows the paragraph giving meals and lodgings at hotels, so it will read as follows:

Permanent Camps:	Meals	Lodgings	Total
Mammoth Camp	32,718	12,[illegible]1	[illegible]
Geyser's Camp	[illegible]	14,631	[illegible]
Canyon Camp	60,479	17,115	77,594
Lake (Emergency camp only)	1,735	1,776	3,111
Camp Roosevelt (Lower Falls)	4,091	1,61[illegible]	[illegible]
Totals	154,[illegible]39	[illegible]0,[illegible]	[illegible]

Very truly yours,

[illegible] .

[illegible]ent.

October 25, 1919.

The Director,
National Park Service,
Department of the Interior,
Washington, D. C.

Dear Sir:

Reference to my annual report for the Yellowstone National Park for 1919 recently transmitted to you, it is requested that the name of Richard V. Dennison, Dubois, Wyoming, including the words "(Complete report not yet submitted.)" be stricken out from the list of the parties holding motor car operating privileges.

Upon investigation it is found that Mr. Dennison passed through the park with a mail train and a party of friends who were not paying him for the trip, and therefore he is not subject to paying a license fee.

The words to be stricken out are found on page 39 of the report.

Cordially yours,

Horace M. Albright,

Superintendent.

October 14, 1919.

Dear Sir:

Upon a careful rereading of the annual report for Yellowstone Park, I find that the following corrections seem necessary:

On page 5, in the next to the last line of the first paragraph, the word"reasons" should be changed to "them".

On page 16a the following paragraph should be inserted before the last paragraph on the page:

"On August 4, 1919, 1,255 tourists entered the park, the greatest number entering in any one day in the history of the Yellowstone. The greatest number of private automobiles entering in one day was 202 on August 4, 1919."

On page 53 the number of meals and lodgings served in permanent camps during the summer is still to be supplied. For some reason or other the camping company has not been able to expedite the compilation of its statistics, to such an extent as to get the figures we require for this table. They will follow in a few days.

On page 60 the paragraph regarding the tame herd of buffalo should be changed to read as follows:

"The tame herd of buffalo is located on the lower drive near the south of Buffalo Creek. At present the herd consists of 17

animals, having increased from a herd of 21 animals purchased in 1902. Ninety calves were born during the year, 3 of which were born in September. Five of these, however, were killed recently while the herd was being vaccinated, leaving but 85 alive at the present time, of which 50 are males. Thirty of these bulls were castrated."

"The following data relating to the buffalo calves were compiled on October 15, 1919:

90 calves born since last annual report	53 males	37 females
Killed while being vaccinated October [illegible] and 15............	3	2
Total alive........................	50 males	35 females"

Then the following new paragraph should be inserted:

"Of the entire herd 355 animals, including all of the calves, have just been vaccinated for hemorrhagic septicemia. Besides the calves already mentioned, one of the old cows was killed during the process of vaccination.

On page 65, in the second line of the last paragraph, the word "mother" should be inserted at the end of the line, so that this particular clause may read "among them one or two families consisting of mother and cubs."

On page 86, in the last line of the page, the word "dilapidated" on page 87 is incorrectly spelled.

On page 88, in the third line, the sentence should begin "He is now engaged" in stead of "he is not engaged."

On page 10, in recommendation No. 11, the word "dilapidated" should be corrected.

Referring to the data regarding Glacier National Park assembled for your report, please change the number of acres in the Two Medicine district that was burned over in the big fire from 500 to 3,000.

Cordially yours,

[illegible]

Superintendent.

The Director,
National Park Service,
Washington, D. C.

YELLOWSTONE NATIONAL PARK

Horace M. Albright, Superintendent,
Chester A. Lindsley, Assistant Superintendent,
Yellowstone Park, Wyoming.

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GENERAL STATEMENT.

The Yellowstone National Park was reserved from the public domain by act of Congress approved March 1, 1872, [1/] and dedicated as a "pleasuring-ground for the benefit and enjoyment of the people." When established the park was situated in a vast region which had been divided into a few territories and practically all of which was embraced within the great Louisiana Purchase area. When these territories were finally changed to States and the surveys were made of these new commonwealths, it was found that while the park was principally in Wyoming, it extended more than two miles into Montana on the north and almost two miles into Montana and Idaho on the west.

The park is rectangular in shape, with east and west sides about 62 miles in length and north and south boundaries 54 miles long. The total area of the park is 3,348 square miles, or 2,143,720 acres, of which 3,114 square miles or 1,992,960 acres are in the State of Wyoming, 198 square miles or 126,720 acres are in the State of Montana, and 36 square miles or 23,040 acres are in the State of Idaho. It is the biggest park in the United States, and next to

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1/ Secs. 2474 and 2475, R.S., 17 Stat., 32.

the largest park in the world, being exceeded in area only by Jasper National Park of the Dominion of Canada.

The altitude of the park is 6,000 to 11,000 feet.

The boundaries of the park have never been changed since they were first established in 1872. However, it is proposed now to extend the park lines to include the Teton Mountains, the headwaters of the Yellowstone River, the valley of Pacific Creek, and the country north of the Buffalo Fork of the Snake, taking in an area of approximately 1,265 square miles, most of which now lies in a forest reserve and two State game preserves. All of this land was withdrawn from settlement on July 2, 1918, in aid of pending legislation.

ADMINISTRATION OF THE PARK.

For fourteen years after its establishment, Yellowstone National Park was administered by civilian superintendents appointed by the Secretary of the Interior. With the exception of the first superintendent, N.P. Langford, one of the explorers of the park, who served five years without salary or any other emoluments, and without assistance, these officers were aided by a few scouts.

In the early eighties some very unsatisfactory conditions connected with the administration of the park were aired in Congress, and the result of these findings was the enactment of a law approved March 3, 1883, authorizing the Secretary of the Interior to call upon the Secretary of War for details of troops

to guard the park. Nevertheless, as long as funds were available to manage the park, the interior department did not call for soldiers. At length Congress refused to appropriate any funds for the protection of the park, and on August 20, 1886, the civilian force was finally removed and a detachment of troops assumed control of the park, Capt. Moses Harris becoming the first military acting superintendent.

It was 32 years later, on October 31, 1918, when complete civilian control of the park was finally restored. Meanwhile Fort Yellowstone, capable of accommodating four troops of cavalry, was built and used by the military force, but rarely ever to its full capacity. The fort was abandoned with the withdrawal of the troops last year.

During the military rule in the park not less than a dozen different officers of the U. S. Cavalry were in charge as acting superintendent, several of them making enviable records. Three of them were in charge for periods of six years each. One of them served two terms in this office, about ten years apart.

PROTECTION OF THE PARK.

The protection of Yellowstone Park is now under the direct control of the superintendent, who exercises his authority through a very efficient ranger force, composed of an acting chief park ranger, three assistant chief park rangers, and 25 park rangers.

This is the existing force, but the authorized force includes a chief park ranger and four assistant chief park rangers. During the tourist season a temporary force of from 25 to 30 park rangers is employed to check automobiles at the various gateways, to control traffic on the highways, to protect the geyser, hot spring and other formations, and to fight fires, or to perform any other service required.

The ranger force is uniformed during the tourist season and presents a very striking appearance; in the fall, winter, and spring these men patrol the trails in plain clothes, and are very effective in protecting the park from poachers and other trespassers.

I am particularly proud of the present ranger force and its achievements of the past season when the demands upon it were tremendous. It has demonstrated beyond peradventure of a doubt that it is far more capable of protecting this great reservation than were the military forces. These park rangers love the interests of the park at heart, they love its wild life, its forests, its lakes and streams, and they are ready to protect these features regardless of the conditions under which this must be done. They come in closely in contact with the tourists in the summer season, and their courteous treatment of these visitors has created many words of commendation of the force, even by people who have been arrested by them for violation of the rules and regulations.

On the other hand, the soldiers were here to-day and gone to-morrow. None took the same deep interest in the park that the park

rangers do, but in most cases they were care free and unconcerned with the problems of protecting the reservation. It was always necessary, even when the military forces were here, to employ a group of civilian scouts who knew the park to care for the wild animals and to guide new troops to their outposts, the latter, unfortunately, an all too frequent duty.

[illegible].

Since July 1, 1916, the superintendent has been vested with full powers of supervision of the improvement and maintenance of roads, trails, buildings, and all other engineering work, much of which was formerly exercised by a district engineer officer of the Corps of Engineers of the U. S. Army. In other words, control of the administration, protection, maintenance, and improvement of the park is now invested by the superintendent for the first time since the early eighties. This centralization of authority in one head, with one office, has resulted in effecting several important economies, and has made it possible to correlate the various activities of the park in a peculiarly satisfactory and effective manner. The new organization is not entirely complete, and another year may elapse before everything is running with perfect smoothness, but perfectly balanced operations are on the way.

HEADQUARTERS.

Park headquarters are located at Mammoth Hot Springs, 5 miles from the northern entrance. Fifteen ranger stations are maintained at convenient points throughout the park, and these are connected with headquarters by 200 miles of telephone lines.

The abandoned Fort Yellowstone buildings are now the headquarters structures. In one of these buildings the park office is maintained, but early next year we hope to remodel the bachelor officers' quarters in the old fort for use as an administration building and museum. A museum here is a most needed institution in connection with the educational work of the service, and should be established very soon. Likewise the new administrative building will have a large and fully equipped information office, with a sufficient supply of publications on the entire [illegible] to meet all tourist inquiries.

Park Ranger M. P. Skinner is now engaged in collecting specimens of geyser and hot spring formations, mammals, birds, wild flowers, etcetera, for the museum exhibits.

A number of the ranger force is a deputy U. S. marshal for Wyoming, and most of the park rangers are deputy State game wardens of Wyoming, Montana, and Idaho.

JURISDICTION OF OFFENSES.

Exclusive jurisdiction of felonies and misdemeanors, including violations of the rules and regulations, committed in Yellowstone Park is vested in the Federal Government. A resident U. S.

Commissioner has authority in cases of misdemeanors or violations of the regulations to impose fines up to $500, to sentence offenders to imprisonment of not exceeding six months, or to impose penalties of both fine and imprisonment. In felony cases the Commissioner has power to determine probable cause for holding a suspect, and he may hold him for trial by the U. S. District Court for Wyoming. Whenever a felony or misdemeanor not covered by the laws of the United States is committed in the park, the laws of the State of Wyoming will govern the action of the court or court commissioner, as the case may be.

Hon. John T. Meldrum has been U. S. Commissioner for the park since 1894, when the jurisdiction act of May 7, 1894, went into effect.

WEATHER BUREAU.

Reports of temperature, precipitation, wind, sunshine, etc., have been furnished by the bureau office of the United States Weather Bureau which is maintained at Yellowstone Park Lake. Such observations as were made here were supplemented by temperature and precipitation records made by the rangers at Norris, Mammoth, Gallatin, Snake River, Lake, and Old Faithful Geyser Stations. The office was in charge of Mr. George T. Lawton, Observer, until October 5, when he was relieved by Mr. Edgar Fletcher.

The winter of 1918-19 was one of the most remarkable for mildness of weather on record. This is shown not only by weather re-

ports of temperature, precipitation, etcetera, but by the fact that the winter was so open that it was not necessary to feed hay at any time to the wild animals. Trucks were able to travel the road between headquarters and Tower Falls all winter. Teams came in from the west entrance on January 15th without shoveling snow, and trucks went to Canyon as early as May 19th, both of which are very unusual.

RAILROADS AND HIGHWAYS TO THE ENTRANCES.

There are four principal gateways to Yellowstone National Park, and three are accessible by both train and automobile. The fourth has no train service.

Northern Gateway.

The northern or Gardiner gateway is reached via a Northern Pacific Railway branch line from Livingston, Montana. The Northern Pacific operated two trains a day over this branch during the season. Through Pullman service to and from both eastern and western points to the north gateway was maintained. The town of Gardiner is situated on the park line, and is 53 miles from Livingston.

An automobile highway follows the railroad. This road is a part of the Yellowstone Trail and the National Parks Highway, two great transcontinental routes. It is also a part of the three main routes to Glacier National Park, the Yellowstone-Glacier Red Line Highway, via Livingston, White Sulphur Springs, and Great Falls; the Geysers to Glaciers Highway, via Livingston, Bozeman, and Helena; and the Flathead Valley Route via Livingston,

Butte, and Missoula. This northern approach road was in good repair most of the summer, and part of it is now being rebuilt under funds provided by Park County and the National Government under the Federal Aid Road Act.

Western Gateway.

The western or Cody gateway is reached by automobile service over an excellent highway maintained by the State and the National Park Service from the town of Cody, 53 miles from the park boundary. The railroad service to Cody is maintained by the Chicago, Burlington, and Quincy Railroad, which operated two trains a day during the past season, making connections at Billings with trains of the northern Pacific and Great Northern routes and at Billings and Frannie with its own trains for the East and Denver, respectively. Through Pullman service was maintained, which made travel to Cody particularly comfortable and convenient.

The automobile road between Cody and the Shoshone National Forest boundary, a distance of 27 miles, was maintained by Park County, Wyoming, and citizens of Cody until July 1, 1919, when the duty of maintaining this section was taken over by the State Highway Commission. The road through the Shoshone National Forest, a distance of 26 miles, was maintained by the National Park Service in accordance with the provisions of the sundry civil appropriation act. This entire highway is a part of the Yellowstone Highway which traverses Wyoming from Cheyenne to Cody and the park by way

of Douglas, Casper, and Thermopolis. It is also on the Black and Yellow Trail, a transcontinental route that is being greatly improved and vigorously promoted at the present time. The Black and Yellow Trail crosses the Bighorn Mountains by way of the beautiful Ten Sleep Canyon.

The Cody approach road has never been in better condition than it was during the past season, and, considering the exceedingly dry summer, the roads across the State of Wyoming were in very fair condition.

In late July, accompanied by officers of the Glacier and Yellowstone park transportation companies and other parties interested in the development of Interpark travel, I made a trip from the park headquarters to Denver, a distance of 809 miles, in 30 hours and 45 minutes.

Western Gateway.

The western or Yellowstone gateway is reached by the Yellowstone Park branch of the Oregon Short Line Railway, which operated nightly during the past season an all-Pullman train known as the Yellowstone Special. This train left Salt Lake in the early evening and arrived at the western gateway at 7:00 a.m. the next day.

Automobile roads lead to this gateway from Utah and Idaho points, and sections of the Montana State highway system approach this entrance by way of the Ruby Valley and Virginia City, the

Madison River Valley, and the Gallatin Valley. With the exception of the road following the direct route from Ashton, Idaho, to Yellowstone, Montana, most of these highways were in good condition for automobile travel during the past summer. The road between Ashton and the park entrance, however, was in an extremely bad condition, and as a result many motorists made long detours in order to avoid this road. Plans are now under way to improve this bad approach road before the opening of next season.

Southern Gateway.

The southern or Snake River entrance at the present time has no tr in service. Automobile roads lead to this entrance from Riverton and Lander, Wyoming, by way of the Wind River and Togwotee Pass; from Rock Springs and Pinedale, Wyoming, by way of Hoback River and the Jackson Hole; from the Teton Valley, Idaho, via Victor, Idaho, the terminus of the Teton Valley branch of the Oregon Short Line, and Teton Pass; and from Ashton, Idaho, by way of Squirrel Meadows and the head of Jackson Lake, a road that is now in a bad state of disrepair.

The Teton Pass road has been in excellent condition for travel throughout the summer. The Wind River and Hoback River routes have been passable for automobiles, but have not been very satisfactory for travel, due to the great amount of reconstruction work that has been carried on. It is expected that both of these routes will be in a much better condition for travel next year. The road

than are being rebuilt under cooperative agreements between the State of Wyoming and the Federal Government, under the Federal Aid Road Act, the Forest Service also supplying funds from its highway appropriation.

There are two other entrances which are becoming increasingly important.

Northwestern Gateway.

The northwestern or Gallatin entrance is reached by a road which leads from the thriving city of Bozeman through the superbly colored and beautifully carved gorge of the Gallatin River. This road is now being rebuilt with State, county, and Federal aid funds, and when completed will doubtless become one of the most popular approaches to the park.

Northeastern Gateway.

The northeastern or Cooke City entrance will be reached by a road which is being constructed from Red Lodge and Roscreek, Montana. This new road will traverse the Beartooth Mountain range and will be a very scenic approach. I have no information as to when this road will probably be completed, but in all likelihood it will be several years before it reaches the park boundary. In the meantime the Cooke City region is accessible from the northern entrance by way of the Lamar River Canyon and the canyon of Soda Butte Creek, on the park highway system.

THE PARK ROAD SYSTEM.

There are 27[illegible].0 miles comprising the main highway system of the park, and there are 24.75 miles of secondary road within its boundaries. These roads, with the distance between junction points, are shown clearly on the attached map.

In the Shoshone National Forest, east of the park, we are charged with maintaining 20 miles of the main Cody approach road, and in that part of the Teton National Forest which is comprehended in the plan to extend the park boundaries we are required by law to maintain approximately 30 miles of the main highway leading to the southern entrance of the park. Should the park be enlarged, t is obligation will extend to the upkeep of considerable additional mileage along the north side of the Buffalo Fork of the Snake River and the larger part of the road from Moran, Idaho, toward the present southern entrance.

The work that was performed on all of the roads under our control is outlined in another portion of this report.

THE PARK TRAIL SYSTEM.

There are between 200 and 300 miles of trails in the park, over 200 of which are fairly well cleared, and upon 200 miles of which are particularly good tourist trails. All of the trails are used by the rangers for fire patrols.

The work accomplished in promoting this trail system is discussed in another part of this report, as are also the extensions

of the trail system that ought to be undertaken in the early future.

TRAVEL OF THE 1919 SEASON.

All travel records of Yellowstone National Park were broken during the 1919 season. Never in the history of the park have so many people enjoyed its opportunities for recreation and sight-seeing as came here for that purpose this year. Furthermore, the tourists this season saw more of the park than usual, there was a general tendency to cover all of the main roads and make as many side trips as possible.

The spring conditions for travel were good. Snow left the roads earlier than usual, and on the opening day of the season, June 20th, the main belt line and all of the entrance roads were open to public use. The first day of the season saw the hotels and permanent camps filled to their capacity, and this condition continued until practically the close of the season on September 20th.

It is with a feeling of pride and happiness that I call attention to the increase in the use of the trails of the park during the year. The people who toured the park with pack horses all expressed themselves as tremendously pleased with their trips. They all had wonderful opportunities to see the wild animals under the best conditions, and of course they enjoyed thrilling rides through scenic regions that are hardly surpassed in any national

park. Most of the trail parties also covered the territory south of the park that it is proposed to add to it, with the Selkirk Mountains.

The aggregate number of persons visiting the park during the year ended October 12, 1919, was 62,261. The following tables show some very interesting analyses of this travel figure:

Travel by different entrances:

From the north, via Gardiner, Mont.	22,706
From the west, via Yellowstone, Mont.	25,552
From the east, via Cody, Wyo.	13,455
From the south, via Moran, Wyo.	548
Total	62,261

Yellowstone Park Transportation Co.:

Entering via the northern entrance	9,253
Entering via the western entrance.	8,097
Entering via the eastern entrance	3,925
	21,275

Making trips with private transportation:

With automobiles paid and complimentary	37,[illegible]	
With automobiles, second trip	2,[illegible]	.. 39,806
With motorcycles	56	
With licensed saddle and pack trains	125	
With miscellaneous facilities, including out-of-season visitors to the park	215	
		1100
Grand total		62,261

Private automobile travel:	Automo- biles	Tourists
Entering via the northern entrance	3[illegible]0	14621
Entering via the western entrance	3[illegible]3	14[illegible]0
Entering via the eastern entrance	2[illegible]3	10[illegible]0
Entering via the southern entrance	6[illegible]	[illegible]5
Totals	10[illegible]7	3[illegible]6

Motorcycle travel:	Motor- cycles	Tourists
Entering via the northern entrance	20	31
Entering via the western entrance	9	14
Entering via the eastern entrance	7	11
Totals	36	56

The following tables are given for the purpose of comparing the travel of this season with the number of visitors entering the park in 1918, the war season; 1917, the season of average travel since the admission of automobiles to the park; and 1915, the Panama-Pacific Exposition season. These tables give in the first column the number of automobiles and in the case of the 1918 and 1919 statistics the number of motorcycles entering the park; in the second column the number of visitors in the park is shown by reference to entrances, those entering via Soda Butte Ranger Station or the northeast gateway being listed with the eastern entrance visitors; the next column shows the number of visitors reaching the north, west, and east entrances by rail; and the last column gives the total number of visitors by entrances.

1919

Entrance	Pvt. Transptn. Cars	Pvt. Transptn. Visitors	By Rail	Total Visitors
North	3498	13433	9353	22786
West	5792	14661	8897	23558
East	2860	10430	5025	15455
South	623	2462		2462
TOTALS	10773	40986	21275	62261

1918

Entrance	Pvt. Transptn. Cars	Pvt. Transptn. Visitors	By Rail	Total Visitors
North	1528	6027	1[illegible]	[illegible]
West	1[illegible]	[illegible]	11[illegible]	[illegible]
East	1120	[illegible]114	[illegible]	[illegible]
South	135	[illegible]		[illegible]
TOTALS	[illegible]	[illegible]	[illegible]	[illegible]

1/ Includes 36 motorcycles carrying [illegible] people.
2/ Includes 1[illegible] motorcycles carrying [illegible].
3/ Includes [illegible] people [illegible] via the northeastern gateway.

1917

Entrance	Pvt. Transptn. Cars	Pvt. Transptn. Visitors	By Rail	Total Visitors
North	1994	7645	5774	15410
West	2258	9055	5495	14600
East	1353	5061 1/	1004	6055
South	96	356		356
TOTALS	5701	22117	12273	35400

1916

Entrance	Pvt. Transptn. Cars	Pvt. Transptn. Visitors	By Rail	Total Visitors
North	365	3094	14569	17663
West	392	2795	29756	32551
East	193	1198	352	1550
South	8	31		31
TOTALS	958	7418	44677	51[illegible]

1/ Includes 10[illegible] people entering via the [illegible] gateway.

Alabama	0	0	0	0	1	2	0	0	1	2
Arkansas	1	4	4	10	19	75	1	2	25	89
Arizona	[illegible]	[illegible]	12	[illegible]	[illegible]	13	11	19	35	126
Colorado	24	[illegible]	54	189	[illegible]	86[illegible]	6	20	342	1166
California	10[illegible]	[illegible]	204	714	69	20[illegible]	9	[illegible]7	3[illegible]7	1265
Connecticut	2	[illegible]	3	12	[illegible]	17	0	0	11	36
Delaware	1	[illegible]	1	2	1	5	0	[illegible]	3	10
Florida	5	16	2	7	3	14	0	0	10	37
Georgia	2	5	4	14	2	10	0	0	[illegible]	29
Illinois	67	22[illegible]	12	[illegible]	77	[illegible]	[illegible]	1[illegible]	161	597
Indiana	[illegible]	[illegible]1	9	[illegible]	[illegible]1	[illegible]	0	[illegible]	[illegible]	[illegible]
Iowa	[illegible]	[illegible]	6	[illegible]4	160	591	[illegible]	[illegible]	262	916
Idaho	[illegible]	10[illegible]	10[illegible]	4205	1[illegible]	47	232	[illegible]	1355	5319
Kansas	17	[illegible]	25	132	176	591	[illegible]	29	226	813
Kentucky	1	5	0	0	3	10	0	0	4	15
Louisiana	2	7	5	14	10	[illegible]6	0	[illegible]	17	67
Montana	170[illegible]	6[illegible]1[illegible]	[illegible]0	3021	2[illegible]	9[illegible]2	[illegible]	[illegible]	2059	10417
Maryland	[illegible]	9	1	4	1	7	0	0	5	20
Massachusetts	[illegible]	14	4	15	11	31	1	[illegible]	20	62
Maine	1	2	11	36	1	[illegible]	0	0	1[illegible]	44
Michigan	[illegible]	1[illegible]	[illegible]	10	[illegible]	103	5	1[illegible]	[illegible]	528
Mississippi	11	41	0	0	0	0	0	[illegible]	11	41
Missouri	1[illegible]	[illegible]1	0	10[illegible]	96	381	[illegible]	1[illegible]	145	559
Minnesota	10[illegible]	[illegible]	[illegible]	1[illegible]	[illegible]2	120	0	0	149	520
New York	[illegible]	91	6	30	36	123	1	4	73	2484
New Mexico	[illegible]	[illegible]	4	14	11	47	0	0	17	65
New Jersey	[illegible]	11	3	1[illegible]	[illegible]	1[illegible]	1	5	11	47
New Hampshire	1	2	1	2	1	2	1	2	4	8
Nevada	1	4	16	52	0	0	1	6	20	62
Nebraska	[illegible]	17[illegible]	[illegible]	126	265	[illegible]0	12	[illegible]7	356	1337
North Dakota	17[illegible]	1[illegible]	[illegible]	26	[illegible]	120	2	[illegible]	103	668
Oklahoma	[illegible]	[illegible]	2[illegible]	114	60	37[illegible]	3	[illegible]	105	794

Ohio	38	11[illegible]	16	56	53	139	3	9	110	319
Oregon	[illegible]	343	140	518	15	40	[illegible]	12	246	913
Pennsylvania	19	51	5	16	25	84	1	4	48	155
Rhode Island	[illegible]	5	0	0	0	0	0	0	2	5
South Dakota	101	328	7	20	76	255	1	2	185	605
Texas	7	19	20	57	77	265	1	6	105	347
Tennessee	1	4	2	[illegible]	7	22	2	9	12	43
Utah	16	59	660	2856	11	43	117	480	804	3438
Virginia	4	[illegible]	0	0	0	0	0	0	4	8
Vermont	1	[illegible]	1	4	1	5	0	0	3	12
Washington	260	862	175	675	58	216	3	9	496	1762
Wisconsin	79	287	8	33	32	116	1	2	120	438
Wyoming	48	172	42	1[illegible]9	693	2739	95	337	878	3387
West Virginia	0	0	0	0	4	12	0	0	4	12
District Columbia	2	3	2	5	0	0	0	0	4	8
Canada	44	169	26	113	8	22	0	0	78	304
Canal Zone	0	0	0	0	1	2	0	0	1	2
Denmark	0	0	0	0	0	0	1	2	1	2
Totals	3273	11894	3525	13567	2793	10104	538	2119	10129	37684

Complimentary cars, unclassified by States	17	
Motorists entering in complimentary cars, unclassified by States		40
Second entry cars, unclassified by States	591	
Motorists in second entry cars, unclassified by States		2162
Grand total, all cars and motorists, classified and unclassified	10737	39886

AUTOMOBILE AND MOTORCYCLE FEES.

A fee of $7.50 was charged for automobile tickets of passenger and $2.50 for motorcycle tickets of passenger, which were good for the entire season. Complimentary tickets were issued to officials of adjoining States or counties, and to officers of the National Government visiting the park officially.

ACCOMMODATIONS.

The above tables disclose the most interesting fact that of the grand total of 83,861 visitors to the park, approximately two-thirds came here in their private automobiles. Of these probably 60 per cent brought with them their own camp equipment, and in most cases used and appreciated our special camp grounds where wood, water, toilet facilities, and, at Mammoth Hot Springs, electric lights, were furnished without charge.

At times during the summer these camp grounds were overcrowded, and before the opening of next season they must be expanded and new areas opened for this use. Likewise, more wood must be provided, and a considerable sum of money must be expended in improving the water and sanitation facilities. The popularity of these camps fully warrants their development on a large scale.

Of the 12,679 tourists who came to the park by rail, and utilized the facilities of the Yellowstone Park Transportation Company, making the complete park tour, 10,[illegible] were accommodated at the hotels

and 8,437 at the permanent camps. We have no data as to the accommodations furnished to people who made short trips in the park or toured only a part of the reservation with the Yellowstone Park Transportation Company. This group of visitors numbered 2596. Likewise we have not been able to compile statistics of the number of private motorists who secured accommodations at the hotels and permanent camps, but, as I have stated, it is estimated that about 60 per cent of these visitors brought their own camp equipment with them. This is a conservative estimate, hence not more than fifteen or sixteen thousand individual automobilists purchased meals or lodgings or both at the hotels and camps.

The total meals and lodgings furnished at the hotels and camps during the season were as follows:

Hotels:

	Meals		Lodgings		Total
Mammoth Hotel ----------	74,210	---	17,737	----	[illegible]
Old Faithful Inn ----------	61,218	---	14,630	----	[illegible]
Canyon Hotel ----------	21,898	---	20,626	----	[illegible]
Totals ----------	197,326	---	66,023	----	[illegible]

Permanent Camps:

Mammoth Camp ----------					
Old Faithful Camp ----------			Figures to		
Canyon Camp ----------					
Lake (Emergency camp only)			follow in one week.		
Camp Roosevelt (Tower Falls)	----------		----------		----------
Totals ----------					

SERVICE TO THE PUBLIC.

At times during the season the hotels and camps were filled to overflowing, and there were occasions when people had to be turned away from the establishments at the Grand Canyon of the Yellowstone, despite the fact that both the hotel and camp at this point are much larger than the plants at Mammoth Hot Springs, Upper Geyser Basin, and Lake Yellowstone. This was due to congestion at the Canyon, owing to lack of accommodations at the Lake. Nevertheless, remarkably good service was furnished to the public by both the hotel and camp companies, and few complaints regarding unsatisfactory treatment at the hands of the companies have been made to my office, or to the Service, so far as I have been advised.

That service should have been so uniformly satisfactory is especially worthy of note because both the hotels and camps had great difficulty in securing and keeping sufficient competent help to operate their several plants. Time and again during the summer they were almost brought to the point of closing the doors of one or more resorts, due to lack of enough assistance to keep them in operation. Laundry help was particularly hard to secure.

LAKE HOTEL AND PERMANENT CAMP.

This discussion leads naturally to the situation at Lake Yellowstone, where the hotel and permanent camp were both closed during the season. In the first place, they were not in proper condition to open. Many necessary repairs had to be made to the hotel, and

the permanent camp was in reality out of existence. The latter was torn down in the autumn of 1917 in preparation for the building of a complete new plant. A new central structure was begun, but snow caused the early cessation of work, and of course war conditions prevented rebuilding last year. It would have been impossible to have rebuilt the camp during the spring of 1919.

But quite aside from the physical difficulties in the way of opening the Lake resorts, the labor situation was such that it would have been practically impossible to have secured crews for either place.

Work is in progress now on the rebuilding of the Lake Camp, and the hotel is undergoing extensive repairs with a view to full operations next season. An exceedingly attractive log building of ample proportions is being constructed at the camp. This will be used as a dining room and lobby, and will be in most respects more interesting and attractive than any building in the park except Old Faithful Inn and the Canyon Hotel. A new kitchen, new comfort stations and flush toilets, and a general rearrangement of tents will constitute the bulk of the other improvements that will be made in this camp before next season.

At the Lake Hotel the improvements that will be the most noteworthy will include a porte-cochere in front of the central entrance of the hotel, built with faithful adherence to the colonial architecture of the hotel itself. The old porch floors will be replaced

by concrete walks, and the grounds in front of the hotel will be improved by planting.

Taken in connection with the new store that will be built at the Lake by C. A. Hamilton, and the new filling station of the Yellowstone Park Transportation Company, the improvements at this point will go far toward making it the most popular tourist resort of the park. The establishment of a large new public automobile camp is another project that we hope to complete next year at this point, and if authorized a new ranger station and information office will also be erected here.

SPECIAL CAMP SERVICE.

The Yellowstone Park Camping Company operated its Camp Roosevelt near Lost Creek, in the Tower Falls region, during July and August, and accommodated a considerable number of people who sought service in that scenic section of the park. This camp is destined to be very popular as a fishing and riding resort. It is in the neighborhood of some of the best fishing waters in the park, and is a rediation point for numerous very interesting trails.

During the summer, it likewise furnished emergency service to tourists at the temporary camp it maintained at Yellowstone Lake in connection with the construction of its new camp buildings.

TRANSPORTATION SERVICE.

The Yellowstone Park Transportation Company maintained first-class service to and from all park gateways, connecting with regular

trains at Cody, Wyoming, and Cardiner and Yellowstone, Montana; and in addition operated cars regularly twice a week in both directions between Upper Geyser Basin and B. D. Sheffield's Teton Lodge at Moran, near the upper part of the Jackson Hole. A total of 414 tourists availed themselves of this Jackson Hole trip, and apparently all came back enthusiastically in favor of placing the magnificent Teton Mountains in the park as contemplated by pending legislation.

During the summer the transportation company had in service 100 ten-passenger automobiles and 17 seven-passenger touring cars, and with all of this equipment it was often necessary to operate them on double shifts in order to move all of the people who wanted travel in the park. Arrangements are now being made to increase this equipment materially before the opening of next season.

,Garage, gasoline and oil, and repair service was maintained by this company at Mammoth Hot Springs,, Upper Geyser Basin, Lake, and Grand Canyon.

Considerable trouble was experienced during the early part of the season in controlling the operation of the cars of the transportation line on the park highways. Many of the drivers of the cars were careless and irresponsible, and refused to observe the rules and regulations. Those were dismissed or punished or had both penalties meted out to them as fast as they could be caught and brought to headquarters. Others permitted to the idea that

they had the right of way on the roads, and were constantly compelling private motorists to let them pass, even though they were not behind their schedule or had other good reason for moving ahead. It took some weeks to get all of these drivers to understand that they had to submit to regulation, that they did not have the right of way, that they had to respect the rights of the private motorist, and that they had to exercise the utmost care of the lives and property in their hands. In extenuation of the offenses of some of these boys, it may be said that they had just been discharged from the aviation and motor truck services of the Army and found driving passenger cars over the park roads too simple a task. Even when going at high speed they could not realize that there was any danger, or that any passenger might feel timid.

INFORMATION SERVICE.

An information desk was maintained in the Superintendent's office during the tourist season, and was visited by many tourists. Here were sold Geological Survey contour maps of the park and certain park pamphlets, and information circulars of the various national parks and other literature of value to the public were distributed free of charge. The Government information circular is a very popular pamphlet, of inestimable value to travelers. It is in great demand and its publication and free distribution should under all circumstances be continued. Automobile maps and circulars of information of other parks were also distributed in considerable quantities.

Automobile maps and information pamphlets relating to Yellowstone Park were also distributed by rangers at each entrance to the park, and a sticker with important regulations printed on it, together with a warning about forest fires printed in brilliant red ink, was pasted on the windshields of all cars coming into the park.

At his Tower Falls photographic studio, Mr. J. E. Haynes maintained a free information bureau for the benefit of the public.

[illegible].

Mr. J. E. Haynes, official photographer, operated picture shops at Mammoth Hot Springs, Upper Geyser Basin, and Tower Falls; and also photograph stands in all hotels and camps. His film developing and printing department was heavily patronized by Kodak users.

General stores were maintained at Upper Geyser Basin and at Lake outlet by Mr. D. A. Hamilton, and similar establishments were maintained by Mr. George Whittaker at Mammoth Hot Springs and at Canyon. Messrs. Pryor and Priestman operated a curio store and ice cream parlor at Mammoth Hot Springs.

At Upper Geyser Basin, Mr. Henry J. Smathers operated the Geyser Baths. He reports that [illegible] persons used these baths, of whom 1,247 were park employees.

All of these enterprises gave unusually satisfactory service to the public, and complaints of improper treatment of visitors were few.

ROAD PAVEMENT METHOD.

The road system of the park was subjected to worse wear and tear this year than ever before. The lack of rain caused the roads to keep in a thoroughly dry condition, and with the sun constantly shining, sprinkling on the sections of the highways that are subject to this treatment was not as effective as usual in holding down the dust. Futhermore, winds were frequent and in the course of the summer considerably impaired certain sections of the road by blowing off top surfacing material.

The tremendously heavy motor travel, of course, was the agency that impaired the road system most. As the statistics already quoted show, 10,737 private automobiles toured the park this season. Let us assume that the equivalent of 2,500 were cars were operated by the Yellowstone Park Transportation Company, making a total of 13,237 pleasure cars on the roads during the summer. Let us further make the conservative estimate that these cars traveled over 200 miles of the road system. Using these figures to determine the use of the roads, we find that the total travel for the season was 2,647,400 motor miles. As there were 62,261 tourists in the park during the summer, the passenger miles traveled were 12,453,200 -- a stupendous travel for a road system that has practically no permanent or semi-permanent surfacing of any kind. Some stretches of the road are gravelled and part of the west approach is surfaced with oil macadam, but these sections are such a small part of the

whole that they might well be omitted from consideration.

As I have stated, the traffic figures under discussion are very conservative. They do not include hundreds of motor miles of truck hauling, considerable motorcycle use, and an amount of horsedrawn traffic that is hardly negligible. Other factors should be considered, too, in determining the full use of this road system, but I have given enough data to make it perfectly clear that we must soon begin the paving of at least the main belt line highways, if they are to be expected to be kept in condition for the enormous traffic of the future, that is inevitable.

In the long run paving will be cheaper and infinitely more satisfactory. The worst section of the belt line should be paved first, then a program covering the pavement of other parts of this main road system should be undertaken. Such a program would require several years to execute, but as it progresses the cost of maintaining the system would be considerably reduced each year.

It would be a splendid step to begin the paving next year under an appropriation of, say, $100,000. In this connection it may be recalled that in the sundry civil act of June 12, 1917, the following appropriation was made for Yellowstone Park which would seem to indicate that Congress intended to have at least the main belt line paved: "For resurfacing and for finishing the belt line with oil macadam, $20,000."

ROAD MAINTENANCE AND IMPROVEMENT.

During the past year, the work of repairing and improving the road system has been entirely under the control of the National Park Service, and has been executed under the direction of the superintendent of the park and engineers of the bureau.

In the fall of 1918, general road construction and maintenance was continued as late as the weather conditions permitted, and in the spring of 1919 small crews made necessary repairs to roads and bridges. Some sprinkling was done in June, but the system was not entirely organized until the early part of July. Owing to the extreme dryness of the season, many sources of water supply failed, thus making it necessary to place double tanks on two of our 5-ton trucks to make sprinkling possible where water was not available. For three weeks in August the road crews, except those on sprinkling duty, were used in forest fire fighting, compelling a cessation of all work of repairing and improving the highways. Most of the work of the season was, therefore, confined to ordinary maintenance and repair activities with much interruption and costly moving and crowding of camps, corrals, and equipment.

The following is a brief summary of the work accomplished along these lines, together with some construction work performed since the date of the last report:

Main Belt Line: -- On the main belt line, in addition to ordinary repair and upkeep, including sprinkling, the following work was accomplished:

On the Mammoth to Norris road 3 miles of graveling was completed, two miles on the Norris end and the remaining mile at Beaver Lake and at Indian Creek.

Four miles from the Lake on the Thumb to Lake road, 1000 feet of road was reshaped and graveled.

At the Canyon the approaches to the Chittenden Bridge were improved and the sharp turns in the Artist Point road were removed.

Three miles of the Dunraven Pass road were widened and the bad turns improved. Four fills were made over culverts. Two concrete culverts, each 4' x 6' x 42' long were constructed. Six concrete culverts were lengthened about 15 feet to carry the fills. One hundred and twenty feet of 10-inch galvanized iron culverts were installed, and 100 feet of 24-inch. The remaining work to be done on the Dunraven Pass road includes the making of fills over deep ravines into which concrete culverts have been placed, and widening one mile of road, most of which is rock work.

At Geode Creek and Elk Creek, on the Tower Falls road, fills were made over concrete culverts built in 1919.

The large steel bridge over Cascade Creek at the Canyon was painted and retouched. The steel span over the Gardiner River, the arch over Tower Creek, and the steel bridge at the Montana-Wyoming state line on the north entrance road were painted and retouched.

<u>North Approach</u>: -- In October proposals were opened for the construction of three-fourths of a mile of road around the Gar-

diner Slide, on the opposite side of the Gardiner River from the old road. The contract was awarded to [illegible] and [illegible], who commenced work on November 1st. The contract quantities were [illegible] cubic yards of excavation, of which a large percentage was rock, [illegible] cubic yards of reinforced concrete, 600 cubic yards of loose rock wall. Also included in the contract was the wrecking of one 75-foot span steel bridge and replacing it on newly constructed abutments. The above contract work totalled $[illegible]. In addition to the contract work, $19,756.00 was expended in graveling the road, salvaging two steel bridges, and providing protection against the slide damming the Gardiner River. It is no doubt the proper solution of the slide problem, and is from all appearances a guarantee against any future trouble from this source. This new piece of road was open for travel on April 14, and was entirely finished before June 1st.

<u>West Approach</u>: --- Nine and one-half miles of this road from the west boundary have been finished during the past four years with oil macadam. Of this the first 5 miles are in excellent condition, the oiled surface being 18 feet wide and showing little signs of wear. On the remaining 4½ miles the surface is only 16 feet wide and in many places is ravelling and breaking badly, so that the general condition is poor. The remaining 1 mile has not been surfaced, but the road is in good condition. No repairs to this section, owing to the labor shortage and lack of funds, were made this year, but it is imperative, in order to save the remaining part of the

road, that these repairs be made next year.

<u>East Approach (in the park).</u>-- Very light grader work, ditching for drainage, and repairs to wooden culverts was the extent of the work done on this road. The Fishing Bridge over the Yellowstone River at the Lake Outlet was repaired. All damaged and missing piles were replaced, and an ice-break of piling was constructed up stream from each bent of the bridge.

<u>East Approach (in the Shoshone National Forest).</u>-- The [illegible] miles of the Cody approach road in the Shoshone National Forest was maintained in excellent repair. General bridge and road maintenance was continued throughout the season. Unfinished repairs to revetments damaged by the washouts of the spring of 1918 were completed. One king post bridge with 30-foot span was erected to replace the old wooden bridge over Cathedral Creek. Approaches to the Grinnell Creek bridge were made, and the road one-fourth mile eastward was widened and the alignment improved.

<u>South Approach (in the park).</u>-- Light bridge and road repairs were made in July. There are over 200 wooden culverts on this road, the worst of which will be replaced by galvanized iron culverts next year.

<u>South Approach (in the Teton National Forest).</u>-- A small crew made light bridge and road repairs from the south boundary of the park to the neighborhood of Moran. Three and one-half miles of road in the vicinity of the Pilgrim Creek bridge were [illegible]

the necessary culverts installed. Ten feet of the concrete decking on the north end of the Snake River bridge was replaced. At Moran 4,700 linear feet of road was graveled 16 feet wide and 6 inches deep.

Cooke City Road.-- The large steel bridge over the Yellowstone River was painted. Light bridge and road repairs, with a few minor grade improvements, were made from the Tower Falls Junction to Pebble Creek. We also made a survey for a new bridge site over the Lamar River.

TRAIL REPAIRS.

Two small crews with pack transportation were employed most of the summer, except when the work was interrupted to take care of forest fires, in cutting out fallen timber and making slight repairs to grades and corduroys on trails so as to render them passable for saddle horses. The total number of miles gone over was as follows:

Lamar River-Mary Bay Trail	42 miles
Upper Yellowstone Trail	35 miles
South Boundary Trail	37 miles
Willow-Park-Riverside Trail	27 miles
Riverside-Fountain Trail	15 miles
Hellroaring-Slough Creek Trail	5 miles (part)
Slough Creek Trail	12 miles
Shoshone Trail	14 miles
Shoshone Trail	30 miles
Total	217 miles

SIGNS.

The metal signs purchased last year showing road junctions and mile post signs were placed on posts made of old 1½-inch pipe,

painted. Many of the signs showing names of objects of interest, trails, etcetera, have not yet been placed, due to lack of skilled labor for this work.

TELEPHONE AND TELEGRAPH LINES.

Of the 269 miles of grounded telephone and telegraph lines maintained by this office in the park, 207 miles underwent quite extensive repairs during the past season, as follows:

From	To	Miles	Character of Repairs
Headquarters	Gardiner	5	Poles reset, wires tightened.
Headquarters	Upper Basin	40	Poles reset, wires tightened.
Canyon	Thumb	31	Poles reset, wires tightened.
Lake Junction	Sylvan Pass	19	Heavy repairs for first 15 miles, ½ mile new line relocated to avoid snowslides through the Sylvan Pass.
Sylvan Pass	East Entrance	7	Light repairs.
Thumb of Lake	South Entrance	23	Light repairs.
Firehold Canyon	West Entrance	16	Light repairs.
Headquarters	Lodge Butte Station	35	Reset all poles for 29 miles and tightened wires; balance 6 miles light repairs.
Swan Lake Flats	Gallatin road	23	Poles reset; wire tightened.

Connection was made with the Western Union Telegraph lines in April, 1919, by attaching to the wire in the park leased by the Yellowstone Park Hotel Company. This gives us a connection for our official messages directly from our office to Helena, Montana, instead of having to file them at the hotel in Gardiner and telephone them to Gardiner in the winter.

The whole telephone and telegraph system in the park ought to

be reorganized on a scale that will provide adequate service by the Government at reasonable rates, for all concessioners and the public. The maintenance of a telephone line in the park is necessarily expensive. At least one-half of our 269 miles of line runs through timber, most of which is lodgepole pine which is easily uprooted by winds, and much damage occurs from fallen timber. The timber available in the park for poles is almost worthless and lasts in the ground but a few years, necessitating rebuilding frequently. If all lines in the park can be consolidated under Park Service control, their use by all interests will warrant the expense of more substantial construction with consequent improved and cheaper service. At present the Government line serves the camping company and connects our headquarters with ranger stations, road camps in summer, and with the railroad station and business houses in Gardiner.

A separate wire connects at the north entrance with the Mountain State Telegraph and Telephone Company's long distance line. Our lines are connected through a 50-drop switchboard with power ringer to 40 telephones at headquarters, 20 on park lines, and 8 in the village of Gardiner, and in summer reaches all hotels in the park through the hotel company's switchboard at Mammoth Hot Springs.

RANGERS AND OTHER EMPLOYEES.

At headquarters one double set of officers quarters in the abandoned fort was converted into flats suitable for four families.

One of the large stone cavalry stables was remodeled to accommodate the blacksmith shop, machine shop, and garage.

The ports in the Gardiner railway arch were closed and sealed up, making a temporary automobile checking station.

Two small frame buildings were erected about one mile south from Gardiner, for use as temporary storehouses for HNT explosive which was received from the surplus stock of the War Department. At one time we had 200,000 pounds of this explosive stored in these buildings.

Two camps were developed for use of private camping parties traveling in automobiles at Mammoth Hot Springs. The first one that was improved consists of the old wagon sheds near Norris Camp. Here open fireplaces were built for cooking, flush toilets with sewer connection installed, and the grounds lighted by electricity, and first-class water piped in. The second was developed later under the hill in the edge of the timber by the lower barns, where the ground was cleared of fallen timber and debris, running water piped to the grounds, and earth closets provided.

The Bechler River ranger station in the southwest corner of the park was painted, and a new root cellar was built, all by labor of the regular ranger force.

A new snowshoe cabin was built on Maple Brook by the rangers at Riverside Station, late in the fall of 1910.

About 3½ miles of fence inclosing the fields at the Buffalo Farm on the Lamar River were rebuilt with new posts, and the corrals, shoots, and squeeze necessary in handling the large herd of tame buffalo were also rebuilt.

LANDSCAPE WORK.

A vista was cut through the woods from the Tower Falls-Mammoth Hot Springs Road, in order that beautiful Wraith Falls might be opened to the view of tourists traveling over this road.

Another vista was cut below the Upper Basin-Fishb road in order that Duck Lake might be better observed by passing visitors. This lake is a perfect gem in a setting of dense forests, and the vista that opened it to public gaze was much appreciated.

On the Mammoth Hot Springs Formation much dead wood and other debris were removed, making a great improvement in the appearance of some of the terraces, among them Angel Terrace, one of the most remarkable and beautiful terraces of the Mammoth Hot Springs District.

All of this work was done under the supervision of Landscape Engineer Punchard, who also directed some landscape work at the Mammoth Camp and at other resorts in the park.

WATER SUPPLY AND SEWER PLANT.

Water System.-- The water supply furnishing part headquarters at Mammoth Hot Springs, including all concessioners, park employees, Mammoth Hotel, and Mammoth Camp, with water for domestic purposes, watering lawns and for running the power plant, is drawn from

Panther Creek and Gardiner River, 7 miles south, and from Glen Creek 4 miles south. At the mouth of Panther Creek are located two concrete diversion dams and head gates, which divert the water for 18,480 linear feet north through reinforced concrete pipe 24 to 27 inches in diameter, to the head of Golden Gate, where it is emptied into Glen Creek. At a distance of 7,200 feet down stream the water is again taken from the stream by a diversion dam and headgate and is carried in vitrified pipe varying in size from 18 to 24 inches in diameter to the main reservoirs. This is a concrete structure pentagonal in shape, in size about 181 by 195 feet, and 10 feet deep at the lowest point, located just across the road from the largest terrace of the Mammoth Hot Springs. Its capacity is 2,025,000 gallons. This storage capacity is supplemented by the old reservoir which is located immediately adjoining and above the main one, of earth construction, capacity 2,000,000 gallons, filled by the overflow from the main reservoir. For domestic uses, watering lawns, etcetera, the water is carried by mains to the buildings and grounds, so arranged that they can be connected directly with the reservoir, or connection can be made with a smaller reservoir some distance higher and southward, thus giving higher pressure in case of fire. The watershed is guarded from contamination to the extent of prohibiting camping on it, and tests of this water have shown it to be reasonably pure.

The hotel company has an adequate water supply at all of its hotels in the park. But the supply for the camps at the Upper Basin and Canyon is neither adequate nor satisfactory from several

standpoints, and there is much to be done to develop a good supply of pure water at these points, as well as several others where it is desirable to establish public camps for use of tourists traveling in their own automobiles.

Power Plant.-- Water is conducted from our two reservoirs at Mammoth Hot Springs to the hydroelectric power plant through a penstock 26" in diameter, 2,000 feet long, with a drop of 310 feet, made of riveted sheet steel laid mostly on top of the ground and painted. This penstock is so connected and supplied with valves that water can be used from either or both reservoirs. The power plant is housed in a modern building of reinforced concrete structur with tile roof, concrete floors, steam heated and lighted with electricity. The main building is 31 by 76 feet in size, with a wing 11 by 46 feet for housing the penstock and control valves, and a concrete tail race and weir. The water is delivered to three De Olier turbines with Frances runners, each rated at 280 H.P. under 300 feet head and 900 R.P.M. The speed is governed by Lombard type L 1 governors. These turbines are directly connected to three Westinghouse revolving field alternators, each three-phase, 60 cycle 150 K.W., 2300 volt, 37.7 amperes per terminal. The exciters are also Westinghouse belted to main alternators each having a capacity of 8 K.W. at 125 volts. The switchboard is a modern one, with volta regulators, oil switches, and necessary instruments. A small machin shop with power lathe, emery wheel, and air compressor in connection and power room makes it a very complete plant.

This plant furnishes electric current for lighting all buildings at Mammoth Hot Springs, including the Mammoth Hotel and Mammoth Camp. The extensive grounds at headquarters are also lighted from this plant, by means of eighty 90-watt tungsten lamps, arranged in series of 20 with shunt coils. It also furnished power to our shops and those of the transportation company. The total production of the plant for the past year was 143,860 kilowatt hours. This production is limited at times by supply of water, but is sufficient for all needs up to the present date. The power lines and street lighting fixtures which have been in constant use since 1903 are showing wear, and will have to be replaced within a year or two.

Other electric plants for lighting purposes are maintained in the park by the Yellowstone Park Hotel Company at Old Faithful Inn and Canyon Hotel, both run by steam power, and by the Yellowstone Park Camping Company for lighting Canyon Camp, run by a gasoline engine which also pumps water to the camp from Yellowstone River.

Ice.

During the past winter 267 tons of ice was harvested at Mammoth by regular park employees and teams.

Light and Irrigation.

I am advised that there are several irrigation projects under consideration which propose to raise the water in Lake Yellowstone and Lewis, Shoshone, and Heart Lakes, as well as flooding Madison

of the Falls and Cochler Rivers in the southwest corner of the park, all of the waters to be stored thereby to be used in Idaho. It is understood that it is proposed to take the Yellowstone Lake water through the continental Divide in tunnels.

I am not advised as to the use that will be made of this water, but I know that these lakes and basins can not be used as storage reservoirs without seriously injuring the scenic beauty of Yellowstone Park and greatly impairing, for generations to come, its usefulness as a national playground. Furthermore, this commercialization of its waters would constitute a precedent for encroachment of other interests that have been held away from the park since early days. Once the park is opened to exploitation of its natural resources, anything may afterwards happen to it.

FISH COMMISSION'S WORK.

For the purpose of making a careful study of the fish supply of Yellowstone National Park and to ascertain by personal inspection what ought to be done to extend and improve the opportunities for catching fish in the waters of the park, Dr. H. M. Smith, Commissioner of the United States Bureau of Fisheries, spent the period between July 9th and Aug. 14th in the park. His survey of the park waters was most complete, and from the data that he has collected he expects to develop a policy for the extension of the operations of his bureau in the park that will make this reservation one of the greatest fishing resorts of the world. Doctor Smith also collected data that will be used in the publication of information on the fish of the park supplementary to that already available.

One of the factors in the fish supply of the Yellowstone National Park is the white pelican. It nests on two small islands in Yellowstone Lake and the adult birds wander widely in search of food, which consists almost exclusively of live trout. The annual consumption of fish by young and old pelicans is large. The question is whether the consumption is so great as to justify or require a thinning out of the pelicans. Doctor Smith while in the park during the summer visited the pelican islands for the purpose of taking a census of the young birds and their parents, and of estimating the quantity of fish consumed annually.

FISH PLANTING.

The United States Fish Hatchery located near the outlet of Yellowstone Lake was operated during the summer season as usual under the direction of the superintendent of the federal hatchery at Bozeman, Montana, Mr. T. F. Thompson, who states that regardless of the unprecedented dry season the operations were quite successful. Eggs of the native, or blackspotted, trout were collected during July and August as follows:

From tributaries of Yellowstone Lake:

Pelican Creek	1,[illegible],000
Clear Creek	1,[illegible],000
Cub Creek	[illegible],000
Columbine Creek	71[illegible],000
Miscellaneous small streams between Lake Hatchery and Shore	2[illegible],700
Clear, Cub, and Columbine streams in August	1,[illegible],000...[illegible],700
From Fish Lake, near Old Faithful Station	[illegible],000
Total harvest for the season	6,973,700

According to the Commissioner of Fisheries and the hatchery officers, an encouraging feature of the season was the very large proportion of young spawning fish appearing in the various streams, apparently the result of plants made in the past few years, and indicating a return of fish in their former abundance before the depredations of the pelicans, gulls, etcetera, had made inroads on the stock in Yellowstone Lake.

A consignment of eastern brook trout was shipped from the Bozeman Hatchery to the park on May 29th for planting. A full load of brook and rainbow trout was delivered at the same point early in September. And a total of 772,200 of the young blackspotted trout hatched in the park were returned to the waters of the small streams tributary to Yellowstone Lake by the employees of the hatchery. A full list of the numbers planted is as follows:

Eastern Brook Trout:

Date:	Waters:	Number:
May 29	Lava Creek	9,000
	Glen Creek	10,000
	Blacktail Creek	10,000
Sept. 3	Upper Firehole River	4,000
	Little Firehole River	4,535
	Nez Perce Creek	5,000
	Mallard Lake	4,000 .. 47,535

Rainbow Trout:

Sept. 3	Gibbon River	40,000
	Glen Creek	15,000
	Lupine Creek	15,000
	Panther Creek	17,500 .. 87,500

Blackspotted Trout:

July and August	Planted from fish hatchery in small stream tributary to Yellowstone Lake from which they were taken.....	..707,000

Total fish of all kinds planted in park waters... 707,035

The operation of this sub-hatchery is most important, since it is almost the sole source of supply for eggs of the native trout for Federal, State, and local hatcheries. For this reason alone it is essential that the waters of Yellowstone Lake and its tributaries be kept well stocked.

On the other hand, I am of the opinion that a considerably larger portion of the fish nurtured in the Yellowstone Lake Hatchery ought to be returned to the waters of the park. In this connection I call specific attention to the fact that 6,471,700 eggs were col-

lected in the watershed of Yellowstone Lake, and only [illegible],200 young trout were returned to these waters. I understand that the percentage of fish hatched from eggs in a hatchery is very much greater than a similar number of eggs would produce under absolutely natural conditions, and I do not contend that an insufficient number of young fish were planted in tributaries of Yellowstone Lake this year, but I do express the opinion that more young blackspotted trout should have been placed in other streams in which they would thrive and which are now barren of fish or not well stocked.

FISHING CONDITIONS.

During the early part of the season tourists reported good catches of trout, and until well along in August the sport was greatly enjoyed by visitors to the park, particularly those who brought their own camping equipment and established themselves near good fishing streams. All of the tourists who made trail trips had no difficulty in catching plenty of fish.

During approximately the last month of the season, which it must be remembered is one-third of the entire tourist season motorists and others who toured the roads of the park had great difficulty in catching any fish at all. This lack of success must be attributed largely to the fact that there were so many people fishing in the waters during the first six weeks or two months of the season that the streams became considerably depleted.

Next year it is proposed to make a census of the amount of

fish caught in the park by visiting tourists, in order that we may gain accurate information as to the condition of the fish supply. It is proposed to do this by asking motorists and other visitors at the park entrances to keep an account of the fish taken from the waters of the park and report their figures to the rangers at the gateways from which they leave the reservation.

Our records indicate that black bass were planted in 1907 in Goose Lakes, situated in Lower Geyser Basin. No trace of them was ever found, but during the past year several parties have reported positively that they caught a good strings of yellow perch in these lakes, and they can be accounted for only by presuming a mistake was made in planting them instead of the black bass.

Very recently a catch of land-locked salmon (salmo salar) was made in Lewis Lake. This fish was planted in the park waters in 1890, but had not been seen since that year. So certain were we that the land-locked salmon reported this year were either Loch Leven (Salmo levenensis) or brown (Salmo fario) trout. Some specimens of fish were given the most careful examination by men who are familiar with all of these species, but it was finally announced by all that the Lewis Lake catch was a salmon and not a trout.

FISHING IN PARK WATERS.

For many years it has been the practice to permit the catching of fish in some of the waters of the park, particularly in Yellowstone Lake, for table use in the hotels and camps, these catches,

however, to be made after the spawning season had ended. Because of the apparent depletion of fish in so many streams of the park this year, I reached the conclusion that this practice ought to be discontinued, and by an order made effective August 15, 1919, the further catching of fish for table use in the hotels and camps, except by tourists in strict accordance with the rules and regulations, was prohibited.

Between the opening of the season and the effective date of this order the Yellowstone Park Hotel Company took 5,32[illegible] pounds of fish from Yellowstone Lake and the Yellowstone Park Camping Company took from the same waters 2,16[illegible] pounds.

[illegible] WILD [illegible].

The weather conditions for the wild animals were ideal during the past year. Forage grasses were abundant last fall, as there had been plenty of rain all summer; the winter was mild and snowfall light, enabling the animals to get at the grass without difficulty. Consequently there was scarcely any loss whatever among the elk, deer, antelope, and mountain sheep. The loss from legitimate hunting in the adjoining States was also slight, as pleasant weather lasted through most of the hunting season. The elk and deer did not leave the park while hunting was permitted.

The new ranger force which on October 1, 1918, relieved the soldiers as protectors of the wild life, proved to be a great improvement in this line of work, and evidences of poaching within

the boundaries of the park were very rare. They were also able to give much special attention to the care of the wild animals, preparing to feed hay if necessary, killing carnivorous animals that prey on others, etcetera. About 100 tons of alfalfa hay were purchased from nearby ranches for feeding these animals, but for the first time in several years the winter was so mild that there was no necessity for feeding hay to wild game, and the stacks were held over for next winter's supply. For the most part the animals were widely scattered during the winter and were not easy to count and keep track of.

The past summer has been exceedingly dry. To begin with, the snowfall of last winter was light, spring opened up earlier than usual and melted what little snow there was stored in the mountains, and during June, July and August there was less rainfall than was known for many years. The consequence is that the ranges have been baked and the grass is stunted and dried to the very mountain tops. The prospects for food for our wild animals during the coming winter are, therefore, most discouraging. The same conditions have prevailed throughout the State of Montana and other mountain States near the park; and this shortage of forage crops is recognized but it could not be shipping thousands of domestic cattle to eastern States where forage is plentiful and reasonable in price. Hay is a very scarce and high priced. The situation would seem to be almost a critical one for the elk, regardless of what efforts to prevent

a tremendous loss of these animals. Preparations are being made to meet it in the best possible manner. About 200 tons of wild hay will be available on Slough Creek where it is hoped large numbers of the elk which usually leave the park if forage is not plentiful there or covered with snow, can be held. One hundred tons of hay bought a year ago is still available; about a hundred tons of oat hay is being harvested on the field at the north entrance; and allotments have been secured and about 470 tons of alfalfa hay in stack have been purchased from the farmers nearest the park down the Yellowstone Valley. We shall therefore have about 870 tons of hay available for feeding wild animals during the winter, which should, with careful handling, do much towards keeping the northern herd of elk from starvation. We also have a call on an additional 100 tons of hay in the Yellowstone Valley which can be purchased if needed. Alfalfa hay that cost $18.00 per ton in the stack last year is worth $25.00 a ton now.

Elk and deer are seen much more frequently in summer by tourists than before the automobile came into general use, for the reason that people travel later in the evening and earlier in the morning, when the animals are out feeding. Small herds of elk, and a few scattering deer, were seen by many travelers. Moose frequently, and in at least one instance wild buffalo, were seen by tourists traveling with saddle horses over the trails.

Antelope:

The antelope wintered as usual near the northern entrance, but were so much scattered that a careful count of them could not be made. During the summer they have ranged well back in the hills of the northern section of the park, and are apparently in fine condition at the present time. A female antelope lost at the Buffalo Farm when very young has become a pet of the family of the buffalo keeper and attracts much attention at the big farm where she makes her home.

Deer.

The deer, like the antelope, were scattered, and but few of them came around headquarters for something to eat. Immediately after the tourist season closed this year a band of about 10 mule deer and a group of three white-tail deer took up their range on the lawns about headquarters, and as I write this I can observe the former herd feeding in front of the office.

Elk:

The elk, by far the most numerous of any of our wild animals, wintered in splendid condition. Regardless of the fact that forage was plentiful inside of its boundaries, several thousand elk left the park and went into the Absaroka National Forest and down the Yellowstone River valley, possibly from force of habit from preceding winters when they were obliged to go out in search of food. These, however, were carefully guarded from poachers by forest rangers, and it is believed that practically all of them found their way back to the park in the spring.

The increase in the northern herd of elk was normal. The losses were small, consisting of a few killed by carnivorous animals, a few more killed outside of the park during the hunting season in Montana, and 100 shipped to South Dakota in March, 1919.

Every person in this country who is interested in the conservation of wild life, who wants to see a supply of big game sustained, who wants Yellowstone National Park to hold its prestige as a great natural preserve, should give attention to the problem confronting us at the present time in caring for the elk. The time is coming when a terrible, long, cold winter is going to kill the Yellowstone elk herds if existing conditions outside the park are maintained. That time may be the coming winter; however, it may be a winter of ten years hence. No one can say when this calamity will strike us, but those of us who know conditions about this park realize that the extinction of the elk is inevitable unless these conditions are changed.

Years ago, when unusually cold winters drove the elk out of the park regions, they found ample range on the hills and in the valleys of lower altitudes. One great herd moved northward and another that now ranges most of the year in the Snake River watershed of the park and in State game preserves south thereof, moved southward to the Jackson Hole. Other smaller herds moved down the Shoshone watershed on the east, the Madison River Valley on the west, and the Gallatin River Valley on the northwest. Slowly but-

tlements on these winter feeding grounds crowded back the elk, and for a time the grazing of cattle and sheep of settlers was permitted right up to the park line, except south and southeast of the park where many years ago the State of Wyoming, with wise foresight, established great game preserves in which the grazing of domestic stock was not permitted. This extensive grazing of stock around the park caused great losses of elk, especially in the Gallatin and Madison herds, which are now represented by comparatively few animals.

Recently, however, the Forest Service has withdrawn considerable areas of adjacent grazing lands from the use of domestic stock, and the State of Montana, of course, has created a number of important game preserves which have aided materially in protecting the elk in normal years, but little has been accomplished yet by any agency in anticipation of the winter when complete destruction of the elk will come. The Biological Survey made one move in the right direction when it acquired its elk farm near Jackson, Wyoming, in the Flat Creek district of the Jackson Hole.

Undoubtedly more of these farms must be provided outside of the park for the purpose of raising hay and stacking it for use only in winters when the elk can not shift for themselves without destroying hay, grain, and other property of farmers in the path of their migration. The Biological Survey farm near Jackson should be greatly extended, possibly to the purchase of all lands in the Flat Creek

Basin, for the purpose of protecting the southern elk herd against the destructive winter; and another large area in the Yellowstone Valley north of the park should be procured for the similar protection of the northern herd which now leaves the park and goes down this valley in hard winters, destroying farm property and causing other damage. These elk farms would be simply as an insurance maintained against destruction of the elk. In open winters such as last winter these elk farms would not be used, all stored hay being retained for times of real need. So far as the park is concerned, there is nothing that we can do to hold the elk when fearful storms drive them from their range within its boundaries or cover it deep with snow.

There is ample summer range for all the elk in the park and the adjacent game preserves of Wyoming and Montana. However, there is a growing demand in the Jackson Hole for grazing privileges in the Teton Game Preserve south of the park, which if secured may seriously impair the summer range of the southern herd. The Buffalo Fork region is chiefly sought for domestic stock, but there are some who would pasture cattle up to the south boundary of the park. It is proposed in pending legislation to add all of this region to the park with the headwaters of the Yellowstone River and the Teton Mountains. This territory is also the winter range of several of the smaller bands of elk.

Moose:

Moose were seen in nearly every part of the park in small numbers. The rangers from Lake Station saw 67 in Upper Yellowstone and Pelican Valley, on their patrols during the month of January. One of our largest moose herds ranges in the meadows and meadows of the Bechler River and Falls River basin in the far southwestern corner of the park, and is thriving splendidly. Recent estimates place the number in the herd at slightly more than 500. There is an irrigation scheme being developed which, if approved by Congress, will result in flooding this entire region, and in driving out the moose, probably to destruction. There is also a growing band of elk in this section that ought to be considered in passing on any use of these park lands for reservoir purposes.

BUFFALO.

Wild Herd: Reports received during the winter indicate that the wild herd of buffalo is on the increase. During January the rangers from Lake Station saw 55 in Pelican Valley. During April Assistant Chief Ranger Trischman saw 32 on Pelican Creek and a different herd of 30 on Saddle Mountain, making a total of 90 animals counted, which is more than have been known for several years back. One member of this herd was found dead at Turbid Lake.

Tame Herd: The tame herd of buffalo is located on Lamar River near the mouth of Rose Creek. At present the herd consists of 33 animals, having increased from a herd of 21 animals purchased in

1902. Ninety calves were born during the year, 8 of which were born in September. Five of these, however, were killed recently while the herd was being vaccinated, leaving but 85 alive at the present time, of which 50 are males. Thirty of these bulls were castrated.

The following data relating to the buffalo calves were compiled on October 15, 1919:

90 calves born since last annual report	53 males	37 females
Killed while being vaccinated October 8 and 15	3	2
Total alive	50 males	35 females

Of the entire herd 355 animals, including all of the calves, have just been vacinnated for hemmorhagic septicemia. Besides the calves already mentioned, one of the old cows was killed during the process of vaccination.

One three-year-old bull was donated to the city of Mexico, Missouri, shipped January 19th; one yearling bull was shipped to the city of San Francisco, California, on February 12th, and one three-year-old bull was shipped to the State Game Warden of Wyoming, May 24th.

The 1918 calves were vaccinated for hemorrhagic septicemia by a veterinarian sent for the purpose from the Bismarck, N. D., Office of the Bureau of animal Industry. This work was done on November 10th, and the second time on November 20th and 21st, when 60 per cent of the male calves (16 in number) were castrated.

The winter was so open and forage so plentiful, that up to the end of January it hadnot become necessary to feed hay to the tame buffalo, but they had been permitted to range for several miles around the farm. The latter part of January a number of them died, and investigation indicated that [illegible]

septicemia notwithstanding the fact that for several years the young animals have been vaccinated for this disease. A telegraphic request was sent for assistance from the Bureau of Animal Industry, and Veterinarian I. Tallman was sent from the Bolans, Montana, Office. His investigation indicated the presence of the disease which has been dreaded since it first appeared in the fall of 1911. The herd was taken up at his advice, and fed hay through the balance of the winter. All carcasses of those that died were destroyed by burning. At least 35 buffalo died during this epidemic, and a few more were missing that might have died on the range but the carcasses were not found. A culture has been developed recently that is believed by the Bureau of Animal Industry to be a certain preventative, and the whole herd, including old and young, is being treated with the fresh vaccine as this report is written.

A show herd of 18 buffalo bulls was kept in the pasture at headquarters throughout the tourist season, and was driven up twice daily where tourists could see them. Visitors to the wild herd averaged about 100 per day.

Approximately 300 tons of hay are available for winter forage for this herd. This is none too much, but will probably, with careful handling, meet all needs, though it will be necessary to keep the herd out on the range as long as possible before beginning to feed hay. Pastures are being developed and seeded that will

eventually yield an abundance of good hay, but the past season was so dry that the crop was short. The tame herd was kept on Mount Norris and the higher slopes during most of the summer, so as to save the forage lower down for late fall and winter grazing.

Bears.

X The grizzlies, black, and brown bears were plentiful and much in evidence throughout the park, and attracted so much attention and were so much talked about that the few tourists who failed to see them felt disappointed. These bears were so mischievous that it was necessary to keep a night guard at Upper Basin, Lake Outlet, and Canyon, to prevent damage to private automobiles and camps, and 5 had to be killed at Lake during the summer to prevent damage to property. One medium sized grizzly was killed in September at Upper Geyser Basin, in a fight with a larger grizzly.

In addition to the bears that made a habit of frequenting the regular camping places, garbage dumps were established within walking distance of Upper Basin and Canyon, where bears of all kinds congregated every evening just before dark, and it was a regular practice for people from the hotels and camps to go to see them. A wire was firmly stretched between trees and posts to keep people from going beyond the danger line, and a ranger was placed on duty with a rifle to protect them. This is one of the most interesting features of the park to the majority of tourists, but requires

eventually yield an abundance of food, but the next season was so dry that the crop was short. The main herd was kept on Mount Norris and the higher slopes during most of the summer, so as to save the forage lower down for fall and later winter.

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careful regulation.

But even more interesting than the bear dumps were a few clever bears, among them one or two families consisting of mother and cubs, that frequented the highway between the Thumb and the Lake Outlet, and daily "held up" passing automobiles and begged for food. As a rule the tourists so held up were willing victims of the robbers, and most of them would risk being tried before the United States Commissioner for violation of park regulations which prohibit "Approaching, molesting, or feeding the bears," rather than turn a deaf ear to the appeals of the cubs for candy, peanuts, etcetera. This rule is the most difficult to enforce of all the park rules and regulations, as indicated by the fact that of 20 trials before the United States Court during the past summer for violation of regulations not one was for this offense.

Coyotes, Wolves, and Mountain Lions.

These represent by far the most destructive of the carnivorous animals in the park, and efforts are constantly made to keep them down to a reasonable number. Three hunters devoted most of their time from November to March inclusive hunting and trapping them, and quite a number were also killed by rangers on regular patrols. Altogether there were killed in the park during the year, 227 coyotes, 6 wolves, and 11 mountain lions. The pelts were sold on commission at the fur auction sales in St. Louis, by Thomas Smethurs and Company, and the net proceeds deposited to

the United States Treasury with other park revenues. The total receipts from this source amounted to $1,943.49. It is hardly practicable, even if desirable, to entirely exterminate these carnivorous animals, but a certain amount of hunting and trapping each year keeps them down to a reasonable limit. They kill annually quite a number of young elk, deer, antelope, and mountain sheep.

Mountain Sheep

Mountain sheep were seen in about the usual numbers, and were in excellent condition, but they did not come down as often as usual during the winter where they could be seen because there was but little snow on the mountains and a construction camp was located all winter in Gardiner Canyon, which kept them back to some extent from their usual winter habitat.

Beaver.

Signs of beaver, consisting of dams, houses, stumps, and pieces of trees which they cut down for food, are found in many places close to the road, and afford much interest to travelers. Beaver are plentiful and widely distributed throughout the park. A most interesting series of colonies has been established on Elk Creek in the Tower Falls region. From an automobile one may count ten dams, one below the other, on this stream.

Porcupines, Squirrels, etcetera.

Other small animals such as porcupines, rabbits, ground

squirrels, redsquirrels, woodchucks, and chipmunks are abundant and seen by nearly all visitors. Several varieties of mice, pocket gophers, lynx, otter, mink, weasels, foxes, marten, skunks, badgers, and bats, are more or less abundant, but are not often seen by tourists.

GRAZING AND FEEDING FOR WILD ANIMALS.

The time seems to be approaching when the antelope, deer, mountain sheep, and the large herds of elk, must have more attention in the matter of artificial feeding. The opportunity for raising alfalfa and other tame grasses to be cut for hay for their winter use is ample, but will require the expenditure of several thousand dollars at the beginning, to develop the meadows, and construct irrigation systems.

Since the advent of motor-driven vehicles, grazing of domestic animals is permitted only to the extent necessary to keep the few horses required in the administration and protection of the park, and the cattle actually necessary to furnish fresh milk to the public at hotels and camps. Even the cattle that are slaughtered for meat for hotels and camps are no longer pastured in the park as formerly, but are slaughtered outside and the meat brought in. The summer grazing of cows for milk, saddle horses in use by tourists and engaged in park patrol and other necessary work, and work horses on Government construction and maintenance work, is maintained principally at the higher altitudes, on the

summer range for game, which is plentiful. It is the winter range which is getting scarce and which must be carefully guarded. The greatest extent to which it is now used is for wintering the surplus stock (saddle, pack and work horses) belonging to the Government and which is not in use during the winter season. These amount to but from 30 to 60 head, wintered at Yancys or on Slough Creek, and much of the winter they subsisted on wild hay cut in low places, very little of which would be grazed by the elk. But it is contemplated raising t is hay on a larger scale, to be available for feeding game if necessary. A total of about 250 tons of wild hay has been cut and is now in stock on Slough Creek for such use the coming winter. Arrangements are being made to develop these meadows by draining if necessary, and introducing red top to make a larger quantity of better quality hay.

[illegible].

Up to date comparatively little of this work has been done. But the example of the 45½-acre field located at the northern entrance gate to the park, proves what can be accomplished by cultivation and irrigation of fields for meadows. This field was taken up in 1901 and seeded to alfalfa which is cut and stacked for winter forage for antelope, bear, and mountain sheep. It has yielded many tons of excellent hay for this purpose, besides being a wonderful improvement from a landscape viewpoint. This field, however, has given trouble by foxtail grass during

in and running out the alfalfa, and it has to be taken up and re-cultivated often. It was broken up last year and seeded to oats, which yielded a crop of 1,675 bushels of oats of unusually fine quality, and 17 tons of the straw was baled for use for bedding at the stables. This season it was again sowed to oats, but owing to the exceedingly high price of hay it was cut green and put up for winter hay, producing about 100 tons. There are a number of tracts where hay can be raised for use of game, and for feeding Government stock in use in the park, much cheaper than it can be bought.

This work has been quite successfully carried on at the Buffalo farm on Lamar River, where it was necessary in order to procure sufficient forage for the tame buffalo herd. A tract of 70 acres was cultivated and sowed to timothy in 1912, and has yielded a good crop of hay annually ever since. Aside from this tract, we have had to depend upon cutting wild hay in that vicinity for the tame buffalo, but the herd is now getting so big that the supply of hay must be supplemented by starting more tame meadows. There is ample opportunity for this work in the vicinity of the Buffalo farm, and 279 acres of excellent land has been plowed up. We expect to get between 100 and 200 acres of this seeded to timothy and alsike clover before snow flies. One hundred acres of this land was sowed to oats last spring with a view to cutting for hay, but the season was extremely dry, and water for irrigating was

short, so that the oats did not grow large enough to cut and only afforded good pasturage for the tame herd of buffalo.

Birds.

While nearly two hundred varieties of birds have been recorded in the park, many of these are seen but rarely. Some of those that are most interesting and seen most commonly are as follows: White pelican, gulls, Canada geese, swans, and several varieties of ducks, are common to the lakes and larger rivers. Great blue heron are seen along streams and in marshy places. Sandpipers, killdeers, grouse, hawks, osprey, magpies, ravens, crows, Rocky Mountain jays, Clark nutcrackers, blackbirds, robins, western bluebirds, sparrows, swallows, meadowlark, finches, and warblers, are more or less abundant. The northern water ouzel, or dipper, is a most interesting songster that remains all winter. They nest close to the water, usually a swift stream, in late winter or very early in the spring, and their extremely sweet song and frequent diving to the bottom of the swift current for food are bound to attract interest.

The nest of a trumpeter swan (Olor buccinator) was discovered by Mr. W. W. Skinner on a low island in a lagoon northeast of Lewis Lake, and on his second visit on September 6 he saw the parent birds and three young ones old enough to fly. This is remarkable, inasmuch as it is the first authentic record we have on file of this bird breeding in the park, and it is even rarely seen here.

The unusual dryness of the season has had its effects on our birds as well as on the mammals. Such ground-nesting birds as sparrows, finches, meadowlarks, juncos, grouse, ducks and geese have attained full growth in unusual numbers due to absence of cold, drenching rains during incubation and brooding. Possibly the same result was helped by the paucity of ticks, mosquitoes, and flies, due also to the dry season.

The fall migration of all birds has been unusually early, and the mammals of all kinds and sizes from ground squirrels to elk are seeking winter quarters much earlier than usual.

[illegible], MOT [illegible], and other [illegible].

The small geyser at Morris located across the road in the timber from Black Growler was seen to play several times during the summer.

The fishing Cone at Thumbplayed frequently to a height of about 40 feet. This is quite an unusual occurrence, and is thought to be due to the fact that the level of the lake is several feet below the usual low water mark.

During the tourist season, except at night when the formations were obscured, a careful record was kept by the ranger force stationed at Upper Geyser Basin, of the activities of the principal geysers in that basin. The results of this record indicate a reasonable regularity in playing and but few changes of importance from previous years. This record shows that the Grand Geyser, one

of the most powerful and beautiful geysers in the Basin, played fifty times during the period June 20 to September 4th, inclusive. Old Faithful, the world's most famous geyser and the object of greatest interest to all Yellowstone Park visitors, played with its usual regularity. The interval between its eruptions this year averaged seventy-five minutes.

The geyser record mentioned above follows:

June 22			9:00a.m.		
June 23			6:25p.m.	9:00a.m.	
June 24					
June 26					
June 27					
June 30		7:30 a.m.			4:00p.m.
July 1	7:10p.m.				
July 2					
July 3				9:00a.m.	
July 5			9:45a.m.		
July 6		8:30a.m.	9:00a.m.		
July 7		10:00a.m.	10:40a.m.		
July 8		8:00a.m.	9:00a.m.		
July 9			10:30a.m.		
July 10			9:25a.m.		
July 11			4:15p.m.		12:15p.m.
July 12		6:45a.m.			
July 13			9:30p.m.		
July 14	8:25a.m.	9:45a.m.	9:40a.m.	8:40p.m.	
July 15			8:55p.m.		
July 16			7:15a.m.		8:25a.m.
July 17			7:40p.m.		
July 18			7:30a.m.		
July 19			10:30p.m.		
July 20			7:30a.m.		
July 21			8:15p.m.		10:00a.m.
July 22			7:30a.m.		
July 23			7:30a.m.		
July 24			3:20p.m.		4:15p.m.
July 25					
July 26		8:30a.m.	12:45p.m.		
July 27			5:20p.m.		
July 28			9:15p.m.		
July 29			1:30a.m.	2:00a.m.	
July 30			8:25a.m.		
July 31			2:00p.m.		1:30p.m.
Aug. 1		11:30a.m.			
Aug. 2		10:30a.m.	11:15a.m.		
Aug. 3			8:30 a.m.		
Aug. 4			8:30 a.m.		

"	3	9:40 am	8:00 am	7:45 am		2:00 p
"	4			5:15 pm		
"	5					5:10 p
"	6					
"	7			10:00 am		
"	7			7:30 pm		
"	8					
"	8					12:50 pm
"	9			11:45 am		
"	10		3:00 Pm			
"	11			4:00 pm		
"	12			1:10 pm		
"	13		9:15 am	9:30 am		3:55 pm
"	13			7:00 pm		
"	14	7:30 am		7:00 am		8:45 pm
"	14			3:30 pm		
"	16			9:00 am		6:15 pm
"	16			6:50 pm		
"	17			6:30 am		
"	18		9:40 am	9:15 am 9:00 am		
"	19					
"	20			3:00 pm		5:00 pm
"	22		9:15 pm			3:15 pm
"	24	9:00 pm		9:45 pm	8:45 pm	7:00 pm
"	24				12:15 pm	
"	25			7:10 pm		
"	26			9:20 am		
"	27	1:45 pm	6:00 am			
"	28					12:15 pm
Sept.	2	2:00 pm		12:50 pm		
"	4					
"	10			11:00 pm		
						4:00pm

The Daisy plays every 85 to 90 minutes; the Grotto every 3 to 4 hours; and the Riverside every 6 to 7 hours. The Grand goes at times two or three days without playing, but as a rule it plays about three times every twenty-four hours. These observations were taken by Rangers Watkin and Harrison and Asst. Chief Ranger Charles J. Smith.

Consultation with men who have lived in the park for many years developed the general opinion that the geysers and hot springs were less active than usual on account of the extremely dry season due to lack of winter snows, and early spring, and lack of rains during the summer. The paint pots of the park, especially the Mammoth Paint Pots in Lower Geyser Basin, appear to be less active, due undoubtedly to lack of subsurface water.

About September 1, 1919, a quiescent paint pot near the south approach road and a few hundred feet east of the Thumb Ranger Station, belched forth a considerable amount of material of the color and consistency of whipped cream, which ran down the slope toward the hot spring basin. This paint pot is less active now, but is still puffing out some of its peculiar thick liquid.

FORESTS.

The forests of the park are in good condition. There are no tree diseases epidemic here, nor do there seem to be any insect pests attacking the forests. There are evidences that the porcupines are causing injury to more trees than usual, but this is a matter that requires further consideration before any definite statement can be made regarding it.

Natural reforestation is rapidly covering several old fire scars with fine growths of new timber. While traveling on the trails this season I observed some really remarkable examples of reforestation, one young forest about fifteen years old, near Lake Yellowstone, having all trees growing a considerable distance apart

and in other respects thriving as a better growth than its surrounding forests.

FOREST FIRES.

The season was the dryest one in the history of the park, and consequently the danger of forest fires was great. This danger was apparent at the beginning of the tourist season, and extra precautions were taken to prevent them. Special notices were printed requesting care in extinguishing cigar and cigarette butts and matches before throwing them away, and these were pasted on the wind shield of cars entering the park, and otherwise distributed where they could be seen by everybody. Patrols gave special attention to visiting camping grounds to see that fires were put out, and when carelessness was apparent the guilty parties were apprehended if they could be found and tried for violation of the regulations. With the forests as dry as they were during the past summer, cigarette and cigar butts were among the most dangerous fire risks we had to contend with, if not the most dangerous, as they are thrown away carelessly, without thought of the possible consequences. They have been observed here to burn for several minutes after being cast aside, if fanned by a gentle breeze. Of 306 small fires extinguished along the road by our patrols and others during the past summer, about one-fourth were evidently started by cigar or cigarette butts. In spite of the great danger of forest fires on account of the extreme dryness, the heavy travel, and the fact that about 80% of

this park is timbered more or less heavily and dead timber is everywhere in evidence along the roads and trails, we were fortunate enough to be free from serious forest fires up to about July 21st, but from that date until about September 5th we had a succession of fires in various parts of the park that required the use of most of our road crews, the ranger force, and as many extra men from adjoining villages as we could get to keep them within bounds. This seriously delayed important improvement work on roads and trails, and cost about $25,000.00. The following shows location, date, cause, and extent of the important fires:

Location	Date reported	Extent	Cause
13-3/4 mi. south of Mammoth	June 15	Small	Cigarette stub
Near Norris Hotel	June 15	5 acres	" "
Fall River	July 21	11 acres	Camp fire
Pitchstone Plateau	" 30	7 acres	Lightning
Thumb Station	" 22	Small	Camp fire
Slough Creek	" 24	Small	Camp fire
Spring Creek	" 10	40 acres	Unknown
Kepler Cascades	" 20	3 acres	Camp fire
Kepler Cascades	" 21	2 acres	" "
Gibbon Meadow	" 26	1 acres	" "
Near Canyon Hotel	" 24	Small	" "
Boundary Lake	Aug. 10	15 acres	Unknown
Mountain Ash Creek	" 13	2000 "	Lightning
Blacktail Deer Creek	" 20	8 "	Camp fire
Specimen Ridge	" 21	25 "	" "
Colter Creek	" 25	Small	Lightning
Lewis Lake	" 27	3 acres	Camp fire
Grizzly Peak	" 28	2500 "	Lightning
Shoshone Geyser Basin	" 29	650 "	Unknown
Phlox Creek	" 29	10 "	Lightning
Mirror Plateau	" 29	1200 "	"
Grayling Creek	Sept. 25	200 "	Unknown
Crowfoot Ridge	" 28	Unknown	"

In addition to this list, about 225 camp fires and small fires that had been abandoned were extinguished by ranger patrols, other park employees, and others traveling in the park. Most loyal assistance was given by concessioners in cases of emergency, and in many cases tourists assisted in fighting fires. It is considered extremely fortunate that with all of the large forest fires we had to contend with, none were close enough to the road to disfigure the landscape and most of the timber that was damaged was of no particular value. The principal damage therefore, was in the cost of fighting the fires, and the delay of important work on roads and other projects under way on account of the necessity for taking the men for fighting fires.

Several of the fires burned over old scars and consequently caused no injury to the park aside from the expense of extinguishing them. Such a fire was the one listed above as burning 650 acres in the vicinity of Shoshone Geyser Basin.

FIRE AND OTHER PATROLS.

Discussion of the forest fires of the past summer prompts further mention of the efficient work of the Yellowstone Park ranger force. While fires were raging over hundreds of thousands of acres of forests of the Northwest (and the fire hazard was greater here, probably, than in any other part of this region) the ranger force of the Yellowstone prevented absolutely any fire damage to this park during June and July. It was only when fires

started in the most remote sections of the park or when several fires were spreading at once that the situation became serious. Even in these trying times it took the ranger force, aided by the road crews, only a relatively short time to quell the flames.

Fire patrols were maintained throughout the summer by permanent rangers traversing the trails on horse-back, while temporary rangers on motorcycles patrolled the roads for the purpose of extinguishing abandoned camp fires and preventing violations of the automobile rules and regulations. From every standpoint I feel sure that the use of one or two aeroplanes for fire patrol would be a most desirable aid to our system of protecting this park, and I hope that some arrangement may be perfected before the opening of next season whereby the Army may be able to assign machines for use in the park during the time of greatest danger from fire. It is also desirable that a fire look-out station be established on Mount Washburn. This mountain commands a vast expanse of the best forests of the park.

The use of motorcycles for making road patrols was very successful. Six machines were purchased for this purpose and with five of these in use the roads were covered twice daily, except when rains interfered, or we were short of riders or mechanics. A few more machines are necessary to keep up a proper system of patrols, and these will be purchased for next year.

Eleven snowshoe cabins were repaired by the ranger force late last fall, and supplied with bedding and other necessities for use of rangers making patrols on skiis or snowshoes in winter.

A night-watchman has been employed to protect property at headquarters since January 14.

ARRESTS FOR VIOLATIONS OF THE REGULATIONS.

Arrests for violation of park regulations were made as follows:

Charged with:	Action taken: Reprimanded:	Tried and fined $5 to $100 and costs:
Speeding	7	11
Breaking, or marring by writing names on, formations	5	
Leaving camp fires unextinguished		14
Obnoxious conduct	2	3
Total	14	20

The above list includes only those cases where official action was taken. There were many cases where rangers warned tourists in time to prevent depredations, and in many other cases that were not flagrant reprimands were administered on the spot and the cases were not recorded.

This record of arrests speaks well for the efficiency of the new ranger force and stands out in contrast with the record for last season, when but two trials were recorded and not an arrest was made

for similar offenses under the military protective force.

STREAM GAUGING.

The work of conducting water resource investigations in the park during the season of 1919 was done under the supervision of Mr. Carl G. Paulsen, District Engineer, U. S. Geological Survey, Boise, Idaho, who visited the park August 5th to 7th. Readings were taken at the gaging stations and reports made by the rangers when practicable. A recording gage was installed on Madison River 4 miles from the western park boundary in October, 1918. Summaries of current meter measurements and discharge data are not now available, but will be published in the Annual Water-Supply Papers of the United States Geological Survey for the Missouri and Snake River drainage area.

FRANCHISES AND PERMITS.

The following is a brief statement of the utilities and other enterprises operated in Yellowstone National Park in 1919 for the accommodation and entertainment of the traveling public. They are all operated under contracts with the department or under temporary permits from the National Park Service, under the strict regulation of this bureau as to service and rates. The statement also mentions improvements in these plans made or contemplated by their owners.

The Yellowstone Park Hotel Company operated the hotels at

Mammoth Hot Springs, Upper Geyser Basin, and Grand Canyon of the Yellowstone, from June 20th to September 20th. For reasons already given the hotel at Lake Outlet was not opened this season. The company is now engaged in making extensive repairs to its properties. These include a very attractive porte-cochere for the Lake Hotel and large new female help dormitories at the Canyon Hotel and at Old Faithful Inn. The latter extensions will considerably increase the capacity of the hotels affected to accommodate tourists.

The Yellowstone Park Camping Company operated camps at Mammoth Hot Springs, Upper Geyser Basin, and Grand Canyon during the entire season, and Camp Roosevelt at Tower Falls was run during July and August, but was not large enough to accommodate more than a limited number of people. At the Lake Outlet the company maintained a few tents and served meals to a limited number in cases of emergency.

In May, 1919, Mr. Howard H. Hays, for many years General Advertising Manager of the former Wylie Permanent Camping Company; during the year 1917 associated with the Union Pacific and Northwestern Lines as tour manager; and under the United States Railroad Administration first manager of the Bureau of Service, National Parks and Monuments, purchased the controling stock interests of the Yellowstone Park Camping Company. Furthermore, Mr. Hays assumed the active management of this enterprise and personally guided its affairs throughout the season.

In the course of the summer and up to the date of this report Mr. Hays has made many notable improvements in his camps and has several very important projects under construction at the present time, chief among them being the fine new central building at the Lake Camp, which I considered elsewhere. Before the opening of next season Lake Camp will be largely rebuilt, and new flush toilets and other sanitary facilities will be installed.

At Mammoth Camp heavy timber supports were placed through the center of the large main building to strengthen its construction and improve its appearance. A new sewer system was built. An ornamental fence was constructed so as to shield the service yard from view from the east side of the main building, where the view is superb; the driveway on this side of the building was discontinued and the porte-cochere removed. The lawn on the west side of the camp was plowed up, cleared, and leveled preparatory to seeding to grass, and a gravel driveway and walk built. In the early future a swimming pool will be constructed in or adjacent to this camp and other extensive improvements will be made. On the part of the Government, the approach to the Mammoth Camp should be greatly bettered from the landscape standpoint.

At the Canyon Camp several new buildings were constructed in strict accordance with the architectural scheme of the camp.

At the Geysers Camp, in Upper Geyser Basin, the new dining room extension was completed and used for the first time on August 22nd,

when a trout dinner was given to the visiting governors' party. A new kitchen is well under way at this camp. If weather conditions permit, a new central building or lodge will be constructed this fall at Camp Roosevelt near Tower Falls, and before the opening of the next season this attractive camp will be expanded and improved in other directions.

The Yellowstone Park Transportation Company operated the only transportation line in the park and met all trains at Gardiner, Montana, Yellowstone, Montana, and Cody, Wyoming, during the tourist season. Service was also maintained on a twice-a-week basis from the belt road to Moran, Wyoming, in Jackson Hole, for parties desiring to take this side trip. One hundred ten-passenger automobiles and 17 seven-passenger touring cars were used in this service.

This company also maintained repair stations at several points in the park and sold gasoline, oil, and other supplies at Mammoth Hot Springs, Upper Geyser Basin, Lake Outlet, and Grand Canyon. It did not, however, carry an extensive assortment of automobile parts. It should be required to carry fairly complete lines of these parts next year.

During the autumn or early next spring the company will construct three very attractive filling stations. They will be built of stone and logs, and will be located near the stores at Upper Geyser Basin, Lake Outlet, and Grand Canyon.

The Yellowstone Park Boat Company rendered little service to the public this season. Its store at the Lake was operated by C. A. Hamilton. This company has very little useful boat equipment. Its big boats are in poor condition and will not meet present demands for service on the lake, and its small boats, except two 45-foot gasoline boats and a few launches, are old, dilapidated, and unsafe. This company has not furnished satisfactory equipment for boat service since 1916. It should be required to purchase new equipment before the opening of the next season and be prepared to meet all demands for row-boat and launch service, as well as for longer trips to the upper arms of Yellowstone Lake. If it can not meet the requirements of the Service some other individual or corporation should be found who will develop the recreational advantages of this beautiful Lake.

Of course the store privilege at the Lake will be exercised next year by Mr. C. A. Hamilton under his new arrangement with the department.

Mr.J. E. Haynes maintained his picture shops at Mammoth Hot Springs, Upper Geyser Basin, and Tower Falls, with photograph stands in all hotels and camps. He was also equipped to develop negatives and make prints for tourists who photographed the features of the park with their own cameras. Mr. Haynes expects to construct a new picture shop at Mammoth Hot Springs before the opening of next season. Plans for the same are now ready to submit to the Service.

Mr. C. A. Hamilton operated his general store at Upper Geyser Basin, and under a subleasing arrangement with the Yellowstone Park Boat Company operated its store at Lake Outlet. In addition to general merchandise and groceries, Mr. Hamilton carried full lines of curios and souvenirs, and also operated gasoline and oil stations. He is now engaged in building a fine new store at the Lake which will take the place of the boat company's store. The new filling stations of the Yellowstone Park Transportation Company at Upper Basin and Lake will be operated by Mr. Hamilton under a cooperative agreement approved by the Service.

Mr. Hamilton expects to arrange for the maintenance of a store next year in the old lunch station of the Yellowstone Park Hotel Company at the Thumb of Lake Yellowstone where the south approach road joins the belt line system.

Mr. George Whittaker, postmaster of Yellowstone Park, operated his general stores at Mammoth Hot Springs and at the Grand Canyon of the Yellowstone. He also carried stocks of curios and souvenirs, and maintained gasoline stations. Mr. Whittaker is now engaged in building a very commodious and attractive new store on his Canyon site. This building is being erected of logs and will be ready for use next season.

Mesdames Pryor and Frischman continued the operation of their ice cream parlors and curio store at Mammoth Hot Springs. They are

now engaged in remodeling the front of their establishment according to plans approved by the landscape engineer. This improvement will greatly enhance the appearance of this popular curio shop.

The Geyser Baths. The bathhouse privilege at Upper Geyser Basin was transferred by Frances F. Brothers under approval dated December 4, 1918, to Henry P. Brothers, who personally ran the business in a very satisfactory manner during the summer.

Pack Outfits. Movable-camp party licenses were issued during the season in favor of the following-named parties:

	Saddle and Pack Animals.		Wagons or Baggage trucks.		Tourists.
Thomas E. Newcomb, Gardiner, Mont..	15	.....	--	.....	5
Charles C. Moore, Ft. Washakie, Wyo.	18	.....	2	.....	11
George F. Hopkins, Cody, Wyo.	35	.....	--	.....	15
I. H. Larom, Valley, Wyo.	7	.....	--	.....	2
L. H. Joy, Teton, Wyo.	7	.....	1	.....	6
Joe A. Jones, Valley, Wyo.	27	.....	--	.....	6
Howard Eaton, Wolf, Wyo.	79	.....	6	.....	66
S. N. Leek, Moran, Wyo.	12	.....	--	.....	6
Clarence Ryerson, Gardiner, Mont....	10	.....	--	.....	2
Richard V. Dennison, Dubois, Wyo. .	(Complete report not yet submitted.)				

This increase in the number of pack trains in use in the tourist business of the park, together with the fact that many of the parties who patronized this class of transportation remained for several weeks, indicates a revival of interest in trail travel which is most gratifying.

Transportation to Cooke: Special permits were issued to parties interested in the development of the mining town of Cooke, Montana, to use their motor trucks and service cars to haul ore and supplies to and from Gardiner, Mont., through the park, as follows:

	Motor trucks		Service cars
Nels E. Soderholm, Cooke, Mont. (merchant)	1	.....	--
Frank R. Lind, Gardiner, Mont.(Contractor for hauling U.S.Mail.)	1	.....	--
Western Smelting & Power Co.,Cooke, Mont., and Seattle,Wash.	1	.....	1
R. I. McKay, Cooke, Montana	3	.....	1

The permit dated March 28, 1917, held by Mr. Robert I. McKay, covering the construction of a metal-surfaced road through the park connecting Gardiner and Cooke, Montana, was cancelled on November 27, 1918.

Moving Picture Companies. Representatives of moving picture companies operated in the park under special permits from the Service, as follows: Pathe Company, in June; C. L. Chester of New York, in August; Famous Players-Lasky Company of New York, August and September; International Film Service October 7 to 10, to get special pictures of tame buffalo herd.

CONVENTIONS AND SPECIAL PARTIES.

Montana Bankers' Association. Two conventions were held in

the park during the season. On August 8th and 9th the Montana Bankers' Association met at Mammoth Hot Springs. Headquarters were maintained at the Mammoth hotel, and the various sessions of the convention were held in the assembly hall at park headquarters, formerly the post exchange of Fort Yellowstone. The Montana bankers, after transacting the usual business of the association, devoted much of their remaining time to a discussion of road improvement in their State.

National Park Touring Association. On August 11th and 12th representatives of twelve western States met in the assembly hall at Mammoth Hot Springs for the discussion of the interpark highway plan, and for the purpose of devising ways and means of completing the selection of this highway system and marking the same. The development of travel over the park-to-park highway was also one of the topics of the convention program. At the close of the first day's session the National Park Touring Association was formed and the following officers elected: Gus Holm's of Cody, Wyoming, President; G. L. Ramsey of Helena, Montana, Vice President; and L. L. Newton of Cody, Secretary-Treasurer.

The new association proposed at once to undertake the selection of the park-to-park highway through cooperation with highway associations. Chambers of commerce, and automobile clubs, and to conduct a scouting expedition over the various routes at an early date. Furthermore, it pledged its support to the department and to

the service in encouraging travel to and between the parks, and in securing large appropriations for park road improvement. Likewise it declared itself in favor of concentrating State funds on interpark highways until they are in first-class condition. The convention adjourned, to meet again at the call of the president, with the understanding that in the meantime a vice president for each western State was to be chosen.

The Governors' Conference. In August the Western Governors' Conference was held in Salt Lake City, and at the conclusion thereof the State of Utah, through its chief executive, entertained most of the visiting governors with a tour of Yellowstone National Park. The party traveled from Salt Lake City to the western gateway on a special train of the Oregon Short Line, arriving on the morning of August 22nd. The tour of the park was made in three days. At Upper Geyser Basin a trout dinner was tendered the party by Mr. Howard H. Hays, General Manager of the Yellowstone Park Camping Company, and several special side trips were arranged by the Yellowstone Park Transportation Company.

The following governors toured the park:

Hon. Simon Bamberger, Governor of Utah;
Hon. O. A. Larrazolo, Governor of New Mexico;
Hon. H. J. Allen, Governor of Kansas;
Hon. John G. Townsend, Jr., Governor of Delaware;
Hon. Thomas W. Bickett, Governor of North Carolina;
Hon. R. A. Cooper, Governor of South Carolina;

Hon. Thomas E. Campbell, Governor of Arizona;
Hon. Ben. W. Olcott, Governor of Oregon;
Hon. James B. A. Robertson, Governor of Oklahoma;
Hon. Wm. C. Sproul, Governor of Pennsylvania;
Hon. Oliver H. Shoup, Governor of Colorado;
Hon. Lynn J. Frazier, Governor of North Dakota;
Hon. Robert D. Carey, Governor of Wyoming;
Hon. Samuel R. McKelvie, Governor of Nebraska;
Hon. Jos. M. Carey, ex-Governor of Wyoming;
Hon. Wm. Spry, ex-Governor of Utah;
Hon. Heber M. Wells, ex-Governor of Utah.

Brooklyn Eagle Tour. A large party under the leadership of the Brooklyn Eagle visited Yellowstone National Park July 27 to 31st, inclusive, in the course of a comprehensive tour of American and Canadian national parks. The party came here in two sections from Rocky Mountain Park, one section traveling in a special train and the other making the interpark trip by automobile. The entire party stopped in Cheyenne on July 25th to attend the famous Frontiers' Day Celebration. Leaving here on August 1st this party proceeded by automobile to Helena, Montana, thence by both special train and automobile it proceeded to Glacier National Park. Under special instructions from the Director I accompanied this party from Denver to Glacier Park.

It will be impossible to over-estimate the importance of the tour of the Brooklyn Eagle party, as it was the first party of eastern people to travel between a group of parks by special train and by automobile service, and likewise it was the first party to make an "international interpark" tour.

International Association of Rotary Clubs. This organization held its annual convention in Salt Lake City just prior to the opening of the park season, and on the first and second days of the season more than 800 Rotarians entered the park by the western gateway, making the complete tour.

Massachusetts Forestry Association. This association, under the leadership of its secretary, Harris A. Reynolds, and Dr. Clinton L. Babcock, visited Yellowstone National Park July 4th to 10th, inclusive.

Travel Club of America. A considerable number of members of this club toured the park July 24th to 29th, inclusive. Both the Massachusetts Forestry Association and the Travel Club of America made the Yellowstone trip as a part of a comprehensive tour of all of the big national parks of the West.

United States Chamber of Commerce Party. On August 16th a score of officials of the United States Chamber of Commerce, headed by its president, reached the northern gateway and during the next three days made a complete tour of the park.

APPROPRIATIONS.

The sundry civil act of July 19, 1919, made available for the administration, protection, maintenance, and improvement of Yellowstone National Park the sum of $255,500, very much less

than has been available annually for the park during the past eight or ten years. Considering further the fact that labor and equipment costs were higher than ever before, this year's appropriations were very inadequate and should be more than doubled next year if the needs of the Yellowstone are to be even approximately met.

REVENUES.

On the other hand, the revenues of Yellowstone Park very largely increased, and at this time it appears likely that they will total $125,000 for the current fiscal year, or nealy one-half the appropriation for the upkeep of the park. The revenue fund will certainly exceed the cost of the administration of the affairs of the park and the protection of its great area by nearly $35,000.

The war season of 1918 produced relatively small revenues, but really more than we expected under the conditions. The following is a statement of the receipts of the park for the fiscal year ended June 30, 1919, as deposited to the credit of miscellaneous receipts of the U. S. Treasury:

Sale of automobile and motorcycle permits	$33,840.04
Collected from corporations and individuals operating stores, permanent camps, the transportation line, and picture shops, 1/	7,784.92
Camping party licenses	---- --
Sale of electric current	886.25
Sale of water	286.80
Sale of hides of carnivorous animals killed by rangers	
Miscellaneous collections	549.08
	$43,347.09

(carefully check these figures in Washington.

1/ Hotels not opened in 1918.

PERSONNEL.

All of our men who left to engage in the world war were taken back into our permanent organization except a few who did not care to return. Other discharged soldiers who applied for work were given employment on the temporary force; in fact, at no time during the summer were men turned away, as labor was scarce and it was necessary to raise the pay of laborers to four dollars a day to keep our men from leaving.

Employees of the park purchased War Savings Stamps aggregating $898.79; Fourth Liberty Loan Bonds aggregating $14,300; Victory Loan Bonds aggregating $11,100; and subscribed to the United War Work fund $474.58. Great interest was also taken in the Red Cross work, and practically all permanent employees and their families belonged to the local branch.

VITAL STATISTICS:

Births: A baby girl, Frances Muriel Stinnett, was born to Mr. and Mrs. Bert Stinnett, our master mechanic, on September 8, 1919.

Deaths: On November 15, 1918, Thomas E. Frazier, buffalo keeper in the park died at the Buffalo Farm of influenza.

On April 24, 1919, Wayne Sweney, three-year-old son of Chauncey M. Sweney, assistant electrician, died of scarlet fever. Two cases occurred in the family, but only one resulted fatally.

On July 18, 1919, James Baxter Hughes, of Gueydon, La., a four-year-old boy traveling with his grandparents, died at Old Faithful Inn from shock caused by burns sustained by backing into a small hot pool the day before at Thumb.

On July 29, 1919, E. M. Mach of Portland, Oregon, died at Mammoth Hotel. He was touring the park in his private automobile. He was a sufferer from tuberculosis and was in a very weak condition when he arrived here. His body was embalmed and shipped to his home.

On August 15, 1919, Mr. Louis D. Boatman of Morrill, Nebraska, touring the park with his aunt and sister, while bathing in Yellowstone River, dived from the bridge across the lake outlet on the Cody road and was instantly killed by striking his head on the bottom and fracturing his skull.

In September rumors became current in and around the park that a man had been killed by a female bear at Old Faithful while he was endeavoring to take a tin can from the nose of one of her cubs. This report has never been corroborated, nor have we been able to trace its source, and I am of the opinion that it was pure fiction.

ACCIDENTS

Considering the unusual number of people in the park during the entire season, serious accidents were exceedingly rare and but one resulted fatally. The most serious accidents noted were as follows:

On July 8th a small boy broke through the geyser formation near

the Giantess Geyser in upper Geyser Basin and burned his feet quite seriously. This was known to be a dangerous place and danger signs were posted, but as is often the case they were not heeded. With increased travel the time seems to have come when more than si[gns] at some places in the geyser basin are needed to keep people out of trouble, as often danger signs are not taken seriously. At this very place one lad[y] asked if it really was dangerous or if the sign gave the name of the geyser. Another said it was not dangerous for she walked over it and did not break through.

James Baxter Hughes, four-year-old son of Mr. R. H. Hughes of Gueydon, La., who was traveling through the park with his grandparents, backed into a small hot pool at Thumb, on July 17th, and was so seriously burned that he died of the shock the following night. Undoubtedly this little boy was not being carefully watched by his guardians or the accident would not have happened. Since this occurrence there have been some suggestions submitted relating to the fencing of all hot springs and geysers, but this should not be done for the reason that barriers of this kind would not only be unsightly but would in all likelihood not prevent unguarded children from suffering injury. Furthermore, fences would be extremely costly to install and there are hundreds of hot springs in the park.

On July 30th one of the ten-passenger cars of the transportation company was tipped over through the fault of the driver

speeding around a double curve, about 1 miles south of Madison Junction. Three of the seven passengers in the car were stunned and quite severely shaken up, but no bones were broken. The driver was tried before the Commissioner for violation of park rules and regulations, and fined $100 and costs.

The same evening a ten-passenger car with a load of hotel employees out for a "joy-ride" left the road and ran into a tree and telegraph pole. The most serious injury to any of the occupants was a broken arm.

On August 16th, an elderly man touring the park with a party of friends stumbled and fell into the edge of Prismatic Lake at Midway Geyser Basin. Fortunately the lake is large enough so that the water is comparatively cool at the edges, and he was not fatally burned. He was well enough to travel, and left the park with his party on August 18th.

On August 23 a ten-passenger car belonging to the Yellowstone Park Transportation Company and carrying members of the Governors' Party collided with a Ford car traveling in the opposite direction, while rounding a curve in the upper end of Hayden Valley. A lady in the Ford car was thrown out into the road, and the left front wheel of the big car was smashed, but fortunately no one was injured beyond a few slight scratches and bruises. Among the occupants of the car were the governors of Pennsylvania, Oregon, Utah, and South Carolina. I was in a car following closely, and after consultation with the occupants of both cars it appeared to me that the accident was a result of both drivers violating the rules

of the road, and that, under all of the conditions as they were shown, a proper punishment was a reprimand to both drivers, and this was administered by both myself and, later, the U. S. Commissioner, who, upon hearing the evidence in the case, reached the same conclusion as I did.

The same day my official car was struck at Virginia Cascades by a Dodge car driven by a girl 18 years of age. The fenders of both cars were damaged, but no further injury was sustained. Both the girl who was driving, and her father who was in another car ahead, were reprimanded and dismissed. The fact that three of the drivers of the four concerned in these two accidents were quite young convinced me that the regulations should provide an age limit for people permitted to drive automobiles on park roads, and this will be recommended when the subject of revision of park rules and regulations comes up later in the year.

MEDICAL SERVICE.

Notwithstanding the fact that we have available at headquarters a large, modern hospital building thoroughly equipped with beds and bedding, kitchen and dining room furniture, office furniture, heating and sterilizing plant, surgical instruments, and medicines, it has not been practical to make provision for medical service, due to scarcity of suitable men for the work. During the past summer the hotel company has employed a doctor whose services could be had

in emergency, and a trained nurse was stationed at each hotel and camp, but for the other nine months the nearest place where medical attention can be had is at Chico Hot Springs, about 40 miles away. The town of Gardiner, five miles distance, has no doctor or trained nurse.

This situation is almost intolerable, and at the earliest possible date we must make some arrangement for medical service here. If a qualified physician can not see his way clear to establish himself here with the hope of building up a profitable practice, we must seek additional appropriations from Congress to employ an experienced doctor at an adequate salary.

CHURCH SERVICES.

During the past year church services were held in the chapel irregularly, but whenever a minister was available. Rev. J. F. Pritchard, Episcopal missionary from Emigrant, Mont., furnished by the Bishop of Montana by arrangement with the Bishop of Wyoming, filled the pulpit every two weeks during the summer, and other ministers were invited to hold services when visiting the park.

SCHOOL AT HEADQUARTERS.

A private school was maintained during the past winter for the benefit of children of permanent Government employees and employees of the business enterprises who remain in the park the year around the expense being borne by the parents of the children. This is one

of the very few places in the United States under exclusive Federal control where no school facilities of any sort have been provided by the Government, and I feel that some steps should be taken to remedy this situation.

MOTION PICTURES.

Under a cooperative plan developed by the park employees, motion picture entertainments were held once a week beginning December 28, 1918, after the influenza epidemic had subsided to the extent that large gatherings were considered safe. A similar arrangement will be worked out for the coming winter, and it is expected that the citizens of the neighboring town of Gardiner will participate.

RECOMMENDATIONS.

Travel to Yellowstone National Park is increasing with such amazing rapidity and such varied uses are being made of this great reservation by its throngs of visitors that it is very difficult to think of any desirable improvement that should not be made in the immediate future. The needs of the park are very great and certainly require the annual expenditure of considerable larger appropriations than have recently been made by Congress. The more important of the urgent needs of the park follow:

1. The Teton Mountains and the head waters of the Yellowstone River, with much of the country between, should be added to the park. Pending legislation provides for this logical and neces-

2. More funds should be provided for the upkeep of the road system. Under existing high labor and material costs not less than $300 per mile should be expended on this system next year.

3. A program providing for the gradual paving of the belt line highways should be immediately adopted. Such a program should provide for the paving of sections of these highways according to their cost of upkeep, the most costly sections to be paved first. One hundred thousand dollars should be made available for this work next year.

4. Eighteen years ago theroad between the Thumb of Lake Yellowstone and Bridge Bay near the outlet of the Lake was realigned, a very scenic highway being abandoned in favor of a shorter route with heavy grades over a high divide. This scenic road along the lake shore should be restored at once. The existing road is exceedingly hard to maintain, is steep, dusty, and almost devoid of scenic features. Small cars experience great difficulty in negotiating its grades. It can not be sprinkled. The old road when restored would afford a lake drive that would be one of the most popular features of the park tour. It would be about five miles longer but this additional distance is of no importance in these days of motor cars.

5. The road that now runs so close to Lake Hotel and Lake camp should be changed to follow the lake shore from the hotel to the junction of the Cody approach road with the belt line system

at the so-called "Fishing Bridge" over the Yellowstone River where it leaves Yellowstone Lake. This realignment would cost comparatively little, but would tremendously improve conditions at the Lake and would especially benefit the traveling public utilizing the hotel and camp by removing the harassment of noisy automobile traffic at night.

6. The Firehole Cutoff Road between Madison Junction and the Cascades of the Firehole should be completed. The major portion of the work on this scenic road was completed by the Army Engineers, but we have had no funds available to undertake the work of finishing it. It will cost $20,000 to complete this project.

7. Ever since automobiles were admitted to the park the finest geysers and hot springs of Lower Geyser Basin have been practically inaccessible to motorists. This is because the old wagon road is badly located and wholly unfit for automobile travel. It should be entirely rebuilt and this work ought to be undertaken next year. It will cost approximately $17,500 to make this improvement. Among other things it will open to all visitors to the park such wonders as Firehole Lake, the Black Warrior, the Great Fountain Geyser, Surprise Pool, Broken Egg Pool, and the White Cone.

8. The Cody or eastern approach road should be improved by the construction of seven new bridges in the forest east of the

park and by the reconstruction and graveling of approximately 4 miles of that portion of the road between Sylvan Pass and Lake Yellowstone. The south approach road should be improved by the construction of a number of new bridges and culverts and by the elimination of curves and the reduction of grades on certain sections of this highway.

9. The Inspiration Point Road should be improved by considerable work of widening and the construction of guard rails and other protective measures, the establishment of adequate parking places, etcetera. This improvement should also include the construction of a walk along the rim of the Grand Canyon for the use of pedestrians. The present road is not satisfactory for motor travel and is distinctly dangerous to walking parties.

10. There is a crying need for the immediate construction of several large new automobile camp grounds for the use of motorists who bring their own camping outfits into the park. Next year the camps at Upper Geyser Basin, Thumb, Lake Outlet, Grand Canyon, Tower Falls, and Norris Geyser Basin should be improved by the extension of the water system, and much attention should be given to the sanitation of these camps. This free automobile camp system should be progressively extended and improved year by year, and as soon as possible not less than 30 major camps should be made available.

11. Many of the ranger stations of the park are in a

dilapidated condition and should be rebuilt. The greatest need is for new stations at Upper Basin, Lake Outlet, and the Grand Canyon. They should be built next year and should be large enough to accommodate several park rangers, a divisional highway engineer, and a large information office in which maps, national park circulars of information, and other data useful to the public may be made accessible to tourists. Several snowshoe cabins used by the park rangers in winter should be rebuilt.

12. Attractive gateway structures should be erected at the Cody or eastern entrance and at the Yellowstone or western entrance to the park. Plans for the Cody entrance have already been approved but funds have not been available for the construction of this gateway. Both of these entrances are as important as the northern gateway, which already has a very imposing and interesting arch.

13. The National Park Service and the Yellowstone Park Hotel Company each maintains a telephone line, and the hotel company maintains a telegraph line. None of these lines is in satisfactory condition. They should all be consolidated and maintained by the National Park Service as in the case of Yosemite Park. This would make it possible from the financial standpoint for the Government to build and maintain a first-class telephone and telegraph service for the public as well as for the park administration and the business interests of the Yellowstone.

14. More funds should be provided for the seeding, cultivation, and draining of hay lands, in order that larger supplies of hay for buffalo and other animals may be available hereafter.

15. By special authority of law the National Park Service now maintains the approach roads to Yellowstone Park through the forest reserves east and south of the park. Enormous tourist traffic on the north approach road from Livingston to Gardiner is now placing a tremendous burden of road maintenance on the county treasury, which, in view of the large size of the county and the small amount of taxable property therein, is a particularly hard burden to bear. It would seem that the Federal Government should bear the cost of up-keep of at least half of this approach road, and I recommend that this proposition be given the earnest consideration of the Service and of the department with a view to bringing it to the attention of Congress.

16. Gallatin County and the State of Montana, with the cooperation of the Forest Service, are rebuilding the highway through the gorgeous canyon of the Gallatin River north of the park, and within two years will have this work completed. Before this new road is finished we should rebuild our section of the Gallatin Highway and should continue it through to the west approach road. This would mean the construction of from 10 to

12 miles of new road from Grayling Creek to the Madison River.

17. The trail system should be largely extended, and it is particularly important that a new trail be built next year from Trapper Creek, south of Lake Yellowstone, around the arms of the lake and over Chicken Ridge to Heart Lake. Likewise, a new trail should be built up Mountain Creek to Eagle Pass. In order that saddle-horse parties may not have to traverse the much-used motor roads, new trails should be built on the east side of Lewis River from the south entrance to Lewis Lake and from Turbid Lake to the east boundary by way of Jones Pass.

18. Last, but more important than most of the projects I have mentioned, is the need for taking every possible step for the conservation and protection of the wild animals of the park, and especially the elk herds, which are in constant danger of destruction during the winter months through lack of feed while outside of the boundaries of the park.

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Yellowstone national park.
Yellowstone park, Wyo.

Superintendent

November 1, 1919.

To the Editor:

The attached press memorandum contains much data on travel in Yellowstone National Park which will doubtless be interesting, not only to the readers of your automobile section, but also to the Chamber of Commerce of your city, and to the organizations engaged in promoting good roads movements and in encouraging tourist travel to the West.

If you are interested in receiving similar data from the park in the future, please advise us and we shall be glad to keep in touch with you.

Cordially yours,

Horace M. Albright,

Superintendent.

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
YELLOWSTONE NATIONAL PARK.

Yellowstone Park, Wyoming,
November 1, 1919.

MEMORANDUM FOR THE PRESS:

During the tourist season of Yellowstone National Park, which closed early in October, all travel records of the great park were broken. The aggregate number of persons visiting the park during the year ended October 12, 1919, was 62,261, an increase of 10,366 over the former record year of 1915, when 51,895 people entered the gates of the Yellowstone. It must be remembered, however, that 1915 was the "Exposition Year", and a large part of the visitors of that year came to the park on side trips en route either to or from San Francisco. The average annual travel for the past ten years, inclusive of 1915 travel, was approximately 29,000, and exclusive of the "Exposition Year" visitors averaged about 26,000.

On August 5, 1919, 1,255 tourists entered the park, the greatest number entering in any one day in the history of the Yellowstone.

AUTOMOBILE TRAVEL.

Even more striking than these figures showing the total travel in the park this year are the statistics of the motor travel -- that is, the number of privately owned automobiles driven through the park, and the number of tourists carried by them. A total of 10,737 cars entered the park during the year, carrying 39,886 people. These cars came from 46 States of the Union, the District of Columbia, Canada, the Canal Zone, and Denmark. North Carolina and South Carolina sent no private motorists through the park this year, but in August Governor Thomas W. Bickett of North Carolina and Governor R. A. Cooper of South Carolina toured the Yellowstone with fifteen other governors. These two States were also represented by a large number of people who came to the park by train.

The greatest number of private automobiles entering the park in one day was 202 on August 4, 1919. This broke all previous records.

The total of 10,737 cars, carrying 39,886 people,

should be compared with the previous record travel by private motorists in 1917, when 5,703 cars, carrying 22,117 visitors registered at the park gates. The private automobile travel for 1919 was nearly double that of two years ago.

MOTORISTS CAMP OUT.

Of the 39,886 people who toured the Yellowstone in their own cars this year, approximately 60 percent, or nearly 25,000, brought with them their own camp equipment, and in most cases used and appreciated the special camp grounds where wood, water, toilet facilities, and, at Mammoth Hot Springs, electric lights, were furnished without charge.

At times during the summer these camp grounds were overcrowded, and before the opening of next season they will be expanded and new areas opened for this use. Likewise more wood will be provided, and a considerable sum will be expended in improving the water and sanitation facilities, provided the necessary funds are made available for the purpose. The popularity of these camps fully warrants their development on a large scale.

TRAVEL BY RAIL.

Of the 21,275 tourists who came to the park by rail, and utilized the facilities of the Yellowstone Park Transportation Company, 18,679 made the complete tour of the park roads. In addition, 2,596 made short trips.

As a rule tourists visiting the park by rail remained nearly five days, while the private motorists spent an average of six days. During the months of July and August there were between five and six thousand people in the park every day, most of them camping out and enjoying the beauties and wonders of their mountain playground in their own way.

Several thousand people spent a considerable period of time in the park this year. This tendency to regard Yellowstone National Park as a great scenic area and vacation land where week and months can be spent in healthful recreation is very gratifying to the National Park Service, which is trying very hard to get the public away from the idea that this big park is little more than a land of extraordinary natural phenomena; it is one of the most beautiful scenic regions of the world, and when the magnificient Teton Mountains are added to the park it will not be surpassed by any other mountain region on the face of the Earth.

The following tables show some very interesting analyses of the season's travel, and also some comparisons with tourist figures of previous years:

Travel by different entrances:

From the north, via Gardiner, Mont.	22,786
From the west, via Yellowstone, Mont.	23,558
From the east, via Cody, Wyo.	13,455
From the south, via Moran, Wyo.	2,462
Total	62,261

Making trips with private transportation:

With automobiles paid and complimentary	37,724	
With automobiles, second trip	2,162	39,886
With motorcycles	56	
With licensed saddle and pack trains	129	
With miscellaneous facilities, including out-of-season visitors to the park	915	1,100

Yellowstone Park Transportation Company:

Entering via the northern entrance	9,353	
Entering via the western entrance	8,897	
Entering via the eastern entrance	3,025	21,275
Grand total		62,261

Private automobile travel:	Automobiles	Tourists
Entering via the northern entrance	3,478	12,621
Entering via the western entrance	3,783	14,520
Entering via the eastern entrance	2,853	10,330
Entering via the southern entrance	623	2,415
Totals	10,737	39,886

Motorcycle travel:	Motorcycles	Tourists
Entering via the northern entrance	20	31
Entering via the western entrance	9	14
Entering via the eastern entrance	7	11
Totals	36	56

The following tables are given for the purpose of comparing the travel of this season with the number of visitors entering the park in 1918, the war season; 1917, the season of average travel since the admission of automobiles to the park; and 1915, the Panama-Pacific Exposition season. These tables give in the first column the number of automobiles and in the case of the 1918 and 1919 statistics the number of motorcycles entering the park; in the second column the number of visitors to the park is shown by reference to entrances, those entering via Soda Butte Ranger Station or the northeast gateway being listed with the eastern entrance visitors; the next column shows the number of visitors reaching the north, west, and east entrances by rail; and the last column gives the total number of visitors by entrances.

1919

Entrance	Private Transportation Automobiles (1)	Visitors	By Rail	Total Visitors.
North	3,498	13,433	9,353	22,786
West	3,792	14,661	8,897	23,558
East	2,860	10,430	3,025	13,455
South	623	2,462		2,462
TOTALS	10,773	40,986	21,275	62,261

1918

Entrance	Private Transportation Automobiles (2)	Visitors.	By Rail	Total Visitors.
North	1,528	6,027	1,537	7,564
West	1,943	7,566	1,136	8,702
East	1,128	4,114 (3)	353	4,467
South	135	542		542
TOTALS:	4,734	18,249	3,026	21,275

(1) Includes 36 motorcycles carrying 56 people.
(2) Includes 16 motorcycles carrying 25 passengers.
(3) Includes 66 people entering via the northeastern entoway.

1917

Entrance	Private Automobiles	Transportation Visitors.	By Rail	Total Visitors.
North	1,994	7,645	5,774	13,419
West	2,258	9,055	5,635	14,690
East	1,355	5,061	1,874	6,935
South	98	356		356
TOTALS:	5,703	22,117	13,283	35,400

1916

Entrance	Private Automobiles	Transportation; Visitors.	By Rail	Total Visitors.
North	365	3,094	14,369	17,463
West	392	2,795	29,756	32,551
East	193	1,198	352	1,550
South	8	331		331
TOTALS:	958	7,418	44,477	51,895

(1) Includes 104 people entering via the northeastern gateway.

NAME OF STATE	NORTH		WEST		EAST		SOUTH		TOTAL	
	Cars	Pass.	Cars	Pass.	Cars	Pass.	Cars	Pass.	Cars	Pass.
Alabama	-	-	-	-	1	2	-	-	1	2
Arkansas	1	4	4	10	19	73	1	2	25	89
Arizona	3	6	12	58	9	13	11	49	35	126
Colorado	24	91	54	189	258	866	6	20	342	1166
California	105	322	204	714	69	202	9	27	387	1265
Connecticut	2	7	3	12	6	17	-	-	11	36
Delaware	1	3	1	2	1	5	-	-	3	10
Florida	5	16	2	7	3	14	-	-	10	37
Georgia	2	5	4	14	2	10	-	-	8	29
Illinois	67	228	12	38	77	313	5	18	161	597
Indiana	22	81	9	33	31	98	-	-	62	212
Iowa	93	353	6	54	160	501	3	8	262	916
Idaho	44	108	1066	4205	13	47	232	959	1355	5319
Kansas	17	66	25	152	176	591	8	29	226	818
Kentucky	1	5	-	-	3	10	0	0	4	15
Louisiana	2	7	5	14	10	46	-	-	17	67
Montana	1705	6412	860	3021	289	962	5	22	2859	10417
Maryland	3	9	1	4	1	7	-	-	5	20
Massachusetts	4	14	4	15	11	31	1	2	20	62
Maine	1	2	11	36	1	6	-	-	13	44
Michigan	38	148	3	10	42	153	5	17	88	328
Mississippi	11	41	-	-	-	-	-	-	11	41
Missouri	16	61	30	104	96	381	3	13	145	559
Minnesota	109	382	8	18	32	120	-	-	149	520
New York	30	91	6	30	36	123	1	4	73	248
New Mexico	2	4	4	14	11	47	-	-	17	65
New Jersey	3	11	3	13	4	18	1	5	11	47
New Hampshire	1	2	1	2	1	2	1	2	4	8
Nevada	1	4	18	18	52	-	-	1	6	20
Nebraska	47	174	34	126	263	990	12	47	356	1337
North Dakota	125	513	7	26	29	120	2	9	163	668
Oklahoma	78	296	24	114	80	376	3	8	185	794

NAME OF STATE	NORTH		WEST		EAST		SOUTH		TOTAL	
	Cars	Pass.	Cars	Pass.	Cars.	Pass.	Cars	Pass.	Cars	Pass.
Ohio	38	115	16	56	53	139	3	9	110	319
Oregon	88	343	140	518	15	40	3	12	246	913
Pennsylvania	19	51	5	16	23	84	1	4	48	155
Rhode Island	2	5	-	-	-	-	-	-	2	5
South Dakota	101	328	7	20	76	255	1	2	185	605
Texas	7	19	20	57	77	265	1	6	105	347
Tennessee	1	4	2	8	7	22	2	9	12	43
Utah	16	59	660	2356	11	43	117	480	804	3438
Virginia	4	8	-	-	-	-	-	-	4	8
Vermont	1	3	1	4	1	5	-	-	3	12
Washington	260	862	175	675	58	216	3	9	496	1762
Wisconsin	79	287	8	33	32	116	1	2	120	438
Wyoming	42	172	42	139	693	2739	95	337	878	3387
West Virginia		L -	-	-	4	12	-	-	4	12
Dist. Columbia	2	3	2	5	-	-	-	-	4	8
Canada	44	169	26	113	8	22	-	-	78	304
Canal Zone	-	-	-	-	1	2	-	-	1	2
Denmark	"	-	-	-	-	-	1	2	1	2
Totals	3275	11894	3525	13567	2793	10104	538	2119	10129	37684

Complimentary cars, unclassified by States	17	
Motorists entering in complimentary cars, unclassified by States		40
Second entry cars, unclassified by States	591	
Motorists in second entry cars, unclassified by States		2162
Grand total, all cars and motorists, classified and unclassified	10737	39886

MAKES OF CARS DRIVEN THROUGH YELLOWSTONE PARK

MAKE	1919	1918	1917	1916
Abbot-Detroit	1	1	3	1
Albright	1	-	-	-
Alco	1	-	-	2
Allen	7	1	2	1
American	-	-	1	2
Apperson	33	6	19	9
Auburn	11	5	4	5
Austin	1	-	-	-
Bangless	1	-	-	-
Biggs	2	-	-	-
Briscoe	7	8	7	4
Buick	1,360	527	499	290
Bush	1	-	-	-
Cadillac	327	135	190	172
Carter Car	1	-	7	2
Case	47	28	27	26
Chalmers	143	68	97	97
Chandler	151	75	59	53
Chase	1	-	-	-
Chevrolet	267	111	94	32
Cole	46	12	30	13
Columbia	-	3	-	-
Columbia-Knight	-	-	-	2
Crane-Simplex	1	-	-	-
Crawford	1	-	-	-
Crow	-	-	-	1
Crow-Elkhart	4	2	2	-
Cunningham	1	-	-	-
Cycle-Car	-	2	-	-
Davis	-	1	-	-
Detroiter	2	-	2	2
Dilop	1	-	-	-
Dixie	1	1	1	-
Dodge	974	395	389	188
Dorris	2	1	-	1
Dort	25	7	17	6
Drummond	-	-	2	-
Elaine	1	-	-	-
Elcar	5	2	-	-
Elgin	23	7	3	-
Elkhart	-	-	-	1
Ely	-	-	1	-
E.M.F.	4	3	2	5
Empire	-	2	1	3
Essex	32	-	-	-
Everett	2	-	-	-

MAKE	1919	1918	1917	1916
Fiat	5	-	-	-
Ford	2,932	1,449	1,684	947
Franklin	158	78	81	58
Fremont	1	-	-	-
Garford	1	-	-	-
Gillette	1	-	-	-
Glide	5	-	3	-
G. M. CO.	-	1	-	-
Grant	22	22	25	12
Great Smith	1	-	-	-
H. A. L.	2	2	4	-
Harroun	3	-	-	-
Haynes	48	36	50	48
Hays	-	-	1	-
Hollier	6	1	2	1
Holmes	2	-	-	-
"Home made"	-	1	-	-
Houk	-	-	1	-
Howard	-	-	-	2
Hudson	312	148	187	100
Hupmobile	161	82	91	58
Imperial	-	-	-	1
International	3	-	-	2
Interstate	6	1	1	3
Jackson	3	3	5	3
Jeffery	25	15	31	12
Jing	-	1	-	-
Jones	1	-	1	1
Jordan	13	-	1	-
King	10	6	8	13
Kissel Kar	32	12	15	9
Laucia	-	-	1	-
Lewis	-	1	-	-
Lexington	15	10	8	-
Liberty	18	4	7	-
Locomobile	12	5	5	10
Lovell	-	-	1	-
Lovere	-	-	1	-
Lozier	10	1	7	7
Luverne	-	-	-	1
McFarlan	2	-	-	1
McLaughlin	16	4	5	-
Marion-Handley	2	2	2	-
Marmon	51	22	20	8
Mason	-	-	-	1
Maxwell	172	90	122	78
Mercedes	-	-	-	3
Mercer	7	7	6	1
Metz	1	1	5	6
Michigan	3	-	1	1
Michelin	1	-	-	-
Minerva	-	-	1	-
Mitchell	79	45	49	24

MAKE	1919	1918	1917	1916
Molene-Knight	2	-	2	1
Monarch	1	-	-	-
Monroe	3	-	-	4
Moon	3	4	-	3
Nash	120	14	-	-
National	39	21	20	13
Nelson	1	-	-	-
New Era	1	-	1	-
Nichols	2	-	-	-
Nickel	1	1	-	-
Oakland	175	87	111	60
Oldsmobile	213	127	96	52
Olympic	1	3	-	-
Overland	446	243	345	230
Owen-Magnetic	1	1	-	-
Packard	113	49	55	51
Paige	117	64	88	54
Pathfinder	-	1	4	4
Patterson	4	1	3	-
Penham	1	-	-	-
Peerless	30	7	13	6
Pierce-Arrow	52	13	27	40
Pilot	5	3	2	1
Pope	-	1	-	1
Pope-Hartford	-	2	1	-
Premier	26	13	10	5
Pratt	1	-	-	-
Pullman	3	1	4	-
Rambler	2	1	1	3
Regal	1	-	2	1
Reo	255	149	192	131
Republic	4	-	1	-
Richmond	-	-	1	-
Roamer	3	-	-	-
Roll-Royce	-	1	-	-
Ross	-	-	1	-
Russell	-	-	-	1
Saxon	37	31	51	22
Scripps-Booth	12	4	4	1
Sears	1	-	-	-
Seneca	1	-	-	-
Simplex	-	-	2	1
Special	-	1	-	-
Speedwell	-	-	1	1
Stanley Steamer	4	4	2	-
Standard	3	-	2	-
Stearns-Knight	20	3	9	8
Stearns	-	1	-	-
Stevens	22	4	3	-
Stevens-Duryea	5	-	3	19

MAKE	1919	1918	1917	1916
Stoddard-Dayton	-	1	2	3
Studebaker	473	220	299	226
Stutz	35	8	10	15
Sun	-	-	1	-
Templar	2	-	-	-
Thomas	1	9	-	1
Varomier	1	-	-	-
Velie	76	7	32	26
Vim	1	1	-	-
Vinnie	1	-	-	-
Westcott	2	1	2	-
White	15	9	8	13
Winton	34	8	15	19
Willys-Knight	129	50	40	17
Willys	-	8	-	-
Yale	-	1	-	-
Undetermined	-	2	4	-
Totals	10,129	4,633	5,331	3,340

MOTORCYCLES.

MAKE	1919	1918
Excelsior	6	4
Harley-Davidson	23	12
Henderson	1	-
Indian	6	-
Totals	36	16

Annual Reports of the Superintendent
Yellowstone National Park
1916 - 1919

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