

R E P O R T

OF THE

ACTING SUPERINTENDENT

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

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REPORT
OF THE
ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF THE SUPERINTENDENT,
Mammoth Hot Springs, Wyo., September 30, 1898.

SIR: I have the honor to submit the following report of the condition, management, protection, and improvement of the Yellowstone National Park from November 10, 1897, the date of the final report of my predecessor, to September 30, 1898:

Maj. Gen. S. B. M. Young, United States Volunteers (Colonel Third Cavalry, acting superintendent), left the Yellowstone National Park on November 15, 1897, and the duties of that position have devolved upon me, as being next in command, and subsequently, in compliance with telegraphic orders from the Department, from that time to the present, except during the period from March 13 to July 11, 1898, when I was on detached service, during which time Lieut. G. O. Cress, Fourth Cavalry, ably performed these duties.

At the time of departure of my predecessor there remained an unexpended balance of \$66.01, with which to keep in repair the road from the Mammoth Hot Springs to Gardiner City, which, on account of its location in the canyon of the Gardiner River, must be constantly worked in the winter season; to protect the game of the park during the winter months from poachers; to open up the usually traveled route of tourists, who begin visiting the park on the 1st of June, and keep the same in repair until the appropriation for this year should become available. Owing to the very small balance of the appropriation remaining unexpended I had to rely mainly for protecting the game upon the services of Lieutenant Lindsley, Fourth Cavalry, and Scouts Morrison and Whittaker, with the assistance of the soldiers on winter station and in garrison. The work done by this officer, and these men, was of the highest importance to the park in the protection of its game, to a large extent prevented poaching, and resulted, in connection with the mild weather of last winter, in a large increase of the game life of all descriptions. The way in which these objects were accomplished will be treated under the heads of "Protection" and "Improvement" later on in this report.

The stage robbery which occurred in the park on August 14, 1897, an account of which was given by my predecessor in his report, was

brought to an end by the trial and conviction of George Reeb and Gus. Smitzer, at Cheyenne, Wyo., before United States court, and they were sentenced to two and one-half years in the penitentiary.

TRAVEL.

To supply the various demands of the public for transportation through the park, it has been found necessary to have and adopt different kinds, viz: Regular stage lines, steamboat transportation on Lake Yellowstone, licensed, and private transportation, whether by wagon, pack train, horseback, or bicycle. The former is represented by the Yellowstone National Park Transportation Company, running its stages from Cinnabar, Mont., on the north of the park, the railroad terminus of a branch line of the Northern Pacific Railway, and over the usually traveled route of tourists, via Mammoth Hot Springs, Norris, Upper Geyser Basin, over the continental divide to Yellowstone Lake, Canyon, Norris, Mammoth Hot Springs, and thence to Cinnabar. The Monida and Yellowstone Stage Company (Humphrey & Haynes) enter the park at Riverside, from Monida, a station on the Oregon Short Line, and travel over the same route as the other stage line, as follows: Fountain Hotel, Upper Geyser Basin, over continental divide to Yellowstone Lake, Canyon, Norris, Mammoth Hot Springs, Norris, thence via Riverside to Monida.

The steamboat company operates one steamboat, which daily makes the trip from the lunch station on the lake (known as West Thumb) to the Lake Hotel, and affords the tourist, whatever means of transportation he may use in making the park trip, an opportunity to take an exceedingly beautiful and interesting trip of some three hours on the lake.

Licensed transportation includes a number of individuals, who, under license from the Department, are authorized to personally conduct parties through the park, furnishing the necessary camp equipage and food. Private transportation, as its name implies, includes all other going through the park, using transportation of their own, of whatever nature.

For the purposes of protection and police, it has been found necessary to register at certain places in the park all persons traveling through it, exclusive of those transported by the regular stage lines, and below will be found a table giving the number of travelers in the park this year and the kind of transportation used.

Number of persons registered at stations during the season of 1898.

Number and location of station.	Camping parties.				Licensed transportation.			
	June.	July.	Aug.	Sept.	June.	July.	Aug.	Sept.
1. Mammoth Hot Springs.....	241	512	1, 174	256	66	166	352	65
2. Norris <i>a b</i>								
3. Canyon <i>a</i>								
4. Lake <i>b</i>	71	538	1, 263	469	42	112	240	30
5. Thumb <i>a</i>								
6. Upper Basin.....	25	436	1, 242	471	9	70	295	58
7. Lower Basin <i>b</i>	77	390	1, 327	423	17	73	428	61
8. Snake River <i>b</i>	24	210	557	219			None.	
9. Riverside <i>b</i>	88	366	911		19	55	88	
10. Soda Butte <i>b</i>	99	162	170	114			None.	

a No registration required.
b Winter station.

Number of persons traveling with registered guides (pack trains).

June	None.
July	39
August	74
September	31

The aggregate number of tourists visiting the park from opening of season (June 1) to September 30 was 6,534. The aggregate number carried over the regular route by the Yellowstone National Park Transportation Company, was 2,196, and by the Monida and Yellowstone Stage Company, 234; aggregate number carried through by licensed transportation of personally conducted camping parties, 890; aggregate number carried through in private transportation, 3,437; bicyclers, foot travelers, etc., included. During the season 2,256 tourists took the trip across Yellowstone Lake on the steamboat of the Yellowstone Lake Boat Company. Of this number, those who came into the park by the regular stage lines numbered 1,225, and those who went through the park by other means of transportation numbered 1,031.

To determine whether or not the park is becoming more traveled, and fulfilling gradually the mission for which created, viz, as a "pleasuring ground for the benefit and enjoyment of the people", a comparison of totals is made, from record, from 1895 to present date:

Number of tourists former years.

	1895.	1896.	1897.	1898.
Camping parties	2,594	1,797	4,454	3,437
Licensed transportation	374	454	1,354	890
Yellowstone Park Association	2,470	2,408	4,872	2,207
Total	5,438	4,659	10,680	6,534

It will be seen that 1897 brought the greatest number of tourists to the park, but the comparison should not be made with that year as a standard, as a great number of Christian Endeavorers, after their meeting in San Francisco, Cal., returned, via the Northern Pacific Railway, and visited the park. Their number can not be determined, but making reasonable deductions on account of this particular and exceptional class of travel, it will be seen that the season of 1898 in the park shows an increased number of tourists. This is yet more remarkable, as the conditions of the country, owing to the war, diverted more or less attention from the park, and probably decreased in no inconsiderable degree the number of persons traveling for pleasure during the summer.

SYSTEM OF PATROLING AND POLICING.

The most difficult task that the acting superintendent has to accomplish is to carry out the provisions of the dedicatory act of the park, setting it aside for the benefit and enjoyment of the people. Were it thrown open to the people, without restrictions of any sort, it would be only a short time before it would cease to be a pleasuring ground, while, on the other hand, the restrictions should be of such a nature only as to preserve intact, not only for the present but for the future, the salient and wonderful features which have made the park the most remarkable, as well as the most scientifically interesting, place in the world. The restrictions, as now established and sanctioned by the Interior Department, and enforced by the acting superintendent of

the park through the military force under his command, though sometimes misunderstood and not appreciated by a few of the travelers of the park, seem to fully and completely accomplish the object for which the park was set aside, and I am glad to say the intentional violators of the rules and regulations of the park have been very few.

The system of enforcing them by means of soldiers stationed at nearly regular distances on the usually traveled routes, and who patrol these routes, and especially by guards from these detachments, who are always present at the most interesting points, preventing their desecration and the destruction of the natural phenomena, has been established for some years, and no better could be devised. I know of no case where these soldiers, in the discharge of these very particular and exacting duties, have been other than courteous and polite toward the public, at the same time enforcing the law. These rules and regulations will be found in the appendix marked A.

In addition to these duties, it has been found necessary to keep a complete and accurate record of all who enter and travel through the park, except those who enter by the stage lines, a record of whom is kept at hotels, and this is also done by the soldiers stationed at the various points in the park.

HOTELS.

The Yellowstone Park Association owns and controls, under lease from the Department, hotels at the following places in the park: Mammoth Hot Springs, Lower Geyser Basin, Yellowstone Lake, Canyon; also lunch stations at Norris Geyser Basin, Upper Geyser Basin, and Yellowstone Lake. The hotels are so located as to stage travel that tourists using this transportation always finish up their day's journey at a hotel; the lunch stations being merely places to obtain noonday refreshments en route to hotels. It is, I believe, the intention of the association to build a hotel at the Upper Geyser Basin this fall. I trust this will be done, and completed in time for the tourist season of next year. Frequent demands have been made for a hotel at this most wonderful spot; besides, by the erection of this hotel, the present route through the park will be so divided up that much fatigue and discomfort to the tourist will be avoided.

PERMANENT CAMPS.

Under authority from the Department, Mr. W. W. Wylie has established permanent camps at the following points: Apollinaris Spring, Upper Geyser Basin, Yellowstone Lake, and Canyon, besides having lunch stations at a point about midway between Norris and Lower Geyser Basin, and near the Yellowstone Lake.

INSPECTION BY ACTING SUPERINTENDENT OF THE PARK.

Ever since the opening of the season, and until its close, frequent inspections have been made by me and other officers of the command, of all stage lines and other transportation, of the hotels, lunch stations, and of Mr. Wylie's permanent camps and lunch stations, and of the steamer on the Yellowstone Lake.

I have always found the entire personnel of the Yellowstone National Park Transportation Company polite, courteous, and efficient; their horses and vehicles always in first-class condition, and suited in every way to handle the business required of it.

The Monida and Yellowstone Stage Company is in the first year of its existence, and has employed the following:

Four-horse drivers	10-12
Two-horse drivers	4
Stock tenders	7
Assistant superintendents	2
Blacksmith	1
Bookkeeper	1

They had in use the following vehicles:

Eleven-passenger Concord coaches	12
Three-passenger Concord surries	4
Concord buggies	2

Also:

Horses	80
Four-horse Concord harness	sets.. 16
Two-horse Concord harness	do... 8
Blankets, dusters, and complete barn supplies.	

This stage company is of the first order in every respect; has given first-class service to its patrons, has opened up a new route to the park through a beautiful country, and I have found its entire personnel, by courtesy and politeness, desirous of making its route popular with the traveling public, which it will undoubtedly be.

Messrs. Humphrey & Haynes, who control the line, are both practical business men, with experience in this business, and are always courteous and obliging.

The steamer *Zillah*, running daily trips on the Yellowstone Lake, under the lease of the Lake Boat Company, and under the personal direction of Mr. E. C. Waters, her captain, who is also president and general manager of the company, has given full satisfaction to the public. I have made many trips on this boat, always found her in perfect condition, and thoroughly safe. The entire personnel of the boat are always attentive and polite to the passengers, doing everything for their pleasure and enjoyment. In addition to the regular tourist business, this steamer has had many excursions.

The hotels and lunch stations of the Yellowstone Park Association, under the able direction and management of Mr. J. H. Dean, fulfill every requirement of the traveling public. No better accommodations and food are furnished anywhere in the United States, under like conditions. The hotels are thoroughly clean and neat throughout, and the service excellent. It should be remembered that all articles of food, except meat, are shipped here, as there is no local market from which the daily supply of edibles can be obtained. I have not heard a single complaint from any guest of any of the hotels.

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

Campers are another class of visitors to the park who furnish their own transportation, tentage, etc., and with whom the daily patrols

from stations have most to do in reference to the police and protection of the park.

The transportation under the heading "Licensed" has also been inspected and the camps of these parties looked after, wherever met. Satisfaction seems to have been given in all cases, for I have not heard one word of complaint from any of their patrons. A list of this licensed transportation will be found in the appendix marked B.

With private transportation of all sorts and descriptions the Department is not interested, except pack-mule transportation. Certain rules govern this kind while in the park, rendered necessary by a due regard to the safety of others traveling in vehicles, as well as the safety of the parties using the pack mules. This is the kind of transportation that is most generally used by hunting parties in the fall of the year, wishing to go through the park and hunt in the country south, southeast, and southwest of the park. Such transportation is restricted to the conditions of traveling on the usually traveled roads and leading the pack animals, for the reasons given above. When the party is under the control of a registered guide a greater latitude is allowed to the routes taken through the park, and a guide is only registered when he is personally known to be absolutely competent and reliable. A list of these registered guides will be found in the appendix marked C.

The Monida and Yellowstone Stage Company have seemingly absorbed the business previously conducted by Mr. C. J. Bassett, from Beaver Canyon, Idaho, into the park via the western entrance, as I have no reports of any passengers by his line during the past season, nor has he applied for license to conduct this class of business.

CARRYING FIREARMS THROUGH THE PARK.

The custom of carrying firearms of some description is nearly universal among the citizens of States bordering the park, who travel in their own conveyances, or on saddle animals; and of course those desiring to hunt in the country adjacent to the park, and who go through the park either on starting on their trip or returning, are fully equipped in this particular. With reference to all of these individuals, the regulation prohibiting firearms in the park, except on written permission from the acting superintendent, in which case the arms are sealed, has been strictly enforced. It is a wise regulation, and its enforcement is essential to the protection of the park.

The mere fact that this region has been set aside as a national park engenders a feeling of hostility toward it and toward the authorities here, on the part of the people living nearest to it; and the fact that it abounds in game, which is becoming more and more rare in other parts of the United States, intensifies the feeling of enmity. As the benefits to the people of the surrounding country derived from keeping the park intact and the game protected become better understood by them, this hostility will undoubtedly cease; and in performing the duties of acting superintendent I have endeavored to make this plain to all I have been brought in contact with, and, so far as possible, to make them friends of the park.

LEASES.

There has been no intentional violation of terms and conditions of any lease during the past year. The rentals under these leases are paid direct to the Department in Washington, except that of Mrs. Jennie H. Ash, which was forwarded through this office under date of August 9, 1898, and its receipt duly acknowledged.

The Monida and Yellowstone Stage Company have constructed on es selected by me, three neat barns, holding from 8 to 12 horses (one Upper Geyser Basin, 8 horses; one at Norris Geyser Basin, 12 horses; e at Mammoth Hot Springs, 12 horses), with additions for grain and eeping quarters for drivers and stock tenders.

At the Fountain, Lake, and Grand Canyon they have used the barns the Yellowstone Park Association; having made such arrangements til locations are made and permanent barns constructed.

The railway station of this line is Monida, on the Oregon Short Line, miles west from the west entrance to the park ("Dwelles").

Between Dwelles and Monida is operated a daily relay line, and in e on this daily are 32 horses and 2 extra coaches. These extra aches have been kept at Monida in case more tourists applied than uld be accommodated by the daily.

At Dwelles are kept 7 coaches and 3 surreys, with drivers and teams, r park service. At Norris are kept 1 coach and 1 surrey to accommo- te tourists holding Northern Pacific tickets, "Norris to Monida", who ve made the regular park trip and are ticketed out via Monida. hese are picked up at Norris, taken to Dwelles for the night, and then ke the daily to Monida the following day.

A barn has been constructed at Monida that will accommodate 20 orses, and wagon sheds to accommodate the entire outfit. Wagons, arness, and equipment will be placed in the Monida barn for the win- r and \$20,000 insurance placed on same. Horses will be wintered in e lower Centennial Valley.

Stations have been constructed at Reeds, Red Rock Pass (Klondyke), nd at Dwelles. A wagon bridge has been constructed by this company ver the south fork of the Madison River, costing \$75; approaches have een built to the Snake River ford, and a crew of 3 men and 1 team ave been employed for two months, keeping the road free of rock and a repair.

Madison County appropriated \$500, which was expended in addition pon the road between Monida and Dwelles. This road is now far etter than the ordinary country road, and is nearly as good as the oads within the park. I append stage schedule of this company Appendix G). The plats of the various sites granted under and equired by lease from the Department to this company will be for- varded as soon as completed.

The building of Mr. H. E. Klammer, at Upper Geyser Basin, referred o in last year's report as not being then received, has been completed nd received. A list of leases now held in the park is hereto appended Appendix D).

UNITED STATES COMMISSIONER AND HIS WORK.

The presence of a United States commissioner at Mammoth Hot Springs to hear and determine cases of violations of the park laws and regulations is eminently satisfactory, and continues to do much to prevent these violations. I append herewith a report of persons tried by him (Appendix E).

FIRES.

The park has been exceptionally exempt from forest fires this year, due not only to the thoroughness with which the patrol work was done, but also to the growing carefulness in reference to fires exercised by camping parties and others. On August 8 a fire was reported 9 miles

northwest of Riverside Station, a short distance outside the park limits, but as the direction of the prevailing wind would soon bring it within the park, a detail of officers and men were sent, and after two days of much fatigue and hard work it was brought under control.

On August 26 a fire was reported and located between Barlow's Fork and Heart River in the southeastern portion of the park, but fortunately rain followed for several days, extinguishing it and rendering no work on the part of the troops necessary, other than a careful watch for several days. The causes of neither of these fires could be definitely determined, but that of August 26 unquestionably originated from camp fires carelessly left burning or smoldering. The origin of the fire of August 8 was not so plainly accidental, and the inquiry as to its origin was limited to the determination that its starting point was not within the park limits. It ought not to be difficult for campers in and in the vicinity of the park to understand the incalculable damage, both in the present and for future years, that can be done by not carefully complying with the park laws in this respect.

FOREST RESERVES.

Bordering on the eastern and southern limits of the park are two forest reserves, both of which have been recommended by my predecessor to be brought within the park boundaries and made a part thereof. It will be remembered that these tracts of land were set aside and established as a public reservation by proclamation of the President, made on March 30 and September 10, 1891, and though not coming within the provisions of the act of Congress approved May 7, 1894, are yet under the jurisdiction and control of the acting superintendent and the military force in the park for the enforcement of the law setting them aside, especially relating to the preservation of the game. To thoroughly determine the character of the forest reserve on the east, the settlers therein, game, etc., Lieutenant Lindsley, Fourth Cavalry, was sent to investigate the same, and on his return submitted a report which will be found in the appendix (F). It will be seen that there are many settlers in it, some in violation of law, and that a few mining claims are being worked.

The country does not seem to be the habitat of any large quantity of game. The forest reserve on the south contains no settlers, is of no mineral value, and is unquestionably a game country. I would for these reasons, therefore, urge that the forest reserve on the south be made a part of the park, and the forest reserve on the east be not further considered with this end in view. It is probable that whatever opposition has hitherto been encountered in taking in both of these reserves as part of the park would cease, when it is proposed to take in only that one on the south, which possesses only the advantage of being a great game country, and has no mineral or agricultural advantage to settlers. I would also recommend that the necessary legislation be enacted, bringing the forest reserves bordering the park under the provision of the National Park protective act, approved May 7, 1894, to preserve and protect the game. As is set forth in the notice of the Department, which has been placed in conspicuous places in and about the park, "All persons are warned not to hunt nor kill game thereon", and the penalty for doing this is ejection from the reserve, prosecution for trespass, and the holding of such persons pecuniarily responsible for any waste or damage, whether done intentionally or

caused by neglect. Such is the extent of the punishment, and in its present mild form it does not form a sufficient safeguard for the protection of the reserve and its game.

PROTECTION.

The following animals are found in the park:

Antelope.—These are yet numerous. The snow drives them from the mountains and high plateaus, their feeding and breeding ground in spring and summer, to the lower altitudes outside of the park, where many are killed.

Bear.—Plentiful, and have proved destructive to the stores of the detachments on station, lunch stations, and campers. If they continue to increase in the future as in the past, some means will have to be taken to rid the park of the yearly increase. They are numerous at the garbage piles of the hotels, and are objects of much interest and enjoyment to the tourists.

Buffalo.—There are probably 50 of these animals yet in the park. They are not increasing—due, I believe, to too much inbreeding. This is about the only wild herd in the United States, and steps should be taken to prevent the extermination of this herd from the evils of inbreeding by the purchase of a few good bulls. Full and ample protection is given these animals, and I believe that with new stock introduced into the herd, an increase would follow.

Coyotes.—Very numerous in certain sections. They do some damage to the young elk, but the young deer and antelope are their particular prey. Efforts are made in winter to keep their number down by poisoning carcasses of dead animals, and to a certain extent it has been successful.

Deer.—Numerous, on the increase; and the protection afforded them has done much to make them very tame. They are frequently seen by tourists along the usually traveled route.

Elk.—Numerous, and are increasing. The park is their breeding place in spring, and feeding ground in winter. Immense herds can be seen in nearly any direction in winter, and in certain localities in summer.

Fur-bearing animals.—Beaver, more plentiful than ever before, and their locations in the various streams in the park are carefully watched and protected. Numerous new dams have been constructed. Otter are fairly abundant. Martens are plentiful and widely distributed as are also the Canadian lynx, wild-cat, and mink. Foxes are in goodly number, the black and red being frequently seen, and some timber foxes being reported. There are also some badgers, and a great many muskrats, ground hogs, squirrels, chipmunks, skunks, porcupines, and rabbits. Of the latter there are the cottontails, a few jack-rabbits, many snowshoe rabbits, and the paca, the tiny rock rabbit. All these animals are increasing yearly.

Moose.—Quite numerous in the south and southwestern portions of the park and forest reserve, and are apparently increasing.

Sheep.—In considerable numbers in various sections of the park; especially are they conspicuous in winter, when they leave the higher peaks and seek a somewhat lower level to feed, and later on to breed. I believe their number is increasing.

Wolverines.—While not plentiful are distributed over a large area of the park.

BIRDS.

Pelicans, geese, ducks, gulls, cranes, swans, ospreys, hawks, eagles, grouse, jays of all kinds, water ousel, robins, kingfishers, and various other small birds abound in the park. The aquatic birds nest here and remain here until late in the fall, and, it is probable, during the winter in streams and lakes where the hot springs prevent entire freezing of the water.

As already stated, at the opening of the winter there was but a balance of \$66.01 remaining on hand for both the protection and improvement. Using this until exhausted, and relying upon the untiring efforts and conscientious work of Lieutenant Lindsley, soldiers, and a volunteer scout, the protection of the park was as efficiently performed, if not to a greater extent, than in former years. The plan adopted was to ascertain the location of all persons who in past years have been guilty, or thought guilty of poaching, and never let them get beyond the surveillance of the park authorities. This was successfully done in many cases, and resulted in the capture and trial of some of them by the United States commissioner; and, with the assistance of the State authorities, by the civil courts, thus deterring others from attempting to poach. Unless actually taking part in the winter work here, the hardships are inconceivable, and I forward herewith as an appendix the report of these trips made by scouts and others, showing the work done. It represents miles of snowshoeing, embracing all portions of the park, under all sorts of weather and temperature, where the parties were their own pack animals, camping usually where night found them, or resorting to the snowshoe shacks, affording but little protection.

The Department supplied sleeping bags, which are of incalculable comfort; and before the winter sets in, comfortable cabins will be built at necessary and convenient points, stocked with rations and bedding, and having stoves, which will lessen materially the hardships and discomforts of these trips. With the end in view of having transportation of some sort for necessary articles for these winter scouting parties, I believed that the reindeer recently purchased by the Government for the Klondike relief party, which was subsequently abandoned, could be used to advantage, and accordingly addressed a letter to the Department asking, if practicable, that a few be sent here for this purpose. It is unfortunate that these animals were so located that they could not be sent here, for in the use of these animals or in sledge dogs lies the solution of winter work in the park.

FISH.

Many streams and lakes were stocked in 1889, 1890, 1893, and 1895, have multiplied abundantly, and in spite of the enormous quantity caught yearly, and those destroyed by animals and birds, there is apparently an ample quantity yet in all the streams. I endeavored to have a hatchery established in the park, believing this to be the most appropriate and suitable place in the United States, as this is the reservoir drained by the principal rivers of the Atlantic and Pacific oceans, and fish planted in these streams would, with natural conditions fulfilled, soon fill the streams outside the park, but the United States Fish Commission did not deem it advisable. Later on this year, it is my intention to determine if the lake bass planted in certain lakes in the

park have survived; none as yet have been caught, and it is possible that they may have perished for want of proper food. There are certain waters in the park that will afford ample food for them, and, if possible, these waters will be stocked. There is no finer trout fishing in the world than that of the waters of the park, and it is free to all.

From the above it will be seen that the park as a game and fish preserve has not its equal in the world; the variety is great, and it is eminently fitted to sustain this variety under the protection of the Government. An increase in appropriation means an increase in the means and facilities of protection, and as a national game preserve, which not only holds secure the remaining wild animals and game birds of this country, but enables them to breed and multiply, thus supplying the needs of neighboring States, it is deserving of an increased fund for this purpose. This leaves out entirely its charm as a pleasure ground for the tourist, with its wonderful natural phenomena. To maintain both of these conditions there is but one inadequate appropriation for the park, viz, that for its protection and improvement.

IMPROVEMENT.

Nature can not be improved upon; the wise policy for years held by the various acting superintendents, has resulted in the laying out of roads interfering the least with natural conditions, and affording the sight-seer with the easiest, most direct, and at the same time safest routes to those wonderful sights which nature has lavishly worked in the park. This work is not yet completed, and some of the grandest scenery and phenomena in the park are yet unseen by the great majority of visitors, on account of lack of means to construct these safe and convenient roads. The first work in the spring, previous to June 1, at which date the stages begin their summer travel, is to send a crew over all the roads, shoveling out snow yet remaining in deep drifts in many places, removing fallen timber, repairing the roads, and making them safe and fit for traveling. As stated before in this report, there were absolutely no funds on hand for this work at the opening of the present season, but with the aid of the scouts and soldiers the roads were opened up, and put in fit condition for travel, and no delay was caused to the tourists.

As is well known, the present traveled route carries the tourist from Cinnabar, via Mammoth Hot Springs, Norris Geyser Basin, Lower Geyser Basin, Upper Geyser Basin, Lake Canyon, and again to Norris, Mammoth Hot Springs, to Cinnabar; or, arriving at Monida, he enters the park on its western boundary at Riverside, thence to Lower Geyser Basin, and with the exception of the ride from Mammoth Hot Springs to Cinnabar, his route is as above, returning to Monida via Riverside. It is thus seen that 28 miles in one case, and 42 miles in the other is gone over twice, which is objectionable. This can be avoided by the construction of a road from the canyon northward, following the canyon of the Yellowstone River over Mount Washburn, and thence by way of Tower Creek into Yancey's, and thence into the Mammoth Hot Springs.

There are at present two trails leading from the canyon to Yancey's over Mount Washburn, joining about a mile and a half south of Tower Creek. I have been over both of these trails, examining each carefully, both for scenic effect and practicability for road construction, and on both these grounds am thoroughly satisfied that the eastern (or lower) trail is the route to be followed in constructing this road, which will be

about 23 miles long, and can be built for \$45,000. From Yancey's to Mammoth Hot Springs is 20 miles. Some 4 or 5 miles of the most costly part of this road was built last year, and has been kept in thoroughly first-class condition, leaving some 15 miles to construct, costing about \$15,000. It is recommended that this amount (\$60,000) be appropriated for this specific purpose, in addition to the usual annual appropriation for the protection and improvement of the park.

The monthly reports of work done in the improvement of the park have given in detail what has been accomplished the past summer, and the further projected improvement in roads already constructed, as set forth in project submitted at the time the appropriation became available, will be completed before the close of the season.

This will be done within the limits of the appropriation, still keeping sufficient on hand for the protection of the park during the eight months of winter, and for opening the roads for tourist travel beginning on the 1st of next June. Taking out of the appropriation for this year of \$40,000 the smallest necessary amount for protection (\$3,000), there remains but \$37,000 with which to do this work. And when it is remembered there is 170 miles of constructed road which has to be gone over entirely at the commencement of every season, kept in repair for four months of the year, and then put in the best possible shape to withstand the effects of winter, it must be confessed that \$218 is but a scant allowance for each mile of road. I have not the data available to make the comparison, but I doubt if there is any road in the country which is traveled so much by the public, demanding a good road, which costs so little per mile. Here is also seen the impossibility of yielding to the demands of the tourists for more new roads leading to places of interest and beauty reached now only by trails, and not to be carried over twice some portion of the route now used. The amount now appropriated is the smallest amount with which the protection and present road condition in the park can be maintained, and if Congress intends to ratify and make good its dedication of the park to the people of the United States as a pleasuring ground for its benefit and enjoyment, it should yield to the demands of the people and make additional appropriation for the construction of new roads, which will add to their pleasure and benefit by opening new and wonderful phenomena and scenery.

NATURAL PHENOMENA OF THE PARK.

There does not seem to be any material change in these during the past year. Certain geysers and hot springs are noted as having become extinct, and others which were quiescent have again become active. The geysers which can be depended upon for regular displays are few in numbers, but constant observation of nearly all of them has enabled their time of eruption to be determined with sufficient accuracy to inform tourists, and give them an opportunity to witness their marvelous displays. There is unquestionably a close connection between temperature of water in the geyser and its time of eruption, certain geysers erupting when the water in their craters reaches a certain temperature, which varies for each geyser, and with the proper instruments for taking temperatures it will not be difficult to foretell the time of display of those geysers which are of greatest celebrity, and thus afford tourists the opportunity of seeing them. I will, if possible, determine the eruptive temperature of the most important geysers before the next tourist season, and will be enabled to give due notice of their eruption.

Mud Geyser has been exceedingly active for a period of two weeks this summer. It has for some years been a somewhat quiescent, boiling mud pool, but in the latter part of July it became more violent, and soon gave a remarkable display of its powers, throwing immense clots of mud 50 and 100 feet away from its crater. It covered the ground and trees in its vicinity and was in this state of eruption for two weeks. It gradually became quiet, but the contents of its crater have changed from boiling mud to boiling dirty water. The Black Growler, in Norris Basin, has also displayed remarkable activity this summer, and the noise of the escaping steam through its crater could be heard for miles; and at the base a mud spring has broken forth, which apparently seems to be growing larger. The Constant Geyser has within the past three weeks ceased to play, after many years of uninterrupted activity.

A new road, now completed, between Elk Park and Gibbon Meadow, on the road from Norris to Fountain, leads past two beautiful chocolate-colored geysers situated on opposite sides of the Gibbon River. They are immense cones. From the top of each a goodly stream of water continually boils and is ejected some feet in the air. The cascades and rapids along the road, which follows the river, are exceedingly picturesque and beautiful.

I forward herewith a map of the park and forest reserve, the same that accompanied the report of last year of the acting superintendent. Upon this I have marked the changes in road system of the park. They are as follows:

Main traveled road, cut off Elk Park to Gibbon Meadow, now notated as completed and used by park transportation companies; road along Madison River from falls of the Firehole River to boundaries of park completed and used by the Monida and Yellowstone Stage Company; road from Upper Geyser Basin to Lone Star Geyser, notated as being used by the same company; projected road from Canyon Hotel to Yancey's, notated so as to show the lower (or eastern) trail as the one recommended to be built, instead of the upper (or western) trail as shown on the map.

My efforts to preserve and maintain the park intact, and for its protection and improvement have been ably seconded by all officers of this command.

Supplementary reports will be submitted at the close of the season, when the weather prevents further work on the roads, and at such times during the coming winter as will keep the Department fully informed of the condition of affairs in the park.

I submit herewith the meteorological record as kept at Fort Yellowstone by the post surgeon.

Very respectfully,

JAMES B. ERWIN,
Captain, Fourth Cavalry, Acting Superintendent.

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

APPENDIX A.

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., June 1, 1897.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot spring formations or to turn loose stock to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and anyone failing to comply therewith shall be peremptorily removed from the park.

5. Hunting or killing, wounding or capturing, of any bird or wild animal, except dangerous animals, when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grading of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior.

9. No drinking saloon or bar room will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000 or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

CORNELIUS N. BLISS,
Secretary of the Interior.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., June 20, 1897.

The following instructions, for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned.

(1) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished, where water is not available, by a complete covering of earth, well packed down.

(2) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other debris must be either buried or taken to some place where they will not offend the sight.

(3) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must, therefore, be exercised by their riders. In meeting teams, riders will always dismount and stand at the side of the road—the lower side if the meeting be on a grade. In passing teams from the rear, riders will ring their bells as a warning and inquire of the driver if they may pass. If it appear from the answer that the team is liable to be frightened, they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(4) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(5) *Dogs.*—When dogs are taken through the park they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling, and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(6) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the roads.

(7) *Miscellaneous.*—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

(8) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

JAMES B. ERWIN,
Captain, Fourth Cavalry,
Acting Superintendent of the Yellowstone National Park.

INSTRUCTIONS FOR STATIONS, MAY, 1898.

OFFICE OF SUPERINTENDENT YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., May 30, 1898.

GENERAL INSTRUCTIONS.

It is the duty of the stations to see that all the rules and regulations and the instructions to persons traveling through the park are complied with. Parties violating any of these rules or instructions will be promptly placed under arrest and reported to headquarters. If the station is not in telegraphic communication with headquarters the offending persons may be brought in to the nearest telegraph station, where report of the case will be promptly made. Frequent patrols will be

made into all the territory belonging to the station for the observation and protection of the game and forests. Particular attention will be paid to the prevention and extinguishing of fires, and when any fire is discovered that can not be controlled by the station an immediate report will be made to headquarters.

When the country is so dry that there is danger of fires along the road, the road will be patrolled every morning.

Each noncommissioned officer will be held responsible for the proper policing of his station and of the ground in its vicinity, and all men on station must, except when scouting, wear the proper uniform and must always be neat and clean. All refuse and slops from camp will be buried.

One man must always be left at the station.

Persons carrying firearms or traps through the park must always have a written permit. This permit must be presented at each station passed and must be carefully scrutinized by the man in charge of the station at the time. If it appears that no undue advantage has been taken of the permit, and if the seals are intact and secure, the permit will be indorsed on the back. If the bearer of the permit appears to have violated the conditions thereof, to have unreasonably delayed between stations, he will be held and the case reported at once to the acting superintendent.

Pack trains entering the park may be given a permit by the noncommissioned officer in charge of a station to come in, traveling by wagon roads only, to the nearest station on their route where there is a commissioned officer. Pack trains will not be allowed off the wagon road without permission in writing from a commissioned officer. Persons in charge of pack trains will be instructed that all vehicles have the right of way over pack trains, and that they will be held responsible for interfering with the progress of wagons or frightening their horses.

All noncommissioned officers in charge of stations will send in to the quartermaster on the 15th and last days of each month all receipts for forage furnished and to their troop commander all receipts for meals.

All stations where a register is kept will forward with their report at the end of each month the number of persons who have been registered during the month. The exterior stations will give the number entering and the number leaving the park by their station. Transcript from register of camping parties will not be sent in.

JAMES B. ERWIN,

Captain, Fourth Cavalry, Acting Superintendent.

SPECIAL INSTRUCTIONS.

Norris.—The territory belonging to this station in summer is that drained by Solfatara Creek, the Gibbon from the head of Virginia meadows to the head of the Gibbon Canyon, Obsidian Creek to the Crystal Springs, and by Straight and Winter creeks.

Road patrols will extend to the Crystal Springs and 5 miles towards the canyon.

This station is charged with the protection of the Norris Basin, and from the time when the first coaches come in until the last one has left one man must remain on the formation. A man must also be on the formation whenever camping parties are there.

The beaver in the neighboring streams must be carefully watched, the same as in winter.

Grand Canyon.—The territory includes the headwaters of the Gibbon to Virginia Meadows and all the country that drains into the Yellowstone from the Mud Geyser to and including Tower Creek. The beaver in Cascade Creek and lake must be carefully watched. Road patrols will extend 6 miles towards Norris and to the Mud Geyser.

Lake.—The territory includes all the country draining into the Yellowstone River, above Mud Geyser, and all draining into the lake from Beaverdam Creek to Rocky Point. Road patrols will extend from Mud Geyser to 10-mile post towards the Thumb.

All parties passing this station will be registered in the book provided for that purpose.

Upper Basin.—The territory includes all the country that drains into Shoshone Lake from DeLacey Creek to its outlet on the west; all the country that drains into the Firehole River to a point opposite the 5-mile post towards Fountain.

Road patrols will extend 9 miles towards the Thumb and 5 miles towards the Fountain.

A principal and very important duty of this station is to protect the formation from injury or defacement.

All parties who camp at or in the vicinity of the Upper Basin will be registered in the book provided for that purpose.

Thumb.—The territory includes all the country that drains into the lake from Rock Point to Beaverdam Creek; also the country that drains into Shoshone Lake from DeLacey Creek to its outlet into Lewis River above the falls, and into Heart Lake. While tourists are at the Thumb, one man will be kept on the formation to enforce the regulations.

Road patrols will extend 9 miles towards the Lake Hotel, 10 miles towards the Upper Basin, and to Lewis Falls.

JAMES B. ERWIN,
Captain, Fourth Cavalry, Acting Superintendent.

OFFICE OF SUPERINTENDENT YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., May 30, 1898.

SPECIAL INSTRUCTIONS.

Parties carrying firearms or traps and desiring to enter the park will be closely questioned as to their intentions and purposes. If they intend to leave the park by the same station by which they entered, they will be required to leave their arms at the station. A receipt will be given, and the arms will be cared for and returned to the owners on their exit from the park.

If the parties desire to pass through the park and leave by some other station, the noncommissioned officer will, if he is satisfied that they are reliable parties, seal their guns and issue a permit on the blank forms provided for that purpose. He will instruct the holder of the permit that he must present it at every station he passes for examination and indorsement, and that any violation of the terms of permit or any undue advantage taken of it will result in his arrest and trial.

When parties leave the park, the permit will be taken up by the last station along the route. It will be properly indorsed and sent to headquarters at the end of the month.

The seals will be removed from the guns when permit is taken up.

JAMES B. ERWIN,
Captain, Fourth Cavalry, Acting Superintendent.

APPENDIX B.

List of parties holding license to conduct camping business.

No.	Name.	Residence.	Number of vehicles.	Duration.
1	G. W. Torbert	Cinnabar, Mont.	4	May 26 to Oct. 1, 1898.
2	W. E. Knowles and H. M. Gore	do	5	May 27 to Oct. 1, 1898.
3	W. S. Dixon	Livingston, Mont.	3	May 28 to Oct. 1, 1898.
4	Charlie T. Smith	do	3	Do.
5	Alfred Lycan	Bozeman, Mont.	5	Do.
6	W. J. Knupper	Cinnabar, Mont.	4	May 30 to Oct. 1, 1898.
7	Adam Gassert	do	5	June 6 to Oct. 1, 1898.
8	S. M. Fitzgerald	Gardiner, Mont.	5	Do.
9	B. S. Thresher and O. L. Bishop	Butte, Mont.	5	June 16 to Oct. 1, 1898.
10	A. L. Roseborough	Gardiner, Mont.	4	June 27 to Oct. 1, 1898.
11	Marshall Bros	Livingston, Mont.	5	June 30 to Oct. 1, 1898.
12	E. V. Blankenship	Bozeman, Mont.	5	Do.
13	A. W. Chadbourne	Cinnabar, Mont.	5	July 7 to Oct. 1, 1898.
14	Shaw & Powell	Livingston, Mont.	4	Aug. 1 to Oct. 1, 1898.
15	A. D. Creasey	Bozeman, Mont.	3	Aug. 9 to Oct. 1, 1898.
16	Wm. Wells	Wells P. O., Wyo.	2	Sept. 3 to Oct. 1, 1898.
17	G. W. Wakefield	Livingston, Mont.	2	Sept. 13 to Oct. 1, 1898.

APPENDIX C.

List of registered guides.

No.	Guide.	Residence.	Number of animals.	Duration.
1	William Hague.....	Fridley, Mont.....	30	May 31 to Dec. 31, 1898.
2	Richard Randall.....	Gardiner, Mont.....	20	July 13 to Dec. 31, 1898.
3	Henry George.....	Cinnabar, Mont.....	20	Do.
4	John P. Bean.....	Bozeman, Mont.....	20	July 16 to Dec. 31, 1898.
5	James H. Tappan.....	Dubois, Wyo.....	20	July 17 to Dec. 31, 1898.
6	Taswell Woody.....	Pleasant Valley, Y. N. P.....	30	July 19 to Dec. 31, 1898.
7	Burton Harris.....	Elk P. O., Wyo.....	15	July 20 to Dec. 31, 1898.
8	Oliver Paulsell.....	Red Lodge, Mont.....	10	July 25 to Aug. 15, 1898.
9	W. T. Hall.....	Gardiner, Mont.....	16	July 26 to Dec. 31, 1898.
10	Geo. W. Reese.....	Cinnabar, Mont.....	20	Aug. 6 to Dec. 31, 1898.
11	Elwood Hofer.....	Gardiner, Mont.....	40	Aug. 10 to Dec. 31, 1898.
12	W. T. Hall.....	do.....	40	Do.
13	Frank Randall.....	do.....	10	Aug. 22 to Oct. 30, 1898.
14	Geo. Albert Pfohl.....	Fridley, Mont.....	16	Aug. 23 to Oct. 31, 1898.
15	O. Paulsell.....	Red Lodge, Mont.....	10	Aug. 23 to Sept. 15, 1898.
16	B. D. Sheffield.....	Livingston, Mont.....	30	Aug. 23 to Dec. 31, 1898.
17	Frank M. Scott.....	Gardiner, Mont.....	15	Aug. 25 to Oct. 31, 1898.
18	Henry Kitchens.....	Absarokee, Mont.....	12	Aug. 29 to Oct. 31, 1898.
19	William Nichols.....	Cooke City, Mont.....	13	Do.
20	David Black.....	Chico, Mont.....	12	Aug. 31 to Nov. 30, 1898.
21	Fountain Black.....	do.....	12	Do.
22	Wm. A. Donahoo.....	Gardiner, Mont.....	13	Sept. 1 to Oct. 15, 1898.
23	Wm. Wells.....	Wells P. O., Wyo.....	20	Sept. 3 to Dec. 31, 1898.

APPENDIX D.

LEASES IN YELLOWSTONE NATIONAL PARK.

Yellowstone Park Transportation Company: Mammoth Hot Springs, 2 acres; Norris, 2 acres; Fountain, 1 acre; Upper Geyser Basin, 2 acres; Lake, 2 acres; Canyon, 1 acre, building, etc., for the accommodation of employees and stock.

Yellowstone Park Association: Mammoth Hot Springs, Mammoth Hotel and commissary; Mammoth Hot Springs, Cottage Hotel and Mammoth Barn; Fountain (Lower Basin), cottages; Fountain, Fountain Hotel and barn; Lake, Lake Hotel and barn; Canyon, Canyon Hotel, pump house, and barn; Upper Geyser Basin, hotel and barn (not yet constructed).

Yellowstone Lake Boat Company: Near Lake Hotel, 2 acres; Frank Island, 2 acres; Stevensons Island, 2 acres; Dot Island, 1 acre; West Thumb, 1 acre; Ways, 2 acres; Southeast Arm, 2 acres; Dot Island Game Corral, 2 acres; to be located by superintendent, 6 acres.

William W. Humphrey and F. Jay Haynes: At Upper Geyser Basin, Thumb, Lake Outlet, Grand Canyon, Norris Geyser Basin, Mammoth Hot Springs, not to exceed 1 acre at each point; building, etc., for the accommodation of employees and stock. (Assignments not yet made.)

Jennie H. Ash: Mammoth Hot Springs, dwelling, post-office, and store.

Ole A. Anderson: Mammoth Hot Springs, dwelling and store.

John F. Yancy: Pleasant Valley, hotel.

F. J. Haynes: Mammoth Hot Springs, studio; Upper Geyser Basin, studio.

Henry E. Klamer: Upper Geyser Basin, dwelling and store.

APPENDIX E.

Statement of cases brought before Hon. John W. Meldrum, United States commissioner, since the 1st day of November, 1897.

January 11.—United States v. Thomas J. Miner. Charge: Violation of the provisions of the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes." Trial had February 8. Defendant ordered to pay a fine of \$50 and costs.

February 12.—United States v. James Herzer. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant not yet arrested; could not be found within the district of Wyoming.

June 27.—United States *v.* James Courtenay and Richard Murray. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Separate trial of Richard Murray. Defendant fined \$50.

NOTE.—The complaint in this case was filed on the 29th day of October, 1897. Original warrant returned December 18, 1897, "not served." Defendants not found within district of Wyoming. Defendant Murray was brought before the commissioner, by virtue of alias warrant issued June 27. Defendant Courtenay not yet arrested.

July 12.—United States *v.* A. K. Crawford. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant not yet arrested; could not be found within the district of Wyoming.

August 26.—United States *v.* A. V. Scott. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant ordered to pay a fine of \$25 and costs.

NOTE.—The papers in the cases of United States *v.* James Herzer and A. K. Crawford, respectively, have been transmitted to the United States attorney for the district of Montana, with request that he cause such action to be taken as will place the defendants within the jurisdiction of the authorities of the district of Wyoming.

APPENDIX F.

REPORT OF LIEUTENANT LINDSLEY, FOURTH CAVALRY, ON TRIP TO THE EASTERN FOREST RESERVE.

FORT YELLOWSTONE, WYO., *August 30, 1898.*

SIR: I have the honor to submit the following report of my trip to the eastern forest reserve.

Pursuant to your verbal instructions, I left this post on Sunday the 7th instant with Private Miller, of D Troop. I had ten days' rations, and took two pack mules. Went over the old stage-robber trail. Saw 22 antelope, including 5 kids, on Black-tail Deer Creek; also saw numerous signs of elk and bear. I camped on the extreme head of Lava Creek.

On the 8th I showed Private Miller the cabin on Lava Creek, came by Grebe Lake, then over to Cascade Lake, and down Cascade Creek to the Canyon, then by the wagon road to Mud Geyser. Saw many tracks of elk and deer. The beaver in Cascade Lake and Creek are undisturbed and are doing new work.

On the morning of the 9th Private Rompre, of H Troop, reported to me from the Lake Station and accompanied me. I crossed the river 6 miles from the Lake Hotel, went up Pelican, and by Turbid Lake, and up Bear Creek to the forks, where I camped. Saw 3 elk on the Pelican and plenty of elk and deer signs all the way. Saw a beaver house in Turbid Lake, but had no time to examine it.

On the 10th I crossed the divide by Jones Pass and camped on Jones Creek, under Silver Tip Peak. Private Rompre returned to his station from Bear Creek. Saw 7 elk and plenty of elk and bear signs.

On the morning of the 11th the mules had gone back on the trail, and I sent Miller back after them and remained in camp all day.

On the 12th I rode to the mouth of Jones Creek and examined the trails up and down the North Fork of Stinking Water River. Saw no sign of horses, except the trail of the party which preceded me over Jones Pass a few days before. They had gone down the river. Saw one deer track on the North Fork. Saw where some one had camped last spring at the mouth of Jones Creek and had smoked an elk. On the way back to camp saw where an elk and a lynx had died last spring, probably a natural death, as no parts of the carcass had been removed. Miller returned at 7 p. m. with the mules, which he had found at the lake.

On the 13th I went down to the Stinking Water and followed up it to the mouth of Torrent Creek and camped. Examined the trail to Lamar River. It has not been used recently.

On the 14th I followed the North Fork to its head and crossed the divide to the head of Galena Creek and down it to the head of Sunlight Creek and camped. On the divide I found some shaft timber cut and piled up ready for use. Also found a cabin, not used recently, which I afterwards learned belongs to a Mr. Hughes. On Galena Creek saw a tunnel and a cabin and stable. At the mouth of Galena Creek is another cabin and a fence across the valley. Both sides of the divide are very steep, and a good trail has been built at considerable expense apparently. On the Sunlight side the trail is dug out of slide rock for a large part of the way and it zigzags down the mountain side at a very practicable grade for pack animals. I found a Mr. Campbell and Mr. Vickers camped at the cabin on Sunlight. Last fall

Mr. Campbell located a claim in the gulch between Dyke and Black mountains and built the cabin and fences. He has now brought Mr. Vickers, of Red Lodge, in to inspect the prospect and test the ore, with an idea of building a smelter in case they have sufficient pay ore to warrant it. They had 24 horses, only six of them packed, and intended to stay a month or more.

The old Frenchman of Snake River fame, De Voe, had just come in from Red Lodge and camped near Vickers and Campbell. He had 6 horses (4 packs) loaded with rations, bear traps, etc.; also had 5 stag and bloodhounds. All the men had rifles. De Voe said he had a prospect on Copper Creek and was going to stay in camp a few days and pack some of his ore in for Mr. Vickers to test. Then he wanted to come through the park and go south into Wyoming for the winter. He said he wintered last winter on Wapiti Creek (Elk Fork he calls it), and trapped some bear this spring. I learned next day that he was never known to prospect; that he did winter on Wapiti Creek, and went out about July 1, through Sunlight, with several heads, and went to Red Lodge. Everyone I saw complains of him and his dogs. They say the dogs kill many elk and run the rest out of the country. I was told by Mr. Green, who lives near the junction of the two forks of Stinking Water, that there were dead elk all along the North Fork and its tributaries, killed last winter by De Voe's dogs.

On the 15th I went down Sunlight to the "Basin" and camped at Tighe's ranch. Remained there on the 16th and saw every ranch and nearly every settler in the reserve. Learned that Mr. Webster, for whom I was looking, has not come in that way.

On the 17th I went on down Sunlight to Dead Indian Creek and up it to near its head.

On the 18th I went down Rattlesnake to the North Fork and camped at Mr. Green's ranch.

On the 19th I crossed over to the South Fork and came up it by Marquette and Ishawood post-offices and camped at Col. W. F. Cody's ranch, at the mouth of Ishawood and close to the Forest Reserve line. At Mr. Green's I learned that no party had gone up the North Fork this year and only the party from the park had come down.

On the 20th I went up the South Fork to Captain Darley's ranch, making the acquaintance of all the settlers on the way.

On the 21st I went on up as far as McLaughlin's ranch (Valley Home). This is the farthest settler up the South Fork except Mr. Davis, whom I met at Captain Darley's. I then returned to Cody's ranch and camped.

On the 22d I came up Ishawood to near its head.

On the 23d I crossed the Ishawood Pass and came down Pass Creek to the Thorofare and down it to the Yellowstone.

On the 24th I came to the mouth of the Upper Yellowstone and camped, and on the 25th came to the Lake Hotel and camped near the station, ferrying my stuff over the river and swimming my stock.

On the 26th I laid over to let my stock rest, and went to the Thumb by boat for my mail. Found the station there in excellent condition as to police and neatness. On returning to Lake, I saw a big volume of smoke rising from behind Flat Mountain, which I reported to the superintendent by wire. In obedience to your telegraphic orders to locate the fire and find out its size, I then went in the Government boat, with Sergeant Welch and Private Montgomery and Mr. Bowers, to the south arm of the lake. We ran on a bar at Frank Island and had to go ashore in a rowboat, which I had procured from Mr. Waters, and cut some big levers; then got out, waded on the bar, and pried her off. When we reached the south arm it was too dark to go further, so we camped.

The 27th I climbed on foot to the top of the divide, but could not satisfactorily locate the fire from there, so I put the boat into the Flat Mountain arm, made a landing and we climbed Flat Mountain, but had to go on to within 2 miles of Heart Lake before we could locate the fire, on the point between Barlows Fork and Heart River. It rained very hard in the morning, and when I saw the fire it was smoking but evidently not burning very hard. It was over a mile long, however. We returned to the boat and then to the hotel. It rained very hard this evening.

On the 28th I came from the lake to the Canyon, and on the 29th reached this post, having been out twenty-two days, on ten days' rations, plus what I had bought en route.

I saw several elk tracks on Ishawood, perhaps half a dozen, and on Thorofare and the Yellowstone River and Lake saw plenty of elk sigas. Saw several moose tracks along the Upper Yellowstone, Thorofare, and the Lake. The beaver dams in Thorofare are deserted, as they are in Beaverdam and Trappers Creek, and all the creeks. There are some bank beaver in the Yellowstone which have escaped the trappers who despoil the colonies in the smaller streams. This is an ideal moose, elk, and

beaver colony, and if a station were put at the mouth of Thorofare, and that country protected, all the streams would soon fill up with beaver, and the moose would increase.

The necessity for a station there and one on Falls River has long been recognized, and now, with the increase in the troops, it will perhaps be practicable.

I saw no game signs whatever in the reserve, and, except one deer track and a few elk, saw no game signs except in the Thorofare country.

Following is a list of settlers in Sunlight Basin, within the forest reserve:

Gust Latond, single, claimed a ranch last fall. There was a cabin on the place; has made no improvements and does not live on his claim; has 6 or 8 head of cattle.

Mrs. Chatfield. Mr. Chatfield located on Sunlight previous to 1891. He died last winter and his widow occupies the place. She has 33 head of cattle and a few horses; has a fair cabin, corrals, and stable, and has a meadow under fence and ditch. Mr. Chatfield also had a number of mining claims in the reserve.

Charles Hoff located previous to 1891; has 9 head of cattle and 20 horses; has comfortable cabin and good corrals and stable; has a meadow under fence and ditch; has no mining claims.

John Hughes has been in the country a long time and has several mines up the creek. Took up a ranch and built a house last winter. Has no cattle; about 25 work horses.

Jack Tighe located his ranch in April, 1891, and left for the winter, coming back in 1892, since when he has resided permanently on his place. Tighe has about 6 head of cattle and a few horses; has a pasture under fence and will turn it into a meadow as soon as he completes his ditch. Has a comfortable cabin and fair sheds and corrals. Is married. Cuts no hay. Works for other people some, in mines.

Williard Ruscher took up claim last year. Has cabin; poor fences; no stock; cuts no hay. Works in mines and on ranches.

Henry Delaney built cabin last winter; single; has no stock and no fence; works for other people.

John R. Painter has family. Came from Philadelphia three years ago. Located last summer close to line of forest reserve. Has two good cabins and good stable. Has nearly completed a good house of peeled logs, two stories, five rooms on ground floor, shingle roof, large windows, matched floor, etc. Has three miles or more of good wire fence around field which he uses now as a pasture. Intends to get water on it next year and then cut hay on it. Has several cattle, horses, and mules. Came here to engage in mining. Mr. Painter has purchased the interests of Messrs. Malin and Pratt, Baronette and Miller, also part of the interests of Mr. Hughes, and has an entire or a controlling interest in some half dozen mines—the Silver Tip, Evening Star, Rainbow, Pilgrim, Novelty, and others. He has expended considerable money in building roads and trails and developing his mines. He told me he has invested about \$25,000 in the forest reserve. He has shipped about 27 tons of ore, which averaged at the smelter \$152 per ton, and is now getting out six cars of ore to ship to Omaha. This ore he packs on mules about 10 or 12 miles to the mouth of Sulphur Creek, then hauls 55 miles in wagons to Red Lodge, whence it goes over the Northern Pacific Railroad to Billings and down the Burlington to Omaha. The cost of working, transporting, and mining the ore he reports to be about \$50, leaving him \$100 per ton profit. He is working several men in the Evening Star at present, besides the men engaged in transporting the ore to the railroad. He intends to put in a stamp mill and concentrator on the Silver Tip property next year.

Following is a list of settlers on Shoshone River, and within the reserve:

A. E. Swanson settled in 1895; fair log house and stable; 3 miles of fence; $1\frac{1}{2}$ miles of ditch; 12 acres hay; 15 in wheat and oats; 4 head of cattle, 20 horses.

W. H. Jordan settled in 1897; has fair log cabin and stable; 2 miles wood fence; 2 miles ditch; cuts 30 tons of hay; 7 acres in grain; 36 cattle and 7 horses.

John Davis settled in May, 1891; log house and 2 stables; $1\frac{1}{2}$ mile fence; $\frac{3}{4}$ mile ditch; cuts 15 tons hay; $7\frac{1}{2}$ acres grain; 7 cattle, 8 horses; is a Welchman and miner.

Duff Putnam settled in 1896; 1-room cabin; 2 stables; 160 acres under fence; 300 yards ditch; cuts 10 tons hay; 12 head cattle, 4 horses.

Capt. Henry A. C. Darley is an ex-officer of Royal Artillery; bachelor; settled in 1897; has fair 3-room house and fair stable; 1 mile wire fence, $1\frac{1}{2}$ miles wood fence; $1\frac{1}{2}$ miles ditch; cuts 50 tons hay; has small field oats this year; 80 cattle and 30 horses; hunts for sport only; has 2 mining claims.

Mrs. E. C. Brown settled April 21, 1894; has fair cabin, several rooms; old, fair stable; 2 miles wood fence; 1 mile ditch; cuts 30 tons hay; has a little barley; 24 cattle, about 100 horses; her son, Nona Brown, is a professional guide, but disclaims to be a hunter, and his neighbors say he is not a hunter.

E. M. Brown settled April 21, 1894; has fair cabin and stable; 2 miles wood fence; 1 mile ditch; cuts 30 tons hay; has no cattle; 4 horses.

James McLaughlin settled in 1889 or 1890; has 3 good cabins, a stable; about 1 mile good fence; $1\frac{1}{2}$ miles ditch; cuts 40 tons hay, and has a fine vegetable garden; 30 head cattle, 9 horses; is a hunter and trapper, but of late devotes his time to ranching and sometimes guides parties to the park; bears a fine reputation among all his neighbors as being absolutely reliable and honest, intelligent, and industrious.

John Hurst; single; settled in 1894; has a good cabin and corral; no stable; $1\frac{1}{2}$ miles wire fence; $\frac{1}{2}$ mile ditch; cuts 10 tons hay, and has 8 horses; bears a good reputation; Captain Darley gives him a high recommendation as a guide and hunter; is a young man, and seems honest and very intelligent.

Many of these ranches, both on South Fork and on Sunlight, were located and occupied previous to the dates given above, upon which they were first occupied by their present occupants. These two valleys are the only parts of the reserve which are suitable for agriculture or stock raising. In both places stock winters with very little feed and the snow fall is light.

In view of the improvements put there in good faith by settlers, it seems best to me to allow these valleys to be used, as they are of no use as a reserve.

In the Shoshone mining region many claims have been located and represented, some for several years, but no real development work has been done on any of them. In the Sunlight district considerable development has been done, and I would recommend that suitable regulations be promulgated, allowing settlers to use any suitable lands for agricultural and stock-raising purposes, allowing prospecting and mining operations to be carried on, and the necessary amount of timber to be used, under wise regulations which would prevent waste or spoliation of the forests; that the reservation be not added to the park, except such part of it in the south as drains into the Yellowstone River; that the game laws of Wyoming be enforced in the reserve; and that either a detail of soldiers be made to enforce these regulations or that the reserve be placed under charge of proper civil officials for its administration and protection.

Very respectfully,

ELMER LINDSLEY,
First Lieutenant, First Cavalry.

The ACTING SUPERINTENDENT YELLOWSTONE NATIONAL PARK,
Present.

APPENDIX G.

SCHEDULE MONIDA AND YELLOWSTONE STAGE COMPANY.

Both ways via Monida:

First day.—Leave Monida 8.30 a. m., arrive Shambow 12.30 p. m.; leave Shambow 1.30 p. m., arrive Dwelle's 5.30 p. m.

Second day.—Leave Dwelle's 8 a. m., arrive Fountain Hotel 11.30 a. m.

Third day.—Leave Fountain Hotel 8 a. m., arrive Upper Basin 10 a. m.; leave Upper Basin 4.30 p. m., arrive Fountain Hotel 6 p. m.

Fourth day.—Leave Fountain Hotel 7.30 a. m., arrive West Bay 1 p. m.; leave West Bay 3 p. m., arrive Lake Hotel 5 p. m.

Fifth day.—Leave Lake Hotel 9 a. m., arrive Canyon Hotel 12 noon.

Sixth day.—Leave Canyon Hotel 9.30 a. m., arrive Norris 12 noon; leave Norris 1.30 p. m., arrive Mammoth Springs 4 p. m.

Seventh day.—Leave Mammoth Springs 8 a. m., arrive Norris 12 noon; leave Norris 1.30 p. m., arrive Dwelle's 5.30 p. m.

Eighth day.—Leave Dwelle's 8 a. m., arrive Shambow 12 noon; leave Shambow 1 p. m., arrive Monida 6 p. m.

In Monida and out via Cinnabar:

First day.—Leave Monida 8.30 a. m., arrive Shambow 12.30 p. m.; leave Shambow 1.30 p. m., arrive Dwelle's 5.30 p. m.

Second day.—Leave Dwelle's 8 a. m., arrive Fountain Hotel 11.30 a. m.

Third day.—Leave Fountain Hotel 8 a. m., arrive Upper Basin 10 a. m.; leave Upper Basin 4.30 p. m., arrive Fountain Hotel 6 p. m.

Fourth day.—Leave Fountain Hotel 7.30 a. m., arrive West Bay 1 p. m.; leave West Bay 3 p. m., arrive Lake Hotel 5 p. m.

Fifth day.—Leave Lake Hotel 9 a. m., arrive Canyon Hotel 12 noon.

Sixth day.—Leave Canyon Hotel 9.30 a. m., arrive Norris 12 noon; leave Norris 1.30 p. m., arrive Mammoth Springs 4 p. m.; leave Mammoth Springs 6.30 p. m., arrive Cinnabar 8 p. m.

Direct connections made at Cinnabar with Northern Pacific Railroad for St. Paul.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.

SEPTEMBER, 1897.							OCTOBER, 1897.							NOVEMBER, 1897.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	75	42	33	SW.	.....		1.....	56	40	16	SW.	0.27	Rain and sleet.	1.....	39	29	10	S.	.....
2.....	81	42	39	S.	.....		2.....	48	37	11	S.	.16	Snow (first storm season).	2.....	59	30	29	SS.	.....
3.....	59	52	7	NW.	.....		3.....	56	30	26	SW.	.....		3.....	56	31	25	SS.	0.38	Earthquake at 2.30 a. m.
4.....	64	44	20	SW.	.....		4.....	62	34	28	SW.	.....		4.....	39	37	2	N.	.....
5.....	77	49	28	SW.	Trace		5.....	68	34	34	W.	.....		5.....	34	14	20	W.	.....
6.....	77	45	32	NW.	.....		6.....	72	35	37	SW.	.09	Rain.	6.....	33	22	11	S.	.20	Snow.
7.....	79	58	21	S.	.....		7.....	64	49	15	NW.	.....		7.....	31	15	16	N.	.10	Snow.
8.....	55	47	8	NW.	.....		8.....	64	49	15	NW.	.....		8.....	25	11	14	N.	.15	Snow.
9.....	53	26	27	NW.	.....		9.....	54	34	20	S.	.....		9.....	27	7	20	W.	.....
10.....	71	33	38	S.	.....		10.....	58	33	25	NW.	.....		10.....	42	18	24	S.	.....
11.....	71	39	32	S.	.....		11.....	56	28	28	SW.	.....		11.....	44	30	14	S.	.....
12.....	66	46	20	NW.	Trace		12.....	55	41	14	NW.	.....		12.....	44	34	10	S.	.....
13.....	75	37	38	S.	Trace		13.....	54	35	19	NW.	.08	Rain.	13.....	47	34	13	S.	.19	Rain.
14.....	56	41	15	S.	Trace		14.....	38	27	11	N.	.67	Snow.	14.....	52	43	9	S.	.11	Rain.
15.....	51	41	10	S.	.....		15.....	32	23	9	N.	.15	Snow.	15.....	48	35	13	W.	.30	Snow.
16.....	61	28	33	NW.	.....		16.....	33	19	14	NW.	.....		16.....	28	20	8	N.	.....
17.....	74	33	41	S.	.....		17.....	33	14	24	W.	.....		17.....	22	9	13	NW.	.....
18.....	72	35	37	NW.	.....		18.....	44	20	24	SW.	.....		18.....	34	10	24	SW.	.....
19.....	75	35	40	S.	.....		19.....	48	27	21	S.	.....		19.....	40	30	10	S.	.....
20.....	74	37	37	S.	.....		20.....	58	26	32	S.	.....		20.....	47	38	9	S.	.....
21.....	78	37	41	S.	.....		21.....	54	31	23	S.	.....		21.....	54	40	14	S.	.55	Snow.
22.....	74	42	32	S.	.....		22.....	63	32	30	SW.	.....		22.....	40	16	24	NW.	.40	Snow.
23.....	70	45	25	NW.	.....		23.....	44	40	4	N.	.04	Rain.	23.....	33	6	27	N.	.....
24.....	73	37	36	SW.	.....		24.....	48	36	12	S.	.06	Rain.	24.....	37	21	16	SW.	.....
25.....	76	37	39	S.	.....		25.....	50	38	12	W.	.....		25.....	45	33	12	N.	.....
26.....	76	41	35	S.	.....		26.....	33	30	3	N.	.20	Snow.	26.....	38	23	15	NW.	.05	Snow.
27.....	73	46	27	S.	.....		27.....	33	29	4	NW.	.....		27.....	31	13	18	S.	.....
28.....	66	43	23	SW.	.....	Rain.	28.....	55	26	29	W.	.....		28.....	26	21	5	S.	.30	Snow.
29.....	67	38	29	S.	.....	Rain.	29.....	59	29	30	S.	.....		29.....	24	6	18	N.	.15	Snow.
30.....	72	42	30	SW.	.04		30.....	52	30	22	SW.	.....		30.....	26	1	25	S.	.10	Snow.
Total	2,091	1,218	873	.....	.31		Total	1,586	950	636	.....	1.72		Total	1,145	664	481	.....	2.98	
Mean	69.70	40.60	29.10	S.	.....		Mean	51.16	30.64	20.51	SW.	.....		Mean	38.16	22.13	16.03	S.	.....

Maximum, 81° on 2d instant; minimum, 26° on 9th instant; mean, 55.15°; total precipitation, 0.31 inch; prevailing winds, south.

Maximum, 72° on 6th instant; minimum, 14° on 16th instant; mean, 40.90°; total precipitation, 1.72 inches; prevailing winds, southwest.

Maximum, 59° on 2d instant; minimum, 1° on 29th instant; mean, 30.15°; total precipitation, 2.98 inches; prevailing winds, south.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

DECEMBER, 1897.							JANUARY, 1898.							FEBRUARY, 1898.							
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	
1.	30	15	15				1.	25	3	22	S.			1.	32	10	22	S.			
2.	28	7	21	S.			2.	39	9	30	NW.			2.	31	5	26	SW.	0.01	Snow.	
3.	23	5	18	S.			3.	36	25	11	S.	Trace		3.	31	18	13	SW.	Trace		
4.	29	11	18	N.			4.	37	15	12	SW.			4.	30	19	11	S.			
5.	30	19	11	NW.	0.05	Snow.	5.	32	25	7	SW.			5.	39	19	20	S.			
6.	37	23	14	W.			6.	34	25	9	S.			6.	37	32	5	S.			
7.	35	29	6	SW.	.10	Snow.	7.	32	20	12	SW.	0.01	Snow.	7.	40	31	9	SW.			
8.	26	25	1	S.	.45	Snow.	8.	23	13	8	S.	.10	Snow.	8.	39	22	17	S.			
9.	27	19	8	S.			9.	23	13	10	S.	.20	Snow.	9.	26	7	19	S.			
10.	31	19	12	SW.			10.	17	1	16	NW.			10.	34	12	22	N.			
11.	31	18	13	SW.			11.	15	3	12	SW.			11.	34	13	21	S.			
12.	32	23	9	S.			12.	16	6	10	S.	Trace		12.	36	23	13	SW.			
13.	33	14	19	S.	.10	Snow.	13.	18	4	14	S.			13.	33	31	2	S.			
14.	30	16	14	N.			14.	25	10	15	N.			14.	41	29	12	S.			
15.	0	5	5	N.			15.	25	6	21	NW.			15.	38	33	5	S.			
16.	6	19	5	N.			16.	22	12	10	S.			16.	37	16	21	SW.	.80	Snow.	
17.	16	4	20	SW.			17.	21	17	4	SE.			17.	13	1	12	NW.	.10	Snow.	
18.	17	3	14	S.			18.	24	5	19	SW.			18.	20	3	17	N.			
19.	18	4	14	S.			19.	27	15	12	S.			19.	38	19	19	S.			
20.	13	1	12	NE.			20.	23	5	18	SW.			20.	39	20	19	S.			
21.	18	3	15	S.			21.	20	3	23	S.			21.	28	5	23	SW.			
22.	25	25	0	S.			22.	17	8	9	N.			22.	32	2	30	N.			
23.	29	5	24	S.			23.	18	1	19	SW.			23.	32	2	30	N.			
24.	27	17	10	S.			24.	10	20	30	N.			24.	45	9	36	NW.			
25.	29	17	12	S.			25.	8	15	23	N.			25.	35	21	14	S.			
26.	31	15	16	S.			26.	9	6	15	N.			26.	39	13	26	SW.			
27.	34	25	9	S.			27.	19	3	16	NW.			27.	45	12	33	SW.			
28.	37	30	7	N.	.10	Snow.	28.	23	6	29	SW.			28.	45	23	19	S.			
29.	37	31	6	SW.			29.	26	5	21	N.			Total.	963	446	517		1.21		
30.	23	15	8	SW.			30.	30	13	17	S.			Mean.	34.39	15.92	18.46	S.			
31.	15	6	21	NW.			31.	33	9	24	SW.										
Total.	807	374	433		.80		Total.	717	310	511		.31		Total.	963	446	517		1.21		
Mean.	26.03	12.06	13.96	S.			Mean.	23.12	10.00	16.48	SW.			Mean.	34.39	15.92	18.46	S.			

Maximum, 45° on 24th and 27th instant; minimum, 10° on 17th instant; mean, 25.15°; total precipitation, 1.21 inches; prevailing winds, south.

Maximum, 39° on 2d instant; minimum, -20° on 24th instant; mean, 14.72°; total precipitation, 0.31 inch; prevailing winds, southwest.

Maximum, 37° on 6th, 28th, and 29th instant; minimum, -19° on 16th instant; mean, 19.04°; total precipitation, 0.80 inch; prevailing winds, south.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

MARCH, 1898.							APRIL, 1898.							MAY, 1898.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	40	26	14	N.	.....	.....	1.....	44	6	38	SW.	.....	.....	1.....	38	26	12	NW.	Trace	.....
2.....	44	24	20	S.	.....	.....	2.....	51	27	24	SW.	.....	.....	2.....	35	24	11	N.	Trace	.....
3.....	39	27	12	SW.	.....	.....	3.....	31	24	7	NW.	0.10	Snow.	3.....	40	25	15	N.	.....	.....
4.....	37	25	12	NW.	.....	.....	4.....	38	18	20	SW.	.....	.....	4.....	44	25	19	NW.	Trace	.....
5.....	41	17	24	S.	.....	.....	5.....	46	12	34	S.	.....	.....	5.....	54	23	31	SW.	Trace	.....
6.....	43	20	23	SW.	.....	.....	6.....	50	22	28	SW.	.....	.....	6.....	59	30	29	SW.	.....	.....
7.....	45	23	22	SE.	0.20	.....	7.....	38	25	13	SW.	.05	Snow.	7.....	54	39	15	W.	.....	.....
8.....	40	18	22	SE.	.....	Snow.	8.....	42	25	17	S.	.....	.....	8.....	59	30	29	NW.	.....	.....
9.....	23	17	6	N.	.....	.....	9.....	54	31	23	SW.	.....	.....	9.....	65	30	35	W.	.....	.....
10.....	25	2	23	N.	.....	.....	10.....	59	32	27	SW.	.....	.....	10.....	70	35	35	W.	.....	.....
11.....	26	1	25	NW.	.10	Snow.	11.....	51	31	20	SW.	.30	Snow.	11.....	62	45	19	SW.	.....	.....
12.....	32	2	30	SW.	Trace	.....	12.....	54	25	29	SW.	.....	.....	12.....	58	37	21	N.	.....	.....
13.....	32	19	13	NW.	.30	.....	13.....	59	34	25	SW.	.....	.....	13.....	65	35	30	SW.	.....	.....
14.....	27	13	14	NW.	.....	.....	14.....	65	35	30	SW.	.....	.....	14.....	65	34	31	SW.	0.15	Rain.
15.....	29	7	22	N.	.....	.....	15.....	68	34	34	SW.	.....	.....	15.....	61	34	27	NW.	.....	.....
16.....	24	0	24	N.	.....	.....	16.....	58	36	22	NE.	Trace	.....	16.....	56	37	19	N.	.....	.....
17.....	32	2	34	N.	.....	.....	17.....	47	35	12	NE.	Trace	.....	17.....	51	40	11	N.	.30	Rain.
18.....	26	7	19	N.	Trace	.....	18.....	48	28	20	NE.	.....	.....	18.....	54	37	17	SE.	.15	Rain.
19.....	25	6	19	NW.	.....	.....	19.....	52	24	28	NE.	.....	.....	19.....	52	37	15	SW.	.10	Snow.
20.....	30	19	11	S.	.30	Snow.	20.....	53	31	22	N.	.....	.....	20.....	47	30	17	NW.	.....	.....
21.....	26	4	30	N.	.50	Snow.	21.....	54	37	17	NE.	.30	Snow.	21.....	58	32	22	NW.	.....	.....
22.....	16	22	38	NW.	.....	.....	22.....	52	35	17	NW.	.....	.....	22.....	63	40	18	NW.	0.45	Rain.
23.....	25	6	19	S.	.....	.....	23.....	54	32	22	SE.	.....	.....	23.....	58	40	18	NW.	.....	.....
24.....	35	18	17	S.	.....	.....	24.....	62	28	34	SE.	.....	.....	24.....	48	37	11	N.	.....	.....
25.....	32	28	14	NW.	.....	.....	25.....	67	34	33	SW.	.....	.....	25.....	55	40	15	NE.	.....	.....
26.....	21	5	16	NW.	.....	.....	26.....	68	43	25	NW.	.....	.....	26.....	59	42	17	NE.	.....	.....
27.....	25	7	30	S.	.....	.....	27.....	62	30	22	W.	.....	.....	27.....	73	39	34	NW.	.....	.....
28.....	29	6	33	NW.	.....	.....	28.....	59	27	32	SW.	.....	.....	28.....	58	41	17	SW.	.45	Rain.
29.....	29	1	30	SW.	.....	.....	29.....	55	30	25	NW.	.....	.....	29.....	58	36	22	NW.	.10	Rain.
30.....	32	13	19	SW.	.....	.....	30.....	55	28	27	NW.	.....	.....	30.....	56	38	18	SW.	.25	Rain and sleet.
31.....	34	13	21	SW.	.....	.....	31.....	42	28	14	NW.	.20	Snow.	31.....	52	29	23	SW.	.....	.....
Total.	964	326	638	.....	1.40	.....	Total.	1,573	859	714	.....	.95	.....	Total.	1,726	1,065	661	.....	1.95	.....
Mean.	31.09	10.51	20.58	NW.	.....	.....	Mean.	52.43	28.63	23.80	SW.	.....	.....	Mean.	55.67	34.35	21.32	SW.	.....	.....

Maximum, 73° on 27th instant; minimum, 23° on 5th instant; mean, 47.51°; total precipitation, 1.95 inches; prevailing winds, southwest.

Maximum, 68° on 15th and 26th instant; minimum, 6° on 1st instant; mean, 41.03°; total precipitation, 0.95 inch; prevailing winds, southwest.

Maximum, 45° on 7th instant; minimum, -29° on 23d instant; mean, 20.80°; total precipitation, 1.40 inches; prevailing winds, northwest.

YELLOWSTONE NATIONAL PARK.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

JUNE, 1898.							JULY, 1898.							AUGUST, 1898.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	61	39	22	SW.	0.32	Rain.	1.....	50	39	11	N.	.....	.....	1.....	73	48	25	.....	.....	.....
2.....	53	35	18	NW.	.....	.....	2.....	67	32	35	W.	.....	.....	2.....	78	40	38	N.	.....	.....
3.....	46	31	15	NW.	.....	.....	3.....	76	40	36	SW.	.....	.....	3.....	84	47	37	N.	.....	.....
4.....	48	26	12	NW.	.15	Rain.	4.....	89	47	33	SW.	.....	.....	4.....	81	47	34	N.	.....	.....
5.....	52	34	18	NW.	.....	.....	5.....	81	53	28	SW.	.....	.....	5.....	67	41	26	N.	.....	.....
6.....	56	34	22	NW.	.02	Rain.	6.....	78	44	34	SW.	.....	.....	6.....	74	37	37	N.	0.10	Rain.
7.....	64	32	32	NW.	.....	.....	7.....	81	49	32	SW.	0.15	Rain.	7.....	79	42	37	NW.	.....	.....
8.....	69	35	34	NW.	.....	.....	8.....	80	47	33	SW.	.30	Rain.	8.....	84	46	38	N.	.....	.....
9.....	(a)	38	.....	NW.	.....	.....	9.....	79	45	34	W.	.....	.....	9.....	85	49	36	N.	.....	.....
10.....	(a)	39	.....	NW.	.....	.....	10.....	86	51	35	SW.	.....	.....	10.....	84	54	30	E.	.....	.....
11.....	(a)	40	.....	W.	.50	Rain.	11.....	87	49	38	SW.	.....	.....	11.....	84	50	34	SW.	.....	.....
12.....	(a)	40	.....	NW.	.....	.....	12.....	77	57	20	S.	.....	.....	12.....	89	54	35	SW.	.....	.....
13.....	(a)	43	.....	NW.	.20	Rain.	13.....	79	49	30	SW.	.60	Rain.	13.....	74	50	24	SW.	.....	.....
14.....	(a)	45	.....	W.	.15	Rain.	14.....	86	52	34	SW.	.....	.....	14.....	70	50	20	SW.	.....	.....
15.....	(a)	39	.....	SW.	.....	.....	15.....	86	52	34	SW.	.....	.....	15.....	70	50	20	SW.	.25	Rain.
16.....	(a)	52	.....	SW.	.....	.....	16.....	86	51	35	SW.	.....	.....	16.....	72	53	19	W.	.30	Rain.
17.....	80	49	31	S.	.....	.....	17.....	77	48	29	SW.	.....	.....	17.....	78	44	34	SW.	.15	Rain.
18.....	87	49	38	S.	.....	.....	18.....	66	39	27	W.	.....	.....	18.....	84	42	42	SW.	.....	.....
19.....	87	55	32	S.	.....	.....	19.....	70	43	27	W.	.....	.....	19.....	86	42	44	SW.	.....	.....
20.....	76	49	27	SE.	.....	.....	20.....	80	39	41	SW.	.....	.....	20.....	87	49	38	SW.	.....	.....
21.....	74	39	35	S.	.....	.....	21.....	77	52	25	SW.	.....	.....	21.....	83	55	28	SW.	.....	.....
22.....	83	47	36	S.	.....	.....	22.....	81	45	36	SW.	.....	.....	22.....	83	44	39	NW.	.....	.....
23.....	71	53	18	S.	.35	Rain.	23.....	72	47	25	SW.	.10	Rain.	23.....	77	40	37	SW.	.....	.....
24.....	66	46	20	SW.	.45	Rain.	24.....	81	40	41	SW.	.....	.....	24.....	84	41	43	SW.	.....	.....
25.....	68	50	18	SW.	.....	.....	25.....	87	46	41	SW.	.....	.....	25.....	83	42	41	SW.	.....	.....
26.....	71	35	36	S.	.....	.....	26.....	82	49	33	S.	.....	.....	26.....	88	45	43	NW.	.50	Rain.
27.....	80	46	34	SW.	.....	.....	27.....	81	45	36	W.	.....	.....	27.....	85	58	27	SW.	.....	.....
28.....	76	46	30	NW.	.....	.....	28.....	83	47	36	W.	.....	.....	28.....	80	48	32	NW.	.....	.....
29.....	73	34	39	NW.	.38	Rain.	29.....	81	46	35	N.	.....	.....	29.....	76	45	31	SW.	.15	Rain.
30.....	70	42	28	N.	.15	Rain.	30.....	72	45	27	NW.	.....	.....	30.....	68	50	18	SW.	.45	Rain.
Total	1,252	.....	.....	.....	2.67	.....	Total	2,425	1,427	998	.....	1.15	.....	Total	2,455	1,451	1,004	.....	2.05	.....
Mean	41.70	.....	.....	NW.	.....	.....	Mean	78.23	46.03	32.20	SW.	.....	.....	Mean	79.19	46.81	32.39	SW.	.....	.....

Maximum, not known; minimum, 31° on 3d instant; mean, not known; total precipitation, 2.67 inches; prevailing winds, northwest.

Maximum, 87° on 11th and 25th instant; minimum, 32° on 2d instant; mean, 62.13°; total precipitation, 1.15 inches; prevailing winds, southwest.

Maximum, 89° on 12th instant; minimum, 37° on 6th instant; mean, 63°; total precipitation, 2.05 inches; prevailing winds, southwest.

^a Thermometer broken.

Diary of Yellowstone Park scouts, winter season of 1897-98.

[George Whittaker, 1897.]

November 6.—Left Mammoth Hot Springs for Norris; arrived at Norris 7.30 p. m. Saw 5 elk on Swan Lake Meadow, 2 coyotes at Willow Park. Weather cloudy and cold.

November 7.—Left Norris station at 9.30 a. m., and proceeded to Mud Geyser; arrived Mud Geyser 6 p. m. Saw 25 elk 1 mile west of Canyon Junction, large band near Sulphur Mountain, 172 on east side of Yellowstone River, opposite mouth of Alum Creek; 1 red fox and 3 coyotes at Trout Creek bridge. Weather very cold and snowing heavy.

November 8.—Left Mud Geyser station and crossed Yellowstone River in a boat. Went on foot for about 4 miles east, making about 8 miles in all. Saw 1 deer track, 2 red foxes. Weather storming and cold.

November 9.—Left Mud Geyser station with Sergeant Simons and Private Akers and proceeded to Pelican Creek cabin. Saw 1 elk. Weather, blinding snowstorm all day.

November 10.—Left cabin with Sergeant Simons, dismounted, for Pelican Cone and Mush Kettles on Pelican Creek; made a circuit of about 10 miles; almost impossible to travel with horses. Weather stormy. Saw 1 elk.

November 11.—Left cabin with Sergeant Simons, mounted, for head of Astringent Creek and White Lake. Left Private Akers at cabin until we returned. Proceeded about 4 miles on horses, then proceeded on foot to south end of White Lake; could not get there with horses on account of deep snow. Saw no sign of any kind all day. Snow between 2 and 3 feet deep on the head of Astringent Creek. Weather stormy.

November 12.—Left cabin for head of Raven Creek, mounted; proceeded as far as beaver dams, where snow was too deep to travel with horses. Saw some fresh beaver sign. Decided to go back to Mud Geyser station for grain and rations and return in three or four days. No sign of any other game. Weather, snowing and raining; snow going very fast.

November 13.—Left Mud Geyser station for Trout Creek cabin, with snowshoe rations for cabin; took Sergeant Simons and Private Akers to assist me in putting wood in cabin, and show them route to Thumb in winter time. Saw no sign of game in Hayden Valley, something very unusual at this time of the year. Weather cold and stormy.

November 14.—Left Trout Creek cabin for Fountain station; decided to take Sergeant Simons and Private Akers with me and return to Mud Geyser from Fountain and go back to Pelican as soon as I get through at this place. Had intended to go up to Bear Parks and Shoshone Geyser Basin and take Corporal Holman and one private with me, but corporal informed me that he had just returned from Bear Parks five days ago and saw no sign of any game in there, and had also tried to get to Shoshone Geyser Basin with horses, and the deep snow drove him back. There being nothing further to detain me here, I decided to return to Mud Geyser to-morrow and try the Pelican Creek again. Left Trout Creek cabin at 11.45 a. m. and got to foot of Mary's Mountain about 1 p. m. After we got to Snow cabin at foot of mountain I saw two very fresh tracks, should say half hour old; examined them closely and saw they were buffalo; about half mile farther came onto two more tracks, which proved to be buffalo also, but not so large as first two, and one more half mile east of Magpie Creek; thought best not to pursue them; presume they were somewhere back of Fountain Hotel all summer and are just moving into Hayden Valley. Some beaver sign in Nez Perce Creek. Weather very cold and stormy.

November 15.—The stock being very tired, and it being very cold and stormy, I decided to lay over to-day and return to Mud Geyser to-morrow; and by the time I got a telephone message in to post about buffalo it was 11 a. m. before I got back to station, almost too late to start for Mud Geyser. Requested Corporal Holman to ride up to Twin Buttes and see if there were any buffalo sign there. He returned and reported nothing but elk sign and some beaver sign in Sentinel Creek. Weather cold and stormy.

November 16.—Left station for Mud Geyser station with Sergeant Simons and Private Akers via Marys Mountain. Arrived at station 4.30 p. m. Saw 15 elk on Nez Perce Creek at foot of Mary's Mountain. Observed that Corporal Holman is very attentive to the duty assigned him to prevent poaching in the park. Weather cloudy and cold.

November 17.—Stayed at Mud Geyser station to start for Pelican Creek to-morrow; there being some work to do pertaining to my stock and saddles, was too late to make a start to-day. Weather clear and cold.

November 18.—Left Mud Geyser station with Sergeant Simons and Private Murphy for Pelican Creek cabin, intending to go up to Mirror Plateau and head of Flint Creek. Arrived at cabin at 4 p. m. Saw 14 swan on Yellowstone River above ford. Weather cloudy.

November 19.—Left cabin for Mirror Plateau, but found, after proceeding about 5 miles, the snow so deep and hard that could not go there, so tried to go up to summit of the mountain and go down Willow Creek, but could not get there, so had to turn back. Could do nothing with horses on account of snow. Saw two buffalo tracks on Astringent Creek; quite a number of elk sign on Pelican Creek. Weather cold and stormy.

November 20.—Left cabin for Mud Geyser station with intention of returning to post, it being useless to try to do anything with horses. Saw 27 swan on river above ford. Weather stormy and cold.

November 21.—Left Mud Geyser for Norris; arrived at Norris at 5.30 p. m. In my experience with the detachment at Mud Geyser I found that they were preventing any poaching being done in their district. A band of about 200 elk crossed the river above Alum Creek, just as I came by. Weather cloudy and cold.

November 22.—Left Norris station for Fort Yellowstone; stayed back with teamster to remove large rock out of road, but could not remove it; tried to pull it out, but could not. Fixed telephone wire at Crystal Spring. Saw a band of about 200 elk at Swan Lake; about 75 elk in the timber about 1 mile post from post; 15 deer at Golden Gate. Weather cloudy.

[James G. Morrison, 1897.]

November 24.—Left the post with Privates McReynolds and Miller to go over on the Gallatin. On account of the deep snow we got no farther than the pocket on Fawn Creek, where we camped. Saw about 750 elk; also numerous signs of beaver on the Gardiner River and Fawn Creek. Distance traveled, about 12 miles.

November 25.—Took back trail down Fawn Creek about 4 miles, thence south along Quadrant Mountain to Indian Creek and up it about 4 miles to snowshoe shack, where we camped. Saw about 150 elk; many signs of beaver on this creek. Distance traveled, about 15 miles.

November 26.—Remained in camp, scouting up Indian Creek. No signs of game. Distance traveled, about 10 miles.

November 27.—Proceeded to the post. Distance, 12 miles.

[George Whittaker, 1897.]

November 23 to 25.—Doing duty at Fort Yellowstone.

November 26.—Received order to go to Mud Geyser with pack mule and four pairs snowshoes.

November 27.—Left Fort Yellowstone for Norris; left post at 3 p. m., arrived Norris 7.30 p. m. Weather cold and storming. Saw 19 elks 6 miles south of post; also 2 deer and 3 coyotes 6½ miles south of post.

November 28.—Left Norris 10.30 a. m. for Mud Geyser; arrived Mud Geyser 4.30 p. m. Took Sergeant Welsh and Private Helm to assist me to Canyon Junction, but finding my horse and mule and Sergeant Simons's horse very tired, decided to have them go to Mud Geyser with me and return the following day via Canyon Hotel to see if it was possible to make a trip due north to Fort Yellowstone from Grebe Lake. Saw a band of elk on east side of Yellowstone River between Trout Creek and Mud Geyser; presume there were about 70 of them. Weather clear, until evening it began to snow.

November 29.—Left Mud Geyser on return trip to Norris with Sergeant Welsh and Private Helm. Went to Canyon Hotel to see how deep snow was, but found it too deep to go to Grebe Lake with horses. Went to hotel and sent Captain Erwin, the assistant superintendent of the park, the following message over telephone:

"Trip must be made on snowshoes. Leave Canyon; will be at Norris about 4 p. m. If any other orders call Norris.

"WHITTAKER, Scout."

Did not arrive at Norris until 5 p. m. Weather forenoon cloudy, afternoon snowing very hard. Hard for stock to travel and make time.

November 30.—Stayed at Norris to wait for wagon to come with snowshoes. During the day I took Sergeant Welsh and Private Hemstead with their skis and broke the trail as far as Virginia Meadows; made a circuit of about 7 miles; found it very hard snowshoeing; the snow was very soft and our skis would sink about 6 to 8 inches. Wagon arrived at 5 p. m. with skis for Norris station and myself and Scout Malin. Weather very stormy.

December 1.—Sergeant Welsh, Scout Malin, and myself left Norris on snowshoes for Canyon Hotel at 9.45 a. m., arrived at Canyon at 3.30 p. m.; found snowshoeing fairly good for time of year. Depth of snow from 18 to 30 inches between Norris and Canyon Hotel. One mountain lion track on Canyon road 1 mile east of Norris; one on sulphur beds 3 miles west of Canyon. Met lineman and Privates Murphy and Davis on their way to Norris to get some mail which was brought out on the

wagon yesterday; they return to Mud Geyser to-morrow. I sent my horses in from Norris by Private Hemstead. No game seen. Weather clear.

December 2.—Left Canyon Hotel with Sergeant Welsh and Scout Malin to make a trip to Grebe Lake, thence north to Fort Yellowstone, on snowshoes. Left Canyon Hotel at 8.35 a. m.; went up Cascade Creek to lake, thence to Grebe Lake; found all beaver had not been molested. Cut north from Grebe Lake and went to poachers' old cabin on the head waters of a tributary of Lava Creek. Saw no game. Snowshoeing was very easy to-day. Made about 10 miles from Canyon Hotel. Depth of snow, from 12 to 24 inches up to Grebe Lake; from there the snow was from 3 to 4 feet. Weather clear; 10 degrees below zero this morning at 6.30 o'clock.

December 3.—Left cabin with Sergeant Welsh and Malin at 7.30 a. m.; began to climb the divide and kept working along the top until we came to Storm Peak, then began to descend to Lupine Creek; when we reached the creek bed, we found it very hard shoeing on account of lack of snow. On the divide from the cabin all the way to Lupine Creek the snow was about 4 to 5 feet deep. No sign of anybody in that district. There seems to be a great many pine marten around Storm Peak and on the head waters of Lupine Creek; great many elk sign near Wraith Falls. I think we made about 25 miles on our trip for to-day. Weather clear and cold. Came in on foot from top of East Gardiner grade; arrived at post about 7.30 p. m. Saw 3 deer and 1 elk near Blacktail Creek; saw tepee near Storm Peak, but nothing in it. From the divide above cabin could see the Tower Creek country, but saw no sign of anything there.

[N. J. Malin, 1897.]

October 8.—Left Fort Yellowstone with Corporal Ornis and Private Canovan at 2.30 p. m.; arrived at Blacktail Creek at 5 p. m., about 8 miles east from fort. Saw 1 blacktail buck and 2 coyotes on the road.

October 9.—Went on; followed down Blacktail Creek near the mouth; beaver houses and dams had not been disturbed on the creek. I showed Ornis and Canovan the trail to cross the river at mouth of Blacktail; also lower and middle trail going to Cooke City. Camped at Yancey's about 5 p. m. No game seen. Weather very stormy; snow and wind.

October 10.—Left camp at Yancey's at 7.30. Crossed main Yellowstone on Barrett's bridge; then went up Lamar River about 1 mile and forded; then cut across divide to trail on north side of the river, leading to Cooke City, about 2½ miles from Slough Creek; then turned northwest to Buffalo Plateau and made camp near Montana-Wyoming line on a branch of Hell Roaring Creek, 4 p. m. Corporal Herb and Private Hardin came to our camp near 5 p. m.—trailed us from where we hit the trail, on north side of Yellowstone, which leads to Soda Butte and Cooke City.

October 11.—Left camp with Ornis, Herb, and Canovan at 8.30 and traveled east to the pass between Hell Roaring and Buffalo Fork of Slough Creek. Found snow about 18 inches deep and crusted hard, so it was hard for horses to travel; then traveled north to what is considered near the north line of the park. Saw 1 blacktail buck and 4 bull elk; also beaver dam and house and fresh work of the beaver in the creek, which was a small branch of Hell Roaring. Herb sent Harding back to station. Snowing and cold; windy.

October 12.—Traveled north with Ornis, Herb, and Canovan, to north line near Hell Roaring Creek. Saw 5 bull elk on trip. Got back to camp at 5 p. m. Found Harding in camp.

October 13.—Ornis, Herb, and Harding scouted up the main Hell Roaring Creek; reported when returning no sign of game or poachers. I went west on Buffalo Plateau; no sign of game or poachers. Snowing and rain.

October 14.—All left camp at 10.30 a. m. and traveled main trail to Soda Butte. Got to station at 5 p. m.

October 15.—Left station at 10 a. m. with Ornis, Herb, and Bremer. Arrived at upper end of Alastin meadows at 5.30 p. m., about 2 miles south of the line of the park. Richard Randall and Roseborough in the party; they had written permit to carry their guns and to pack meat through the park to Soda Butte, thence along the road to Gardiner. Saw near 1,000 elk on Warm Spring Creek; also a very large band on Specimen Mountain.

October 16.—I took Herb, Bremer, Ornis, and Canovan as near north boundary line as I could judge from the line of Montana and Wyoming. Randall and Roseborough went across the line hunting. Clear and fine.

October 17.—All scouted up Slough Creek to where the line crosses the mountains. Clear and fine.

October 18.—Canovan and myself went across the point of the mountain to Buffalo Fork of Slough Creek to near line of park. The other men went up Slough Creek outside the park, hunting. Ornis killed a blacktail deer. Clear and fine.

October 19.—Started back to Soda Butte Station and arrived at 3.30 p. m. Roseborough and Randall also went to the Butte. Warm; thawing, so the travel was muddy.

October 20.—All remained at the station. Raining all day. Blane and Hoppe captured negro supposed to be the negro who broke jail in Deadwood, Dak.

October 21.—All left station for Cache Creek; followed up the main creek to right-hand fork, thence up the right-hand fork to the canyon, then up the divide to near the line of the park. Camped at 5 p. m. Herb, Ornis, Canovan, and Edwards, Randall, and Roseborough started east, hunting. I went on top of the mountain, so I could see Saddle Mountain and Baronet Peak, to determine, as near as possible, where the line would cut the mountain and creek, and found that we were camped in the park about three-quarters of a mile, as near as I could tell. Herb and Edwards, while hunting, came across the corner of the timber reserve, and found the line of the park; also trees and monuments showing the line. The line is also blazed as far as followed north and south. No sign of game in the country.

October 22.—Started back to station; arrived at 3 p. m. Lots of elk on bottom between Lamar River and Soda Butte Creek. I saw several coyotes and some mountain-lion tracks. Warm and pleasant.

October 23.—Randall, Ornis, Canovan, and I left station at 10 a. m. and arrived at camp on Slough Creek at 4.50 p. m. Saw several thousand elk between Soda Butte and Slough Creek. Both sides of Lamar River alive with elk; as near as I could judge, must have been 7,000.

October 24.—All hunted north of line for camp meat, but nothing outside of the park lines but bulls. Found on my way to camp an old camp where poachers had been camped. Near the line they had left their camp outfit, cooking utensils, also three quarters of elk, hung up in the trees, about 500 yards from their camp.

October 25.—All scouted the country between the north line and Slough Creek to see if we could find any more signs of poachers, but found no camps made lately. The beaver in Slough Creek have not been disturbed.

October 26.—Left camp on Slough Creek and followed it down through the canyon to or near the mouth. Crossed the Lamar River and went to Yancey's place and camped for the night. Several hundred elk at mouth of Slough Creek; also, several hundred on Specimen Mountain and Little Specimen Creek. Ornis killed 1 coyote, and we saw lots of signs and several coyotes.

October 27.—Left camp at 8.30 and arrived at Fort Yellowstone at 2.30. Saw no game, but a large herd had come off of Mount Washburn and crossed the road, going towards the Yellowstone River, near Devils Gut.

November 30.—Left post for Norris Station at 11 a. m. with Sergeant Bernstein, mounted, and Donehue as teamster. Saw a band of near 200 elk on Swan Lake Flat; 2 coyotes on road near Crystal Springs; 24 geese on lake at 3-mile post from Norris. Met syndicate team, with driver and Andy Wold, on road to Springs. Arrived at Norris Station at 4.30 p. m. Ten to 12 inches of snow beyond Crystal Springs to Norris.

December 1.—Left Norris, with Whittaker and Sergeant Welsh, for Canyon on snowshoes at 9.45; arrived at the Canyon Hotel at 3.30. Snow would average about 20 inches deep.

December 2.—Left Canyon Hotel with Whittaker and Sergeant Welsh. Traveled up Cascade Creek to the lake, thence across to Grebe Lake; then took up the trail that Reeb and Smitzer took after the robbery, to the cabin built by poachers. Cascade Creek and Lake frozen and covered with snow, so could tell nothing regarding the beaver in the creek and lake. No sign of game or poachers; snow average about 3½ feet deep.

December 3.—All left cabin at about 7.30 a. m.; traveled to top of divide looking into Tower Creek, then followed along the head of the divide to the head of Lupine Creek, then down the creek to the open country, then across to the main road leading from Springs to Cooke City; arrived at Fort Yellowstone at 8 p. m.; snow 4 to 5 feet deep in mountains, very little in the open country.

December 5.—Made trip along north line back of Cinnabar, then followed around the foot of mountains to target ground, then down old road to Gardiner. Game seen on trip, about 250 antelope in foothills, 3 blacktail deer near old brickyard, 8 bull elk above target ground, 2 live and 8 dead coyotes.

[George Whittaker, 1897.]

December 4.—Reported to the commanding officer for duty.

December 5 and 6.—Doing post duty.

December 7.—Left Mammoth Hot Springs for Yancey's with saddle horse and 2 pack mules. Saw 2 mountain sheep on east end of Mount Everts; 4 elk on Blacktail, 82 one mile west of Yancey's, and 2 deer same place. Weather stormy.

December 8.—Left Yancey's and proceeded to Soda Butte Station. Saw large herd of elk near hot spring, 2 miles southeast of Yancey's—about 75 in the herd; 3 small herds about 1 mile north of the junction of Yellowstone and Lamar rivers, 27 in one herd, 64 in next one, and I will venture to say there were over 300 in the other herd.

Twelve bull elk near the Junction Butte; 59 on the southeast side of Junction Butte; 33 near Cedar Ford of Lamar River; large herd near the mouth of Slough Creek—can say there were between 200 and 300; large herd on the east side of Slough Creek—between 50 and 75; 4 deer on Little Specimen Creek; 11 elk on Specimen divide; large herd on west side of Druid Peak of about 100; some scattered all the way from Amethyst Creek to Soda Butte. Corporal Herb and 2 privates absent on patrol duty on Slough Creek. Weather stormy. Snowed about 5 inches of snow during the night. Saw 7 coyotes near carcass of dead elk, 1 mile from station.

December 9.—Left station on snowshoes for trip up Opal Creek, then over to head of Flint Creek, but broke one of my snowshoes at foot of Specimen Ridge, so had to return to station. Was too late to make the trip by the time I had secured new shoes, so had to abandon it. Corporal Herb promised to make the trip by next Tuesday. Saw 14 elk opposite station. Weather cloudy.

December 10.—Left Soda Butte with Corporal Herb and Scout Malin for Hellroaring Creek. Saw about 700 elk near Junction Meadow; 200 on Slough Creek; about 1,000 scattered around between the outlet of Lamar River and Hellroaring Creek; also between 400 and 500 on east side of Hellroaring; some on west side also, but could not see them very well; should say there were about 150 of them. Camped on the State line near Hellroaring Creek. Saw 1 dead elk on Slough Creek and 6 coyotes eating on his carcass. The elk had evidently been run down and killed by the 6 coyotes last night. It was a last spring calf and was in good condition. Weather fair. No sign of anyone in the country we came over.

December 11.—Left camp with Corporal Herb and Scout Malin. Game seen to-day was 6 large herds of elk—2 herds on east side of Hellroaring creek, 3 herds on west side, and 1 herd on Blacktail Creek. It would be almost impossible to count them, but I will say there were at least 3,000 between Hellroaring and the mouth of Cottonwood Creek and 300 on Blacktail. Saw 3 white-tail deer near east side of Cottonwood Basin, 12 on Gardiner Grade, 1 mountain sheep near Cottonwood. No sign of anybody in the district.

Corporal Herb and his detachment keep a very close watch of that country. Corporal Herb came as far as Blacktail bridge, then left me and went to Yancey's. Malin left me at ford on Yellowstone River. Weather stormy. There were a great many fresh signs of beaver in Blacktail creek about 1 mile from outlet. Arrived at Fort Yellowstone at 4.45.

December 12.—Doing duty at Fort Yellowstone.

December 13.—Left post, mounted, with Private Dawson, of D Troop, and Private Martin, of H Troop, and 3 pack mules, for Fawn Pass. Proceeded as far as Golden Gate, where we were compelled to return to post on account of deep snowdrift in the gate, which was about 15 feet deep on the upper side and tapered down to 7 feet on lower side. Saw 10 deer at 3-mile post south of post. Weather very stormy.

December 19.—Left Fort Yellowstone with Scout Morrison and 4-mule team and driver at 8.10 a. m. for Norris. Had 4-mule team and 8 men to assist our team through the Snow Pass. After getting on the main road at Swan Lake found it fairly good traveling to Indian Creek; began to get very hard from there on; could not get farther than Crystal Spring on account of mules being tired; had to camp there for the night. Saw small herd of elk near the Snow Pass. Weather clear and cold.

December 20.—Left Crystal Spring cabin for the Canyon Hotel at about 8 a. m.; arrived at Norris for dinner. Left Norris at 2 p. m.; arrived at Canyon Hotel at 7.30 p. m. No game on road. Weather clear and cold.

December 21.—Left Canyon Hotel at 6.45 a. m., intending to go to Mud Geyser Station and secure the body of Private Davis, who was found frozen to death 10 miles from Lake Hotel on road to Thumb, and brought to Mud Geyser Station by Sergeants Simons and Welch and Private Akers. Found that Sergeants Simons and Welch had tied the body up with canvas and had everything ready to start back to the Canyon Hotel after dinner. Left Mud Geyser at 1 p. m. with Scout Morrison, Sergeants Simons and Welch and Private Hemstead to return to Canyon Hotel with body of Private Davis. Arrived at Canyon Hotel at 5 p. m. No game seen on road. Weather stormy in forenoon and clear in afternoon. Fairly good traveling for the team.

December 22.—Left Canyon Hotel at 7.25 a. m. for Crystal Spring; arrived at Norris for noon hour; left Norris 1.45 p. m.; arrived Crystal Spring at 5 p. m. Weather clear and cold.

December 23.—Left Crystal Spring with same party for Mammoth Hot Springs; left cabin at 7.04 a. m.; arrived Mammoth Hot Springs 11.55 a. m. Saw 17 elk near Snow Pass. Weather clear and cold. Depth of snow from Norris to Indian Creek about 2 feet; from Norris to Canyon 3 to 4 feet; from Canyon to Mud Geyser from 12 to 30 inches; all the snow is very soft.

December 24.—Left Fort Yellowstone to make a trip to Gardiner, Horr, and Aldridge; arrived at Gardiner; decided to remain over night. Weather cloudy.

December 25.—Left Gardiner City at 8.45 a. m., and proceeded to Horr. Stopped

two hours in Horr, then proceeded to Aldridge; arrived there 12.30 p. m. Weather cloudy.

December 26.—Left Aldridge and returned to Gardiner. Remained in Gardiner over night. Weather stormy.

December 27.—Left Gardiner; from Gardiner went up on Mount Everts; saw a great many elk and antelope up there; saw 6 mountain sheep also; weather cold and stormy; from Mount Everts returned to Fort Yellowstone; arrived at post at 5.30 p. m. On this entire trip I have gathered some information that sooner or later will lead to the arrest of some poachers.

December 31.—Left Fort Yellowstone, mounted, with privates Disbrow and Root, of H Troop. Proceeded as far as Snow Pass, mounted; then proceeded on skis up Glen Creek; then over the divide to head of Gardiner River, at foot of Electric Peak, and camped for the night. Saw 12 elk near head of Glen Creek. Weather clear and cold.

[Geo. Whitaker, 1898.]

January 1.—Left camp with same party for Mulharen Creek and Fish Lake. Camped on Fish Lake over night. Saw one fresh track of mountain sheep. Weather clear.

January 2.—Left Fish Lake at daybreak. Proceeded down Mulharen Creek one mile; then kept working along the park line, intending to go to head of Reese Creek, but Private Root broke one of his snowshoes when we were just opposite Aldridge, so I had to go to the nearest road, as we could not use our skis any more. Saw one old snow trail, which I presume was one week old or more. Came on to an old cabin, but it was empty and there had been nobody near it this winter. The cabin is in the park, but very near the line. Saw no game. Weather clear. We arrived at Mammoth Hot Springs at 2 a. m. on the morning of the 3d.

January 12.—Sergeant Wall, of H Troop, and Corporal Herb, of Soda Butte Station, and myself left Fort Yellowstone for main camp on Big Blacktail Creek. From post we went to first bridge on Gardiner River, then turned to the right and went up the old road to old coal mine. At the coal mine we saw 22 mountain sheep—7 rams and 15 ewes. I then sent Corporal Herb on top of Mount Everts, while Sergeant Wall and I patrolled along the cliffs at Eagles Nest; then went down as far as the Yellowstone River; then up the old Turkey Pen road to Blacktail. Saw 1 mountain sheep near old slaughterhouse on Turkey Pen road; about 20 antelope on Gardiner flat. Saw about 1,200 elk on Mount Everts; saw 21 deer scattered on Mount Everts. Corporal Ornes and Private Bremier left post with pack train with rations and forage for main camp. Found everything O. K. in camp. Weather clear and very cold. Saw one human foot track on Everts, but it was about four days old and was not very plain.

January 13.—Took Sergeant Wall and Corporal Ornes, mounted, and proceeded up Crevasse Creek to patrol that place and also measure the distance from park line to where Miner killed the elk, and found it was 235 yards due south of the line, as near as we could make it. Brought the head to camp to be sent to post as evidence against Mr. Miner. Saw 88 elk on east side of Crevasse Creek; 24 on head of Dry Gulch creek. Weather cloudy.

January 14.—Left camp with Sergeant Wall and Corporal Herb and 3 pack mules to go over to Buffalo Creek and remain there three days, if necessary. Sent Corporal Ornes into the post with 2 mules and letter to Captain Erwin, and elk meat and elk head of Mr. Miner's. Saw 48 elk on Dry Gulch Creek; 4 white-tail deer same place. Elk sign were very numerous on Crevasse Mountain. Weather clear. Went into camp on Buffalo Creek at 4 p. m. The snow is very deep on Crevasse Mountain.

January 15.—Stayed in camp until about 11 a. m., then took Sergeant Wall and rode out toward the park line. Just before we came to the line we found an elk, dressed and covered with a blanket, and there was a fresh track of a man leading into the park, but before we got there he had come out again and gone down towards Bear Gulch, but later on I saw him coming back. I had already found his camp and a man in it who said his partner was out hunting horses, so I sent Corporal Herb down to watch his partner, when he came in, and see what he had with him. At that time I saw a man moving along the cliffs near the Yellowstone River, so I watched him until I thought he was in the park, then went after him and arrested him for hunting in the park. It turned out to be Scotty Crawford, or "Horse-thief Scotty." Brought him into the post and Captain Erwin ordered him confined until we could find out for certain whether he was in the park or not. Weather cloudy and cold.

January 16.—Left post with Lieutenant Arnold and proceeded to Buffalo Creek, to determine whether Scotty Crawford was in the park when we arrested him. Found the stakes and monuments and found that he (Scotty) was all of 50 yards out, but found where he had been all of 400 yards inside, but when arrested he was about 100

yards outside the line. Returned to Fort Yellowstone at 7.30 p. m. Weather clear and cold.

January 17.—Stayed at Fort Yellowstone to meet Sheriff Young from Livingston. He arrived on the mail stage and said he would take charge of Scotty in Gardiner, to-morrow. Told him I would meet him at 10 a. m. Weather cloudy, not very cold.

January 18.—By order of Captain Erwin, took prisoner Crawford to Gardiner and turned him over to Sheriff Young, who told me to have all the witnesses to appear in Horr at 2 o'clock p. m. I sent Private Root up to camp and told him to have Sergeant Wall and Corporal Herb come down at once and move the camp down also. They arrived at 2 p. m. in Gardiner; then I took them to Horr. Scotty was tried and found "not guilty." Then his partner had Sergeant Wall arrested for taking his gun away from him, but Sergeant Wall was discharged. Justice Erret said he could not make a case of it. Returned to post at 8.45 p. m. Weather clear and very cold. Saw 8 mountain sheep at Eagles Nest.

January 19.—Stayed at post to wait for Private Carter to come in from camp on Blacktail Creek; he arrived at 8.45 p. m.

January 20.—Left post, mounted, and rode over to Mount Everts. Saw 8 mountain sheep on Mount Everts; about 600 elk there also; 6 deer same place. Saw where somebody had built a small footbridge across the Gardiner River, near the mouth. Returned to post at 5 p. m. Weather clear and cold.

January 21.—Left post with Private Weston, of H Troop, mounted. Proceeded from the bridge 2 miles north of post to the old coal bank on Mount Everts; from there to mouth of Gardiner River, thence along the north line of park as far as the Gassert ranche, thence back to Fort Yellowstone. Saw 11 mountain sheep on Mount Everts; about 200 antelope on Gardiner flat on east side of the Gardiner River; 4 whitetail deer near Government garden; 7 near post ice house; about 75 elk back of the Gassert ranche. Arrived at post about 5.30 p. m. Weather clear and cold.

January 22.—Remained in post until 6 p. m., then packed up 5 mules and left post with Sergeant Wall, Private Weston, and Private Martin to make a night camp on Mount Everts. Made camp on McMahon Creek at 8.10 p. m. Returned to post with Private Martin at 9.20 p. m. Left Sergeant Wall and Private Weston of H Troop in camp for six days, by order of Captain Erwin. Weather stormy and cold.

January 23.—Left post, mounted, with Private Carter and Private Martin, of H Troop, and Private Squires, of D Troop, and 5 pack mules to make a camp just back of Cinnabar. Left post at 10 a. m.; arrived in camp at 1 p. m. Sent Private Martin back to post with 3 mules. Saw about 150 antelope on Gardiner Flat; 6 elk back of Gassert ranche. Weather, clear and cold.

January 24.—Left camp with Private Carter to make a patrol up Reese Creek. Left camp at 8.30 a. m.; returned at 4.30 p. m. After going up Reese Creek to within one-half mile of park line saw some smoke away up in a little draw or ravine and concluded it was a poachers camp. I went about one-fourth mile inside the park; saw lots of game sign. Tried to ride to foot of Electric Creek, but snow was too deep for our horses; so returned to camp to go up and get Sergeant Wall and Private Weston to come down and help me investigate what that camp is doing there. Weather very cold all day, and clear.

January 25.—Left camp with Private Squires and went up to Sergeant Wall's camp to get him to come down and assist me for one day to investigate camp fire seen yesterday on Reese Creek. When I got to Gardiner I was informed that the sergeant had gone over to Buffalo Creek; so decided to send Private Squires back to camp and I would wait in Gardiner for the return of Sergeant Wall. Saw about 50 antelope on Gardiner Flat. Sergeant Wall arrived from Buffalo Creek at 6.30 p. m. Weather clear and very cold; 18 below zero at Gardiner. Remained with Sergeant Wall over night.

January 26.—Left Sergeant Wall's camp with Sergeant Wall and Private Weston. Proceeded to within 1 mile of Cinnabar, then fired two shots as a signal for Private Carter to meet us in Cinnabar. Left Cinnabar at 11 a. m. and went up Reese Creek as far as the park line, thence along said line to the foot of Electric Peak, thence back to where I saw the smoke on the 21st. Found that where we saw the smoke there is an old man, who built a log cabin last fall. He is mining coal. His cabin is about 150 yards from park line. Saw where two elk or deer had been killed and dragged down Reese Creek to Horr, but they were killed outside the park. Also found an old bear trap just outside the park; it has been there for about one year. There seems to be a great many fresh elk sign on Reese Creek and all of them are inside the park. Sergeant Wall and Private Weston returned to their own camp this p. m. Weather cloudy and cold.

January 27.—Sent Private Carter up to help Sergeant Wall take out the footbridge across the Gardiner River. Left camp about 2 p. m. and rode up to foot of Sepulchre Mountain to see if any poaching had been done there, but saw no sign of any having been done there. Saw 32 elk at foot of Sepulchre Mountain. Private Carter returned at 5.30 p. m. from Sergeant Wall's camp. He informed me that the foot-

bridge was taken out by Sergeant Wall and himself. He saw about 100 antelope on Gardiner Flat. Weather cloudy and very windy.

January 28.—Left camp with Private Squires to make a patrol up Reese Creek. As this is the day I am told to go to the post, thought that I had better make this patrol before going. Saw where an elk had been killed yesterday—but outside the Park—and dragged to Horr. Returned to camp about 5.30 p. m. and started to pack up and go to Sergeant Wall's camp and take him in also, but when we got there he had just returned from Buffalo Creek to look after Scotty's camp, and it being late and his stock tired, decided to remain there until morning and pull into the post by daybreak. My idea for doing this at night is to keep the hunting class of people thinking the camps were still out where they were. Weather clear and warm.

January 29.—Left camp on McMahon Creek with Sergeant Wall and Private Carter and Private Weston, of H Troop, and Private Squires, of D Troop, at 6.30 a. m. for Fort Yellowstone. Saw about 100 antelope on west slope of Mount Everts; 2 elk and 11 mountain sheep same place. Arrived at post at 8 a. m. Weather clear and very cold. Reported for duty at 9.30 a. m.

[Sergt. M. J. Wall, Troop H, Fourth Cavalry.]

January 23.—Left camp at 10 a. m. Made a patrol on Mount Everts on the south-east slope, with Sergeant Wall and Private Weston. Game seen during patrol, about 100 head of elk and 6 blacktail deer. On the east of Mount Everts discovered an elk killed by a mountain lion, lying south from my camp. Saw tracks about one day old of man and horses passed by my camp and going towards Gardiner. Distance traveled, about 20 miles. Weather very cold.

January 24.—Left camp at 8.30 a. m. Patrolled Turkey Pen Trail with Private Weston. Game seen, 200 head of antelope on Gardiner Flat and 100 head of elk near my camp on the mountain east of Turkey Pen Trail. Saw 3 mountain sheep, and on south of trail saw 200 head of elk. On my return saw man's tracks leading from Gardiner to the ridge south of Yellowstone River; lost his trail in the rocks, and saw one mountain sheep, a ram, which looked to me as if he was hunted. Waited for signs of something to turn up and could find nothing, so returned to camp. Distance traveled, about 25 miles. Weather cold and clear.

January 25.—Left camp at 8.30 a. m. Made a patrol to Buffalo Creek with Private Weston. Game seen during patrol, 100 head of antelope on Gardiner Flat, east of Gardiner River. Found Crawford's camp on Buffalo Creek; went to his camp; spoke to him about the meat that was lying on trail; he said he knew nothing about it. Left his camp and went to the line. Found fresh tracks leading into the park; tracks that were made by a man's foot. Returned to McMahon Creek. Distance traveled, about 25 miles. Weather very cold.

January 26.—Left camp at 9 a. m. Made a patrol of the northern boundary with Scout Whittaker, Private Weston, and Private Carter. Game seen during patrol, about 150 head of antelope on Gardiner Flat and 15 head of elk outside of the line, northwest of Electric Peak. Found the camp that Scout Whittaker thought to be Bucher's was an old prospector's cabin. Was told by a rancher named McMahon that there was deer taken out on Monday (24th) by coal miners. Returned to McMahon Creek. Weather cloudy and cold. Distance traveled, about 20 miles.

January 28.—Left camp at 10 a. m. A patrol made to Gardiner River. Game on Gardiner Flat, 200 head of antelope. Met Private Carter on the side of river; had him help, myself, and Private Weston to ent the footbridge across the Gardiner River. After the bridge was cut went on Turkey Pen Trail. Saw 200 head of elk on east of trail. Returned to camp. Weather windy and cold. Distance traveled, about 15 miles.

January 28.—Left camp at 9.30 a. m. Patrol east of Mount Everts with Private Weston. Game seen on and around Mount Everts, about 600 head of elk and 6 black-tail deer on McMahon Creek, 1 mountain lion on the east side of Mount Everts hunting elk, but when he saw us coming towards him he made for cover. After making this patrol went to Crawford's camp. Found fresh trails leading to the park; too late to follow them, so returned to camp. Weather clear and cold. Distance traveled, about 28 miles.

January 29.—Left camp at 6.30 a. m. Game seen on return to post, 100 head of antelope and 10 mountain sheep on south of Everts. Built a cabin on McMahon Creek.

[George Whittaker, 1898.]

January 4.—Left the post, mounted, and took in all the country at the foot of Sepulchre Mountain down as far as the corner of Chadbourne's ranche; then came back by way of Gardiner City. Saw 4 elk near the target range, about 110 antelope near Gardiner, 5 white-tail deer in Government garden, 12 near Government ice house. Weather clear and very warm.

January 5.—Left Fort Yellowstone with Corporal Ornes, of D Troop, and Private Carter, of H Troop, mounted; took five pack mules and proceeded to mouth of Blacktail Creek and went into camp there, so I could scout all the Crevasse Mountain country. Saw one man on snowshoes; sent Corporal Ornes after him; found out he was coming from Cooke City on his way to Gardiner. He had a pistol, but was sealed at Soda Butte. Saw a great many elk on Blacktail Deer Creek. The beaver in this creek have done a great deal of work, but are not working now. They have not been molested so far this winter. Weather cloudy and very wintry, but not cold.

January 6.—Left camp with Corporal Ornes and left Private Carter in camp; decided to go down the river to J. S. Knowles's ranch and see what was going on there, then go up on Crevasse Mountain and see if there is any poaching going on there; got to J. S. Knowles's cabin; found there was nobody at home; looked around for any elk meat that might be stored there, but found none. We then proceeded up Crevasse Creek; there we found two human footprints in the snow; followed them around to park line. The country was all pawed up by elk; there must have been hundreds of them in there last week, but they have been shot at and they have all moved back into Cottonwood Basin, except 11 that we saw to-day, and they ran for that place as soon as they saw us coming. After going to park line we began to circle a radius of 500 yards to see what those two men had been doing. I found where a quarter of elk had been cached overnight; I suppose it had been dragged there from the cache to Tom Miner's cabin. I followed the trail where it had been dragged, and it led to Tom Miner's door; am going back on the 8th to see just where it was killed; looked to-day as far as the park line, but could not find the carcass. Tom Miner told me, when I asked him who had dragged the meat, that he had, and that he was going to drag some more just as soon as he could get to kill one. My opinion is that he did not kill the elk, but somebody has killed several elk somewhere on Crevasse Creek and gave him the front quarters, for when I got to his cabin he was out and I looked into his meat house, but saw nothing but fore quarters and one old hind quarter of elk or deer; I did not take time to note which. Saw 3 whitetail deer near J. S. Knowles's cabin. Knowles was at home on my return, and so was Miner. Weather, very stormy.

January 7.—Left camp and rode to south end of Cottonwood Basin to meet Corporal Herb, but he failed to come, so returned to camp. Saw 3 whitetail deer and 97 elk to-day along the Yellowstone River. Weather, clear.

January 8.—Left camp with Corporal Ornes, proceeded to Tom Miner's cabin. Requested Miner to go with us and show us where he had killed his elk. At first he refused to do so, but after talking to him a little while he concluded to go. Found that he had first shot the elk outside the park about 500 yards, but the elk ran into the park about 400 yards before he killed it, so he killed the elk inside the park, but wounded it outside, for which I feel that I am in duty bound to arrest him for the offense. Saw a great many herds of elk on Crevasse Mountain near the park line, but they were all inside the park. Two whitetail deer above Miner's cabin. After we got through at Miner's we proceeded to Buffalo Creek, arrived there at sundown. Weather very cold and cloudy. Sent Private Carter into the post with 3 pack mules and note to Captain Erwin.

January 9.—Left camp on Buffalo Creek on foot; went out about half a mile, but it was snowing so hard that we could see nothing whatever, so decided to return to camp and listen for any shooting that might take place, but did not hear any near the park line, except below Gardiner we could hear six shots fired just at dusk and one in the forenoon. Heard two shots fired on Mount Everts about 5.30 p. m. Have seen no sign of anyone having been in the park poaching, except Tom Miner on Crevasse Creek. Saw no game to-day. Weather, stormy; snowing hard all day.

January 10.—Left camp on Buffalo Creek to return to camp on Big Blacktail Creek. Saw no sign of anyone poaching in the park. Got back to Tom Miner's cabin and found him dressing up to leave. I told I would have to arrest him for killing elk in the park. Took him to our camp on Big Blacktail and kept him overnight. Saw a great many elk on Crevasse Mountain, but outside the park. Weather, clear.

January 11.—Left camp on Blacktail for Fort Yellowstone with Corporals Herb and Ornes and prisoner Miner. (Corporal Herb met me on Crevasse Creek on the 10th instant.) Left Mr. Miner's arms and meat in camp, pending action of the commanding officer at the post. Saw 117 elk near mouth of Blacktail and 40 between Blacktail and top of Gardiner grade; 9 blacktail deer on Gardiner grade, 14 at forks of East and West Gardiner rivers; 9 mountain sheep on Mount Everts, opposite same place; 5 deer east corner of pasture. Arrived at the post with prisoner at 1 p. m. Weather, cloudy and very cold.

January 30.—Left post with Sergeant Wall, Private Weston, Private Martin, and 5 pack mules, to put Sergeant Wall in camp on McMahon Creek, on Mount Everts, by order of Captain Erwin. Returned to post with Private Martin and pack mules. Weather, clear.

January 31.—Received orders from Captain Erwin to take 2 privates and 3 pack mules to make a six days' trip to the Soda Butte district and Crevasse Mountain, then return to the post. Weather, clear.

February 1.—Left post with Private Martin, Private Rompre, of H Troop, Private Slough of D Troop, and 4 pack mules, for Hellroaring Creek. Only got as far as outlet of Big Blacktail Creek, on account of the ice in the Yellowstone River, which was frozen out so far from shore that we had to cut a channel through. Camped in old camp at ford of river. Saw two mountain sheep on east point of Mount Everts; got within 30 feet of large ram near the Cooke City road. Saw about 1,000 elk scattered along the road from top of Gardiner grade to mouth of Blacktail Creek. The beaver in Blacktail have not been working lately, nor have they been molested. Clear.

February 2.—Left camp with Privates Rompre and Slough to go up to Soda Butte Station, via Hellroaring and Slough Creeks. Sent Private Martin back to post with 1 mule. Saw about 3,000 elk between Cottonwood Creek and Soda Butte; 3 white-tail deer, 1 blacktail deer; 1 mountain sheep near Cottonwood Creek. Found 3 men absent on patrol duty when I arrived at station, but they returned at 8.15 p. m. Weather, clear.

February 3.—Left station with same party and returned to camp at Blacktail Ford with rations for the brush cabin on Line Creek. On Hellroaring Creek found everything O. K. at the station. Saw about 1,000 elk on Hellroaring, about 700 of them in one herd. Saw 9 mountain sheep near Cottonwood Creek; 3 whitetail deer near the ford of Yellowstone River. Weather, blinding snowstorms for about four hours and very cloudy all day. Average depth of snow 15 inches from Hellroaring to Soda Butte Station.

February 4.—Stayed in camp at Blacktail Ford of the Yellowstone River to fix up brush cabin and listen for any shooting on Crevasse Mountain. Our stock was very tired from our trip to Soda Butte and back here, which is about 28 miles each way. The ice in the river has about all gone out in the last two days. Weather, cloudy in a. m., clear in p. m.

February 5.—Left camp with same party and proceeded to J. S. Knowles's cabin, thence over Crevasse Mountain to Buffalo Creek, to look after Scotty's camp and see what he is doing there. We arrived on Buffalo Creek Mountain about 1.30 p. m. Went into camp inside the park line. Laid low all the afternoon to listen for any shooting that might take place, but did not hear any. Saw an old web snowshoe trail leading into the park from Scotty's camp, but it was three or four days old. Saw where one elk had been shot inside the park, but could not see where it had been butchered. Saw 3 whitetail deer at Knowles Lake, 4 at Knowles Cabin; 42 elk on Crevasse Mountain about 100 yards outside the park. Weather, cloudy and chinook wind blowing.

February 6.—Left camp with same party; went out on the cliffs and watched for anyone coming out or going into the park. Stayed there until about 1 p. m., then went over to my old camp on Buffalo Creek. Found that Scotty had camped there since his arrest, but he has moved away in the last three or four days. I have since been informed that he has moved down the river about 4 miles below Gardiner. After finding he had moved I came over to Sergeant Wall's camp on McMahon Creek; found Sergeant Wall and Private Weston absent on patrol duty. There has not been much of anything going on since January 15. Weather, cloudy and chinook wind. Saw no game.

February 7.—Left camp with Sergeant Wall and made a patrol down to Reese Creek. There has been some elk killed, but outside the park. Privates Weston and Rompre made a patrol over Mount Everts. Private Slough remained in camp. They saw 8 elk and 30 antelope on Mount Everts. We left camp at 6 p. m. for the post; arrived at post at 7.30 p. m. Weather, cloudy and warm wind.

[Sergeant M. J. Wall, 1898.]

January 30.—Left the post at 6.15 p. m.; made camp on McMahon Creek at 8.20 p. m. Night mild.

January 31.—Left camp at 10.20 a. m. Made a patrol on Gardiner Flat. Found Tom Newcomb on Gardiner Flat and told him the commanding officer wanted to see him. Returned to camp and made a patrol on the east side of Mount Everts. Game seen: 100 antelope on the east side of Mount Everts, 6 mountain sheep, same side, and 20 elk on the west side of McMahon Creek. Weather, warm. Traveled about 10 miles.

February 1.—Left camp at 10 a. m. Made a patrol on Turkey Pen Trail and on the east side of Mount Everts. Game seen, 150 antelope on Gardiner Flat, and 200 head of elk counted on northeast side of McMahon Creek, and 1 mountain sheep (a ram) on the mountain northeast of the Turkey Pen Trail, and about 400 elk on the south slope of Mount Everts. Discovered one blacktail deer, killed by a mountain

lion, on the east side of Mount Everts about 100 yards from where he killed the elk. I saw his tracks in a great many places, and believe he is about as big as an African lioness. I saw 5 bull elk south of McMahon Creek. They were all very large. I saw Tom Newcomb on Gardiner Flat, and he gave me a bottle of strychnine to put on the meat, which I did. No signs of anyone having been on Mount Everts since last patrol. Weather, fine and mild. Traveled about 20 miles.

February 2.—Left camp at 8.30 a. m. Made a patrol on Buffalo Creek and Buffalo Mountain with Private Weston. Found Crawford's camp to be abandoned. Looked all around Buffalo Creek and Buffalo Mountain, but he was not to be found in that location; he must have left camp on the 31st of January, in the night. I saw his camp on that day from Mount Everts. There was a man walking on Buffalo Mountain. Saw fresh man and horse's tracks leading from Crawford's camp to Mr. Moore's cabin; I believe them to be the tracks of Crawford. There is a cabin on the northeast of Buffalo Mountain, where there was someone, but seeing me coming they left. I had heard a shot fired long before I got there. When I reached the place I saw about 100 head of elk all around Buffalo Mountain, looking as if they were hunted very much. Followed trails all around and could find no signs of any game having been killed, so returned to camp. Game seen during patrol: 200 antelope on Gardiner Flat and on the east slope of Mount Everts; about 200 elk on east and west of Buffalo Mountain. Weather, normal. Traveled about 25 miles.

February 3.—Left camp at 9.30 a. m. Made a patrol on the north boundary line and to Reese Creek and to a prospector's cabin; no signs of anyone having been there of late. I had Private Weston patrol the east of Mount Everts and look at the deer that was poisoned. He found two foxes, which were poisoned, and were destroyed by crows picking holes in their heads; he also saw 30 bull elk on the south slope of Mount Everts and 400 cow elk on the east slope of Mount Everts, and 4 mountain sheep on the ridge of Everts. Game seen during the day: 100 head of antelope on Gardiner Flat and 50 head of elk on the west side of McMahon Creek, and 6 mountain sheep on the east of Mount Everts. Weather, blowing northwest and light snow. Traveled about 20 miles.

February 4.—Left at 9 a. m. Made a patrol on Crevasse Mountain to meet Scout Whittaker, which I failed to do on account of snowdrifts. My patrol would be to Mr. Knowles's cabin to leave a note for the scout. Also my horse was very lame and could not make it to Mr. Knowles's cabin and then to my camp, so I returned to camp. On my return I saw the poachers' cabin on Buffalo Mountain. I went over to it. There was a fire burning inside, but no one at home. I looked all around and saw some mink skins and what I thought to be fox skins. Waited to see if anyone would show up; then it was getting dark, so I returned to camp. Game seen, 200 antelope on Gardiner Flat. Private Weston made a patrol on Turkey Pen Trail, and also went to the top of the mountain northeast of Turkey Pen Trail. He saw 11 mountain sheep on the mountain. Two of them he said were rams, which he said were last spring lambs, and the remainder of them very small. He also stated that he believes all the big rams are killed off. Private Weston saw 200 elk west of Turkey Pen Trail and 100 antelope on Gardiner Flat. I believe there is more poaching done around here than any other part of the park, outside of Snake River and Riverside. There is a variety of game in this part—1,000 elk, 300 antelope, 200 blacktail deer, about 40 mountain sheep, and plenty of foxes, beaver, and mink. Weather, fair. Traveled about 30 miles.

February 5.—Private Weston left camp at 9.30 a. m.; made a patrol on the north boundary line and to Reese Creek. Said he saw no signs of anyone having been there since last patrolled. Game seen during his patrol, about 200 antelope on Gardiner Flat, 1 that was crippled on the west side of Gardiner River, 20 head of elk on Reese Creek, and 15 blacktail deer on Reese Creek. He traveled about 15 miles.

I left camp on the same day about 11 a. m.; made a patrol on Turkey Pen Trail and on Mount Everts. Travel very bad on account of snowdrifts. Game seen during patrol, about 40 elk on the slope south of McMahon Creek, 7 blacktail deer on the ridge of Mount Everts, and 6 mountain sheep on the west of Mount Everts. Found 1 fox that had died from the poisoned deer meat. No signs of anyone having been there since last patrol. Weather, mild. Traveled about 10 miles.

February 6.—Left camp at 9 a. m.; made a patrol on Turkey Pen Trail and to Cooke City road. Game seen, about 200 elk on the west side of trail and 1 mountain sheep on the mountain northeast of the trail, and about 200 antelope on Gardiner Flat. Sent Private Weston to the post to get one day's rations. No signs of anyone over the trail since last patrol. Weather, chinooky. Traveled about 16 miles.

February 7.—Left camp at 9.30 a. m.; made a patrol on the north boundary line. Scout Whittaker and I saw signs of blood on the trail leading to the line of the park; looked as if it was meat that was taken but the night before. Saw fresh tracks of a man and horse leading to the park; heard one shot fired close to the line. Also made a patrol on Reese Creek. Saw no signs of anyone having been there since last patrol. Weather, chinooky. Traveled about 12 miles.

[Scout Whittaker, 1898.]

February 8.—Reported to Captain Erwin for duty. Attended court at Commissioner Meldrum's house—Tom Miner case.

February 9.—Attended court again on Tom Miner case. Weather, clear.

February 10.—Attended court until 11.30 a. m., when trial was over. Prisoner found guilty of killing an elk in the park. Took Private Martin and all the pack mules out in the afternoon for practice. Weather, clear.

February 11.—Left post, mounted, with Private Root to make a patrol along north line of park, via Gardiner and Cinnabar, and try to locate Scotty's camp; found it on Trail Creek. Returned to post at 5.30 p. m. Weather, cloudy.

February 12.—Remained in the post.

February 13.—Took Private Murphy and left post, mounted, to make a patrol on Mount Everts. Returned to post at 5.45 p. m. Weather, cloudy and very windy.

February 14.—Remained in the post.

February 15.—Left post with Sergeant Wall, mounted, to make a patrol to Buffalo Creek and Mount Everts. Returned to post about 4.45 p. m. Left Sergeant Wall out on Mount Everts until about 7 p. m., when he should return to the post. He returned about that time.

February 16.—Reported to Captain Erwin at 9 a. m. for orders, but it was storming so hard at that time could do nothing. Storm ceased about 10.30 a. m. Received orders at that time to take Sergeant Wall and Private Weston with seven days' rations and leave post after dinner. Left post at 2.30 p. m.; put Sergeant Wall in camp, and returned to post with the mules. Weather, very stormy.

February 17.—Remained in the post.

February 18.—Left post with Private Slough, of D Troop, and Privates La Mont and Martin, of H Troop, with five days' rations and five pack mules, to make a patrol to Hellroaring Creek. Saw about 300 elk between forks of Gardiner River and outlet of Big Blacktail Creek. The beaver in this creek have not been molested. Saw 3 deer on east end of Mount Everts; 6 deer on north side of Yellowstone River, opposite camp. The snow was not very deep, except a few drifts. Weather, cloudy.

February 19.—Stayed in camp until 12.30; then went up the river with Private Slough to look for sheep sign. Sent Privates La Mont and Martin back to post with 2 mules, Private La Mont to return to camp after they got to Blacktail Lake. He saw about 75 elk and 4 deer. Weather, clear.

February 20.—Left camp with Private Slough and Private La Mont, and went down to Crevasse Creek to see if any one had been there, but saw no sign of anything having been done there since I was there last time. Mr. Knowles informed me that there have been all of 2,000 elk in sight at one time near his place, in the last fifteen days. I saw 26 elk on the east side of Crevasse Creek, one-half mile north of Mr. Knowles', inside the park. The elk seem to be working up very high and back towards the Hellroaring district. Saw 14 deer, 6 whitetail and 8 blacktail on opposite side of the river from our camp. The snow is not very deep anywhere yet, except on Crevasse Mountain. Saw one scabby elk near the ford on Oxbow Creek. Weather, clear and very warm.

February 21.—Left camp with Private Slough and Private La Mont. Rode up to south end of Cottonwood Basin to look over the sheep range and see if they were still there, but after looking over it carefully I could not see a single fresh sign of any sheep. I presume they have moved to some other range. Saw 5 whitetail deer near mouth of Cottonwood Creek. Saw about 1,000 elk between the ford and south end of Cottonwood Basin; also, found 3 calf elk that had been killed by mountain lion, there being fresh tracks of such animals around the carcass of each elk. Weather, stormy.

February 22.—When we woke up this morning we found all of our mules gone, but still had the troop horses left. We rode them after the mules, and found them about 2 miles from camp. Returned to camp, packed up, and proceeded to Sergeant Wall's camp. After we arrived there I received orders from Captain Erwin, through Private Weston, to investigate the killing of a deer about 1 mile above the Government ice lake. I found said deer and also the carcass of an elk. The deer had been shot, but the elk, in my opinion, had been killed by coyotes. I came into the post with Private Weston and Private La Mont, and reported the same to Captain Erwin, who gave me orders to remain in the post over night and return to Sergeant Wall's camp to-morrow morning, leaving Privates Weston and La Mont in the post. Saw 17 blacktail deer near mouth of Blacktail Creek, 6 on Mount Everts, 18 just above the Government ice lake. Saw about 250 elk on Mount Everts, and 7 coyotes same place. Weather, clear.

[Sergt. M. J. Wall, 1898.]

February 16.—Left camp at 4 p. m., to patrol the Gardiner Flat and portion of Turkey Pen. Found no signs of anyone crossing the Gardiner River. The antelope were on Gardiner Flat in small bands, from 10 to 15 in each band, and seemed to be

more wild and uneasy than ever. On my return I crossed Gardiner River and found about 150 in one band on the west side of Gardiner River, about 400 yards from Gardiner City, very much watched by the so-called citizens of Gardiner. Two men had guns; one of them Mr. Mack, the other was a stranger to me. There was also about 300 head of elk on the northeast slope of Mount Everts. Weather, cold and light snow. Traveled about 10 miles.

February 17.—Left camp at 10.30 a. m., and patrolled Buffalo Creek and Buffalo Mountain, and followed boundary line to where it crosses the Yellowstone River. Myself and Private Weston went to the camp of Crawford, which was supposed to be occupied by John Dewing. It was found deserted, and there was no evidence of its having been used by anyone lately. The cabin on north side of Buffalo Mountain is still used by parties, but have found no evidence of game being killed across park line, nor no new trails leading into park. Saw 5 blacktail deer on Buffalo Creek and signs of elk on Buffalo Mountain. Returned to camp at 6 p. m. Weather, cold. Traveled about 16 miles.

February 18.—Left camp at 9.30 a. m., and patrolled Reese Creek and north boundary line, myself and Private Weston. On going through Gardiner, a man joined us on the road, and told me there were parties going in there, but if I would watch it that night I would catch them coming out. I afterwards found his name out and asked those men's names, which he said he did not care to tell. I also found out that he was putting me on the wrong trail. Game seen, 6 blacktail deer on the west side of Reese Creek and 1 cow elk, which was wounded in the shoulder. She was then traveling up Reese Creek. Weather, cold. Traveled about 15 miles.

February 19.—Left camp at 10 a. m. and patrolled Trail Creek Mountain with Private Weston; also to find Crawford's camp, but could not locate it. Was told he had taken a load of meat out to Horr, and on my return myself and Private Weston went to Horr to find out if it was so. I was told he was not bringing his meat to that town. I saw Crawford there on the same day. Game seen: About 250 elk on slope of Mount Everts and 200 antelope on the west side of Gardiner River. Returned to camp about 6.30 p. m. Traveled about 20 miles. Weather, cold.

February 20.—Left camp at 10 a. m. and patrolled Trail Creek and also went to the town of Horr. I had sent Private Weston to Mount Everts, to find out if he could see the sheep on the regular range, but he could not see any signs of them. He thinks they have left Mount Everts. When I got to Horr I saw the said Brundage, and Dewing, and Drummond (a man who is a stranger to me), and Brundage's pack horses standing outside Mr. Welcome's saloon. Brundage had made a remark to the strange man, "I am ready, as I am out of meat and money, and we must go to-night." I heard him say, "We will go towards Reese Creek." After they had left I sent a telegram to the post for two men to report to me at Horr. Sergeant Alexander and Private Palmer reported to me. We waited until towards morning, then left for Reese Creek. We patrolled every place we thought we could find them, but failed to do so; then we thought they were notified. Returned to camp about 7 a. m. and Sergeant Alexander and Private Palmer returned to post. Weather, cold. Traveled about 28 miles.

February 21.—Private Weston left camp at 7 a. m. Made a patrol on the north boundary line and also up towards Ice Lake. Hearing shots fired, he went in that direction, and found one blacktail deer dead, about 1½ miles southeast of Ice Lake. He returned to camp, and not finding me there, waited for my return. I was making a patrol on Gardiner Flat. When I returned he reported it to me. Game seen by Private Weston: 50 head of elk on the west side of Gardiner River. Game seen by myself: 12 head of antelope on Gardiner flat. Weather, fair. Private Weston traveled about 12 miles; I traveled 4 miles.

February 22.—Left camp at 9.30 a. m. with Private Weston. Went to the place where Weston had seen the dead deer. We thought the best thing to do was to skin the deer and send Private Weston to the post to report to the commanding officer, which he did. I waited around there for some time to see if anyone would show up, but no one came, so I returned to camp. On my return I found Scout Whittaker and his party in my camp, and Private Weston returned from the post, with orders from the commanding officer for all to return to the post. Scout Whittaker told me he would leave me and Private Slough in camp until further orders. Game seen: 200 antelope on the west side of Gardiner River. Weather, fine. Traveled 8 miles.

February 23.—Left camp at 11 a. m. On my way I met Private Martin, and he told me to report to Scout Whittaker, myself and Private Slough, which I did; and he told me to take Sergeant Alexander and Private Leter to the place where the deer lay, which I did; and then I was to report to Scout Whittaker, to find out where all the shooting was done which we heard. We could not find out, so we returned to camp about 9.30 p. m. Game seen: About 200 antelope on west side of Gardiner River; 14 elk around Ice Lake. Weather, fine. Traveled about 18 miles.

February 24.—Packed up all property and sent Private Martin to the post with

pack mules. I left camp at 10 a. m. to make a patrol to Horr, which I did, and meeting Mr. Welcome, he told me if I would lay for Brundage I would catch him. I returned to Cinnabar, and meeting Scout Whittaker, I reported to him what I had heard from Mr. Welcome. Scout Whittaker sent Private Slough to the post to find out what to do. Scout Whittaker told me to go as far as Mr. Shields's ranch and he would send me a man, which I did, and couldn't find any trail of Brundage, so I returned and found Scout Whittaker and Private Slough at Yellowstone Bridge, where Scout Morrison joined us shortly afterwards; then all returned to the post about midnight. Game seen: 7 blacktail deer. Weather, cold. Traveled about 30 miles.

[Scout Jas. G. Morrison, 1897 and 1898.]

November 24, 1897.—Left the post with Privates McReynolds and Miller to go over on the Gallatin. On account of deep snow we got no farther than the pocket on Fawn Creek, where we camped. Saw about 750 elk; also numerous signs of beaver on the Gardiner River and Fawn Creek. Distance traveled, about 12 miles.

November 25.—Took back trail down Fawn Creek about 4 miles; thence south along Quadrant Mountain to Indian Creek and up it about 4 miles to snowshoe shack, where we camped. Saw about 150 elk. Many signs of beaver on this creek. Distance traveled, about 15 miles.

November 26.—Remained in camp; scouting up Indian Creek. No signs of game. Distance traveled, about 10 miles.

November 27.—Proceeded to the post. Distance, 12 miles.

February 14, 1898.—Left the post, accompanied by Corporal Ornes and Private Rompre, at 9 a. m. for Soda Butte. Arrived at Yancey's at 4 p. m. Saw about 800 elk. Warm and snow. Distance, 20 miles.

February 15.—Left Yancey's at 9.30 a. m.; arrived at Soda Butte at 4 p. m. Saw about 500 elk. Distance traveled, 15 miles. Warm and pleasant.

February 16.—Remained at Soda Butte on account of very severe snowstorm. Warm and snow.

February 17.—Party, consisting of Corporals Ornes and Herb and Privates Edwards and Rompre, left station, mounted, for Mirror Plateau, following trail up East Fork of Yellowstone. The snow was too deep south of Miller Creek, so made camp south of it about one-fourth mile. Snow $2\frac{1}{2}$ feet deep. Saw about 100 elk on north side of Cache Creek; a great number of Elk signs all the way up to Miller Creek. In Cache Creek bottom saw signs of blacktail deer, but saw only 1, a doe. Distance, 13 miles. Clear and very cold.

February 18.—Left camp with Corporals Ornes and Herb for Ponuntpa Springs on skis, following right bank of East Fork to within a mile of Timothy Creek, up Timothy to near its head, and camped. Snow about 3 feet, very loose, and skiing very hard. Saw a number of mountain lion tracks; also much beaver sign on Timothy Creek. Distance, about 10 miles. Privates Edwards and Rompre remained in camp. Mild; snowing all day.

February 19.—Following to head of Timothy and down Pelican Creek about 4 miles; thence across to Broad Creek, up it to hot springs near Fern Lake, arriving there about noon. Leaving Corporal Ornes to make camp, Corporal Herb and myself left for Ponuntpa Springs to look for buffalo. Found numerous signs of buffalo all around the spring and on both sides of Sour Creek. Followed them down Sour Creek to where a hot creek came down from a hot mountain on the north side, which they went up, and a close examination of the trail which they made going west to Hot Creek (the trail was not made in single file, but band was spread out). I estimated the band as follows: 4 calves, 8 bulls, about 8 or 9 cows, but think some of the signs which I took for cow signs may have been made by two-year-old bulls; in all 21 head. Ponuntpa Springs is an ideal wintering place for the band which is there, as there is no snow to speak of on the flat, which is about a mile long and three-fourths wide, and is covered with hot springs and hot creeks. The snow on Mirror Plateau is about 5 feet. Mild and fair weather. Distance, about 12 miles.

February 20.—Returned to camp on East Fork as went up. Temperature, mild; weather, fair. Distance, 18 miles.

February 21.—Entire party with pack train left for station (Soda Butte). Saw a few elk, also numerous signs of lynx on Cache Creek and Calfee Creek. Distance, 13 miles. Weather, stormy; temperature, mild.

February 22.—Left Soda Butte for Yancey's on return to post. Saw about 1,000 elk. Weather, fair; temperature, mild.

February 23.—Left Yancey's for post. Saw about 450 elk. Weather, fair; temperature, mild. All the game seen on this trip was in excellent condition for this time of the year.

February 25.—Scout Whittaker and myself left the post to patrol north line and locate Brundage's camp, and see if he had elk meat in his possession. Found that he had left his camp, but could not locate him. Saw about 400 antelope on flat in

front of Gardiner; 3 blacktail deer on road to same place. Went from Gardiner to Brundage's camp on Eagle Creek, from there down Trail Creek to Horr, up Yellowstone River to Cinnabar, and thence by road to post. On the head of Trail Creek we saw James Forsyth and Frank Bezere with a wagon load of elk meat; followed the back trail, and found where they were killing, on Eagle Mountain, about $1\frac{1}{2}$ miles northwest of Gardiner. Weather, clear; temperature, mild. Distance, 25 miles.

February 26.—Scout Whittaker and myself left post to scout north line and meet train at Cinnabar. Saw 6 blacktail deer, 18 whitetail deer, about 400 antelope, and 4 elk. Weather, clear; temperature, mild. Distance, 17 miles.

[Scout Whittaker, 1898.]

February 23.—Left post with Private Martin and 2 pack mules, with grain for camp on McMahon Creek. After proceeding about 1 mile north of post I distinctly heard two shots fired near the north point of Sepulchre Mountain. I sent Private Martin on to camp, while I returned to post to inform Captain Erwin of the shooting I heard. Two men were detailed at once to go with me and see what had been done, or if anything had been killed. I took Sergeant Alexander and Private Lefler, of D Troop, and proceeded to the Government garden, where I met Sergeant Wall and Private Slough. I sent Sergeant Wall with Sergeant Alexander and Private Lefler and told him to put them on a hill above the Government Ice Lake, then come down where I was going to stop. I took Private Slough and patrolled along north line of the park to Gassert Creek, where I found the trail of a horse leading into the park; followed it, and saw where a man had dismounted from his horse and walked around awhile, then mounted his horse again and rode towards Cinnabar. I stayed out until 10 p. m., then returned to Sergeant Wall's camp. Sergeant Alexander returned to the post about 7.30 p. m. Saw about 300 elk near north point of Sepulchre Mountain; about 50 antelope on the Gardiner Flat. Weather, clear and warm.

February 24.—After packing up the mules I sent Private Martin to the post with them, while I took Private Slough and Sergeant Wall and patrolled the north line to Reese Creek. When I got to Cinnabar I was informed that Brundage was coming into Horr with a load of elk meat. Not knowing just what to do I sent Private Slough to the post with a letter to Captain Erwin for orders in this matter. About 7 p. m. I met Scout Morrison and Private Slough with orders from Captain Erwin to watch for Brundage and see if he had any meat in his possession. I sent Scout Morrison and Sergeant Wall to Trail Creek, while I watched the bridge at Gardiner. We stayed out until about 11 o'clock, but saw nothing of Brundage, and decided to return to the post. We arrived at the post about 12.30 p. m. Saw 14 elk back of Gassert ranch. Weather, clear and warm.

February 25.—Left post with Scout Morrison to make a trip to Eagle Creek and see if we could locate a band of 21 sheep, which were reported to have left the park. We saw nothing of them, but about 1 o'clock p. m. we came onto two men, Frank Bezere and James Forsyth, with a wagonload of elk meat, which had evidently just been killed. Frank Bezere asked us not to put him on the road for having the meat in his possession. We did not say anything, but went to Trail Creek, then to Horr, where we wired Captain Erwin about the meat we had seen. Then we proceeded to the post. Saw about 400 antelope at Gardiner, inside the park. Saw 6 deer near the post and 11 near the Government ice lake. Weather, clear and warm.

February 26.—Left post with Scout Morrison to patrol north line as far as Reese Creek. Went to Cinnabar. When train arrived, met Game Warden James F. Keown, who came up to arrest Bezere and Forsyth. He went to post to remain over night. We returned to post about 5 p. m. Saw about 350 antelope near Gardiner. Weather, clear and warm.

February 27.—Scout Morrison, State Game Warden James F. Keown, Sergeant Wall, Private Rompre, and myself left Fort Yellowstone to look for A. K. Crawford's camp and anybody that was violating the game laws. Mr. Keown and Scout Morrison went to Eagle Creek, while I took Private Rompre and Sergeant Wall and went down to Cedar Creek; scouted around there until about 4 p. m., then went to Cinnabar and remained over night. Mr. Keown and Scout Morrison returned to post. Saw 6 deer near the Government ice house; one had its front leg broken; I presume it was done while running. Weather, cloudy and warm.

February 28.—Received orders from Scout Morrison to meet himself and Mr. Keown at Gardiner with buckboard. We met there at about 9.30 a. m. After I saw Mr. Keown I told him I thought I could get him another case on Reese Creek if he could get along without me. He told me to go by all means and try to catch whoever was doing hunting at that place. I left Sergeant Wall and Private Rompre in his charge. After I got to Reese Creek I found the footprints of two men leading into the park, but could not find where they had done anything. I followed the tracks until about 3.30 p. m., when I saw the two men following a lot of elk trails that were there. I asked them if there was any game there. They said "Yes," but they could not find it. I started to go home, and after I went about 400 yards they started to follow

me out. I suppose they were going back to the coal banks where they were from. I returned to the post about 5.30 p. m., and reported all the doings of my trip to Captain Erwin. Weather, cloudy and warm.

March 1.—Remained at post. Weather, cloudy and warm.

March 2.—Received orders to go to Livingston with Scout Morrison, in response to a telegram from State game warden to Captain Erwin, the acting superintendent of the park, to give our testimony in the Frank Bezere elk-killing case, which case was set for 6 o'clock p. m. On our testimony the accused was held for next term of district court. Said court convenes some time in the month of April. Weather, clear and warm.

March 3.—Returned from Livingston to Fort Yellowstone with Scout Morrison and reported for duty. Weather, cloudy and cold.

March 4.—Reported to Captain Erwin, the acting superintendent of the park, at 9 a. m., and received orders to take two men and eight days rations and work in the Reese Creek district, and as far east as the Gardiner River. At about 2 p. m. left post with Privates Rompre and Martin of H Troop, and Private Slough of D Troop, and four pack mules. Proceeded about 7 miles north of post and pitched camp at the north point of Sepulchre Mountain. After making camp I sent Private Martin back to post with all the mules. Saw about 250 antelope near Gardiner City; also saw a herd of 11 horses about 1 mile south of north line. Weather, cloudy and stormy.

March 5.—Left camp with Privates Rompre and Slough and patrolled the north line as far as the Gassert ranch; then I sent Privates Slough and Rompre back to camp, via Cinnabar, with orders to come to Reese Creek if I did not return to camp by 4 p. m. After leaving them I went to the McMahon ranch, on Reese Creek, to see if anybody was up there hunting, but learned that nobody had gone up there since last Tuesday. On that day two men brought out 1 elk, could not tell just where it was killed or who the men were, but they belonged in Horr. Saw about 75 antelope between Gardiner and Chadbourne's ranch, just outside the park, but they came back in the park towards evening. Saw 1 large bull elk near our camp. Weather, clear and very warm.

March 6.—Left camp with Private Rompre to patrol the north line as far as Reese Creek, and stayed there until 8.30 p. m., then returned to camp. Sent Private Slough to patrol east as far as the Gardiner River. He saw about 200 antelope near Gardiner, but inside the park. I saw about 50 near the Chadbourne ranch, outside the park, but they returned toward evening. There has been nobody on Reese Creek since Thursday night. The snow is going very fast on this creek. Weather, clear and very warm.

March 7.—Left camp with Privates Rompre and Slough to round up a herd of 9 horses that have been running on the park and send them into the post. After I got them started I let Privates Rompre and Slough take them to the post, while I patrolled the north line to Reese Creek again. After I got to Reese Creek I went down to Horr to see if I could find out anything about "Scotty" Crawford or Brundage, but I did not succeed in getting any information of Brundage. But "Scotty" was in Horr last night; I was told that he had given up hunting for meat. I went back to Reese Creek and remained there until 5.30 p. m., when it began raining so hard that I decided to return to camp, there being no sign of anybody up there to-day. Privates Slough and Rompre report seeing about 250 antelope near Government ice lake; they saw 8 deer near our camp. I saw 13 back of the Gassert ranch—all blacktail. They must have just moved in there; it is the first time I have seen them there this winter. Weather, cloudy and warm; wind blowing and raining in afternoon.

March 8.—Left camp with Private Slough and patrolled along the line to the Gardiner River, thence back to camp. Remained in camp until about 6.30 p. m., then started down to lay at Reese Creek. When I got there found out that there had been nobody up there, yet I returned to camp about 11 p. m. While in Gardiner learned that Brundage had been there yesterday, but did not bring in any meat. He returned to his camp last night. I saw about 350 antelope near Gardiner, but inside the park. I saw about 50 last night when I was coming back to camp from Reese Creek, along the road between Gardiner and Cinnabar, just above the Chadbourne ranch, but nothing seems to molest them. About 2 inches of snow fell here last night. Weather, cloudy; cold wind blowing all day.

March 9.—Left camp with Private Rompre to make a patrol to Reese Creek. I sent Private Slough to patrol to McMahon Creek, on Mount Evarts. When I got to Cinnabar I wrote Captain Erwin, the acting superintendent of the park, a letter requesting that I be allowed to remain in camp until Sunday night; also wrote a letter in regard to "Scotty" Crawford, but later I learned the information was false and wired the same to Captain Erwin. Towards evening I went to Horr. I remained there until 5.30 p. m., then went up to Reese Creek. There was nobody up there. I layed along the Yellowstone River until about 7.30 p. m., then I went to Cinnabar

and remained there until 9 p. m., then returned to camp. While at Horr learned that Brundage had a contract to furnish elk meat to a certain party, for a debt he owes to said party, to the amount of 1,500 pounds. Also saw two men come in with guns and a rope which had blood on it. Don't know where they came from. Saw about 75 antelope near Gardiner, inside the park, 12 deer back of Gassert ranch. Private Slough saw about 100 antelope on the McMahon bench at north point of Mount Evarts. A. K. Crawford went up to Bear Gulch to-day. Weather, cloudy and cold; wind blowing.

March 10.—Sent Private Slough to Reese Creek while I took Private Rompre and went to the post to report to Captain Erwin and see if I could return to camp and remain until Sunday. My request was granted, and I took two days' rations and Private Martin, with one pack mule, and returned to camp at 5 o'clock p. m. Sent Private Martin back to post with the mule. I saw about 100 antelope near Gardiner, about 100 on Mount Evarts, 2 deer on Mount Evarts, 6 on the Government dump, 9 near the Government ice lake, all blacktails. Saw 10 mountain sheep on Mount Evarts, near McMahon coal bank. Weather, cloudy and cold; wind blowing. About 6.30 p. m. Private Slough and myself met "Scotty" Crawford's partner going towards Gardiner with one pack horse loaded with grub. He went up to Bear Gulch.

March 11.—Sent Privates Rompre and Slough to Reese Creek while I made a patrol to the Gardiner River, thence back to camp. I saw nothing on my trip, but Rompre reported seeing 1 large bull elk on Reese Creek with one hind leg broken. About 4 p. m. decided to go to the post and ask Captain Erwin to let Scout Morrison come down to-morrow and go with me to Eagle Creek and see where "Scotty" Crawford's partner had gone to. I left the post again at 7.15 p. m., and patrolled the road back as far as Chadbourne's ranch, then returned to camp. I saw 15 black-tail deer on river bed, just opposite the Boiling River, 9 white-tail deer near the Government ice house, 57 antelope on west slope of Mount Evarts, just opposite the Boiling River. Captain Erwin told me he would have Scout Morrison meet me to-morrow. Weather, stormy and cold.

March 12.—Sent Private Slough to make a patrol to Gardiner River, then return to camp. After he had returned to camp I sent him with Private Rompre to make a patrol to Reese Creek again, while I went to meet Scout Morrison. I met Scout Morrison about 10 a. m., and proceeded to Eagle Creek; saw nothing there and returned to camp. There I found Privates Rompre and Slough in camp; they reported nothing on Reese Creek. Scout Morrison and myself saw George Mack, of Gardiner, hunting along the north line of the park, about 500 yards west of Gardiner. When he saw us, he came back to the road again and back to Gardiner. We saw about 75 antelope on the east side of Gardiner River, on the Gardiner Flat. Scout Morrison said he saw a great many in the J. C. McCartney field. The 13 deer that were back of the Gassert ranch have moved back into the park and up near the ice lake. Weather, cloudy; temperature, mild.

March 13.—Started out from camp on foot with Private Rompre to watch a small band of antelope near the north line, about 400 yards west of Gardiner. I saw two men near the line. Both of them had guns and were evidently hunting. I watched them until they returned to Gardiner. One of them fired two shots, but I could not see where he had killed anything. One of them was George Mack, of Gardiner. I returned to camp about 12.30 p. m., and found Private Martin had just arrived with the pack mules. I packed them up and sent him back to the post with Private Slough about 1.30 p. m., then took Private Rompre and went to Reese Creek. There had been nobody up there since I made camp here. I returned to the post about 7.30 p. m., and reported everything to First Lieut. G. O. Cress, the commanding officer. I saw about 300 antelope near the road about 400 yards west of Gardiner and outside the park. I reported the fact to Lieutenant Cress, who detailed 2 men to patrol the line to-morrow morning. Also saw about 150 on east side of the Gardiner Flat. Weather, very cold and stormy. About 4 inches of snow fell in our camp last night and to-day.

March 14.—Left the post with Lieutenant Arnold and 17 privates to shovel out the Golden Gate. Did not have much trouble in getting to the Gate, and it only took about three hours to get through the Gate. For about one-half mile from the Glen Creek Bridge we had to shovel a great deal of snow. Then it was easy to get to the Klammer cabin. From there on saw about 100 elk in the vicinity of Swan Lake Flat. Weather, stormy and cold.

March 15.—Left post and went to Gardiner and overtook 2 men who were sent out early in the morning. I took Private Hoover and sent Private Newman to post; then went along the line to Reese Creek, then came back to Cinnabar; stayed there until about 5 p. m., then started for the post. Saw about 300 antelope near Gardiner inside the park. In the evening saw about 75 near the road outside the park. Saw 17 blacktail deer, 4 in Government garden, 14 near Boiling River. Weather, cloudy and cold; wind blowing.

March 16.—Left the post with First Lieut. G. O. Cress, the commanding officer, and

rode up to the McMahon ranche, on north point of Mount Evarts; thence over to Gardiner Flat, then over to the J. C. McCartney field, then to the post via Government garden. Saw 1 blacktail deer near the Government ice house, 1 whitetail deer at the crossing of the old road over the Gardiner River, about 25 antelope on the west slope of Mount Evarts, almost opposite the Boiling River, and between 150 and 175 in the vicinity of Gardiner Flats and about 50 near the J. C. McCartney field. Saw 8 mountain sheep on the bluff near the Eagle's Nest, 5 deer on the west slope of Mount Evarts, opposite the first bridge over the Gardiner River from post. Weather clear and warm. At the Government garden we saw a duck going down the river on its back, and landed on the opposite side of the river. I then went over and caught it and found it bleeding from the head. Saw some fresh beaver sign just below the first bridge over the Gardiner River north of the post.

March 17.—Left the post with Lieutenant Hawkins to make a patrol to Reese Creek, then back to the post. Saw about 150 antelope in the vicinity of Gardiner Flat and north point of Mount Evarts, and about 150 west of Gardiner, some outside the park and some inside. Saw 10 mountain sheep on Mount Evarts, 24 elk near Government ice lake. Mr. McMahon informed us that some meat had been taken out yesterday. Weather, clear in the a. m. and cloudy in the p. m.

March 18.—Remained in post. Weather cloudy.

March 19.—Left the post with Sergeant Alexander, of D Troop, and Private Boniface, of H Troop; proceeded 7 miles north of the post and went into camp in my old camp at the north point of Sepulchre Mountain for three days. Saw about 50 antelope above the Boiling River on the east side of the Gardiner River, 29 near the first bridge over the Gardiner River north of the post, 11 blacktail deer about the same place, 2 at the Government garden, 9 near the Government ice lake. Arrived in camp about 7.30 p. m. Weather, stormy and cold.

March 20.—In the morning I took Sergeant Alexander and went on top of a high hill so we could see everything that took place on the north line of the park, between Gardiner and Reese Creek. We saw nothing up to 12.30 o'clock p. m. and returned to camp and left for Reese Creek about 5.30 p. m. There had been nothing up there since my last trip, which was on the 17th instant. We saw 8 deer near the Gassert ranche. Saw about 50 antelope one-half mile west of Gardiner and about 500 yards north of the park line. We returned to camp about 8.30 p. m. Weather, cloudy and cold; wind blowing.

March 21.—Left camp on foot with Sergeant Alexander and went almost to the park line to look for the antelope, but owing to the inclement weather we could do nothing, so we returned to camp until about 4.30 p. m. We then took our horses and rode along the park line as far west as the Gassert ranch, but saw nothing, so we returned to camp. It was almost impossible to do anything on account of the intense cold. We saw 3 blacktail deer about 300 yards north of our camp; 10 elk about 700 yards east of camp; all inside the park. Weather, stormy and very cold.

March 22.—Left camp with Sergeant Alexander and patrolled the north line as far as Reese Creek, thence back to camp. We left camp about 3.30 p. m. and went to Fort Yellowstone. Saw nothing on Reese Creek. Game seen to-day, about 150 antelope about 400 yards north of the park line and about one-half mile west of Gardiner; 3 blacktail deer one-fourth mile north of our camp; 19 blacktail deer near the McMahon coal bank on north point of Mount Evarts; 6 near the Government ice house one-fourth mile north of the post; 25 elk about one-half mile east of our camp; about 300 elk on Mount Evarts near the McMahon coal bank. Arrived at post 6.30 p. m. Weather, clear; very cold at night and warm during the day.

March 23.—Left the post with Private Murphy, of D Troop, on snowshoes and went around Mount Evarts down Rescue Creek to Blacktail, thence back to post. Saw about 125 elk on east end of Mount Evarts; 6 mountain sheep same place. Weather, cloudy and cold.

March 24.—Left the post, mounted, about 10 a. m. to make patrol to Reese Creek, then back to post. Saw 3 men near the outlet of Gardiner River; think they were fishing, but could not swear to it. Saw about 125 antelope in the vicinity of Gardiner Flat; 52 on east side of Gardiner River, opposite Boiling River; 23 blacktail deer same place; also 8 near McMahon ranch on Reese Creek. Saw 14 mountain sheep on top of bluff at Eagle's Nest—7 ewes and 1 ram in one bunch and 6 ewes in the other. Saw about 300 elk near the head of McMahon Creek. Weather, clear and chinook wind blowing.

March 25.—Left post, mounted, with Private Palmer, of H Troop, to make patrol along north line to Reese Creek, thence back to the post. Left post 10.20 a. m., returned 4.10 p. m. Saw about 75 antelope on Gardiner Flat; 6 blacktail deer about 300 yards east of the post sawmill. Went to Reese Creek, but saw nothing there; the weather was too stormy to see very far off. Weather, stormy; light snow falling all day but not very cold.

March 26.—Left the post with Private Bledsoe, of D Troop. Went to the outlet of Gardiner River, then west along the park line to Reese Creek. At Gardiner I

found a fresh foot track leading into the park; followed it and found it to be Thomas Newcomb, but he had no arms with him. On the road to Gardiner I saw 4 mountain sheep at the Eagle's Nest. Saw about 75 antelope on the Gardiner Flat; about 150 400 yards west of Gardiner but inside the park; 13 blacktail deer near the Government ice house; 4 at the Government garden. Weather, stormy and cold.

March 27.—Remained in the post. Weather, clear; temperature, cold.

March 28.—Left the post to patrol to Reese Creek, but before I reached there I came across 2 footprints of men going towards the park and I decided to come up Reese Creek, then go back and follow the tracks. There was nobody on Reese Creek to-day. On my return I took up the trail of the 2 men. Had some difficulty in finding it once in a while, but I finally struck it where the snow was deep and found that there were 3 men instead of 2, and that they had gone about one-half mile into the park and there shot and killed 1 cow elk, and it looked as if they had wounded 2 others. They took the meat out last night. There were tracks of 2 men hunting along the line, but they did not get inside the park. I saw 7 mountain sheep at Eagle's Nest; 37 antelope on the west side of Gardiner River; about 75 at the junction of the Gardiner and Yellowstone rivers; about 250 1 mile west of Gardiner, and about 300 yards north of the park line saw 35 blacktail deer, between the Government ice lake and Gardiner River; 4 near the Eagle's Nest; 4 at the two-mile post north of the post; 6 whitetail at the Boiling River; 5 in the Government garden. Weather, clear; temperature, mild.

March 29.—Left the post with Lieutenant Lindsley; went to Gardiner City, then to Cinnabar, then to Horr, then back to where the elk were killed yesterday, then back to the post. Saw 42 elk on the north slope of Sepulchre Mountain, about 15 near the Gardiner ice lake; 3 blacktail deer near the Government garden; about 50 antelope on the Gardiner Flat on the north point of Mount Evarts. Weather, clear in the forenoon, cloudy in the afternoon; temperature, mild.

March 30.—Left the post with Scout Morrison, on skis, and proceeded to Norris. Saw no game. At Willow Park we met Corporal Moore, Private Root, and Private Fremont coming in off pass. Weather, cloudy; temperature, mild.

March 31 (12 miles).—Left Norris with Scout Morrison and proceeded to Canyon Hotel. Saw no game on trip to-day. Weather, clear; temperature, mild.

April 1.—Left Canyon Hotel with Scout Morrison and proceeded to Lake Hotel. We took lunch at Mud Geyser Station. Took Privates Price and Canivan with us from there to Lake Hotel, intending to take them to the Thumb, but when we arrived at the Lake we found Sergeant Leob and two privates from Snake River Station. Scout Morrison and myself then decided to make up our trips from here. I am to take Privates Price and Canivan from Mud Geyser and Private Montgomery of Snake River Station, and go up the Upper Yellowstone River, then to Snake River Station, while he would take Sergeant Leob and Private Carter, and we would meet at that place. Saw 2 foxes and 1 coyote in Hayden Valley. Weather, clear; temperature, mild.

April 2.—Left Lake Hotel with Private Montgomery, of the Snake River Station, Privates Canivan and Price, of Mud Geyser Station, and proceeded to Beaverdam Creek. We went from Lake Hotel straight across the Yellowstone Lake to the lean-to on Beaverdam. The lean-to is filled up with gravel and snow so we could not stay in it, but had to camp in the woods near by. At Terrace Point we saw 14 elk and numerous signs of others. Saw 5 dead elk—last spring calves. Saw what I took to be two moose tracks near the east end of the lake on the mouth of Beaverdam Creek. Saw one fresh bear track which was made to-day along Beaverdam Creek. Have seen no signs of beaver at this place yet. Saw no signs of any poaching having been done. Will venture to say there are between 150 and 200 elk between Terrace Point and Beaverdam Creek. Weather, clear; temperature, warm.

April 3.—Same party left Beaverdam Creek and proceeded to the old Crawford cabin near Atlantic Creek. Camped there over night. There was a lynx at the cabin which had killed something and dragged it to the cabin. I think he had killed a lot of jack rabbits or else another lynx and eaten it up there at the cabin. There has been nobody at the cabin since the rations were put there, nor has there been any poaching done in that district this winter. At least there are no signs of any having been done. Saw 13 bull elk near the outlet of Mountain Creek; also saw signs of 6 moose between Beaverdam Creek and Mountain Creek. The Upper Yellowstone River is open in some places. From Mountain Creek to Crawford cabin there is no sign of game of any kind. The snow is too deep to permit any animal to live in it. Weather, clear and warm. Twenty miles.

April 4.—The same party left Crawford Cabin and proceeded to the gold mines on Pacific Creek. Went up Atlantic Creek and down Pacific Creek. We saw no sign of any game until we got to Coral Creek; there we saw one fresh bear track. The snow will average 7 or 8 feet in depth in that country. Weather, clear; temperature, hot. Twenty-one miles.

April 5.—Same party left gold mines on Pacific Creek and proceeded to Snake River Station. Saw no game of any kind. Left gold mines at 8 a. m.; arrived at station at 7.30 p. m. All the game I have seen is in very good condition; I don't think they will have any trouble in getting through the rest of the winter. Weather, clear and warm.

April 6.—Same party remained at the Snake River Station to wait for Scout Morrison and party to return from the Falls River country. Weather, clear and warm, but very stormy towards evening.

April 7.—Party still remaining at station, waiting for Scout Morrison and party. Scout Morrison and party returned from Falls River country to-day. Weather, very stormy, but not cold.

April 8.—Remained at Snake River Station. Weather, cloudy; temperature, warm.

April 9.—Left Snake River Station with Scout Morrison, Sergeant Leob and Private Carter of Snake River Station, and Privates Canivan and Price of Mud Geyser Station, and proceeded to Shoshone Geyser Basin. Camped near the Union Geyser. Saw signs of 6 or 7 elk on Polecat Creek. Weather, clear; temperature, warm. Thirty miles.

April 10.—Same party left Shoshone Geyser Basin and proceeded to Upper Geyser Basin lunch station via Lone Star Geyser. Left camp 4.40 a. m.; arrived Upper Basin 8.30 a. m. Saw no sign of any large game. Saw no sign of anybody having been in that country this winter. Saw one pine marten at Upper Basin. Weather, cloudy; temperature, warm.

April 11.—Same party left Upper Geyser Basin and proceeded to Lower Geyser Basin or Fountain Hotel. Five miles from Upper Basin, on the road to the Fountain Hotel, we saw a trail across the road, and, to the best of my knowledge, it was a trail made by buffalo, but could not tell how many of them had made the trail, it being about three or four days old. I think they were going north; there were at least 3 of them on the trail. Toward Mary's Mountain there are a great many elk signs between the Excelsior Geyser and the Fountain Station. There is a great deal of bare ground between the Upper and Lower Basins and snow is very soft. We had to wade about one-half of the way. We went to the station and remained over night with Corporal Holman. Weather, clear; temperature, mild. Ten miles.

April 12.—Left Fountain Station with Scout Morrison, Sergeant Leob, and Private Carter of Snake River, and proceeded to Norris Station. Stayed there over night. There is about 6 miles of bare ground between Fountain and Norris Basin. Saw a few elk sign in Gibbon Canyon. Privates Canivan and Price left me at Fountain Station to go back to their station at Mud Geyser; they will go over Mary's Mountain and through the Hayden Valley. We arrived at Norris about 8.30 a. m. Weather, clear; temperature, warm. Twenty miles.

April 13.—Same party left Norris and proceeded to Fort Yellowstone. Left Norris at 3 a. m.; arrived at post at 8.10 a. m. Saw no game on road. The snow is going very fast. This entire trip from March 30 to the present day has been made on skis and covers a distance of about 235 miles in all. All the game I have seen is in very good condition. The rations in the Beaverdam and Crawford cabins are in bad condition, except the coffee. The mice and rats have got into the boxes and have eaten up some of them, and what they did not eat they have spoiled. Private Price of the Mud Geyser Station is a very good man to have on such a trip. Private Montgomery went snow-blind at the Crawford cabin and could hardly get to Snake River Station. We had to walk into the post from Golden Gate. Weather, clear; temperature, warm. Twenty miles.

April 14.—Left the post with Scout Morrison, mounted and went to Cinnabar, then back to the post. Saw 36 blacktail deer near the Boiling River; 30 antelope—22 opposite the Boiling River, 8 on the Gardiner Flat. Saw a fire burning about 300 yards north of the park line near the Gardiner Ice Lake. Weather, clear and warm.

April 15.—Left post, mounted, and went around Mount Everts to try and locate the mountain sheep. Saw 7 near the coal bank, 4 on Turkey Pen, 4 on east end of Mount Everts. Saw 65 blacktail deer—7 about 200 yards east of post hospital, 4 on McMahon Creek, 10 on Turkey Pen road, 1 on Red Mountain, 10 on Cooke City road on East Gardiner River, 21 on west slope of Mount Everts, about 600 yards east of Boiling River, 12 opposite the Boiling River. Saw 67 antelope on Turkey Pen road, 27 near the coal banks, 19 opposite Boiling River; 5 bull elk at the top of the Gardiner grade. Weather, clear; temperature, hot.

April 16.—Left post, mounted, and went over old road to Reese Creek. Saw 11 mountain sheep on top of Mount Everts, about 150 antelope on the Gardiner Flat, 7 whitetail deer 1 mile west of Gardiner and about 300 yards north of park line. Weather, cloudy and rainy at Cinnabar; temperature, mild.

April 17.—Remained in post. Weather, cloudy; temperature, warm.

April 18.—Remained in post. Reached pack mules in the forenoon. Weather, clear and warm.

April 19.—Remained in the post. Weather, clear; temperature, warm.

April 20.—Went to Livingston, Mont., with Scout Morrison, on the case of Frank Bezere for killing elk, to give our testimony in said case. Weather, rainy; temperature, cold at Cinnabar.

April 21.—Attended court in Livingston, Mont., to give testimony against Frank Bezere, defendant; he was found "not guilty." Weather, cloudy; temperature, warm.

April 22.—Returned from Livingston, Mont., to Fort Yellowstone and reported for duty to the commanding officer. Arrived at post at 2.45 p. m. At 5.45 p. m., left post with Sergeant Welch and 2 pack mules and went to Gardiner to get some Tom Moore pack saddles; returned to post at 9 p. m. Saw 14 blacktail deer between Boiling River and the Government ice house. Saw 4 mountain sheep at Eagle's Nest, about 150 antelope on the Gardiner Flat. Weather, cloudy and rainy in Gardiner and Cinnabar; temperature, mild.

April 23.—Left the post, mounted, with Sergeant Welch, Private Hemstead and Private Holt of H Troop, and 4 pack mules and 2 lead horses, and proceeded to Norris Station. We left post at 9.45 a. m., arrived at Crystal Spring 1.15 p. m. Left Crystal Spring at 2.10 p. m., arrived at Norris 5 p. m. We made the trip in about six hours travel, which was remarkably good time, this being the first mounted party to make the trip this spring. There was about 5 miles of pretty deep snow, but it was so soft that a horse could pass right through it without much trouble; the rest was easy traveling. Private Helm met us at Bijah Spring. We saw several bear tracks on the road between Twin Lakes and Norris. Weather, clear; temperature, hot.

April 24.—Left Norris, mounted, with Private Hemstead and 2 pack mules and went to the Riverside Station. There was not a great deal of snow on the road in the 26 miles we traveled. We did not go through more than 4 miles of snow, and it was so soft that it was just like going through so much water. The ground is very soft in some places. There is some fallen timber and a great many rocks in the road in Gibbon Canyon; in fact, the road is in very bad condition for a team to get over them before they are repaired. Saw about 50 elk at the forks of the Gibbon and Firehole rivers, 3 fresh bear tracks in Gibbon Canyon, several in Madison Canyon. From Norris Sergeant Welch and Private Holt took 2 mules and returned to the post. I wired the Fountain men to meet me at the forks of the road and take their led horse to their place until I came back from Riverside. I met Corporal Holman in the Madison Canyon going to his station. Weather, clear; temperature, very hot, and does not freeze any at night.

April 25.—Left station with Sergeant Bernstein, mounted, and rode north to Maple Creek, then returned to station. Saw some fresh elk sign in the fallen timber close to Maple Creek. Sergeant Bernstein showed me where 3 elk were killed last December. They were inside the park about 8 miles north of the station, or 1 mile west of north. Sent Private Norvell and Private Will into the post from here, so that they would not have to go to the Fountain. Decided to hold Private Ornes and the mules over to-day; the stock was a little tired. There is no snow to speak of around here or Sand Butte, but the ground is very soft and a horse mires down very easy. It would be very hard for any poacher to get into the park just now. Weather, clear; temperature, hot.

April 26.—Left Riverside Station with Sergeant Bernstein, Private Ornes, and Private Hemstead, and went to Fountain Station. At the forks of the road, I sent Private Hemstead to Norris. Saw a great many fresh elk tracks in Gibbon Canyon. The roads are drying up very fast. There is no snow around this place. Weather, clear; temperature, hot; high wind blowing.

April 27.—When I got up this morning I found my horse and the 2 mules gone; began to look for them and found they had gone to Norris. I saddled up Private Ornes's horse and went after them. It was 11.30 a. m. before I got to Norris. I started back at 1 p. m.; arrived here at 5.10 p. m. I sent Privates Burdette and Stitham on their way to the post and told them to take Private Hemstead with them when they left Norris and I would take Private Ornes and go clear through to the post to-morrow with the pack mules. The wind storm of yesterday did a great deal of damage in the Gibbon Canyon to the telephone line. It is broken in about 25 places and down for about one-half mile in some places and there are at least 100 fallen trees across the road, and the most of them will have to be cut out before a wagon can get through. In my orders for this trip, I was ordered to take Corporal Holman from the Fountain and make a trip on skis up to Bear Parks, stay there over night, and next day go out as far as possible and return to cabin again. Not being able to make the trip at present on account of sickness, I decided to go to the post and report the fact to Lieutenant Lindsley. I could not get any message over the telephone because the wires were down. There has been a band of elk come up the road from the Madison Canyon to the Twin Buttes. There are about 500 elk in this vicinity. One fresh beaver sign in Nez Perce Creek about 2 miles above the station. Weather, clear; temperature, hot. Distance, 40 miles.

April 28.—Left station with Private Ornes and Private Sybert, mounted, with 2 mules and proceeded to Fort Yellowstone. Left Fountain at 7.30 a. m.; stopped at Norris for dinner; left Norris at 1.30 p. m. Saw where 2 elk crossed the road at Crystal Spring, 2 at Obsidian Cliff; several fresh beaver signs in the road between the Fountain and Crystal Spring; 4 Elk on Swan Lake flat. The telephone wire is down very badly all around the park. Very little snow between Norris and the post. Weather, cloudy; temperature, warm.

April 29.—Remained in the post. Weather, cloudy; temperature, mild.

April 30.—Remained in the post on account of sickness. Cloudy, snowing a little; temperature, cold.

May 1.—Remained in the post on account of sickness. Weather, cloudy; temperature, cold.

May 2.—Left post, mounted, with Scout Morrison and made patrol to J. S. Knowles' cabin on the Yellowstone River. Saw about 300 elk near Blacktail Creek; 8 blacktail deer near the outlet of the creek; 5 antelope same place. The beaver on Lava Creek are not working any this spring—at least there are no signs of any work. The beaver in Blacktail Creek are doing some great work at present. They are building some fine dams on the creek, about 1 mile from its outlet. Weather, cloudy; temperature, cold.

May 3.—Left J. S. Knowles' cabin with Scout Morrison and returned to the post. Saw some signs of people fishing on the Yellowstone River above Mr. Knowles' place. They come up from Gardiner and camp over night in an old cabin near Knowles' place and fish from there. We saw 1 man fishing on the river on the east side, opposite mouth of Blacktail Creek; his name was Mike O'Brien, from Gardiner City. Saw 3 dead elk, last spring calves, near the Blacktail ford. Saw about 200 elk on Blacktail; 2 antelope same place. I saw 2 and Morrison saw 6 mountain sheep near mouth of Blacktail. Weather, cloudy and cold.

May 4.—Remained in the post, owing to sickness. Weather, cloudy; temperature, cold.

May 5.—Left post with Scout Morrison, mounted, to make a patrol to headwaters of the Gardiner River and Indian Creek, but could not get there on account of deep snow. Saw about 30 elk near Mr. Klammer's slaughterhouse on Swan Lake Flat. Weather, cloudy; temperature, cool.

May 6.—Left post, mounted, with Scout Morrison and 2 pack mules to make patrol to Hellroaring Creek. Camped at the mouth of Cottonwood Creek. Saw 2 men fishing on the Yellowstone River; they had about 30 pounds of fish between them. Saw quite a number of elk in the vicinity of Blacktail Creek. Saw 10 blacktail deer on the Cooke City road along the Gardiner grade. Met Lieutenant Lindsley with pack train at Blacktail Creek on his return to post from Soda Butte Station. Weather, cloudy; temperature, mild.

May 7.—Left camp on Cottonwood Creek and rode over to Hellroaring Creek. Saw 4 whitetail deer and 4 blacktail between Cottonwood and Hellroaring creeks. Found 2 dead bull elks that died this spring, and 7 that I believe were killed for their teeth alone; but they were killed last year if they were killed at all. Weather, clear; temperature, mild.

May 8.—Left camp and returned to the post. Saw about 25 elk on Blacktail Creek; 1 antelope same place; 10 blacktail deer on the Gardiner grade on Cooke City road. The Yellowstone River is very high at present; will be hard to ford from now on. Weather, clear; temperature, warm.

May 9.—Left post, mounted, and went to Gardiner City to get some pack saddles. Returned to post at 7 p. m. Saw 11 mountain sheep on Mount Evarts, opposite Boiling River; 1 at the Eagle's Nest. Weather, clear; temperature, warm.

May 10.—Remained in the post to fix up the pack-train outfit for use. Weather, cloudy; temperature, warm.

May 11.—Remained in the post to work on the pack train. Weather, clear; temperature, warm.

May 12.—Remained in the post on account of sickness. Weather, clear; temperature, warm.

May 13.—Left the post with Mr. A. E. Burns to make patrol on Reese Creek. Mr. McMahon informed me that A. K. Crawford was up on Reese Creek last Sunday. We followed up the creek and saw where somebody had gone up into the park, but they came out again. I presume they were trying to get into the park. We saw 5 deer near the Boiling River. Weather, clear; temperature, warm.

May 14.—Left post, mounted, with A. E. Burns and 1 pack mule, and proceeded to the headwaters of Glen Creek; camped there over night. Saw 6 elk on the west slope of Sepulchre Mountain. Weather, clear; temperature, warm.

May 15.—Left camp on Glen Creek, and went to head of Reese Creek, down said creek to the McMahon ranch, then to the Gassert ranch, then along the foot of Sepulchre Mountain to the post. Saw 13 deer at the old brickyard on the old Gardiner road, 3 near the Transportation barn. Weather, cloudy; hard rain falling around

Electric Peak. There are quite a number of bear signs and fresh elk signs also. There are about 25 head of cattle and a few horses running on the park southwest of Gardiner City. There has been nobody through the Electric Peak Pass yet, but there are some fresh horse tracks along the park line on Reese Creek.

May 16.—Remained in the post on account of sickness. Weather, cloudy and rainy; temperature, cool.

May 17.—Went to Gardiner and returned to the post; saw 3 deer near the old brickyard; intended to start for Yancey's in the afternoon, but the weather was bad, so received orders to wait until morning. Weather, cloudy and rainy; temperature, mild.

May 18.—Left post with A. E. Burns, mounted, and 3 pack mules, and proceeded to Yancey's Hotel; saw 2 deer on the new Cooke City road, 4 near the halfway place; 4 in the Devils Gut, 4 antelope near the Blacktail Creek; also a great many elk scattered along the road to Yancey's—at least 400 of them. The beaver in the Blacktail Creek have not been molested this spring and they are doing a great deal of work all along the creek. In the vicinity of Yancey's place the beaver are increasing very rapidly; all the small creeks have beaver in them now; they are doing a great deal of work at present and have not been molested by anyone. Weather, cloudy and rainy; temperature, mild.

May 19.—Remained at Yancey's owing to the inclement weather; also to prospect the beaver dams in all the creeks around here; found them all in good condition and beaver doing a great deal of work on them; saw 25 elk near the hot spring, 2 miles southeast of Yancey's. Weather, cloudy; drizzling rain all day; temperature, mild.

May 20.—Left Yancey's and proceeded to Soda Butte; saw about 3,000 elk between Yancey's and Soda Butte, 37 antelope between Junction Butte and Little Specimen Creek, 17 deer near the Junction Butte. The beaver are doing a great deal of work in the streams around this district. Weather, cloudy and very stormy; temperature, cold.

May 21.—I remained at the station while Burns went up to Death Gulch and Cache Creek. Private Edwards went to Hellroaring Creek; Herb went with Burns. Privates Root, McDonald, and Palmer arrived to-day to relieve the present detachment. Herb and Burns report 11 dead bear in Death Gulch. Weather, cloudy; temperature, mild.

May 22.—Left station with A. E. Burns and went to J. S. Knowles' cabin on Crevasse Creek. Private Hardin and Private McDonald left station ahead of me to meet Private Edwards on Slough Creek; we met them all at that place. Slough Creek and Hellroaring Creek are up pretty high, but we had no difficulty in crossing them. On our way down the river I saw a man fishing along the bank, about 150 yards above the ford; did not say anything to him, but came down to the old cabin below Knowles' place, and there I found a man camped. I asked him what he was doing and he said himself and 2 other men were fishing. I went into the cabin and found about 20 pounds of fish hanging up in a secluded place. Everything looked rather suspicious to me; the man at the cabin said the other two were out fishing; but I saw 2 poles and 2 sacks at the cabin, and I concluded he was not telling the truth about the matter. I had come down the river myself and saw but one man, while the other ones were not there, as he had told me. They had been here three days—two of them—while the third one had come up last night. I told them they would have to stop fishing and return to Gardiner. They leave to-morrow morning. Saw about 2,500 elk between Soda Butte and Cotton Creek; 2 deer and 7 antelope on Slough Creek. Weather, cloudy; hard rain in the evening; temperature, mild.

May 23.—Left camp at J. S. Knowles', and proceeded to Fort Yellowstone. Before leaving camp, I went down to see if the 3 men who were fishing had left their cabin; found they had gone. When we went through Gardiner, I saw them there. Saw no game. Weather, cloudy and raining hard part of the day; temperature, cold.

May 24.—Remained in the post until 3 p. m., then took Private Kelner and 1 pack mule and went to J. S. Knowles' cabin on Crevasse Creek with order from the commanding officer and Acting Superintendent of the park to destroy all the cabins around Knowles' place. I burned 4 of them; 1 belonged to Tom Miner, 1 to Charles White, 1 to David Borem, and 1 to J. S. Knowles. I moved everything out before setting them on fire. Saw quite a number of grouse on Crevasse Mountain. John Ballinger is camped about one-half mile from the park line; saw where he had been in the park on foot on Crevasse Mountain. Weather, cloudy; temperature, cool.

May 25.—Left Knowles' to return to the post. Before leaving I looked at all the cabins that had been burned to see that there was no danger of fire spreading; found them all about out. The Yellowstone River is very high and muddy. Saw 1 deer, 1 mile north of the post. Weather, cloudy; temperature, cool.

May 26.—Left post and went to H. E. Klammer's slaughterhouse and stayed there over night. Weather, cloudy; temperature, cold.

May 27.—Left slaughterhouse and rode up almost to the pocket on Fawn Creek.

The beaver have not done any work on this creek this spring. Three dams have been torn out, but it has been done a year or two ago. Saw about 300 elk on Fawn Creek and 27 on the Gardiner River. The beaver in Gardiner River are doing some work; but, owing to the high water, it is hard to tell how many there are in the district. Weather, clear; temperature, mild.

May 28.—Left post with Private Williams, of D Troop, and returned to the Gardiner River, then up Indian Creek to the foot of Bighorn Pass. The beaver are doing some work at present and have not been molested this spring, or up to the present time. There are about 500 elk near the headwaters of Indian Creek, 57 on Panther Creek, and 7 on Gardiner River. Left post at 7.45 a. m., returned at 3.30 p. m. Weather, cloudy; raining part of the day, and very cold.

May 29.—Remained in the post. Weather, cloudy; temperature, cool.

May 30.—Left post and went to Gardiner and Cinnabar. Returned to post this afternoon; went down to gather information. Weather, cloudy, stormy, and cold.

May 31.—Owing to no appropriation being made, I was laid off; this is the end of my scouting duty.

[James G. Morrison.]

March 26, 1898.—Remained at post. Weather, stormy; temperature, mild.

March 27.—Remained at post. Weather, clear; temperature, cold.

March 28.—Remained at post. Weather, clear; temperature, mild.

March 29.—Remained at post. Weather, clear; temperature, mild.

March 30.—Scout Whittaker and myself left post for Snake River Station. Stopped at Norris over night. Weather, cloudy; temperature, mild.

March 31.—Left Norris for Canyon. Weather, clear; temperature, mild.

April 1.—Went to the lake from Canyon, stopping at Mud Geyser for luncheon, and taking Privates Price and Canivan with us. Met Sergeant Leob, Privates Carter and Montgomery, from Snake River, at lake. Saw about 50 swan, 4 foxes, 2 coyotes. Weather, clear; temperature, mild. Distance, 17 miles.

April 2.—Scout Whittaker, Privates Canivan, Price, and Montgomery left Lake Hotel for Beaverdam cabin. Myself, Sergeant Leob, and Private Carter left Lake Hotel for Snake River Station; stopped over night at Thumb. Weather, clear in the forenoon, cloudy in the afternoon, and a little rain in evening; temperature, mild. Distance, 15 miles.

April 3.—Left Thumb for Snake River Station. Stopped at Lewis River cabin for lunch. Saw signs of 1 elk at Thumb and sign of a moose on Warm Spring Creek, about 2½ miles from Snake River Station. Weather, cloudy; temperature, mild. Distance, 27 miles.

April 4.—Stayed at Snake River Station. Weather, clear; temperature, mild.

April 5.—Privates Carter, Wharam, and myself left station. Went to Grassy Lake on road that leads to Falls River. Left the road there, turning southwest, coming out in Falls River Basin between Loon Lake and a lake about 2½ miles south of it, on a creek which has no name. Continued southwest about 3 miles and made a camp. Left Private Wharam in camp and went with Private Carter about 3 miles, coming out in a large flat, which extends northeast and southwest. On southwest end of flat we saw a shack which we went to and found a log house about 20 by 30 feet. Northwest of house is a log stable about 20 by 50 feet, alongside of which are two large haystacks. South of the house and stable about one-half mile are three stacks more. I believe these are all in the timber reserve about 1½ miles. There were no signs of anyone having been there or around there this winter. The streams in this country are all open, but saw no signs of beaver. Saw 2 mountain lion tracks. After finding cabins and hay Carter and myself returned to camp. Weather, clear; temperature, mild. Distance, 28 miles.

April 6.—Left camp, traveling northwest, striking Falls River near junction of Bechler River; thence up Falls River to Mountain Ash Creek, crossing the river, and up Mountain Ash Creek to cabin on same. Saw fresh signs of moose on Falls River near where we struck it; also fresh sign on Mountain Ash Creek, near cabin. Weather, clear in a. m., cloudy in p. m., snow in evening; temperature, mild. Distance, 22 miles.

April 7.—Left cabin on Mountain Ask Creek for Snake River Station; on arriving there found Scout Whittaker awaiting me with his detachment, having come from Upper Yellowstone. Saw signs of beaver in Proposition Creek. Weather, cloudy and snow; temperature, mild. Distance, 18 miles.

April 8.—Stayed at Snake River Station. Weather, stormy; temperature, mild.

April 9.—Sergeant Leob, Scout Whittaker, Privates Carter, Canivan, and Price, and myself left station, going over Pitchstone Plateau to Shoshone Geyser Basin. In going up Pole Cat Creek saw signs of 6 or 7 elk; sign of 1 in geyser basin. Weather, clear; temperature, mild. Distance, 30 miles.

April 10.—Same party left Shoshone Geyser Basin, going up Shoshone Creek about 3 miles; thence across to Firehole River, down it to Lone Star, there to road and to

Upper Basin. Saw signs of large game to-day. Weather, clear in forenoon, cloudy in afternoon; temperature, mild. Distance, 15 miles.

April 11.—Same party left Upper Basin, went to Fountain, walking about one-third of the way. Saw trail across road about 4 miles from Upper Basin of buffalo. I think there were 3 of them, but trail was about four days' old and in deep snow, and the number may not be accurate. Many signs of elk between Upper Basin and Fountain. Weather, clear; temperature, mild. Distance, 10 miles.

April 12.—Same party left Fountain for Norris. Saw signs of about 10 elk in Gibbon Canyon. Weather, clear; temperature, mild. Distance, 18 miles.

April 13.—Same party left Norris for Springs. Saw signs of beaver working on Willow Creek. Weather, clear; temperature, mild. Distance, 20 miles.

April 14.—Went to Cinnabar, Mont., to serve subpoenas on James Hawk and Frank Scott. Weather, clear; temperature, mild.

April 15.—Left post for station on Swan Lake Flat. Weather, clear; temperature, mild. Distance, 5 miles.

April 16.—Sergeant Welch, Private Holt, and myself left station, going west on Gardiner River, down it to mouth of Indian Creek, back to station along ridge east of river. The river is open in many places. Some signs of beaver working. Weather, clear; temperature, mild. Distance, 12 miles.

April 17.—Sergeant Welch, Private Holt, and myself left station, going west to Gardiner River, up it about 3 miles, then west across ridge to Fawn Creek, down it to mouth, back to station along ridge east of river. The river is open in many places and much sign of beaver work, one very large dam having been built this spring. Saw 29 elk near mouth of Fawn Creek. Weather, cloudy and snow; temperature, mild. Distance, 19 miles. Left station for post in evening.

April 18.—Remained at post. Weather, clear; temperature, mild.

May 3.—Scout Whittaker and myself left post, going out Cooke City road to Turkey Pen trail, down Blacktail Creek to Yellowstone River, crossing at ford, thence down river to Knowles place, stopping there over night. Examined beaver dams on Blacktail and found them undisturbed. Saw about 350 elk, 8 blacktail, 2 antelope on or near Blacktail. Weather, cloudy; temperature, cold; distance, 14 miles. We left Knowles, going up river to ford. Saw Mike O'Brien near ford fishing. He said he came from Gardiner this a. m. Crossed river, thence up Blacktail Creek to road, and thence to post. Saw about 200 elk, 2 antelope, 2 coyotes, 3 blacktail deer. Weather, cloudy; temperature, cold. Distance, 14 miles.

May 4.—Went part way to Gardiner and back to post on bicycle. Weather, cloudy; temperature, cold.

June 21.—Left post with Private Price for Gallatin; went up Fawn Creek through Fawn Pass; about 3 feet of snow in pass; camped on Gallatin River north of Crow-foot Ridge. Saw 12 elk near head of Fawn Creek; fresh signs of beaver on Fawn Creek opposite pocket. Distance, about 21 miles; weather, clear and warm.

June 22.—Left camp on Gallatin, going down it to where it turns north, then back northeast to head of Stellaria Creek, down to its mouth, and then down Fan Creek to mouth of it, camping on Gallatin River. Saw 1 cow elk on Stellaria Creek; no signs of beaver on any of the streams. Nobody has been in this country this spring. Weather, cloudy and warm. Distance, 14 miles.

June 23.—Leaving the camp on Gallatin, went down the river about 2 miles, when we struck fresh trail of three horses coming up and going back again. Followed trail about 2 miles down Gallatin; there it turned up a small creek coming in from the west; up it about one-half mile found a man in camp, Haskell by name, who had located a mining claim. He is camped about on or near park line (west). Had no horses; said his partner, Curtis, who lives on Gallatin about 3 miles outside of park, had gone to Bozeman for more provisions. Says he has been at his present camp since April 25. Showed us where the cabin was, and I think about one-half of it is in the park. Saw no sign of him doing any trapping or hunting; he had no gun, but plenty of picks and shovels. He is prospecting for George Alderson, of Bozeman. On the 15th he saw 2 men with 2 pack horses and 1 pack mule going up the Gallatin River. Says his partner, Curtis, told him it was "Scotty" and another man from Horr. I followed the trail he showed me up the Gallatin to near the mouth of Fan Creek; there it turned east. Will continue on trail up Fan Creek to-morrow. Saw 1 fish otter in Gallatin River near mouth of Baconrind Creek; while watching him he caught 2 fish. Distance, 17 miles. Weather, cloudy and rainy.

June 24.—Left camp on Gallatin, going up Fan Creek. Saw no signs of trail until I got up about 3 miles, then saw some trail had been made on Gallatin. It made for the pass between Fan Creek and Sportsmans Lake; followed it down Mulharen Creek to park line. Saw signs of fishing in lake. Saw no game to-day. Camped about on north line of park. Weather, cloudy and rainy. Distance, 15 miles.

June 25.—Left post with Privates Wigman and Canivan. Went to Yancey's. Saw no game. Weather, cloudy and rainy. Distance, 20 miles.

July 1.—Left Yancey's, going across bridge of Yellowstone. Camped on river. Saw 9 antelope. Weather, clear. Distance, 8 miles.

July 2.—Left camp on Yellowstone River, going up point of Specimen Ridge and along it to head of Deep Creek. Camped on head of Deep Creek. Saw 29 antelope and 1 elk. Weather, clear. Distance, 18 miles.

July 3.—The 3 pack mules took back trail to Yancey's, Wigman and myself following them, and got them at Yancey's. Stayed there over night, Canivan staying in camp. Saw about 50 antelope on Specimen Ridge. Weather, clear. Distance, 26 miles.

July 4.—Wigman and myself returned to camp on head of Deep Creek. Saw about the same antelope as on 3d. Weather, clear. Distance, 26 miles.

July 5.—Broke camp on Deep Creek, going over Mirror Plateau, crossing head of Opal Creek, then to Timothy, then over to head of Pelican Creek. Camped there. Saw no sign of buffalo. Saw about 5 cow elk with calf and 7 bulls. Distance, 17 miles. Weather, clear.

July 6.—Left the camp on head of Pelican Creek, went west to a small creek that flows into Broad Creek, down it to near its mouth, thence down Broad Creek about 2 miles, thence northeast to hot springs on Shallow Creek, up Shallow Creek to Wapiti Lake, thence east to camp. Saw signs of 3 buffalo (fresh), 2 on the small creek that flows into Broad Creek and one at Wapiti Lake. Saw 15 elk, all cows. Weather, clear. Distance, 15 miles.

July 7.—Left camp on head of Pelican Creek, went down it about 5 miles and made camp. In the afternoon went over to Fern Lake, around it to head of Sour Creek, down it, then followed fresh buffalo trail over ridge to Broad Creek, up it to Fern Lake and on to Tern Lake, from there to camp. Saw one buffalo; jumped 5 buffalo near ford of Broad Creek, following them to Fern Lake, where we saw the one, an old bull, on one of the heads of Sour Creek. Around Ponuntpa Springs there were fresh signs of the band I saw there last winter. I think there are 30 buffalo in this country we came through. Saw about 100 elk. Weather, cloudy and rainy. Distance, 20 miles.

July 8.—Moved camp to Growler, on Plateau Creek. Leaving camp, went up East Fork of Pelican. Saw where 5 or 6 buffalo wintered near forks of Pelican Creek, but no fresh signs. Saw about 150 elk. Weather, clear. Distance, 14 miles.

July 9.—Broke camp and continued down Pelican Creek to the Yellowstone Lake; camped on lake shore about 1 mile from Lake Station. Saw about 100 elk on Pelican, mostly cows with calves, and 16 sand-hill cranes. Weather, clear. Distance, 16 miles.

July 10.—Left camp, going down the Yellowstone River to Canyon; camping there. Saw a black bear on north side of river. Weather, clear. Distance, 18 miles.

July 11.—Went to Norris. Weather, clear. Distance, 11 miles.

July 12.—Went to post. Weather, cloudy and rainy. Distance, 20 miles.

[Fountain Station, 1897.]

November 12.—Holman left station at 8 a. m., crossed the Firehole at footbridge west of the station, followed up Sentinel Creek to its source, and returned to station over same route. Saw tracks of deer and elk. Great many beaver in Sentinel Creek. Distance, 14 miles. Object, scouting.

November 13.—Burdett left station at 8.30 a. m. Followed the road to the Fountain Geyser, from there to Black Warrior, Great Fountain and Excelsior, from there traveled east following a small stream which flows from a basin about 3 miles from Excelsior Basin. Game, tracks of deer and elk.

November 15.—Holman left station at 8 a. m., crossed the Firehole River at wagon bridge which is southwest from the station, followed up Fairy Creek to the falls, and returned to station. Object, to ascertain if any buffalo had crossed going to Hayden Valley. Distance, 9 miles.

November 16.—Holman left station at 8.30 a. m., traveling north. Struck 1 mile west of Gibbon Falls. Followed wagon road to Norris and returned to station. Saw tracks of 1 mountain lion and 3 deer. Object, mail matter. Distance, 35 miles.

November 18.—Holman left station at 8 a. m.; followed trail to Summit Lake cabin, traveled along the west side of Bear Park, and returned to station. Distance, 30 miles.

November 19.—Holman and Burdett left station, 8 a. m., and followed trail to Bear Park; they returned to station, blazing the trail on return trip. Distance, 24 miles. Object, to blaze the trail.

November 23.—Halmon and Stritham left station at 8 a. m., following the road to Firehole Falls; there one man dismounted and followed down the river to its junction with the Gibbon, the other man followed the road, leading one horse. Saw no sign of beaver below the falls; some beaver signs between the falls and the troop camping grounds.

November 24.—Burdett left station 9 a. m.; followed Nez Perce Creek up to the mouth of Magpie; returned to the station over the same route. Distance, 14 miles.

November 27.—Holman left station at 9 a. m., mounted; traveled north and struck Gibbon River below the falls, following down the river on the north side to the junction and then followed the road to the station. Saw some bear signs 1 mile from the junction. Distance, 22 miles.

November 29.—Stitham left station 9 a. m., mounted, following the old road to Mary's Lake and returning to station by the same route. Distance, 20 miles.

November 30.—Burdett left station 9 a. m.; followed wagon road to Norris Station. Object, mail. Distance, 38 miles.

December 3.—Holman and Stitham left station at 7 a. m. on skis. Followed the trail to Summit Lake cabin; arrived there at 7 p. m. The following morning, after putting in wood enough to last one night, we left the cabin and traveled around Bear Park, keeping on the west side. From there we traveled northwest to Lower Bear Park; after scouting through it we returned to station. Saw no sign of buffalo; 15 elk near Twin Buttes, 3 deer near Fairy Falls. Distance traveled, 40 miles. Weather, clear.

December 6.—Mathieson and Stitham left station at 1 p. m. and followed road to Riverside. Stayed there over night and returned to station. Saw several beaver in Madison River; 175 elk in Madison Canyon. Distance, 34 miles. Weather, stormy.

December 10.—Holman and Mathieson left station on skis at 8 a. m. Followed up Nez Perce Creek to Magpie Creek and returned to station. Object, scouting. Distance, 14 miles. Weather, cloudy.

December 11.—Holman and Stitham left station, 8 a. m., on skis. Crossed the Firehole River on the footbridge west of the station; followed up Sentinel Creek to the head of the Queens Laundry and returned to station. Distance, 8 miles. Weather, snow; g. Saw tracks of elk.

December 12.—Holman left station at 9 a. m., mounted. Followed the road to Excelsior Geyser. From there traveled southeast to a point 5 miles from Excelsior and returned to station. No sign of game. Distance, 20 miles. Weather, clear.

December 13.—Holman left station at 8 a. m. Traveled southeast to Juniper Creek and returned to station. No sign of game. Distance, 14 miles. Weather, cloudy.

December 14.—Burdett and Mathieson left station at 1 p. m. Traveled southwest to Fairy Falls and returned to station. Transportation, skis. Distance, 8 miles. Weather, clear.

December 17.—Mathieson and Stitham left station 8 a. m., followed old road half-way to Riverside and returned to station. No game. Distance, 17 miles. Weather, cloudy.

December 18.—Holman left station at 8 a. m., mounted. Traveled east to Canyon Creek and returned to station. Distance, 18 miles. No game. Weather, cloudy.

December 21.—Mathieson and Stitham left station, 9 a. m., on skis, followed Nez Perce Creek to foot of Mary's Mountain, and returned to station. Distance, 20 miles. No game. Weather, cloudy.

December 22.—Holman and Stitham left station, 9 a. m., crossed the Firehole River at the footbridge, followed up Sentinel Creek to its source, and returned to station. No game. Distance, 15 miles. Weather, clear.

December 24.—Burdett and Mathieson left station, 1 a. m. Traveled southeast and struck a deep canyon about 5 miles from the station, followed the canyon to the Black Warrior, and followed the wagon road to the station. Saw tracks of 15 elk. Distance, 15 miles. Weather, clear.

December 27.—Mathieson and Stitham left station, 7 a. m.; followed the blazed trail to Summit Lake cabin, stopped there one night, and returned to station. No game. Distance, 30 miles. Stormy scouting.

December 29.—Holman, Mathieson, and Stitham worked at the ice house.

December 30.—Burdett and Stitham left station, 12 m.; followed the Firehole to the falls, and returned to station. Saw some bear tracks across the road. Distance, 10 miles. Weather, clear.

[1898.]

Holman and 4 men worked at ice house from January 3 to January 6, putting up about 20 tons of ice.

January 6.—Holman, Burdett, P., and Burdett, C., left station, 8.15 a. m. Followed the old road to Riverside. Stopped there one night. Holman and Burdett, P., returned to station. Object of trip to accompany Burdett, C., to his station. Distance, 31 miles. Weather, snowing. Saw tracks of 75 elk in Madison Canyon.

January 8.—Mathieson and Stitham left 9 a. m., following down the Firehole to the falls, and returned to station. Saw 25 geese and 40 ducks. Weather, stormy.

January 10.—Holman and 3 men worked at ice house.

January 12.—Burdett, Mathieson, and Stitham left station at 9 a. m., crossed the

Firehole River at the first bridge, followed up Sentinel Creek to the beaver dams, and returned to station. Saw 12 geese, 25 ducks, and 1 swan. Distance, 10 miles.

January 13.—Holman, Burdett, and Mathieson left station 8.30 a. m.; followed Nez Perce Creek to the foot of Mary's Mountain, and returned to station. Saw 1 beaver, 3 elk, and 19 ducks. Tracks of 50 elk. Distance, 20 miles. Weather, snowy.

January 14.—Holman and Stitham left station at 11 a. m.; followed the road to Canyon Creek, and returned to station. Saw 12 ducks. Lieutenant Lindsley and Scout Morrison arrived from Riverside.

January 15.—Mathieson left the station at 8 a. m. and followed the telegraph line to Canyon Creek, where he met Private Holt, who was ordered here from Norris, and returned to station. Distance, 18 miles. Weather, clear.

January 16.—Lieutenant Lindsley and detachment left for Snake River via Upper Basin and Thumb, taking 2 men, mounted, from here, as far as the Upper Basin, with rations.

January 17.—Burdett and Mathieson returned from Upper Basin. Saw 50 ducks on Firehole River. Weather, cloudy.

January 18.—Mathieson and Syberty left at 8 a. m. on skis; traveled northeast, and struck Magpie Creek about 4 miles from its mouth; followed this stream to its junction with the Nez Perce, thence west along the Nez Perce to the station. Saw 3 elk. Weather, clear; distance, 18 miles.

January 19.—Holman and Burdett left station 9 a. m. on skis; followed the road to Norris Station, remained there one day, and returned to station on the 21st. Object, mail.

January 21.—Holman, Burdett, and Mathieson left station at 7 a. m. and followed the road to the Upper Basin; stayed there one night, and left the next day at 7 a. m.; scouted through the Black Sand and Biscuit basins, and returned to station. Weather, clear; distance traveled, about 30 miles.

January 23.—Holman, Burdett, and Syberty left station 1 p. m.; crossed the Firehole River at the footbridge and followed Sentinel Creek to the Queen's Laundry, thence south to Twin Buttes, thence east to the river, and followed the river to the station. Distance, 10 miles. One hundred ducks in the river. Weather, clear.

January 31.—Holman, Burdett, and Mathieson left station at 8 a. m.; followed up Nez Perce Creek to the mouth of Juniper Creek, and then followed up Juniper to the hot springs, thence east to Spruce Creek and down Spruce to its junction with the Nez Perce, thence west along the Nez Perce to the station. Saw tracks of 10 elk and some beaver signs in Spruce Creek; also saw a great number of geese, ducks and fishes in and along the streams. Distance traveled, about 20 miles. Weather, fine.

February 2.—Burdett and Syberty left station at 8 a. m.; followed the road to Canyon Creek, and returned to station. Object, breaking trail.

February 3.—Burdett and Syberty left station at 7 a. m. on skis; followed the old road to the foot of Mary's Mountain, and returned to station. Object, to meet Holt and Stitham, who were coming in from Mud Geyser. Weather, snowy.

February 6.—Holman, Burdett, and Syberty left station at 9 a. m. mounted; followed the road to Madison Canyon, and returned. Saw tracks of 100 elk. Distance, 16 miles. Weather, stormy.

February 7.—Stitham and Syberty left station at 8 a. m.; followed road to Canyon Creek, and returned to station. Object, breaking trail. Cloudy.

February 8.—Holman, Burdett, and Syberty left station at 8 a. m.; followed up Nez Perce Creek to the mouth of Magpie Creek, thence north along Magpie to a point 5 miles from its mouth, and returned to station over the same route. Saw tracks of 5 elk. Distance, 20 miles. Object, scouting.

February 9.—Holman, Burdett, and Syberty left station at 9 a. m., following the old road to Mary's Lake. After scouting along the foot of the mountain two hours, we returned to the station. Saw 20 elk. Distance, 24 miles. Cloudy.

February 10.—Holman, Burdett, and Syberty left station at 7 a. m. on skis; followed up Nez Perce Creek to the mouth of Spruce Creek, thence up Spruce Creek to the hot springs, and returned to station. Saw tracks of 10 elk. Distance, 24 miles. Weather, fine.

February 14.—Holman, Burdett, and Stitham left station at 7 a. m.; followed the trail to Summit Lake cabin, arrived there at 5 p. m. Saw 1 swan and tracks of 5 elk between the station and Twin Buttes. Distance, 15 miles. Weather, stormy.

February 15.—Left Summit Lake cabin at 9 a. m.; traveled south to Summit Lake, thence west to hot springs and then back to the lake, thence south to hot springs, 1 mile south of the lake, and then followed the trail back to the cabin. Saw tracks of 1 mountain lion. Distance, 10 miles. Weather, stormy.

February 16.—Left the cabin at 9 a. m., went northwest to Lower Bear Park, from here followed the trail to the station. Saw tracks of 10 elk near Twin Buttes. Distance, 15 miles. Weather, snowy. Object, scouting.

February 22.—Holman, Burdette, and Syberty left station at 9 a. m. with five day's

rations; followed the road to the Upper Basin; stayed there until the following morning; left there at 8 o'clock; followed the road to the Lone Star Geyser; there we took off our skis and waded the Firehole River and followed it to a point about 3 miles north of Madison Lake. Here we left the river and traveled southeast and struck Shoshone Creek 2 or 3 miles from the Shoshone Geyser Basin, where we made camp. Left Shoshone Creek the following morning; followed down the creek to the lake, and followed around on the side of the lake. Made camp on Heron Creek; left Heron Creek the next morning at daylight and struck the main road near the 9-mile post; followed it to the Upper Basin station and stayed there for the night. Left the Upper Basin the next morning and followed the road to the station. Saw 10 elk near Twin Buttes, tracks of 2 elk near the station. Saw no sign of game in Shoshone Basin. Distance traveled, about 67 miles. Weather, cloudy and snowing.

March 2.—Burdett, Mathieson, and Syberty left station at 9 a. m.; followed up the Firehole River to the Biscuit Basin and returned to station via Great Fountain Geyser. Saw tracks of 15 elk. Weather, clear.

March 3.—Holman left station mounted, and followed up Nez Perce Creek to the foot of Mary's Mountain and returned to station. Saw tracks of 25 elk near the mountain. Saw 25 elk 2 miles from the station.

March 4.—Burdett, Mathieson, and Syberty left station at 8 a. m. and followed the road to the junction of the Firehole and Gibbon rivers; from there, followed up the Gibbon to a point about 5 miles from the falls and returned to station over the same route. Saw 200 elk near the junction of the rivers, and saw tracks of a great many elk. Distance, 24 miles.

March 10.—Holman, Burdett, and Mathieson left station at 8 a. m.; followed the road to Norris, remained there one day, and left Norris on the morning of the 12th; followed the wagon road to the post; remained at the post two days to draw clothing. Holman and Burdett left the post on the morning of the 15th; followed the road to Crystal Springs, stopped there one night; on the following day followed the road to Norris; left Norris next morning and followed the road to the station. Distance traveled, 78 miles. Object, to accompany Mathieson to the post on account of expiration of his term of service.

March 19.—Holman and Syberty left station on skis; followed the road to the Upper Basin, stopped there overnight, and returned to station via Biscuit Basin. No game. Weather, snowing.

March 28.—Left station with one man, crossed the river on the foot bridge, followed up Sentinel Creek to the head of the Queen's Laundry, and returned to station.

March 26.—Holman and Syberty left station at 7 a. m.; followed the road to the junction of the Firehole and Gibbon rivers; from there followed up on the north side of Gibbon River to near the falls; crossed the river and followed the road to the 9-mile post from the hotel; left the road there, traveled south and struck the telegraph line and followed it to the station. Saw 15 elk along the Gibbon River. Saw tracks of 250 elk. Distance traveled, 22 miles. Weather, snowing.

March 29.—Holman, Stitham, and Syberty left at 6.30 a. m.; followed up Nez Perce Creek to the foot of Mary's Mountain; from there followed up a small stream that flows southward along the mountain to a point about 3 miles from its mouth; thence west to Magpie Creek, and then down Magpie to the road and followed the road to the station. Saw 1 elk and tracks of 15. Some fresh beaver signs in a small stream near the mountain. Distance traveled, 20 miles. Weather, fine. Object, scouting.

March 30.—Holman, Stitham, and Syberty left station at 7 a. m.; traveled southeast and came to a deep canyon about 4 miles from the station; followed down the canyon to the Black Warrior; from there traveled around the Great Fountain and near to the Excelsior, and followed the road to the station. Saw tracks of 3 elk near the station. Saw a stray horse at the Black Warrior. Distance, 12 miles. Weather, snowy.

April 2.—Stitham and Syberty left station 6 a. m.; followed the road to Norris station; there one night and returned to station. Object, mail.

April 5.—Holman, Stitham, and Syberty left station at 6.15 a. m.; followed up Nez Perce Creek to Spruce Creek, thence up Spruce to the hot springs, thence north along the mountain to the old road, thence west to the station. Saw tracks of 25 elk; saw 2 coyotes and 1 red fox. Distance, 24 miles. Weather, fine.

April 8.—Holman, Stitham, and Syberty left station at 7 a. m. on skis; traveled southwest to Twin Buttes, thence northwest to the head of the Queen's Laundry, thence east to the station. Saw 7 elk near Twin Buttes; 5 coyotes; tracks of 10 elk. Distance, 10 miles. Weather, fine.

April 12.—Stitham and Syberty left station at 4.30 a. m.; followed up the road and struck buffalo trail 4 miles north of Upper Basin; followed trail up for 4 or 5 miles; lost the trail there, and then traveled south to the Upper Basin; stopped there for the night and returned to station the next day. Distance traveled, 30 miles.

April 14.—Holman and Syberty left station at 6 a. m., on skis; followed the road

to Madison Canyon; from there followed up the Gibbon River for about 5 miles, then returned to station. Saw 40 elk and tracks of 200, 2 minks and 3 muskrats in the Firehole, 2 coyotes, and 1 red fox. Distance traveled, 24 miles. Weather, fine. From all indications the elk are leaving Madison Canyon and coming into the Lower Basin.

April 15.—Stitham and Syberty left station on skis at 5.30 a. m.; followed the road to Canyon Creek and returned to station. Saw tracks of 1 bear. Weather, fine. Distance, 18 miles. Object, mail.

April 16.—Holman left station at 8 a. m., mounted; followed Nez Perce Creek to the mountain and then traveled south along Mary's Mountain; struck Spruce Creek about 5 miles from its mouth and followed it to the Nez Perce, then followed it to the station. Saw tracks of 75 elk. Saw 1 red fox and 2 coyotes. Weather, fine. Distance traveled, 22 miles. Object, scouting. A great many fresh beaver signs along the Nez Perce.

April 17.—Stitham and Syberty left station, mounted, at 1 p. m.; followed the road to Madison Canyon; there they met Sergeant Bernstein and 2 men from Riverside. They stopped there one hour and returned to station. Saw tracks of 20 elk. Distance traveled, 16 miles. Weather, snowing. Object, to take some packages for Sergeant Bernstein which had been left here.

April 18.—Holman and Syberty left station at 8 a. m.; followed the road to first bridge south of the Excelsior; there we left the road and patrolled through the Biscuit Basin. Arrived at the Upper Basin at 12 m.; stopped there one hour for lunch, and then followed the road down to the 5-mile post; left the road and followed up a small stream which flows from a hot basin. Patrolled all through the basin and returned to station. Saw tracks of 15 elk. Saw 2 coyotes. Distance traveled, about 35 miles. Weather, fine.

April 19.—Stitham and Ornes left station at 12 m. and followed the road to Riverside. Stitham stopped there one night and returned to station. Object of trip, to take Ornes to Riverside. He came out here on skis and was ordered to go to Riverside; as the snow is nearly all gone, he couldn't go on skis, and I sent him down mounted.

April 21.—Stitham and Syberty left station, mounted, at 10 a. m.; followed the road to Norris, and arrived there at 3 p. m. Returned to station the following morning. Saw tracks of 23 elk. Saw 1 bear and 3 cubs. Distance traveled, 38 miles. Weather, snowing. Object, mail.

April 23.—Holman left station at 9 a. m.; followed Sentinel Creek to the beaver dams and returned to station. Saw tracks of about 30 elk. Distance traveled, 8 miles. Weather, clear. Object, to look after the beaver.

April 24.—Holman left station at 8 a. m., mounted; followed the road to Riverside Station; there three hours and returned to station. Saw 2 coyotes, 3 muskrats, 1 mink, 1 badger, 2 grouse, tracks of 8 elk, and some fresh beaver signs along the Firehole. Met Scout Whittaker on the road to Riverside with pack train. Object, a trip to take some mail to Riverside and to get some fresh meat. Distance, 34 miles. Weather, fine.

April 25.—Holman left station, dismounted, at 8 a. m.; followed up Nez Perce Creek to Magpie; waded all through the beaver dams and returned to station. Saw 1 coyote, tracks of 30 elk, 3 sand-hill cranes. Distance, 10 miles. Weather, fine.

April 26.—Holman left station at 7 a. m., dismounted; traveled southwest to Twin Buttes and returned to station. Saw 39 elk, 2 coyotes, 4 sand-hill cranes, and 1 mink. Distance traveled, 10 miles. Weather, clear and high winds. Object of the trip, to try the skis between Twin Buttes and Summit Lake Cabin.

April 27.—Burdett and Stitham left station at 10 a. m. to go to the post, in compliance with verbal orders from the commanding officer.

April 28.—Syberty left station at 7 a. m., mounted, following the road to the post; remained there one day and returned to Norris on the 30th. Left Norris on the 1st of May and came back to station by the road. Distance traveled, 78 miles. Object, to get the horses shod.

May 3.—Holman left station, mounted; followed the old road half way to Riverside and returned to station. Saw 1 mink, 1 coyote, and tracks of 15 elk. Distance traveled, 16 miles. Weather, cloudy. Object, scouting.

May 4.—Holman left station at 9 a. m.; followed the road to the Upper Basin, mounted, and returned to station. Saw 81 elk and 1 coyote, and 4 sand-hill cranes. Distance traveled, 20 miles. Weather, cloudy. Object, scouting.

May 5.—Holman left station at 9 a. m., mounted; followed up Nez Perce Creek to the foot of Mary's Mountain and returned to station. Saw 1 coyote, 1 mink, 2 sand-hill cranes, and tracks of 75 elk. Distance traveled, 16 miles. Weather, snowing. Object, scouting.

May 6.—Holman left station at 9 a. m., crossed the Firehole River on footbridge west of the station, struck Sentinel Creek near its mouth, followed it to the head of the Queen's Laundry, and returned to station. Saw 1 bear, 1 mink, tracks of 15 elk.

Distance, 8 miles. Weather, clear. Object, scouting. Transportation, dismounted (on foot).

May 7.—Holman left station at 7.30 a. m., dismounted, to look for the horses which have strayed away. Struck their trail on the road leading to Norris; followed the trail up to Gibbon Canyon; there I met the lineman. He said he saw 2 horses in Elk Park; followed the road to Elk Park, looked all down the park, but did not find them; followed the road to Norris. Moore went out mounted, and found them near the station. I remained there until 3 p. m. and returned to the station. Distance traveled, about 45 miles. Weather, cloudy. Saw 1 mink in the Gibbon, tracks of 1 bear, and about 7 elk.

May 8.—Syberty left station, mounted, at 8 a. m.; followed the road to Norris and returned to station on the 9th. Distance traveled, 38 miles. Weather, clear. Object, mail.

May 10.—Holman left station at 7 a. m., followed the road to the post, remained there two days, left the post on the 14th, followed the road to Norris, stayed there one night, and came to the station on the 15th. Distance traveled, 78 miles.

May 18.—Holman left station at 9.30 a. m., mounted, for Riverside Station; arrived there at 1 p. m. Saw 15 elk, 7 badgers, 1 coyote, 2 grouse, and tracks of 1 bear. Weather, raining. Left on the morning of the 19th, followed the road to the station; saw numerous geese and 1 pheasant. Distance traveled, 32 miles. Syberty left station at 10 a. m., mounted; followed up the road to the Biscuit Basin, patrolled through the basin and returned to station. Saw 4 blacktail deer, 2 bear, 1 silver fox, and numerous geese. Distance traveled, 15 miles. Weather, snowing and blowing.

May 20.—Syberty patrolled road to Madison Canyon and return. Saw 18 antelope near Gibbon Bridge; tracks of 11 elk. Distance traveled, 16 miles. Weather, cloudy and snowing. Holman left station, mounted, at 10 a. m.; followed up Nez Perce Creek to the mouth of Magpie Creek, waded all through the beaver dams, found everything O. K., and returned to station. Saw 1 coyote, 2 minks, 2 grouse, and numerous geese. Distance traveled, 10 miles.

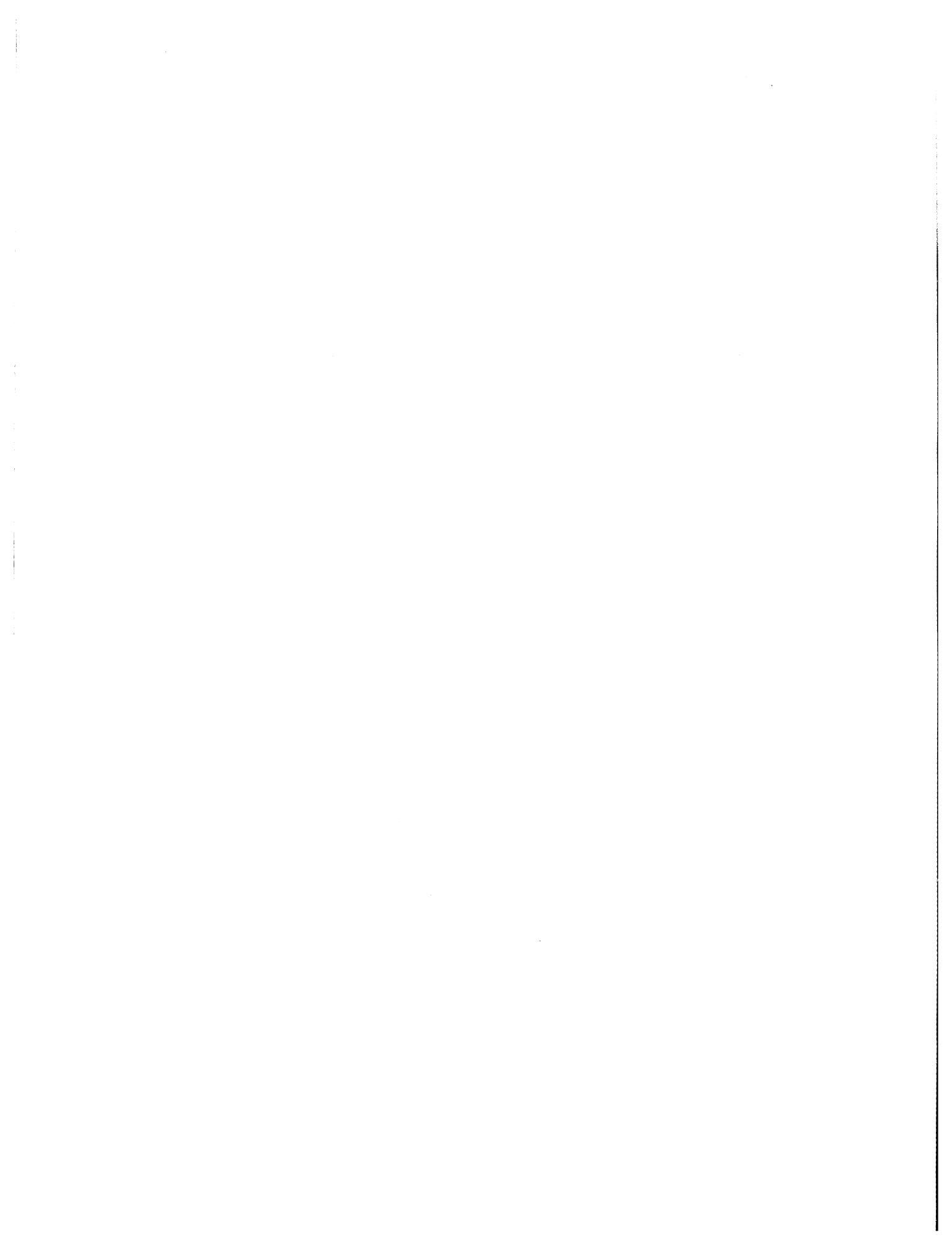
May 23.—Holman left station, mounted, at 10 a. m.; crossed the Firehole River at ford, followed up Sentinel Creek to the head of the Queen's Laundry, examined the beaver dams closely, and returned to station. Saw 75 elk, 1 coyote, numerous geese and ducks. Distance traveled, 8 miles. Weather, rainy. Object, scouting.

May 24.—Holman and Syberty left station at 7.30 a. m., mounted, following up the road to the Lone Star Geyser. Then we dismounted and tied our horses up and followed up the Firehole River to a point about 3 miles south of the Lone Star. Looked closely for beaver signs, but found no fresh ones. Returned to station at 5.30 p. m. Saw 1 bear, 1 coyote, tracks of 30 or 40 elk. Distance traveled, 34 miles. Weather, rainy. Object, scouting.

May 25.—Holman left station, mounted, at 1 p. m.; followed up Nez Perce Creek to the mouth of Magpie and returned to station. Saw tracks of 19 elk and of 1 bear. Distance traveled, 10 miles. Weather, cloudy. Object, scouting.

May 26.—Syberty left station at 8 a. m.; followed the road to Riverside, remained there one night and returned to the station the following day. Saw numerous geese. Distance, 32 miles. Weather, cloudy.

May 29.—Holman left, mounted, at 1 p. m.; traveled southeast to Twin Buttes and returned to station. Saw 27 elk, 1 coyote, 2 grouse, tracks of 1 bear. Weather, cloudy.



REPORT

OF THE

ACTING SUPERINTENDENT

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1899.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1899.



REPORT
OF THE
ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

OFFICE OF THE SUPERINTENDENT,
YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., November 1, 1899.

SIR: I have the honor to submit the following report of the condition of affairs in the Yellowstone National Park from the date of the last report made on September 30, 1898, by Capt. James B. Erwin, Fourth Cavalry. My immediate predecessor as acting superintendent of the park was Capt. W. E. Wilder, Fourth Cavalry, who assumed these duties in March, 1899, and whom I relieved on June 23, 1899, upon his departure for the Philippine Islands. Owing to his short period of service here, no report was made by him.

Early in the year, and before my arrival, the work of improvement in the park was transferred to the Corps of Engineers and placed in charge of Capt. Hiram M. Chittenden. Since that time no funds for this purpose have been disbursed by the acting superintendent, nor has he had anything to do directly with this work, except that important improvements and changes, before being made, are referred to him by the engineer officer in charge, and an agreement between them is arrived at before the work is commenced. The detailed statement of expenditures for all improvements is contained in Captain Chittenden's report to the Chief of Engineers; mine contains only a general statement of what has been done.

I arrived at Fort Yellowstone with Troop M, First Cavalry, June 5, and within two or three days thereafter began relieving the detachments of the Fourth Cavalry stationed throughout the park with men from my own troop. The detachment at Snake River was not relieved until the last of June, owing to the great depth of snow between here and that point.

DISPOSITION OF TROOPS.

For the purposes of enforcing the regulations relating to the protection of the natural phenomena of the park from injury and mutilation, to the carrying of firearms, protection from forest fires, and care of the animals, fish, and birds of the park, detachments composed of from three to ten enlisted men were stationed during the summer at the following points, each station being in charge of a noncommissioned officer: Norris Geyser Basin, Lower Geyser Basin, Upper Geyser Basin, The Thumb west side of lake, Lake Station near Lake Hotel, Grand Canyon, Soda Butte, Riverside, Snake River.

A system of mounted patrols is kept up daily from each of these stations, covering approximately 180 miles of road, making the distance traveled each day about 360 miles.

The dispositions for the winter have been modified by abandoning the Thumb and Upper Geyser Basin as stations, changing the number of men at others, and it is my intention to establish within a few days a new station about 10 miles northeast of this point, on the east side of the Yellowstone River, to cover what is known as the Hellroaring country.

The stations mentioned vary in distance from this post from 20 miles, the nearest (Norris Basin), to 90 miles, the farthest (Snake River).

METHOD OF PROTECTION.

During the summer patrolling is mainly along the roads traveled by tourists. When the hunting season begins, the country covered by scouts from the different stations is that where the game usually ranges and where poaching would most probably be done. Frequent scouts are made from the permanent stations, and to facilitate this a number of snowshoe cabins have been constructed at about a day's trip apart.

In these cabins a small amount of food is placed at the beginning of the winter, together with bedding, fuel, matches, cooking utensils, etc. These cabins and the supplies contained in them are indispensable, as without them trips of only one day at a time, or at most only two or three days, could be made from the permanent stations, as the travel has to be made on skees and it is impracticable, under these circumstances, to carry bedding or supplies; and such short scouts would leave a large part of the game country entirely unprotected.

The territory to be covered by the detachments of the different stations is described in the appendix to this report.

By reference to the map attached hereto, upon which the location of stations and snowshoe cabins is noted, it will be seen what a large extent of country has to be covered.

In addition to the scouting from outlying stations, frequent trips are made from this post by small detachments, accompanied by the civilian scouts. There are from two to four of these parties out continually during the hunting season.

TRAVEL IN THE PARK.

The aggregate number of tourists taking the park trip during the season of 1899 (June 15 to September 15) and stopping at the hotels of the Yellowstone Park Association was 3,637. Of this number the Yellowstone National Park Transportation Company carried from the northern entrance of the park 2,997; and Haynes & Humphrey, from western entrance of the reservation, 414; the remainder—226 people—were bicyclers, or those carried in private transportation.

The total number carried through the park by W. W. Wylie and accommodated at his permanent camps was 975. This number is included under head of "Licensed transportation" in the table below. Mr. Wylie also reports a transient custom at his camps during the season amounting to an equivalent of 1,305 persons for one day.

The aggregate number of persons taking the park trip with licensees of personally conducted camping parties was 703, and the aggregate

number traveling with private transportation (camping parties) was 4,264.

The grand total of all visitors to the park during the season was 9,579.

Three thousand one hundred and six tourists took the trip on the Yellowstone Lake during the season, of which 1,526 came into the park with the regular transportation company; 127 with Humphrey & Haynes, and 1,453 who were traveling with camping parties, 916 of whom were with the Wylie Camping Company.

Comparison of tourist travel, 1895 to 1899.

	1895.	1896.	1897.	1898.	1899.
Camping parties.....	2,594	1,797	4,454	3,437	4,264
Licensed transportation.....	374	454	1,354	890	1,678
Yellowstone Park Association hotels.....	2,470	2,408	4,872	2,207	3,637
Total.....	5,438	4,659	10,680	6,534	9,579

HOTELS.

The hotels in the park are owned and managed by the Yellowstone Park Association. Mr. J. H. Dean is president of the association. They are thoroughly well kept in every respect, and are models of cleanliness and neatness. No complaint as to their management has come to my notice, nor do I believe any could justly be made.

In addition to the hotels, this association maintains lunch stations at Norris Basin, Upper Basin, and at the Thumb.

The system of hotels should include one at the Upper Geyser Basin. The principal geysers are here, and it is perhaps the most interesting and wonderful point along the whole line of tourist travel. At present this place is visited from Fountain Hotel, at Lower Geyser Basin, distant 9 miles, for which a day is required, and involving an extra travel of 18 miles. An opportunity to see some of the greatest geysers in action is often lost to tourists by their not being able to stay over night here.

MEANS OF TRANSPORTATION.

These include two regular stage lines, the Yellowstone National Park Transportation Company, under the management of Mr. S. S. Huntley, the Monida and Yellowstone Stage Company, Humphrey & Haynes, proprietors; the Wylie Camping Company; other licensed transportation in connection with camping privileges, and the Yellowstone Lake Boat Company, E. C. Waters, president.

The Yellowstone National Park Transportation Company runs from Cinnabar, Mont., to Mammoth Hot Springs, thence through the park, making the tour in five days.

The Monida and Yellowstone Stage Company runs from Monida on the Oregon Short Line into the park by way of Riverside Station, and the trip includes the same points of interest as the other line. Both of these lines are thoroughly equipped with the best Concord coaches and harness, have good horses, reliable drivers, and give excellent service.

Mr. W. W. Wylie is licensed to use twenty wagons in connection with his permanent camps, and certain other parties are issued licenses for a number of wagons—not to exceed five for each licensee—to do a

movable camping business. The names of these licensees and the number of wagons so employed are included in the appendix. The teams, vehicles, and drivers employed by Mr. Wylie and the other licensees were adequate for the purpose, and so far as I know gave general satisfaction.

The Yellowstone Lake Boat Company has one steamboat on the lake and makes daily trips from the Thumb to the Lake Hotel, connecting at the Thumb with the stage line coming from the Fountain Hotel and affording such tourists as desire it an opportunity to make the trip from the Thumb to the Lake Hotel by water and obtain a view of the lake. The equipment and management of this boat is satisfactory in every respect.

PERMANENT CAMPS.

These are maintained by Mr. Wylie at Appollinaris Spring, Upper Geyser Basin, the Lake, and Grand Canyon, with two lunch stations—one between Appollinaris Spring and Upper Geyser Basin, the other at the Thumb.

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

It is probable that, for sanitary reasons, their locations may have to be changed from time to time.

FOREST FIRES.

There have been no fires within the limits of the park during the present year. Notices containing the precautions to guard against fire are posted throughout the park and at all places suitable for camping. As an additional precaution, mounted patrols examine all camps on their line of travel after they are vacated to see that camp fires are extinguished. In a few instances fires have been found in deserted camps, and on two occasions the parties who left them were pursued, arrested, and brought before the United States commissioner for trial.

FOREST RESERVES.

I recommend that the necessary legislation be enacted to make the forest reserve bordering on the southern limits of the park a part of the park, and bring it under the provisions of the national park protective act. This is necessary for the better protection of the game in the park. As the matter now stands the superintendent has no authority to prevent hunting in this strip, except when it is done in violation of the game laws of Wyoming.

UNITED STATES COMMISSIONER.

The statement of cases tried for violations of the park regulations before Judge John W. Meldrum, United States commissioner, will be found in the appendix.

WILD ANIMALS.

Antelope.—It is believed they have increased within the last two years. At this season they are nearly all within a few miles of this

post, on the slopes of the foothills where there is little or no snow. About 600 can be seen here nearly every day. There are probably not more than 700 or 800 in the park. It is with the greatest difficulty that they are preserved at all, as they are constantly trying to get across the line and outside of the park limits, where there are numerous hunters watching for an opportunity to shoot them. It requires one of the civilian scouts and two soldiers to be permanently posted along this part of the line to drive them back. As they wander across in the nighttime, these must be on the alert before daybreak to prevent them from being killed. A fence about 4 miles long on this boundary of the park would solve the problem of their protection.

Bear.—These are numerous and are without doubt increasing. They are to be seen about the hotels in numbers and have given much trouble at these places by breaking into buildings in search of food. It will undoubtedly be necessary to kill some of them to prevent such destruction.

Buffalo.—It is not known how many there are left or whether or not they are increasing. I shall try and find out this winter as to their number. One of the scouts saw twenty-six last spring, and signs were seen of others. It is probable that there are fifty or more.

Coyotes.—There are many of these, especially where the antelope are ranging. They undoubtedly kill many antelope, as well as young elk and deer. The only means of getting rid of them is by poison. This method will be tried during the winter.

Deer.—There are many of them in the park. They can be seen at this season all about the post, and they frequently come on the parade. They are increasing.

Elk.—Are more numerous than any other animal in the park. The scouts frequently report seeing herds of a thousand or more. While a great many died last winter, due to the unusually cold weather, yet they are without doubt rapidly increasing. Some of the scouts, from the number of dead ones seen by them, estimate that as many as 5,000 died during the past winter. It is estimated that there are at present from 35,000 to 60,000 in the park.

Moose.—Little is known as to the number of these animals, but there are still quite a number left and they will probably increase now, owing to the stringent laws against killing them in Wyoming. They range principally along the southern line of the park in Wyoming.

Sheep.—There are not many in the park, and it is not known as to whether or not they are increasing. Most of them are near here on Mount Everts, and can be seen any day.

Beaver.—There are many of these in the park and they are believed to be increasing.

Mountain lions.—Are numerous and destroy much game. Several were killed last winter where the mountain sheep range.

FISH.

Nearly all streams abound in trout of different varieties. Vast quantities of them are caught during the season without apparently diminishing their number, except in some of the smaller streams. There is probably no place on the face of the earth where the angler can meet with such success as in the Yellowstone Park.

ROAD WORK.

The early spring work begun with repairs in the road between here and Gardiner. This part of the road was improved by decreasing grades, straightening curves, and erecting guard rails along a precipitous hillside.

Early in June small road crews were sent along the roads to open up the route for tourist travel. It was necessary for them to shovel out the snow nearly the whole distance. The road over the Continental Divide was not opened and ready for travel until June 22, and it was July 5 before the snow finally disappeared from this part of the road.

High water carried away part of the bridge over east fork of the Yellowstone, cutting off my station at Soda Butte. This was promptly repaired.

The snowfall during the past winter was the heaviest ever known in the history of the park, and the consequent high water in the spring called for unusual repairs to roads.

The most important work done was the construction of a new road of about 3 miles between the Golden Gate and Mammoth Hot Springs. The ascent to the Golden Gate has always been one of the heaviest in the park, and to avoid this Captain Chittenden projected this road. It is the best piece of road building in the park, and makes the travel from here to Golden Gate comparatively easy, besides bringing into view many picturesque objects that could not be seen from the old road.

It is intended next summer to abandon the dangerous piece of road on the east side of the Gardiner River and construct a road on the opposite bank. This has been surveyed and a small part of it built, including a steel bridge with concrete abutments, the first of the kind in the park.

Preliminary surveys have been made, locating proposed roads from Mammoth Hot Springs to Yancey's; from the Grand Canyon to Yancey's over Mount Washburn; Yancey's to Soda Butte; Gibbon Canyon to Madison River; Upper Basin to Lone Star Geyser, and Grand Canyon to Norris.

Statement of funds for improvement and protection of Yellowstone National Park, for fiscal year ending June 30, 1899, covering expenditures and transfers from December 1, 1898, to June 30, 1899.

Balance on hand November 30, 1898, as per report of acting superintendent,
dated November 22, 1898 \$2, 240. 44

EXPENDED.

Salaries of scouts	\$1, 030. 00
Salary of watchman and clerk for acting superintendent	475. 00
Necessary repairs to roads and bridges between Mammoth Hot Springs and Gardiner (to May 1)	470. 54
Labor and material finishing profile of proposed new road over south side of Mount Washburn.....	6. 08
Paid for hay for animals in captivity.....	80. 46
For mounting maps of park on linen.....	4. 15
Transferred to Capt. Hiram M. Chittenden, Corps of Engineers, Special Orders, No. 70, Adjutant-General's Office, March 25, 1899.....	154. 21
Balance transferred to Treasurer United States	20. 00
	<u> </u> \$2, 240. 44

NOTE.—Actual amount transferred to Captain Chittenden was \$1,581.33, but of this amount, \$1,427.12 was to pay outstanding liabilities as per list furnished him.

Statement of funds allowed acting superintendent from appropriation for improvement and protection of Yellowstone National Park, fiscal year 1900.

Amount allowed, as per agreement between Capt. Hiram M. Chittenden, Corps of Engineers, U. S. A., and acting superintendent Yellowstone National Park, dated May 29, 1899, and approved by Secretary of War June 12, 1899		\$4, 500. 00
Allotted as follows:		
Scouts and detectives	\$3, 000. 00	
Clerk for acting superintendent	1, 000. 00	
Contingencies	500. 00	
		<u>4, 500. 00</u>

EXPENDITURES, JULY, AUGUST, AND SEPTEMBER, 1899.

Salaries of scouts	\$487. 50
Salary of clerk	250. 00
Paid for hay for elk and deer in captivity	15. 70
Total	<u>753. 20</u>
Balance	3, 746. 80
Total	<u>4, 500. 00</u>

Estimate of funds needed for protection for the coming fiscal year.

Estimates for this purpose were furnished your office on September 12, and are repeated here for convenient reference.

For scouts and detectives	\$3, 000. 00
For one clerk, office of superintendent, one year	1, 000. 00
Forty tons of hay, at \$14	560. 00
Contingencies	500. 00
Two new stations for troops at detached points	1, 912. 50
Four and one-half miles of fence along north boundary between this post and Gardiner	3, 250. 00
Station house and gate at northern entrance to park	1, 200. 00
Surveying and monumenting boundaries of park, 59 miles, at \$75	4, 425. 00

The first two items provide for payment of regular scouts and detectives and a clerk for the office of the superintendent. The hay is for elk and deer in captivity. The amount for contingencies is for necessary expenditures that can not be foreseen.

The remaining items have been included in Captain Chittenden's estimates to the Chief of Engineers.

If the appropriation is made for the new stations, it is my intention to establish one in the extreme northwestern corner of the park and the other in the southwest corner. Under the present conditions these sections where there is much game must be protected by the detachments from Riverside and Snake River, respectively, which are too distant to do this efficiently.

The fence estimated for is absolutely necessary for the protection of the antelope and mountain sheep that range during the winter along this part of the north boundary, and will also serve to keep out the large bands of horses and cattle that cross over the line and eat down the grass on the feeding ground of this game. It is next to impossible to keep the antelope from straying across the line, and, as has already been stated, it requires a special detail for this purpose. This matter and the necessity for an entrance gate and station house at the north entrance of the park were fully set forth in the report of Captain Wilder, made to the Department on April 19.

Marking boundaries.—There still remains about 59 miles of the park boundary along the north and west that should be marked. It is very important that this should be done, in the interest of protection and to prevent trespasses of other kinds. It frequently happens when hunters are arrested by the scouts within what is understood to be the park lines, the contention is made by them that they were not in the park. It is necessary to testify under oath as to the matter before the commissioner, and when there is any doubt about it of course these witnesses can not so testify, and while it is reasonably certain that the regulations of the park have been violated, the guilty ones escape. As poaching is usually done near the border, this question is liable to come up at any time.

PROJECTED IMPROVEMENTS.

The following estimates for improvements have been prepared by Captain Chittenden and included in his report to the Chief of Engineers.

New road in Gardiner Canyon, including three steel bridges.....	\$10,000
Road through Golden Gate Canyon, including a new steel bridge to replace wooden bridge around cliff, and widening road along cliff, the latter all solid rock.....	15,000
Raising 3 miles of road in Gibbon Canyon and cutting out 1 mile of dangerous grades, also opening 4 miles of new road down the Gibbon to connect with western approach.....	16,000
Completion of 8 miles of road near Fountain Hotel.....	8,000
Completion of southern approach along Snake River, 20 miles.....	20,000
New road from West Thumb to Natural Bridge, cutting out present line around lake shore, 8 miles.....	16,000
Surfacing new road from Lake Hotel to Grand Canyon, 15 miles.....	15,000
New bridge across the Yellowstone near the falls.....	20,000
New road down right bank of Grand Canyon, 3 miles.....	6,000
New road near Grand Canyon, to cut out dangerous hills.....	5,000
New road, Canyon to Norris, 10 miles.....	20,000
New road, Grand Canyon, via Tower Falls, to Mammoth Hot Springs, 36 miles.....	72,000
New bridge over Yellowstone near Tower Falls.....	10,000
New bridge over Lamar River.....	5,000
Completion of east approach, 15 miles.....	15,000
New plant.....	5,000
New office and other buildings.....	5,000
Current repairs and maintenance for season of 1900.....	10,000
New bridges at various points (six needed at once).....	12,000
Office, transportation, and miscellaneous expenses.....	10,000
There should also be added for clearing out and rendering more easily passable the numerous trails throughout the park, which are essential to its proper police and protection.....	5,000
Total for completion of project in a single season.....	\$300,000

I have gone over these estimates very carefully with Captain Chittenden and fully approve of them. This work will have to be done at some time, and Captain Chittenden estimates that it would cost about one-half to have one appropriation cover the whole. The amount appears large when compared with the usual annual appropriation, but in the end it would be a measure of economy for the Government to appropriate all at once, so that a systematic plan of work might be adopted and carried out. The result would be to make travel easy and safe, and bring almost every point of interest of the park in the line of tourist travel. After this work is completed the cost of maintenance would probably not amount to more than half of the present

annual appropriation, and a part of this could be used for macadamizing a few miles of road each year.

Whether the total amount required for this work is obtained or not, there are certain items for which the Department should make every effort to get appropriations. The more important are as follows:

Fifteen thousand dollars for new steel bridge in Golden Gate Canyon. This is absolutely necessary for safety. I do not consider the present bridge safe for another season's travel, and if upon careful examination in the spring it is not found to be so I shall have to prohibit any passage across it. This would stop all travel in the park as there is no other way of getting through. This bridge is of wood, fastened to the side of a precipitous cliff with wooden supports below, and has been in use several years.

Sixteen thousand dollars for road in Gardiner Canyon. This road runs at the base of a mountain, the side of which, next to the road, is composed of loose earth and an easily disintegrated stone that from time to time break away and fall into the road making travel along it at certain seasons dangerous. This change should be made in the interest of safety.

Twenty thousand dollars for new road from Grand Canyon to Norris. This road should be changed to avoid an extremely steep declivity with an abrupt turn at the foot which makes it dangerous.

Five thousand dollars for bridge over Lamar River. The old bridge here washes out every spring, cutting off the Soda Butte Station and isolating an important part of the park.

Twenty thousand dollars for new bridge across the Yellowstone near the upper falls. This bridge should be built both as a means of protection and for the opening up of the east side of the river to tourists. The means of getting to the other side, where much of the game ranges, is to cross on the ice in the winter and to ford it at shallow points in the summer. It is late in the winter before this can be done on the ice. During high water it is impossible to ford anywhere, and it is late in the summer and at only a few points where this can be done at all.

The park is unquestionably fulfilling the purposes for which it was set aside by the Government. It has been visited by about 10,000 tourists this year from every part of the United States and from foreign countries. As its natural wonders and picturesque beauties become more widely known these numbers will undoubtedly increase. As a game preserve it is probably the greatest in the world, and as the game disappears from the country surrounding it and other points of the West its value will be conspicuous as the breeding ground and refuge of the wild fauna of our country.

To properly protect this extensive area and enforce compliance with the many regulations for its government requires more troops than the number now stationed here, but it is well understood that under the present conditions no more are available for this duty. The majority of the men of the command were newly enlisted and had hardly passed the recruit stage at the time they were sent out to the different stations. It is but just to them to state that the important duties they were charged with have been performed with commendable prudence and efficiency, and it is believed that the care and condition of the park this season will compare favorably with those at any period of its history.

The work of the civilian scouts for the past season, as shown by the diaries kept by them and on file in my office, is a story of a vast amount of difficult country traversed under all conditions of weather, involving much labor and in some cases actual hardship. Their services have been most valuable in the protection of game.

Very respectfully,

OSCAR J. BROWN,

Captain, First Cavalry, Acting Superintendent.

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

APPENDIX A.

INSTRUCTIONS FOR WINTER PATROLLING.

NORRIS STATION.

East: Up Gibbon River to Grebe Lake.
Northwest: To Christmas Tree Park.
South: To Canyon Creek.

FOUNTAIN STATION.

East: To Nez Perce Creek and scout foothills of Marys Mountain.
Southwest: Around Twin Buttes and Fairy Falls.
North: To Gibbon Falls, meeting scouts from Norris.
South: By the way of Upper Geyser Basin to Shoshone Lake by the way of Lone Star Geyser.

RIVERSIDE STATION.

North: Along west boundary as far as Grayling Creek; up Grayling Creek to the vicinity of Three River Peaks; along foothills by White Peaks; down Maple Creek and Duck Creek to Cougar Creek, thence to station.
South: Over Madison Plateau for a distance of 10 or 12 miles, thence back to station. Patrol up the Madison River to forks of Gibbon and Madison.

SNAKE RIVER STATION.

West: To Fall River Meadows; to Boundary Creek Cabin, taking in cabins at Proposition Creek and Bartlett Cabin.
East: As far as Snowshoe Cabin, on Coulter Creek; thence north to Heart Lake; around through Heart Lake Geyser Basin to Lewis River Cabin; thence south to home station.

LAKE STATION.

East: Across the Yellowstone to Astringent Creek Cabin; thence south by Turbid Lake, along east side of lake to Snowshoe Cabin, at Park Point on the lake; along southeast arm of lake to cabin on Trappers Creek, scouting Upper Yellowstone country from this point to boundary.

CANYON STATION.

South: To Mud Geyser; thence west to Marys Lake and to Trout Creek Cabin, returning by Alum Creek.
East: Across Yellowstone River, through the Sour Creek country to Fern and White lakes and the country about the hot springs near these lakes; thence to Astringent Creek Cabin, and along Pelican Creek to Lake Station; thence to home station.

SODA BUTTE STATION.

North: Soda Butte Creek and Pebble Creek to park boundary.
South: Up Lamar River to Willow Creek Cabin, scouting up Miller and Cache creeks to east boundary of park. Mirror Plateau to December 1.

Northwest: Slough Creek and Buffalo Fork of Slough Creek to boundary line, thence west along northern boundary to Hellroaring Creek Cabin.

This is an outline of the territory to be covered by the detachments at the respective stations, but whenever necessary these limits may be extended.

Scouting parties will avoid the regular trails as far as possible; will not habitually go in the same direction, and will vary this work as much as the character of the country will allow.

OSCAR J. BROWN,
Captain, First Cavalry, Acting Superintendent.

APPENDIX B.

List of parties holding license to conduct camping business.

No.	Name.	Residence.	Number of vehicles.	Duration.
1	Marshall Bros.	Livingston, Mont.	1	June 1 to Oct. 1, 1899.
2	A. W. Chadbourne	Cinnabar, Mont.	4	Do.
3	C. C. Chadbourne	do	3	Do.
4	Erwin Clark Sandy	do	3	Do.
5	C. T. Smith	do	3	Do.
6	Frank Halem	do	2	Do.
7	Adam Gassert	do	3	Do.
8	W. J. Kupper	do	2	Do.
9	Henry George	do	3	Do.
10	J. W. Taylor	do	3	Do.
11	H. M. Gore	do	3	Do.
12	Capt. Amos Shaw	Livingston, Mont.	5	Do.
13	Marshall Bros.	do	4	June 15 to Oct. 1, 1899.
14	R. H. Menefee	Cinnabar, Mont.	2	Do.
15	Alfred Lycan	Bozeman, Mont.	19	June 24 to Oct. 1, 1899.
16	W. S. Dixon	Livingston, Mont.	1	July 5 to Oct. 1, 1899.
17	B. S. Thresher	Butte, Mont.	3	July 7 to Oct. 1, 1899.
18	J. V. & S. S. Blankenship	Bozeman, Mont.	17	July 8 to Oct. 1, 1899.
19	P. B. Cobb	do	4	July 28 to Oct. 1, 1899.
20	Albert Hill	Wells, Wyo.	3	Aug. 1 to Oct. 1, 1899.
21	C. C. Chadbourne	Cinnabar, Mont.	1	Aug. 4 to Oct. 1, 1899.
22	Ed. Staley	Lake, Idaho	3	Aug. 7 to Oct. 1, 1899.
23	John Dewing	Gardiner, Mont.	2	Aug. 12 to Oct. 1, 1899.
24	Frank Sebastian	Elk, Wyo.	1	Aug. 18 to Oct. 1, 1899.
25	B. D. Sheffield	Livingston, Mont.	2	Aug. 22 to Oct. 1, 1899.
26	Geo. W. Reese	Cinnabar, Mont.	1	Aug. 21 to Oct. 1, 1899.

¹All in excess of five wagons were for baggage.

APPENDIX D.

STATEMENT OF CASES BROUGHT BEFORE HON. JOHN W. MELDRUM, UNITED STATES COMMISSIONER, SINCE THE 1ST DAY OF SEPTEMBER, 1898.

September 29.—United States *v.* Horace Stockwell. Charge: Violation of the provisions of the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes." Defendant ordered to pay costs.

December 2.—United States *v.* Alexander Stewart. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant ordered to pay a fine of \$10.

December 13.—United States *v.* Henry Jenkins and Charles Steed. Charge: Violation of the provisions of the act of Congress approved May 7, 1894.

The original warrant herein was returned on the 17th day of January, 1899, "not served." Defendants not found within the district of Wyoming. The papers in the case have been transmitted to the United States attorney for the district of Idaho, with request that he cause such action to be taken as will place the defendants within the jurisdiction of the authorities of the district of Wyoming. No report of arrest has yet been received from the authorities of the district of Idaho.

February 1.—United States *v.* A. K. Crawford. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant ordered to pay a fine of \$50 and costs.

The complaint in this case was entered on the 12th day of July, 1898, and original warrant returned "not served." Defendant was subsequently arrested within the district of Montana, and was brought before the commissioner, by virtue of an order of removal issued by the Hon. Hiram Knowles, United States judge for said district.

June 7.—United States *v.* Margaret Gleason Trischman. Charge: Murder. Defendant held to United States district court for the district of Wyoming.

July 12.—United States *v.* John Jacobson. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant ordered to pay a fine of \$10.

July 13.—United States *v.* Thomas Murchie. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant committed to post guard-house, Fort Yellowstone, Wyo., for the period of twenty days.

August 26.—United States *v.* Washington Jones. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant ordered to pay costs.

September 25.—United States *v.* G. P. Hitchcock. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant ordered to pay costs.

APPENDIX E.

List of registered guides.

No.	Guide.	Residence.	Number of animals.	Duration.
1	B. D. Sheffield	Livingston, Mont.	40	July 1 to Dec. 1, 1899.
2	Henry George	Cinnabar, Mont.	20	June 27 to Dec. 1, 1899.
3	E. Hofer	Gardiner, Mont.	40	July 1 to Dec. 1, 1899.
4	W. T. Hall	do	20	Do.
5	Wm. Wells	Wells, Wyo.	25	July 28 to Dec. 1, 1899.
6	Ed. Staley	Lake, Idaho	40	Aug. 7 to Dec. 1, 1899.
7	C. L. Ryerson	Gardiner, Mont.	30	Aug. 8 to Dec. 1, 1899.
8	G. M. Leatherman	do	40	Aug. 11 to Dec. 1, 1899.
9	John Dewing	do	15	Aug. 12 to Dec. 1, 1899.
10	Frank Sebastian	Elk, Wyo.	30	Aug. 18 to Dec. 1, 1899.
11	Geo. W. Reese	Cinnabar, Mont.	30	Aug. 22 to Dec. 1, 1899.
12	E. C. Alderson	Bozeman, Mont.	20	Aug. 23 to Dec. 1, 1899.

APPENDIX F.
METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.

SEPTEMBER, 1898.							OCTOBER, 1898.							NOVEMBER, 1898.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	74	42	32	SW.	0.25	Rain.	1	34	29	5	NW.	0.10	Snow.	1	36	21	15	SW.		
2	56	46	10	NW.			2	53	20	13	N.	.20	Snow.	2	41	29	12	SW.		
3	56	34	22	NW.			3	38	19	18	N.			3	36	32	4	SW.	0.25	Snow.
4	63	35	28	SW.			4	48	19	23	NW.			4	49	32	17	NW.	.10	Snow.
5	61	34	27	NW.			5	47	21	26	SW.	.10	Snow.	5	44	26	18	SW.		
6	60	35	25	NW.			6	45	29	16	N.			6	52	32	20	SW.		
7	60	35	25	NW.			7	56	26	30	SW.			7	44	17	27	W.		
8	65	35	30	NW.			8	67	28	39	W.			8	44	17	27	W.		
9	55	34	21	NW.			9	51	37	14	SW.			9	29	8	20	NW.		
10	64	25	39	NW.			10	47	30	17	SW.			10	33	15	15	SW.		
11	73	29	44	SW.			11	45	32	13	SW.			11	31	15	15	W.		
12	73	37	36	NW.			12	46	31	15	SW.			12	30	12	18	NW.		
13	69	34	35	NW.			13	58	30	23	SW.			13	29	8	21	W.		
14	76	38	38	NW.			14	55	37	18	SW.			14	41	9	32	SW.		
15	58	36	22	NW.			15	50	27	18	N.	.10	Snow.	15	41	9	32	SW.		
16	72	32	40	NW.			16	37	19	18	NW.			16	39	23	16	SW.		
17	79	40	39	SW.			17	44	18	26	SW.			17	35	22	13	SW.	.05	Snow.
18	84	44	40	SW.			18	43	27	16	NW.			18	36	22	14	SW.	.05	Snow.
19	85	40	45	SW.			19	34	24	10	NW.	.20	Snow.	19	42	30	12	SW.	.10	Rain.
20	77	47	30	SW.			20	42	13	29	W.			20	43	34	9	NE.	.30	Snow.
21	71	39	32	W.			21	54	29	25	SW.			21	32	5	37	N.	.33	Snow.
22	62	47	15	S.	.15	Rain.	22	59	34	25	S.			22	15	13	28	S.		
23	58	35	23	S.			23	53	13	22	N.	.85	Snow.	23	20	11	9	S.		
24	73	34	40	S.			24	37	24	13	SW.	.15	Snow.	24	25	9	16	SW.		
25	80	43	37	S.			25	47	20	27	SW.			25	30	10	20	SW.		
26	81	39	42	S.			26	42	26	16	SW.			26	35	8	27	W.		
27	73	47	26	S.	.50	Rain.	27	41	31	10	SW.			27	32	13	19	S.	.05	Snow.
28	51	38	13	SE.			28	39	29	10	NW.	.15	Snow.	28	34	17	17	S.	.20	Snow.
29	45	30	15	SW.			29	47	12	35	SW.			29	25	15	10	SW.	.20	Snow.
30	49	32	17	NW.			30	56	26	30	SW.			30	30	18	12	S.		
Total.	2,014	1,104	933		.90		Total.	1,421	813	608		2.25		Total.	1,021	478	543		1.55	
Mean.	67.13	36.80	31.10	NW.			Mean.	45.84	26.23	19.61	SW.			Mean.	84.03	15.93	18.10	SW.		

Maximum, 85° on 19th instant; minimum, 25° on 6th instant; mean, 51.97°; total precipitation, 0.90 inch; prevailing winds, northwest.

Maximum, 67° on 8th instant; minimum, 12° on 29th instant; mean, 36.04°; total precipitation, 2.25 inches; prevailing winds, southwest.

Maximum, 52° on 6th instant; minimum, 4° on 8th instant; mean, 24.98°; total precipitation, 1.55 inches; prevailing winds, southwest.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

DECEMBER, 1888.							JANUARY, 1889.							FEBRUARY, 1889.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	31	20	11	SW.	.....	.....	1.....	25	2	23	.....	0.10	Snow.	1.....	-10	-23	13	.....	0.30	Snow.
2.....	33	17	16	N.	0.05	Snow.	2.....	28	20	8	.....	.15	Snow.	2.....	-18	-33	15	.....	.30	Snow.
3.....	19	1	20	N.	.....	.....	3.....	29	12	17	.....	.30	Snow.	3.....	-19	-35	16	.....	.....	.....
4.....	31	9	22	S.	.....	.....	4.....	15	3	18	.....	Trace	.....	4.....	4	-29	25	.....	.....	.....
5.....	28	14	14	N.	.10	Snow.	5.....	13	-	12	.....	.....	.....	5.....	9	-28	19	.....	.....	.....
6.....	21	2	23	N.	.....	.....	6.....	12	8	12	.....	.....	.....	6.....	7	-22	19	.....	.....	.....
7.....	20	4	16	N.	.07	Snow.	7.....	23	7	24	.....	.....	.....	7.....	18	-7	11	.....	.....	.....
8.....	18	2	20	NW.	.....	.....	8.....	25	1	18	.....	.....	.....	8.....	31	15	16	.....	.....	.....
9.....	18	15	24	NW.	.....	.....	9.....	21	9	12	.....	.....	.....	9.....	29	-10	39	.....	.....	.....
10.....	16	5	21	NW.	.....	.....	10.....	30	12	18	.....	Trace	.....	10.....	29	-10	39	.....	.....	.....
11.....	23	0	23	NW.	.....	.....	11.....	32	23	9	.....	Trace	.....	11.....	24	-2	26	.....	.....	.....
12.....	26	5	21	W.	.....	.....	12.....	29	21	8	.....	Trace	.....	12.....	22	-12	34	.....	.....	.....
13.....	27	4	23	SW.	.....	.....	13.....	28	10	18	.....	Trace	.....	13.....	29	-16	13	.....	.....	.....
14.....	30	4	26	SW.	.....	.....	14.....	24	16	8	.....	.10	Snow.	14.....	32	18	14	.....	.....	.....
15.....	27	14	16	SW.	.....	.....	15.....	31	17	14	.....	.05	Snow.	15.....	32	25	7	.....	.....	.....
16.....	29	10	19	SW.	.....	.....	16.....	36	27	9	.....	.10	Snow.	16.....	34	20	14	.....	.....	.....
17.....	34	15	19	SW.	.....	.....	17.....	35	24	11	.....	.10	Snow.	17.....	28	18	10	.....	.....	.....
18.....	36	18	18	S.	.....	.....	18.....	40	24	16	.....	.05	Snow.	18.....	36	17	19	.....	.....	.....
19.....	34	18	18	SW.	.....	.....	19.....	34	20	14	.....	.....	.....	19.....	43	23	20	.....	.....	.....
20.....	34	26	8	SW.	.....	.....	20.....	33	23	10	.....	.....	.....	20.....	39	22	17	.....	.....	.....
21.....	26	12	14	SW.	.05	Snow.	21.....	38	29	9	.....	.....	.....	21.....	26	13	13	.....	.....	.....
22.....	24	14	10	NW.	.....	.....	22.....	34	18	16	.....	.13	Snow.	22.....	26	18	8	.....	.....	.....
23.....	18	3	15	SW.	.05	Snow.	23.....	20	0	20	.....	.....	.....	23.....	31	4	27	.....	.....	.....
24.....	26	14	12	S.	.....	.....	24.....	32	15	17	.....	.02	Snow.	24.....	29	11	18	.....	.....	.....
25.....	31	18	13	S.	.....	.....	25.....	32	17	15	.....	.50	Snow.	25.....	30	7	23	.....	.....	.....
26.....	36	27	9	S.	.....	.....	26.....	34	23	11	.....	.....	.....	26.....	23	3	26	.....	.....	.....
27.....	37	31	6	N.	.20	Snow.	27.....	34	16	18	.....	.70	Snow.	27.....	27	17	10	.....	.....	.....
28.....	32	5	28	N.	.05	Snow.	28.....	40	12	18	.....	.30	Snow.	28.....	34	12	22	.....	.....	.....
29.....	31	9	26	N.	.10	Snow.	29.....	30	13	27	.....	.30	Snow.	29.....	28	1	27	.....	.....	.....
30.....	9	5	5	N.	.....	.....	30.....	28	1	27	.....	.....	.....	30.....	567	38	529	.....	.....	.....
31.....	8	10	18	S.	.....	.....	31.....	13	-11	24	.....	1.40	Snow.	31.....	20.25	1.35	18.90	.....	.....	.....
Total	802	264	538	.....	.67	.....	Total	878	389	489	.....	4.21	.....	Total	567	38	529	.....	.....	.....
Mean	25.87	8.52	17.35	SW.	.....	.....	Mean	28.32	12.55	15.77	.....	.....	.....	Mean	20.25	1.35	18.90	.....	.....	.....

Maximum, 37° on 27th instant; minimum, 1° on 3d instant; mean, 17.20°; total precipitation, 0.67 inch; prevailing winds, southwest.

Maximum, 40° on 18th instant; minimum, -11° on 31st instant; mean, 15.43°; total precipitation, 4.21 inches; prevailing winds, south.

Maximum, 43° on 19th instant; minimum, -35° on 3d instant; mean, 10.75°; total precipitation, 3.40 inches; prevailing winds, south.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

MARCH, 1899.							APRIL, 1899.							MAY, 1899.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.	36	21	15	S.	0.10	Snow.	1.	31	10	21	S.	Trace	Snow.	1.	39	23	16	N.	0.60	Snow.
2.	36	21	15	S.	.20	Snow.	2.	36	16	20	S.	0.40	Snow.	2.	24	19	5	N.		
3.	31	6	25	S.	.40	Snow.	3.	47	16	31	S.			3.	37	15	22	S.		
4.	30	16	14	SW.			4.	45	32	13	S.			4.	47	24	23	S.		
5.	30	8	22	SW.			5.	48	23	25	S.			5.	55	29	26	S.		
6.	32	31	1	S.			6.	39	19	20	S.			6.	61	28	33	N.		
7.	49	32	17	SW.			7.	46	17	29	S.			7.	62	32	30	NW.		
8.	43	32	11	SW.			8.	51	20	31	S.			8.	60	33	27	NW.		
9.	39	24	15	NW.	.20	Snow.	9.	56	33	23	S.			9.	57	38	19	NW.	.12	Rain.
10.	26	14	12	NW.			10.	54	33	21	S.			10.	60	33	27	W.		
11.	30	3	27	SW.			11.	54	33	15	S.			11.	63	47	16	S.	.35	Rain.
12.	30	16	14	S.			12.	50	33	17	S.	.75	Rain.	12.	54	27	27	S.		
13.	31	17	14	S.			13.	45	25	20	S.			13.	50	30	20	S.		
14.	26	6	20	N.	.10	Snow.	14.	45	27	18	S.			14.	43	34	9	S.	.04	Rain.
15.	32	3	29	S.	.40	Snow.	15.	53	25	28	S.			15.	45	31	14	SW.	.25	Rain.
16.	32	14	18	S.	.40	Snow.	16.	49	33	16	SW.	.05	Snow.	16.	53	29	24	S.	.05	Rain.
17.	27	10	17	SW.			17.	39	19	20	S.	1.00	Rain.	17.	59	35	24	S.		
18.	28	3	25	S.			18.	43	23	20	N.			18.	50	40	10	S.		
19.	36	25	11	S.	.05	Snow.	19.	43	23	20	N.			19.	43	33	7	N.	.10	Rain.
20.	38	28	10	S.	.05	Snow.	20.	45	18	27	S.			20.	48	36	12	N.	.05	Rain.
21.	33	1	32	S.	.20	Snow.	21.	55	34	21	S.			21.	44	33	11	N.	.03	Rain.
22.	25	10	15	SW.			22.	59	36	23	NE.			22.	48	31	17	S.		
23.	39	20	19	S.	.50	Rain.	23.	52	32	20	NW.			23.	67	34	33	S.		
24.	45	35	10	SW.			24.	50	32	18	W.			24.	71	36	35	S.	.15	Rain.
25.	42	16	26	N.			25.	60	31	29	W.			25.	65	36	29	S.	.20	Rain.
26.	18	—	20	N.			26.	46	29	17	S.			26.	59	34	25	S.	.15	Rain.
27.	19	—	29	N.			27.	35	26	9	S.	2.00	Snow.	27.	57	30	27	W.	.33	Rain.
28.	33	14	19	S.			28.	38	14	24	S.	.30	Snow.	28.	56	37	19	W.	.05	Rain.
29.	37	24	13	N.	.40	Snow.	29.	41	15	26	S.	.40	Snow.	29.	58	39	19	S.		
30.	31	1	30	N.			30.	44	29	15	S.			30.	51	34	17	W.	.05	Rain.
31.	28	—	33	N.			31.	44	29	15	S.			31.	50	33	17	W.		
Total.	1,017	413	604		3.00		Total.	1,388	756	632		2.30		Total.	1,637	992	645		2.52	
Mean.	32.81	13.32	19.48				Mean.	46.27	25.20	21.07	S.			Mean.	52.81	32.00	20.81	S.		

Maximum, 71° on 24th instant; minimum, 10° on 1st instant; mean, 35.74°; total precipitation, 2.30 inches; prevailing winds, south.

Maximum, 60° on 25th instant; minimum, 10° on 1st instant; mean, 35.74°; total precipitation, 2.30 inches; prevailing winds, south.

Maximum, 71° on 24th instant; minimum, 15° on 3d instant; mean, 42.40°; total precipitation, 2.52 inches; prevailing winds, south.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

JUNE, 1899.							JULY, 1899.							AUGUST, 1899.							
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	
1.....	59	38	21	N.	0.08	Rain.	1.....	76	37	39	SW.	.....	.....	1.....	76	39	37	S	.....	.....
2.....	55	40	15	NW.	.22	Rain.	2.....	74	40	34	NW.	.....	.....	2.....	75	40	35	S	.....	.....
3.....	60	42	18	NW.	.20	Rain.	3.....	71	44	27	NW.	.....	.....	3.....	78	41	37	S	.....	.....
4.....	55	36	19	W.	.15	Rain.	4.....	75	49	26	NW.	.....	.....	4.....	75	49	26	S	.....	.....
5.....	50	30	20	N.	.06	Rain.	5.....	70	44	26	SW.	.....	.....	5.....	74	45	29	S	.....	.....
6.....	46	26	20	SW.	.02	Snow.	6.....	79	40	39	W.	.....	.....	6.....	74	45	29	W	.....	Rain.	
7.....	50	32	18	N.	.02	Rain.	7.....	84	45	39	W.	0.05	Rain.	7.....	69	50	19	NW.	.....	Rain.	
8.....	59	33	26	S.	.....	.....	8.....	82	43	39	SW.	.....	.....	8.....	67	48	19	N.	.....	.08	Rain.
9.....	67	33	34	S.	.....	.....	9.....	84	46	38	SW.	.....	.....	9.....	65	44	21	N.	.....	.30	Rain.
10.....	65	46	19	N.	.05	Rain.	10.....	86	47	39	S.	.....	.....	10.....	65	43	22	N.	.....	.70	Rain.
11.....	63	45	18	N.	.05	Rain.	11.....	81	55	26	SW.	.40	Rain.	11.....	78	37	41	W.	.....	.....	.....
12.....	57	33	24	NW.	.18	Rain.	12.....	79	47	32	SW.	.05	Rain.	12.....	71	40	31	W.	.....	.....	.....
13.....	59	37	22	W.	.12	Rain.	13.....	71	49	22	NW.	.....	.....	13.....	77	43	34	S.	.....	.....	.....
14.....	59	33	26	SW.	.....	.....	14.....	74	46	28	NW.	.....	.....	14.....	83	45	38	S.	.....	.....	.....
15.....	69	34	35	W.	.....	.....	15.....	74	41	33	NW.	.....	.....	15.....	70	40	30	E.	.....	.....	.....
16.....	76	40	36	SW.	.....	.....	16.....	75	44	31	W.	.....	.....	16.....	71	37	34	W.	.....	.08	Rain.
17.....	82	49	33	S.	.....	.....	17.....	80	44	36	W.	.....	.....	17.....	68	42	26	NW.	.....	.09	Rain.
18.....	81	48	33	S.	.....	.....	18.....	86	47	39	W.	.....	.....	18.....	73	37	36	W.	.....	.....	.....
19.....	76	55	21	NW.	.55	Rain.	19.....	88	49	39	S.	.05	Rain.	19.....	67	41	26	NW.	.....	.45	Rain.
20.....	64	48	16	N.	.15	Rain.	20.....	88	54	34	S.	.15	Rain.	20.....	78	44	34	W.	.....	.....	.....
21.....	64	35	29	N.	.....	.....	21.....	80	51	29	SW.	.....	.....	21.....	61	42	19	N.	.....	.....	.....
22.....	64	32	32	NW.	.....	.....	22.....	75	52	23	SW.	.....	.....	22.....	52	34	18	N.	.....	.02	Rain.
23.....	71	33	38	S.	.....	.....	23.....	71	34	37	SW.	.....	.....	23.....	58	35	23	N.	.....	.....	.....
24.....	77	39	38	SW.	.....	.....	24.....	79	41	38	S.	.....	.....	24.....	69	38	31	N.	.....	.....	.....
25.....	77	47	30	SW.	.....	.....	25.....	76	50	26	NW.	.23	Rain.	25.....	75	42	33	W.	.....	.....	.....
26.....	69	52	17	SW.	.05	.....	26.....	72	50	22	W.	.24	Rain.	26.....	73	47	26	W.	.....	.....	.....
27.....	71	42	29	S.	.....	.....	27.....	76	46	30	NW.	.....	.....	27.....	75	43	32	SW.	.....	.....	.....
28.....	81	45	36	S.	.....	.....	28.....	71	46	25	NW.	.....	.....	28.....	77	42	35	S.	.....	.....	.....
29.....	82	52	30	S.	.....	.....	29.....	80	41	39	NW.	.10	Rain.	29.....	78	47	31	S.	.....	.....	.....
30.....	82	52	30	S.	.....	.....	30.....	80	41	39	NW.	.15	Rain.	30.....	77	38	39	S.	.....	.....	.....
31.....	74	51	23	NW.	.....	.....	31.....	63	45	18	NW.	.....	.....	31.....	80	45	35	S.	.....	.....	.....
Total.	1,974	1,206	768	.....	1.90	.....	Total.	2,398	1,408	990	.....	1.42	.....	Total.	2,229	1,303	926	.....	.....	2.23	.....
Mean.	63.33	38.50	24.83	N.	.....	.....	Mean.	77.36	45.42	31.94	NW.	.....	.....	Mean.	71.90	42.03	29.87	S.	.....	.....	.....

Maximum, 82° on 17th instant; minimum, 26° on 6th instant; mean, 50.92°; total precipitation, 1.90 inches; prevailing winds, north.

Maximum, 88° on 19th instant; minimum, 34° on 23d instant; mean, 61.39°; total precipitation, 1.12 inches; prevailing winds, northwest.

Maximum, 83° on 14th instant; minimum, 34° on 22d instant; mean, 56.96°; total precipitation, 2.23 inches; prevailing winds, south.

APPENDIX G.

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., April 1, 1899.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes United States, and the act of Congress approved May 7, 1894:

(1) It is forbidden to remove or injure the sediments or incrustations around the eyes, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb in any manner or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

(2) It is forbidden to ride or drive upon any of the geyser or hot spring formations or to turn loose stock to graze in their vicinity.

(3) It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.

(4) Fires shall be lighted only when necessary, and completely extinguished when no longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and anyone failing to comply therewith shall be summarily removed from the park.

(5) Hunting or killing, wounding, or capturing of any bird or wild animal, except dangerous animals, when necessary to prevent them from destroying life or inflicting injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

(6) Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

(7) No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and make the same in his discretion, and no pack trains shall be allowed in the park except in charge of a duly registered guide.

(8) The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior.

(9) No drinking saloon or barroom will be permitted within the limits of the park.

(10) Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

(11) Persons who render themselves obnoxious by disorderly conduct or bad behavior or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of proceedings.

E. A. HITCHCOCK,
Secretary of the Interior.

APPENDIX H.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., April 1, 1899.

The following instructions for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned:

(1) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. When fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished where water is not available by a complete covering of earth well packed down.

(2) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other débris must be either buried or taken to some place where they will not offend the sight.

(3) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must therefore be exercised by their riders. In meeting teams, riders will always dismount and stand at the side of the road—the lower side if the meeting be on a grade. In passing teams from the rear, riders will ring their bell as a warning, and inquire of the driver if they may pass. If it appear from the answer that the team is liable to be frightened, they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(4) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(5) *Dogs.*—When dogs are taken through the park they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling, and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(6) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the roads.

(7) *Miscellaneous.*—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

(8) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

OSCAR J. BROWN,
Captain, First U. S. Cavalry, Acting Superintendent Yellowstone National Park.

REPORT

OF THE

ACTING SUPERINTENDENT

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1900.

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1900.

NATIONAL PARK

INTERIOR,

NATIONAL PARK,

yo., April 1, 1899

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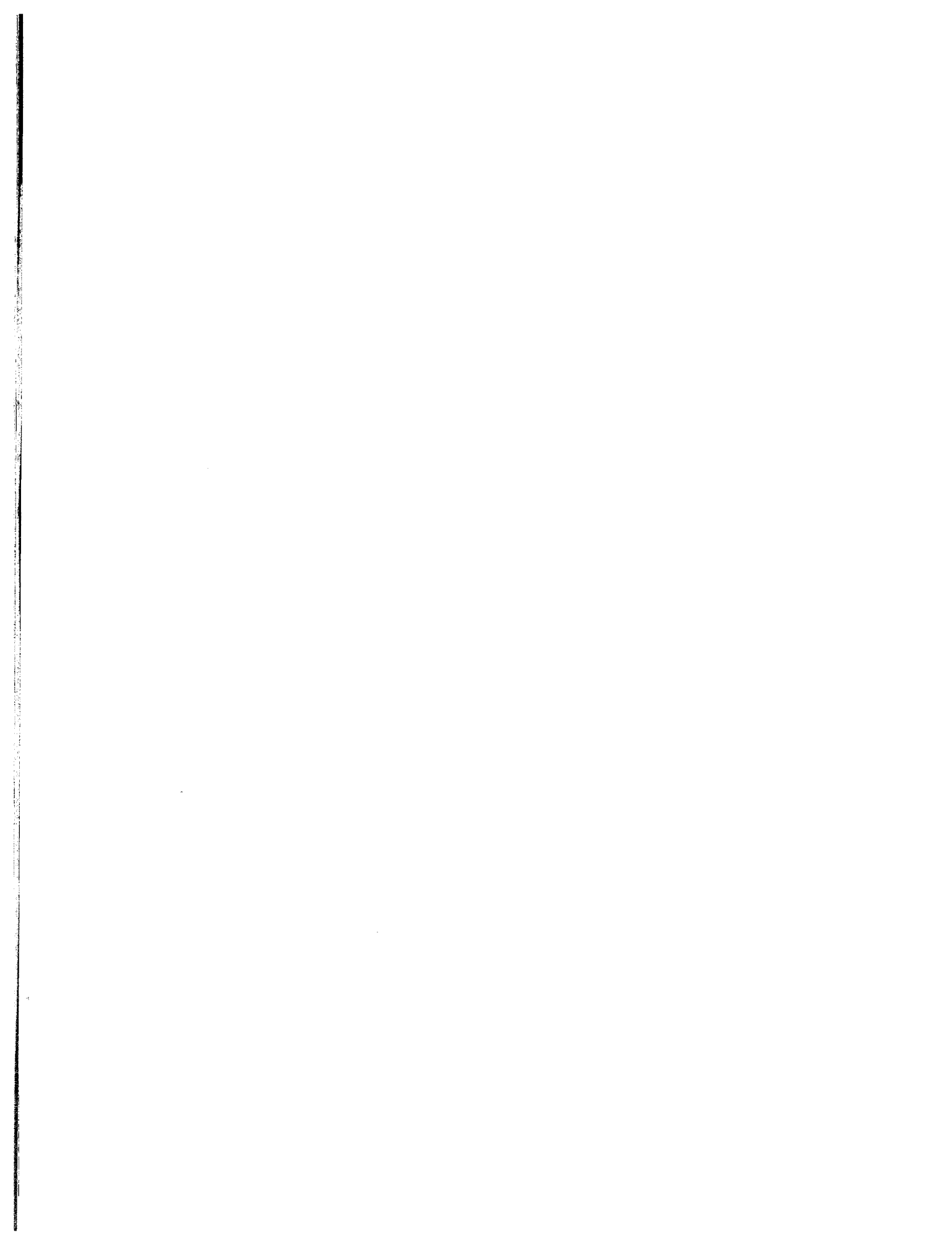
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OSCAR J. BROWN,

Yellowstone National Park.



R E P O R T
OF THE
ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Mammoth Hot Springs, Wyo., September 25, 1900.

SIR: I have the honor to submit the following report of the condition of affairs in the Yellowstone National Park, covering the time since the last report rendered up to date, and of my management of same since assuming the duties of acting superintendent.

My administration dates from July 24 last, when I relieved Capt. Oscar J. Brown, First Cavalry, whose troop was ordered to the East for service with the regiment in China or the Philippine Islands, G Troop, First Cavalry, replacing M.

My work has been mainly of routine nature, inasmuch as I took charge of affairs at the height of the season, under established conditions which differed little, or not at all, from the previous season in regard to tourist travel and the business connected therewith.

For this reason, and because through an exigency of the service I succeeded to the superintendency of the park for an unexpired portion of Captain Brown's régime, I might quote his last report in most essential features.

PROTECTION.

The disposition of details of soldiers at the different stations has been the same as I found under my predecessor. The exchange was made with such great haste, in order that Troop M could be moved to the Pacific coast under telegraphic instructions from the War Department, that my men suffered some disadvantage in consequence. In reasonable time, however, they had familiarized themselves with their duties, which they have performed satisfactorily, with few exceptions.

For the winter season I shall make some changes, retaining the station at the Thumb as late as possible in the fall, on account of the returning hunting parties from the Jackson Hole country.

It is my intention to put a detachment with a civilian scout at Knowles Cabin to watch the Hellroaring country, and have the southwest corner of the reservation frequently scouted from the Snake River station during the fall and winter.

The establishing of snowshoe cabins throughout the park was an excellent step; they are most effective as a means of protection during

the winter, the scouts being enabled to cover practically the entire reservation and penetrate to localities which would otherwise be inaccessible at a time when poachers are at work.

These cabins are now being rationed and put in proper shape for winter use. Their location and number is shown by appended map, taken from Captain Brown's last report.

The civilian scouts do excellent work, and are indispensable to a satisfactory administration of affairs, as regards the protection of the game, etc. Their work, in conjunction with that of the local magistrate, has been, I believe, the salvation of the game up to the present time. These men know the country and are trained woodsmen in all seasons, whereas the soldier, as a rule, is replaced before he has time to become proficient in such duties.

Besides the work of the scouts and soldiers from Fort Yellowstone, making the round of snowshoe cabins during the winter, the instructions for the detachments at the permanent stations require frequent scouting trips within their districts, so that the entire area of the reservation is under fairly effective surveillance during the hunting season and winter; without an increase in the number of scouts, however, it is impossible to prevent poaching.

TRAVEL.

The following table shows the aggregate number of tourists making the trip through the park during the season, apportioned according to the different means of transportation, accommodation, etc.:

Carried by Yellowstone National Park Transportation Company, entering via northern entrance of park.....	2,664
Carried by Messrs. Humphrey & Haynes, entering via western entrance of park.....	437
Others at hotels, traveling with private transportation, bicyclers, etc....	127
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Total number at hotels.....	3,228
Carried by W. W. Wylie and accommodated at his permanent camps..	802
Carried by other licensees of personally conducted camping parties....	474
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Total number camping, traveling with licensed transportation.....	1,276
Total number of tourists traveling through the park with private transportation as "camping parties".....	4,424
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Grand total of all visitors to the park, season of 1900.....	8,928

During the season 3,050 tourists took the trip across Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number, 1,816 entered the park with the Yellowstone National Park Transportation Company, 222 with Messrs. Humphrey & Haynes, 771 with W. W. Wylie, and the balance, 241 people, were other campers.

HOTELS.

Mr. J. H. Dean, president Yellowstone Park Association, has immediate charge of the hotels and lunch stations of that association, and deserves great credit for his efficiency in the administration of this very important service. I have nothing but praise for the satisfactory way in which these hotels are conducted.

The Wylie permanent camps, and other licensees for camping parties, have rendered satisfactory service.

YELLOWSTONE NATIONAL PARK.

TRANSPORTATION.

In the matter of transportation there is no change since last season. The two principal lines, the Yellowstone National Park Transportation Company and Monida and Yellowstone Stage Company, are well equipped and give excellent service.

The Wylie Company (for permanent camps) and other licensees to personally conduct camping parties have given satisfaction to their patrons, so far as I can learn.

In my official intercourse with the men having this business in charge, I have found them courteous and disposed to comply with the terms of their leases, licenses, or permits, as a rule, the principal exceptions being the cases recently reported to the Department.

The following is a list of licensees for transportation, etc., for the past season:

The Yellowstone National Park Transportation Company, S. S. Huntley, manager.

The Monida and Yellowstone Stage Company, Messrs. F. Jay Haynes and W. W. Humphrey, proprietors.

W. W. Wylie, permanent camping business.

Licensed to personally conduct camping parties: A. W. Chadbourn, C. C. Chadbourn, Charles Gassert, Marshall Brothers, Capt. Amos Shaw and J. D. Powell, R. H. Menefee, Sarah C. Gassert, Alfred Lycan and Frank A. Lyons, Ed. Staley, H. M. Gore, B. D. Sheffield, Lionel Compiegne, James V. and Houston Blankenship, Erwin Clark Sandy, Frank Scott, and B. S. Thresher.

FIRES.

The past season has been remarkably dry, nothing like it being known in the park, and as a consequence the danger from fire was excessive.

Beginning on the first day of duty at the stations (July 22), my patrols were called upon to extinguish small fires frequently during the season in all parts of the park where camping parties were found. Only three of the fires threatened to be of serious proportions:

One on the Soda Butte road, 6 miles west of Yanceys, September 2, was set through the carelessness of a teamster, and was extinguished by the men from Soda Butte station before it reached the timber.

One on the grade in Gardiner Canyon (east fork), about 3 miles from Fort Yellowstone, September 3, presumably started from a cigar or cigarette thrown down by a party passing over the road in a wagon, was held in check by detachment from the post assisted by twenty roadmen from the force employed by Captain Chittenden, Corps of Engineers. This fire was kept under control for about ten hours, and extinguished by rainfall the following night.

The most serious fire during the season was reported July 29, west of the Thumb, apparently near Shoshone Lake. My troop was not yet established in its new quarters when every available man was sent, as rapidly as possible, to the scene of this fire, where Lieutenant Amos joined them August 1, and for about a month, with the assistance of men from the road crews furnished by Captain Chittenden, Corps of Engineers, the fire was held under partial control—depending always upon the condition of wind and the character of the timber growth—until timely rain and snow, August 24, extinguished what remained.

This fire at one time threatened the destruction of the timber in the park and the interruption of tourist travel. The high winds for sev-

eral days were unprecedented, and the small force available for work seemed helpless to make any impression.

I take pleasure in acknowledging the timely and willing assistance given by Captain Crittenden, through his road crews and foremen, and commend most highly the efficiency of Lieutenant Amos and the men under his command, whose patience and zeal accomplished so much in the face of discouraging conditions.

UNITED STATES COMMISSIONER.

In comparing the conditions which existed at the time the first military superintendent began his administration of affairs in the park with those at the present time, the one change which stands out most noticeably is the presence of a local magistrate having jurisdiction within the reservation.

I was on duty with Capt. Moses Harris, First Cavalry, during the season of 1887, and know how much the need of such an institution as a local court was felt at that time. The Government is fortunate in having as its representative in this department a man so well qualified as the present commissioner.

Following is report of cases tried for the past year:

October 16.—United States *v.* Henry Lohman, Benjamin F. Sheppard, and P. E. Sheppard. Charge, violation of Yellowstone Park protective act. Defendants fined \$10 each and costs.

October 23.—United States *v.* Richard Randall, Marion R. Randall, and C. J. B. Stevens. Charge, violation of Yellowstone Park protective act. Defendants fined \$10 each and costs.

December 2.—United States *v.* Sanders Keouskie. Charge, violation of Yellowstone Park protective act. Defendant fined \$10.

December 28.—United States *v.* George Mack. Charge, violation of Yellowstone Park protective act. Defendant discharged.

January 25.—United States *v.* James Courtenay and Jay Whitman. Charge, violation of Yellowstone Park protective act. Trial June 18, 1900. Defendants fined \$300 each and costs.

May 15.—United States *v.* John A. Brundage. Charge, violation of Yellowstone Park protective act. Defendant fined \$10 and costs.

June 30.—United States *v.* O. D. Johnson and James Jones. Charge, violation of Yellowstone Park protective act. Defendants fined \$5 each and costs.

July 30.—United States *v.* William Maher. Charge, assault. Defendant ordered to pay costs, \$14.40.

August 6.—United States *v.* J. Neelson, Frank Adams, J. H. Tomlinson, and E. J. Robinson. Charge, violation of Yellowstone Park protective act. Defendants fined \$5 each and costs.

August 13.—United States *v.* Anton Blas. Charge, violation of Yellowstone Park protective act. Defendant fined \$25 and costs.

August 17.—United States *v.* R. F. Russell. Charge, assault. Defendant discharged.

August 17.—United States *v.* William Merrill. Charge, assault. Defendant not apprehended.

September 3.—United States *v.* Amos Hogeland. Charge, violation of Yellowstone Park protective act. Defendant discharged.

WILD ANIMALS.

I have the assurance of the scouts, who have seen the game at all seasons, that, with the exception of the bison (American buffalo) all varieties, including antelope, bear, beaver, coyotes, deer, elk, moose, sheep, and mountain lions are increasing, notwithstanding that the antelope range in winter over the north boundary and the elk in the fall over the south boundary, where many of them are killed.

Owing to scarcity of feed the antelope will almost certainly wander

in large numbers across the northern boundary into the Yellowstone Valley, where their chances of getting back into the park again are very few. It is for this reason, and because of keeping stock out of the park, that the fence across this part of the boundary is so necessary.

Twenty-nine head of buffalo were counted by scouts last winter, and there were possibly 10 more in the park that were not seen.

Unless stations are located near the two southern corners of the reservation and the force of scouts increased the buffalo will be exterminated in a few years. With that addition to the facilities for protection they can be preserved and will increase.

FISH.

The trout in Willow Creek and Glen Creek, although apparently as numerous as ever, are so small as to indicate the advisability of prohibiting fishing in those streams during the next season. Otherwise there is no change in the conditions, the other streams throughout the park being full of fish of good size, notwithstanding the large number taken out every season.

CASUALTIES.

But two casualties during the season within the park limits were brought to my notice: The scalding of a camper at Fountain Basin, which was not reported to me, but which on inquiry I found to be the result of carelessness on the part of the injured man, and which did not, I believe, result seriously, and the disappearance from the Fountain Hotel of a tourist by the name of R. L. Piper, July 31. This man's disappearance was reported to me August 1, some twenty-four hours after he was first missed. My men were all at that time fighting fire at the south end of Shoshone Lake, and I could render little or no help. My patrols were instructed to do what was possible, and some days later a searching party was organized by friends of the lost man. Nothing being accomplished, however, the day following the return of my men from the scene of the fire I sent out a detachment, and some days later a second detachment, but with no better result.

It is my belief that Mr. Piper, when he arrived at the Fountain Hotel, was in a partially demented and irresponsible condition, and that he wandered away from the hotel, fell in with some camping outfit, and got out of the park.

IMPROVEMENT.

The work pertaining to the "improvement" in the Yellowstone National Park is in charge of Capt. H. M. Chittenden, Corps of Engineers, an officer of experience and ability, who is perhaps better equipped for this duty than any man in his corps.

In his work of construction and maintenance of roads and bridges this officer is not under the orders of the acting superintendent, and makes his report to the Chief of Engineers, United States Army. I have nothing, therefore, to say in the way of comment regarding this important work except that if such an anomalous condition is to continue I have confidence that Captain Chittenden will serve the Government to the best advantage under the circumstances.

Appended is a statement and estimate of projected improvements reported by that officer to the Chief of Engineers.

RECOMMENDATIONS.

A knowledge of the park, extending through a number of years, and a most sincere interest in its preservation and welfare, prompt me to make the following recommendations for your consideration:

(1) The appropriation of \$10,000, to be expended in the proper quartering of soldiers at the stations throughout the park.

(2) That new stations be built (1) near southwest corner of park, on Bechler River; (2) where southern boundary crosses Snake River (present Snake River station to be abandoned); (3) at southeast corner, on Thorofare Creek; (4) on the Gallatin River or Fan Creek, near northwest corner, (5) and at the town of Gardiner, Mont.

(3) That never less than two troops of cavalry be stationed within the reservation for its protection.

(4) That the number of permanent scouts be increased to ten, with suitable quarters for same at Fort Yellowstone and Lower Geyser Basin, in order that the acting superintendent may divide the entire reservation into districts, to be constantly patrolled by them, after the manner of game wardens.

(5) That no individual nor business concern be allowed to cut hay within the limits of the national park.

(6) That it shall be a violation of park regulations to use any location within the park as a range for stock, and that no stock shall be allowed within the limits of the park which is not at all times under such control that it can not stray away from its owners.

(7) That it shall be necessary to give suitable bond in order to obtain a license to personally conduct camping parties through the park; that the number of such licenses be limited to ten, the number of passenger wagons in each case being limited to five.

(8) That, in accordance with the terms of its lease, the Yellowstone Park Association be required to furnish transportation exclusively for its guests throughout the park.

(9) That registered guides be required to sign an agreement, which, while they are in the national park, places upon them the obligation to enforce the regulations and protect the interests of the Government.

(10) That the introduction of liquor of any kind into the park, except as provided for under authority of the Interior or War Departments, shall be prohibited by park regulations.

(11) That all money appropriated for the purpose of improvement and protection, and for any other purpose, within the national park, be expended under the direction of the acting superintendent, and that all work in connection therewith shall be under his supervision and control.

(12) That a suitable fence be built inclosing the entire reservation along the official boundaries thereof, and that the Interior Department secure the enactment of laws for its protection and maintenance.

I have indicated on the appended map approximate route of a proposed trip I intend taking about October 1, with small detachment and pack outfit; rationing some of the snowshoe cabins en route, and locating sites for proposed additional stations, as per recommendation No. 2 in this report.

In conclusion, I take pleasure in testifying herein to the efficiency and fine character of the officers on duty at Fort Yellowstone, and Mr. Lindsley, the civilian clerk employed by the Interior Department, and

feel grateful for the intelligent and willing assistance they have given me in the discharge of my duties, and in expressing my gratification at the excellent work performed by the enlisted men of Troop G, First Cavalry, during its sojourn in the park.

Appended is meteorological report prepared by Dr. James B. Ferguson, acting assistant surgeon, United States Army.

I am, sir, very respectfully,

GEO. W. GOODE,

Captain, First Cavalry, Acting Superintendent.

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

APPENDIX A.

IMPROVEMENT YELLOWSTONE NATIONAL PARK.

UNITED STATES ENGINEER OFFICE,
Mammoth Hot Springs, Wyo., September 15, 1900.

CAPTAIN: I have the honor to transmit herewith for your information a copy of my project for the improvement of the Yellowstone National Park, with the approval of the same by the Chief of Engineers. The act of June 6, 1900, contained the following provision:

“Provided further, That road extensions and improvements shall hereafter be made in said park under and in harmony with a general plan of roads and improvements to be approved by the Chief of Engineers of the Army.”

Under this provision the Chief of Engineers called for a general project for the proposed road work of the park. The project herewith simply embraces in official form the scheme of improvement which has been in contemplation for many years, with the exception of the eastern approach, which was added this year by act of Congress.

The estimate of cost of this work is contained in my annual report for 1900, a copy of which will be sent you as soon as published.

Very respectfully,

H. M. CHITTENDEN,

Captain, Corps of Engineers, United States Army.

Capt. GEORGE W. GOODE,

*First Cavalry, United States Army, Acting Superintendent
Yellowstone National Park, Fort Yellowstone, Wyo.*

UNITED STATES ENGINEER OFFICE,
Mammoth Hot Springs, Wyo., August 20, 1900.

GENERAL: In compliance with instructions contained in your letter of June 12, 1900 (E. D. file No. 30129), I have the honor to submit herewith a general plan for road extensions and improvements in the Yellowstone National Park.

The road system of the Yellowstone National Park is designed to give access to the many natural objects of interest which abound throughout that region. It may be considered under three heads:

(1) The belt line, or general circuit, which passes, or is to pass, through all the more important centers of interest.

(2) The approaches, by which travel reaches the belt line from the boundaries of the park.

(3) Side roads and trails, which are to give access to isolated objects of interest or are to serve the special purposes mentioned further on.

The belt line.—There are six principal centers of interest in the park. Three of them, the Mammoth Hot Springs, the Norris Geyser Basin, and the Firehole Geyser Basins, are located on a nearly north and south line and are, roughly speaking, 20 miles apart. The other three are the Yellowstone Lake, the Grand Canyon of the Yellowstone, and the open park country around Tower Falls at the northern base

of Mount Washburn, and are likewise located approximately on a north and south line about 20 miles to the eastward of the first.

The belt line is to include these six localities and travel will probably always pass around the circuit to the left.

The line from Mammoth Hot Springs to Norris is definitely fixed and constructed, and no future changes of importance in the alignment are proposed.

From Norris, via the Gibbon and Firehole rivers, past the Fountain Hotel, to the Upper Geyser Basin the general alignment is fixed, but the road is not yet all constructed. Additional work is required in the Gibbon Canyon and along all of that portion of the road through the Lower Geyser Basin.

From the Upper Geyser Basin to outlet of the Yellowstone Lake the line is definitely fixed, except over that portion from the Thumb to the Outlet. It is proposed to carry the road directly over the hills from the Thumb Bay to Bridge Bay, thus shortening the distance 4 miles. From the Thumb to the Outlet the lake itself will be an important part of the route, and tourists will generally pass over this portion of the circuit by boat.

From the Lake Outlet to the Canyon Junction the line is definitely located and constructed, and no changes of consequence are proposed.

From the Canyon Junction to Tower Falls the line is still unopened, except for 1 mile from the junction to the Canyon Hotel, and even this portion will require extensive modification to make it what it should be. It is proposed to carry the road across the Washburn range, through the low pass between Mount Washburn and Dunraven Peak, with a loop or side road passing over the Washburn summit.

From Tower Falls to Mammoth Hot Springs the line is still unlocated, except for about 2 miles near the east Gardiner Falls.

Connecting the east and west portions of the belt line at the points where they approach nearest each other is a crossroad which may be considered a part of the circuit. It extends between Norris and the Grand Canyon and will always be an important road, even when the circuit is entirely completed. The general location of this road will be as at present, but it will require radical modification and improvement in several places.

The total mileage of the belt line, including the crossroad just referred to, will be about 153 miles.

The approaches will be four in number, one from each border of the park. The northern approach extends from the northern boundary, near the mouth of the Gardiner River, up the valley of that stream to Mammoth Hot Springs, a distance of 5 miles. As the belt line here lies much nearer to a railroad than at any other point, and as the business and administrative headquarters of the park, with the military post of Fort Yellowstone, are all located here, the northern approach will probably always remain the most important to the traveling public.

The eastern approach is located and begun, but is still incomplete. It extends up the valley of the north fork of the Stinkingwater River, across the forest reserve to the mouth of Middle Creek, and up the latter stream to Sylvan Pass, and thence to the outlet of Yellowstone Lake. It enters the park about 2 miles above the mouth of Middle Creek. The distance from the east boundary of the forest reserve to the belt line will be about 58 miles.

The southern approach extends from the elevated valley of Jackson Hole up the Snake and Lewis rivers to the Lewis Lake, and thence to the belt line at the Thumb of the Yellowstone Lake. The length from the south boundary of the forest reserve is 33 miles. The whole line is located, but only partially constructed.

The western approach extends from the western boundary of the park, where the Madison River leaves the reservation, up the Madison River to the junction of the Firehole. Here it forks, one branch ascending the Gibbon and the other the Firehole, until they intersect the belt line in the valleys of these two streams. This road is open to travel, but is not yet definitely located over all its course, while some portions are only partially completed.

The total mileage of the approaches is about 116 miles, of which 79 miles is in the park proper and 37 miles in the forest reserve.

The side roads, trails, etc., are important adjuncts of the road system, giving access to points of interest off the main lines of travel. The following are the more important side roads:

Near Mammoth Hot Springs there will be a road leading around the terraces, another to the Middle Gardiner Falls, and a third to Mount Everts. These roads are as yet only partially completed.

At the Lower Geyser Basin there is a branch of the main road which starts near the mouth of the Nez Perce Creek, keeps mainly on the west side of the Firehole River, and joins the main road above Prismatic Lake. It is useful as a short cut for

freight teams. From the Mammoth Paint Pots, near the Fountain Hotel, a side road leads to the Firehole Spring and the Great Fountain Geyser.

At the Upper Basin there will be a road passing among the various objects of interest. It is already partially completed. Three and one-half miles above the Upper Basin there is a road already open leading to the Lone Star Geyser.

On the road along the Yellowstone River there is a loop about 3 miles long leading past Sulphur Mountain. It is only partially completed.

At the Grand Canyon there should be two side roads leading several miles down both banks of the canyon. One of these will require a bridge across the Yellowstone above the rapids. The road down the left bank has been constructed as far as to Inspiration Point, 2½ miles.

On the line between the Grand Canyon and Tower Falls there will be a loop about 4 miles long, leaving the main line at Dunraven Pass, extending across the summit of Washburn, and joining the main line to the north of the summit. From near Tower Falls there is a road extending up the Lamar and Soda Butte valleys to the northeast corner of the park. This road gives access to numerous objects of interest in the Lamar Valley, is useful in supplying the patrol station near Soda Butte, and gives a necessary highway for commercial purposes and for the United States mail to the mining districts on the northeast corner of the park.

The total mileage of these side roads will amount to about 72 miles.

The trails of the park are used mainly in patrolling the reservation, but also to a considerable extent by camping parties who are visiting portions of the park not reached by the roads. They have been almost entirely neglected in recent years, and are consequently badly blockaded with fallen timber. Nothing is proposed in the line of extending these trails, but they should be maintained in passable condition.

Concerning the character of the work at present proposed, nothing is contemplated beyond securing a good grade, 18 feet wide, with a clearing through timber 30 feet wide, gradients nowhere exceeding 10 per cent, good side ditches, culverts, and bridges. In regard to the culverts and bridges it is proposed to use iron or tile for the culverts and steel and concrete for the bridges where these are located near enough to the railroad not to make the cost of transportation excessive. Farther out in the park wood will be used as heretofore.

The present project and estimates do not contemplate the macadamization of the roads. While this will come in time, it will probably be done along with the current annual repairs, and its completion will be a matter of many years to come.

The detailed mileage of the road system, statement of past expenditures and estimates of future cost, together with maps showing the location of the roads, are contained in the Annual Report of the Chief of Engineers for 1900.

Very respectfully, your obedient servant,

H. M. CHITTENDEN,
Captain, Corps of Engineers.

Brig. Gen. JOHN M. WILSON,
Chief of Engineers, United States Army,
Washington, D. C.

OFFICE OF THE CHIEF OF ENGINEERS, UNITED STATES ARMY,
Washington, D. C., August 27, 1900.

CAPTAIN: Referring to your letter of the 20th instant, submitting a general plan for road extensions and improvements in the Yellowstone National Park and to the detailed project contained in your annual report for the fiscal year ending June 30, 1900, I have to say that these projects, in my judgment, are in accord with the requirements of sundry civil act of June 6, 1900, and, subject to such minor changes as may become necessary from time to time in the progress of the work, they meet with my approval. All road extensions and improvements carried on in the park under the Engineer Department will hereby be in harmony with these approved projects.

Very respectfully, your obedient servant,

JOHN M. WILSON,
Brigadier-General, Chief of Engineers.

Capt. H. M. CHITTENDEN,
Corps of Engineers, Sioux City, Iowa.

ESTIMATES.

In my last annual report I presented an estimate of the cost of completing the existing project for the construction of roads and bridges in the Yellowstone National Park. The sum estimated was \$300,000. A full explanation of each item of the estimate may be found in Senate document No. 226, Fifty-sixth Congress, first session, pages 9 to 15. Fuller information derived from more careful surveys made after the estimate was prepared necessitated a slight modification in a few items. Congress at its last session extended the project by authorizing the construction of a road from the outlet of the Yellowstone Lake to the east boundary of the forest reserve. This work will ultimately cost, omitting the bridges over the Yellowstone River and Pelican Creek, not less than \$100,000, of which \$20,000 has been appropriated.

The work necessary to be done at the beginning of the fiscal year 1901 is as follows:

1. New road in Gardiner Canyon, including 3 steel bridges.....	\$10,000
2. Road through Golden Gate Canyon, including a new bridge to replace wooden bridge around cliff, and widening road along cliff, the latter all solid rock work.....	15,000
3. Raising 3 miles of road in Gibbon Canyon, and cutting out 1 mile of dangerous grades; also opening 4 miles of new road down the Gibbon to connect with western approach.....	16,000
4. Completion of 8 miles of road near Fountain Hotel.....	8,000
5. Completion of southern approach along Snake River, 20 miles.....	30,000
6. New road from West Thumb to Natural Bridge, cutting out present line around lake shore, 8 miles.....	16,000
7. New road from lake outlet to east boundary of forest reserve, 50 miles, at \$2,000, eastern approach.....	100,000
8. Surfacing new road from Lake Hotel to Grand Canyon, 15 miles.....	15,000
9. New road down right bank of Grand Canyon, 3 miles.....	6,000
10. New road near Grand Canyon to cut out dangerous hills.....	5,000
11. New road, Canyon to Norris, 10 miles.....	20,000
12. New road, Grand Canyon, via Mount Washburn and Tower Falls, to Mammoth Hot Springs, 40 miles.....	80,000
13. Completion of Cooke City road.....	15,000
14. Side roads and trails.....	9,000
15. New bridges not included in above estimate:	
Yellowstone River, to replace Baronett bridge.....	\$10,000
Yellowstone River, near falls.....	20,000
Yellowstone River, at lake outlet.....	10,000
Lamar River, to replace existing bridge.....	5,000
Pelican Creek.....	3,000
Gibbon River, two bridges.....	4,000
On Snake River road, two bridges.....	6,000
Cascade Creek bridge, near Grand Canyon.....	5,000
Nez Perces Creek.....	2,000
	<hr/>
	65,000
16. New plant.....	5,000
17. New office and other buildings.....	10,000
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Total for completion of project.....	425,000
18. Annual repairs and maintenance for season ending June 30, 1902, 150 miles, at \$100 per mile.....	15,000

APPENDIX B.
METEOROLOGICAL REPORT.

SEPTEMBER, 1899.							OCTOBER, 1899.							NOVEMBER, 1899.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	78	57	21	NW.	0.37	Rain.	1.....	61	37	24	S.			1.....	53	25	28	SE.		
2.....	78	40	38	NW.			2.....	47	22	35	S.			2.....	55	20	29	SW.		
3.....	80	40	40	NW.			3.....	59	29	30	S.			3.....	57	25	32	SE.		
4.....	71	38	33	NW.			4.....	69	26	34	S.			4.....	60	25	25	SE.		
5.....	70	36	34	NW.			5.....	74	33	41	SE.			5.....	45	33	12	SW.		
6.....	64	37	27	W.			6.....	67	36	31	SE.			6.....	40	25	15	SW.		
7.....	63	29	34	NW.			7.....	69	36	33	N.			7.....	49	24	25	S.		
8.....	68	28	40	SW.			8.....	46	34	12	N.			8.....	53	30	23	S.		
9.....	74	31	43	W.			9.....	44	26	18	N.			9.....	47	35	12	S.		
10.....	78	38	40	W.			10.....	38	27	11	N.			10.....	57	34	23	E.		
11.....	85	45	40	S.			11.....	40	26	14	N.	0.30	Snow.	11.....	47	33	14	E.		
12.....	82	42	40	S.			12.....	31	20	11	NW.	.20	Snow.	12.....	40	29	11	S.		
13.....	72	49	23	S.			13.....	34	13	21	NW.	.35	Snow.	13.....	43	33	10	SW.		
14.....	51	37	20	N.	.53	Rain.	14.....	31	18	13	N.	.05	Snow.	14.....	52	32	20	S.		
15.....	62	33	29	NW.			15.....	31	20	11	N.	.20	Snow.	15.....	51	30	21	SE.		
16.....	66	34	32	E.			16.....	33	20	13	N.			16.....	45	37	8	SE.		
17.....	68	34	34	SW.			17.....	35	24	11	NW.	.15	Snow.	17.....	40	24	16	E.		
18.....	70	33	37	S.			18.....	37	25	12	NW.	.025	Snow.	18.....	36	24	12	SE.		
19.....	76	35	41	S.			19.....	51	29	22	NW.	.25	Rain.	19.....	42	27	15	NE.		
20.....	74	40	34	S.			20.....	54	42	12	N.			20.....	41	26	15	N.E.		
21.....	75	36	39	S.			21.....	57	36	21	N.			21.....	39	21	18	S.		
22.....	73	27	46	SE.			22.....	41	33	6	N.			22.....	38	24	14	E.		
23.....	72	37	35	SE.			23.....	42	31	11	W.			23.....	37	12	25	E.		
24.....	77	40	37	S.			24.....	38	24	14	W.			24.....	40	13	27	SE.		
25.....	80	42	38	S.			25.....	40	23	17	NW.			25.....	45	14	31	NE.		
26.....	68	44	24	S.			26.....	36	25	11	W.			26.....	42	19	23	E.		
27.....	74	31	43	S.			27.....	46	30	16	NW.			27.....	41	33	8	SE.		
28.....	72	37	35	S.			28.....	57	30	27	SW.			28.....	43	36	7	E.		
29.....	75	37	38	S.			29.....	54	28	26	S.			29.....	35	31	4	E.		
30.....	75	37	38	S.			30.....	54	28	26	S.			30.....	31	24	4	E.		
Total.	2,153	1,124	1,029		.90		Total.	1,462	862	600		2.025		Total.	1,331	804	527		.035	
Mean.	71.77	37.47	34.30	S.			Mean.	47.16	27.80	19.36	N.			Mean.	44.37	26.8	17.56	E.		

Maximum, 85° on the 11th instant; minimum, 27° on the 23d instant; mean, 54.62°; total precipitation, 0.90 inch; prevailing winds, south.

Maximum, 74° on the 5th instant; minimum, 13° on the 13th instant; mean, 37.48°; total precipitation, 2.025 inches; prevailing winds, north.

Maximum, 57° on the 3d instant; minimum, 12° on the 23d instant; mean, 35.58°; total precipitation, 0.035 inch; prevailing winds, east.

METEOROLOGICAL REPORT—Continued.

DECEMBER, 1899.							JANUARY, 1900.							FEBRUARY, 1900.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	35	27	8	E.	0.20	Snow.	1.....	22	2	20	E.	.....	.....	1.....	29	10	19	SW.	.....	.....
2.....	20	13	7	E.	.....	.....	2.....	35	13	22	SE.	.....	.....	2.....	33	21	12	SW.	.....	.....
3.....	20	4	16	S.	.....	.....	3.....	36	30	6	SE.	.....	.....	3.....	29	24	5	S.	.....	.....
4.....	24	4	20	SE.	.....	.....	4.....	31	30	1	S.	.....	.....	4.....	27	14	13	S.	.....	.....
5.....	26	13	13	SE.	.05	Snow.	5.....	31	28	3	S.	.....	.....	5.....	22	10	12	NE.	0.7	Snow.
6.....	27	12	15	SE.	.....	.....	6.....	33	27	6	S.	.....	.....	6.....	13	9	14	NE.	.....	.....
7.....	28	14	14	S.	.....	.....	7.....	35	30	5	S.	.....	.....	7.....	9	-13	22	SW.	.....	.....
8.....	27	19	8	E.	.025	Snow.	8.....	30	29	1	SE.	0.025	Snow.	8.....	20	6	14	W.	.....	.....
9.....	20	12	8	SE.	.050	Snow.	9.....	24	13	11	S.	.050	Snow.	9.....	27	19	8	SW.	.....	.....
10.....	20	9	11	E.	.....	.....	10.....	23	21	2	S.	.....	.....	10.....	25	21	4	N.	.....	.....
11.....	22	18	4	SE.	.250	Snow.	11.....	24	17	7	S.	.125	Snow.	11.....	24	13	11	SW.	.....	.....
12.....	17	16	1	SE.	.....	.....	12.....	26	22	4	S.	.....	.....	12.....	14	0	14	S.	.075	Snow.
13.....	16	5	11	E.	.....	.....	13.....	37	23	14	S.	.025	Snow.	13.....	5	-7	12	S.	.....	.....
14.....	20	9	11	SE.	.....	.....	14.....	32	26	6	N.	.425	Snow.	14.....	.....	.....	.....	N.	.....	.....
15.....	24	13	11	E.	.475	Snow.	15.....	23	13	10	S.	.....	.....	15.....	.....	.....	.....	N.	.050	Snow.
16.....	24	10	14	E.	.125	Snow.	16.....	27	17	10	SW.	.....	.....	16.....	.....	.....	.....	N.	.....	.....
17.....	21	19	2	E.	.....	.....	17.....	31	22	9	S.	.....	.....	17.....	.....	.....	.....	S.	.....	.....
18.....	15	3	12	E.	.....	.....	18.....	35	15	20	S.	.....	.....	18.....	.....	.....	.....	S.	.....	.....
19.....	24	2	26	NE.	.....	.....	19.....	34	23	11	SE.	.....	.....	19.....	.....	.....	.....	S.	.....	.....
20.....	34	17	17	E.	.....	.....	20.....	31	23	8	SE.	.....	.....	20.....	.....	.....	.....	E.	.....	.....
21.....	28	8	20	SE.	.....	.....	21.....	30	11	19	S.	.....	.....	21.....	.....	.....	.....	E.	.....	.....
22.....	22	15	7	E.	.....	.....	22.....	35	14	21	SW.	.....	.....	22.....	.....	.....	.....	S.	.2	Snow.
23.....	28	21	7	E.	.....	.....	23.....	24	22	2	NW.	.225	Snow.	23.....	.....	.....	.....	SW.	.....	.....
24.....	32	27	5	E.	.....	.....	24.....	20	12	8	SW.	.....	.....	24.....	.....	.....	.....	SW.	.....	.....
25.....	30	21	9	E.	.125	Snow.	25.....	18	-1	19	SW.	.....	.....	25.....	.....	.....	.....	SW.	.....	.....
26.....	24	21	3	E.	.600	Snow.	26.....	23	3	20	SE.	.....	.....	26.....	.....	.....	.....	W.	.....	.....
27.....	24	10	14	SE.	.....	.....	27.....	10	-2	12	N.	.....	.....	27.....	.....	.....	.....	S.	.025	Snow.
28.....	30	12	18	SE.	.....	.....	28.....	18	-12	30	S.	.....	.....	28.....	.....	.....	.....	SW.	.....	.....
29.....	31	16	15	S.	.....	.....	29.....	21	15	6	SW.	.050	Snow.	29.....	.....	.....	.....	SW.	.....	.....
30.....	32	14	18	SE.	.....	.....	30.....	28	14	14	S.	.....	.....	30.....	.....	.....	.....	S.	.....	.....
31.....	22	2	20	E.	.....	.....	31.....	31	10	21	S.	.....	.....	31.....	.....	.....	.....	SW.	.....	.....
Total.	707	402	305	.....	1.90	.....	Total.	856	510	348	.....	.....	.....	Total.	277	271	150	.....	.....	.....
Mean.	24.74	12.97	11.77	E.	.....	.....	Mean.	27.68	16.44	11.23	S.	.....	.....	Mean.	21.30	9.7	11.35	.....	.....	.....

Maximum, 35° on the 1st instant; minimum, -2° on the 19th instant; mean, 18.85°; total precipitation, 1.90 inches; prevailing winds, east.

Maximum, 37° on the 13th instant; minimum, -12° on the 28th instant; mean, 22.6°; total precipitation, 0.925 inch; prevailing winds, south.

Maximum thermometer broken on the 13th; hence incomplete report.

METEOROLOGICAL REPORT—Continued.

MARCH, 1900.							APRIL, 1900.							MAY, 1900.							
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	
1	.....	16	.....	S	0.03	Snow.	1	62	30	32	S.	.....	.....	1	60	36	24	S.	0.03	Rain.
2	.....	14	.....	SW.	.05	Snow.	2	60	32	28	SW.	0.06	Rain.	2	61	30	31	S.	.....	.....
3	.....	26	.....	SW.	.50	Snow.	3	53	29	24	SE.	.....	.....	3	65	36	29	S.	.....	.....
4	.....	4	.....	NE.	.63	Snow.	4	53	32	21	NW.	.....	.....	4	65	38	27	S.	.....	.....
5	.....	4	.....	NE.	.63	Snow.	5	64	31	33	SW.	.....	.....	5	66	38	28	S.	.....	.....
6	32	6	26	E.	.02	Snow.	6	64	32	32	SW.	.....	.....	6	60	43	17	S.	.....	.....
7	37	27	10	SW.	.10	Snow.	7	55	34	21	NE.	.....	.....	7	60	35	25	S.	.....	.....
8	42	29	13	S.	.60	Snow.	8	40	25	15	N.	.60	Snow.	8	70	37	33	S.	.....	.....
9	42	25	17	S.	.10	Snow.	9	41	26	15	N.	.....	.....	9	76	40	36	S.	.....	.....
10	52	37	15	S.	.....	.....	10	41	28	13	N.	.....	.....	10	75	39	36	W.	.....	.....
11	57	35	22	S.	.....	.....	11	53	21	32	SW.	.....	.....	11	73	43	30	SW.	.....	.....
12	56	34	22	S.	.....	.....	12	41	27	14	SW.	.....	.....	12	68	36	32	NW.	.60	Rain.
13	48	24	24	SW.	.....	.....	13	50	33	17	S.	.....	.....	13	45	32	13	NW.	.....	.....
14	40	21	19	N.	.....	.....	14	42	30	12	SE.	.05	Snow.	14	51	32	19	S.	.....	.....
15	42	30	12	N.	.....	.....	15	43	32	11	N.	.10	Snow.	15	66	31	35	S.	.....	.....
16	41	24	17	NE.	.....	.....	16	46	30	16	S.	.....	.....	16	60	40	20	S.	.....	.....
17	42	18	24	NW.	.....	.....	17	53	25	28	S.	.....	.....	17	47	32	15	W.	.....	.....
18	42	22	20	NW.	.....	.....	18	60	32	28	S.	.....	.....	18	56	36	20	SE.	.40	Rain.
19	37	25	12	N.	.....	.....	19	62	39	23	S.	.....	.....	19	58	36	22	SE.	.....	.....
20	43	24	19	S.	.....	.....	20	63	35	28	S.	.....	.....	20	58	40	18	S.	.35	Rain.
21	58	25	28	S.	.....	.....	21	66	36	30	S.	.....	.....	21	64	35	29	S.	.....	.....
22	58	29	29	S.	.....	.....	22	60	36	24	SE.	.12	Rain.	22	61	40	21	SE.	.04	Rain.
23	55	29	26	S.	.....	.....	23	44	34	10	N.	.20	Rain.	23	63	33	30	S.	.....	.....
24	48	28	19	SW.	.60	Rain.	24	46	33	13	SE.	.19	Rain.	24	60	47	13	SE.	.....	.....
25	50	35	15	SE.	.....	.....	25	51	36	15	SE.	.....	.....	25	68	37	31	S.	.....	.....
26	47	29	18	NW.	.30	Snow.	26	53	35	18	SE.	.58	Rain.	26	77	50	27	S.	.....	.....
27	40	23	7	N.	.20	Snow.	27	50	36	14	S.	.03	Rain.	27	73	43	30	S.	.....	.....
28	34	50	24	N.	.....	.....	28	47	36	11	NW.	.....	.....	28	71	40	31	S.	.....	.....
29	42	12	30	S.	.....	.....	29	55	30	25	S.	.....	.....	29	63	33	30	SE.	.....	.....
30	49	28	21	S.	.....	.....	30	55	30	25	E.	.....	.....	30	70	31	39	S.	.....	.....
31	58	26	32	S.	.....	.....	31	55	30	25	E.	.....	.....	31	66	38	28	S.	.....	.....
Total.	1,176	711	521	.....	3.13	.....	Total.	1,573	945	618	.....	1.93	.....	Total.	1,976	1,557	819	.....	2.42	.....
Mean.	45.2	22	20.4	S.	Mean.	52.4	31.5	20.6	S.	Mean.	63.6	37.6	26	S.

A new maximum thermometer was furnished on the 6th instant to replace one broken, hence incomplete report.

Maximum, 66° on the 21st instant; minimum, 21° on the 11th instant; mean, 41.9°; total precipitation, 1.93 inches; prevailing winds, south.

Maximum, 77° on the 26th instant; minimum, 30° on the 2d instant; mean, 50.6°; total precipitation, 2.42 inches; prevailing winds, south.

METEOROLOGICAL REPORT—Continued.

JUNE, 1900.							JULY, 1900.							AUGUST, 1900.							
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	
1	73	32	41	S.	0.02	Rain.	1	64	44	20	S.			1	91	43	48	SW.			
2	78	48	30	S.			2	66	36	30	SE.			2	93	50	43	W.			
3	76	40	36	S.			3	66	40	26	N.	0.30	Rain.	3	89	55	34	S.			
4	74	43	31	S.			4	66	36	30	N.			4	88	50	38	E.			
5	74	48	26	S.			5	64	47	17	S.			5	72	48	24	S.	0.06	Rain.	
6	72	49	23	SE.			6	68	38	30	W.			6	78	46	32	SW.			
7	74	50	24	S.			7	75	35	40	W.			7	80	43	37	SW.			
8	80	55	25	S.			8	88	43	45	S.			8	82	41	41	SW.			
9	74	40	34	NW.			9	82	38	44	S.			9	74	45	29	NW.			
10	68	30	38	S.			10	86	43	43	SE.			10	72	46	26	S.			
11	71	40	31	S.			11	87	49	38	SE.			11	74	44	30	S.			
12	69	42	27	S.			12	80	53	27	SW.			12	73	41	32	S.			
13	71	43	28	SE.	1.00	Rain.	13	73	50	23	S.			13	80	38	42	S.			
14	60	43	17	SE.			14	69	44	25	S.			14	79	47	32	SW.			
15	72	47	25	SE.			15	71	47	24	N.			15	82	43	39	S.			
16	70	47	23	SE.			16	78	40	38	W.			16	72	43	29	S.			
17	60	40	20	SE.			17	83	53	30	W.	.20	Rain.	17	79	49	30	SW.			
18	70	40	30	S.			18	74	48	26	E.			18	78	42	36	S.			
19	80	47	33	S.			19	74	32	42	S.			19	76	44	32	W.			
20	85	51	34	S.			20	83	42	41	S.			20	70	39	31	S.	.050	Rain.	
21	92	55	37	S.			21	86	47	39	S.			21	76	42	34	SW.			
22	90	55	35	SE.			22	84	48	36	S.	.10	Rain.	22	70	40	30	NW.	.175	Rain.	
23	86	56	30	S.			23	81	53	28	E.			23	61	41	20	SW.			
24	82	58	24	N.E.	.15	Rain.	24	84	47	37	SE.			24	61	43	18	SW.			
25	86	30	36	SE.			25	83	53	30	SE.			25	65	48	17	S.			
26	81	53	28	SE.			26	80	55	25	NW.			26	69	45	24	S.			
27	82	48	34	S.			27	72	48	24	SE.	.20	Rain.	27	78	38	40	S.			
28	90	46	44	SE.			28	76	36	40	SE.			28	79	51	28	S.			
29	88	50	38	S.			29	86	43	43	SE.			29	81	44	37	SW.			
30	84	60	24	SE.			30	91	43	48	SE.			30	77	49	28	S.			
31	84	60	24	SE.			31	93	50	43	S.			31	76	45	31	SW.			
Total	2,312	1,406	906		1.17		Total	2,413	1,381	1,032		.80		Total	2,375	1,383	992		.285		
Mean.	77	46.3	30.2	S.			Mean.	77.84	44.55	33.29	S.			Mean.	76.61	44.61	32	S.			

Maximum, 93° on the 1st instant; minimum, 38° on the 13th instant; mean, 61.61°; total precipitation, .285 inch; prevailing winds, south.

Maximum, 93° on the 31st instant; minimum, 35° on the 7th instant; mean, 61.19°; total precipitation, 0.80 inch; prevailing winds, south.

Maximum, 92° on the 21st instant; minimum, 30° on the 10th instant; mean, 61.9°; total precipitation, 1.17 inches; prevailing winds, south.

APPENDIX C.

[Public—No. 62.]

AN ACT To protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Yellowstone National Park, as its boundaries now are defined, or as they may be hereafter defined or extended, shall be under the sole and exclusive jurisdiction of the United States; and that all the laws applicable to places under the sole and exclusive jurisdiction of the United States shall have force and effect in said park: *Provided, however,* That nothing in this Act shall be construed to forbid the service in the park of any civil or criminal process of any court having jurisdiction in the States of Idaho, Montana, and Wyoming. All fugitives from justice taking refuge in said park shall be subject to the same laws as refugees from justice found in the State of Wyoming.

SEC. 2. That said park, for all the purposes of this Act, shall constitute a part of the United States judicial district of Wyoming, and the district and circuit courts of the United States in and for said district shall have jurisdiction of all offenses committed within said park.

SEC. 3. That if any offense shall be committed in said Yellowstone National Park, which offense is not prohibited or the punishment is not specially provided for by any law of the United States or by any regulation of the Secretary of the Interior, the offender shall be subject to the same punishment as the laws of the State of Wyoming in force at the time of the commission of the offense may provide for a like offense in the said State; and no subsequent repeal of any such law of the State of Wyoming shall affect any prosecution for said offense committed within said park.

SEC. 4. That all hunting, or the killing, wounding, or capturing at any time of any bird or wild animal, except dangerous animals, when it is necessary to prevent them from destroying human life or inflicting an injury, is prohibited within the limits of said park; nor shall any fish be taken out of the waters of the park by means of seines, nets, traps, or by the use of drugs or any explosive substances or compounds, or in any other way than by hook and line, and then only at such seasons and in such times and manner as may be directed by the Secretary of the Interior. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary and proper for the management and care of the park and for the protection of the property therein, especially for the preservation from injury or spoliation of all timber, mineral deposits, natural curiosities, or wonderful objects within said park; and for the protection of the animals and birds in the park, from capture or destruction, or to prevent their being frightened or driven from the park; and he shall make rules and regulations governing the taking of fish from the streams or lakes in the park. Possession within the said park of the dead bodies, or any part thereof, of any wild bird or animal shall be prima facie evidence that the person or persons having the same are guilty of violating this Act. Any person or persons, or stage or express company or railway company, receiving for transportation any of the said animals, birds, or fish so killed, taken, or caught shall be deemed guilty of a misdemeanor, and shall be fined for every such offense not exceeding three hundred dollars. Any person found guilty of violating any of the provisions of this Act or any rule or regulation that may be promulgated by the Secretary of the Interior with reference to the management and care of the park, or for the protection of the property therein, for the preservation from injury or spoliation of timber, mineral deposits, natural curiosities or wonderful objects within said park, or for the protection of the animals, birds and fish in the said park, shall be deemed guilty of a misdemeanor, and shall be subjected to a fine of not more than one thousand dollars or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

That all guns, traps, teams, horses, or means of transportation of every nature or description used by any person or persons within said park limits when engaged in killing, trapping, ensnaring, or capturing such wild beasts, birds, or wild animals shall be forfeited to the United States, and may be seized by the officers in said park and held pending the prosecution of any person or persons arrested under charge of violating the provisions of this Act, and upon conviction under this Act of such person or persons using said guns, traps, teams, horses, or other means of transportation such forfeiture shall be adjudicated as a penalty in addition to the other punishment provided in this Act. Such forfeited property shall be disposed of and accounted for by and under the authority of the Secretary of the Interior.

SEC. 5. That the United States circuit court in said district shall appoint a commissioner, who shall reside in the park, who shall have jurisdiction to hear and act upon all complaints made, of any and all violations of the law, or of the rules and regulations made by the Secretary of the Interior for the government of the park, and for the protection of the animals, birds, and fish and objects of interest therein, and for other purposes authorized by this Act. Such commissioner shall have power, upon sworn information, to issue process in the name of the United States for the arrest of any person charged with the commission of any misdemeanor, or charged with the violation of the rules and regulations, or with the violation of any provision of this Act prescribed for the government of said park, and for the protection of the animals, birds, and fish in the said park, and to try the person so charged, and, if found guilty, to impose the punishment and adjudge the forfeiture prescribed. In all cases of conviction an appeal shall lie from the judgment of said commissioner to the United States district court for the district of Wyoming, said appeal to be governed by the laws of the State of Wyoming providing for appeals in cases of misdemeanor from justices of the peace to the district court of said State; but the United States circuit court in said district may prescribe rules of procedure and practice for said commissioner in the trial of cases and for appeal to said United States district court. Said commissioner shall also have power to issue process as hereinbefore provided for the arrest of any person charged with the commission of any felony within the park, and to summarily hear the evidence introduced, and, if he shall determine that probable cause is shown for holding the person so charged for trial, shall cause such person to be safely conveyed to a secure place for confinement, within the jurisdiction of the United States district court in said State of Wyoming, and shall certify a transcript of the record of his proceedings and the testimony in the case to the said court, which court shall have jurisdiction of the case: *Provided*, That the said commissioner shall grant bail in all cases bailable under the laws of the United States or of said State. All process issued by the commissioner shall be directed to the marshal of the United States for the district of Wyoming; but nothing herein contained shall be construed as preventing the arrest by any officer of the Government or employe of the United States in the park without process of any person taken in the act of violating the law or any regulation of the Secretary of the Interior: *Provided*, That the said commissioner shall only exercise such authority and powers as are conferred by this Act.

SEC. 6. That the marshal of the United States for the district of Wyoming may appoint one or more deputy marshals for said park, who shall reside in said park, and the said United States district and circuit courts shall hold one session of said courts annually at the town of Sheridan in the State of Wyoming, and may also hold other sessions at any other place in said State of Wyoming or in said National Park at such dates as the said courts may order.

SEC. 7. That the commissioner provided for in this Act shall, in addition to the fees allowed by law to commissioners of the circuit courts of the United States, be paid an annual salary of one thousand dollars, payable quarterly, and the marshal of the United States and his deputies, and the attorney of the United States and his assistants in said district, shall be paid the same compensation and fees as are now provided by law for like services in said district.

SEC. 8. That all costs and expenses arising in cases under this Act, and properly chargeable to the United States, shall be certified, approved, and paid as like costs and expenses in the courts of the United States are certified, approved, and paid under the laws of the United States.

SEC. 9. That the Secretary of the Interior shall cause to be erected in the park a suitable building to be used as a jail, and also having in said building an office for the use of the commissioner, the cost of such building not to exceed five thousand dollars, to be paid out of any moneys in the Treasury not otherwise appropriated upon the certificate of the Secretary as a voucher therefor.

SEC. 10. That this Act shall not be construed to repeal existing laws conferring upon the Secretary of the Interior and the Secretary of War certain powers with reference to the protection, improvement, and control of the said Yellowstone National Park.

Approved, May 7, 1894.

APPENDIX D.

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., April 1, 1899.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes United States, and the act of Congress approved May 7, 1894:

(1) It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb in any manner or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

(2) It is forbidden to ride or drive upon any of the geyser or hot spring formations or to turn loose stock to graze in their vicinity.

(3) It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.

(4) Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and anyone failing to comply therewith shall be peremptorily removed from the park.

(5) Hunting or killing, wounding, or capturing of any bird or wild animal, except dangerous animals, when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

(6) Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

(7) No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

(8) The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior.

(9) No drinking saloon or barroom will be permitted within the limits of the park.

(10) Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

(11) Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

E. A. HITCHCOCK,
Secretary of the Interior.

APPENDIX E.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., April 1, 1899.

The following instructions for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned:

(1) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. When fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished where water is not available by a complete covering of earth well packed down.

(2) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other débris must be either buried or taken to some place where they will not offend the sight.

(3) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must therefore be exercised by their riders. In meeting teams riders will always dismount and stand at the side of the road—the lower side if the meeting be on a grade. In passing teams from the rear riders will ring their bell as a warning, and inquire of the driver if they may pass. If it appear from the answer that the team is liable to be frightened, they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(4) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(5) *Dogs.*—When dogs are taken through the park they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling, and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(6) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the road.

(7) *Miscellaneous.*—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

(8) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

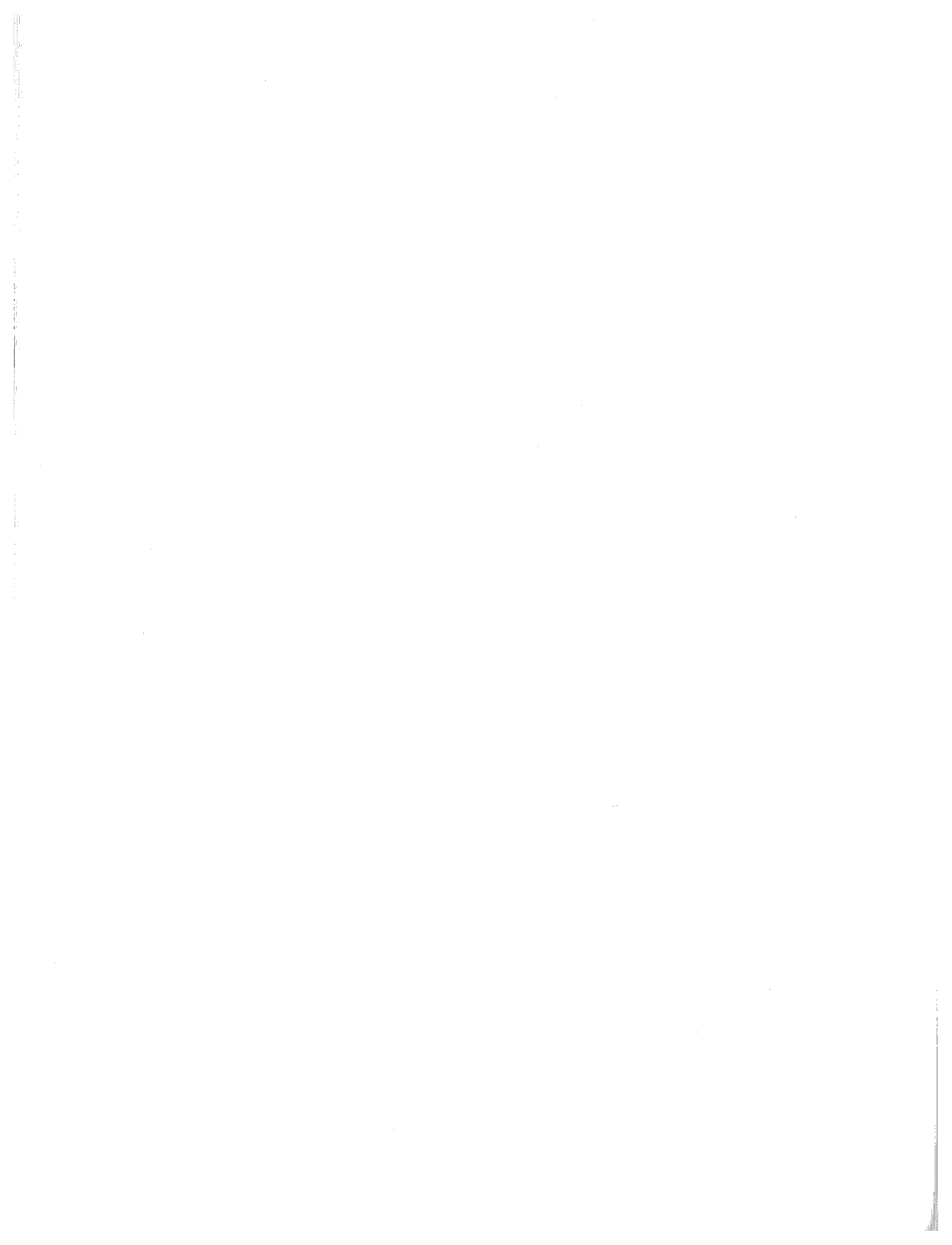
OSCAR J. BROWN,
Captain, First U. S. Cavalry, Acting Superintendent Yellowstone National Park.

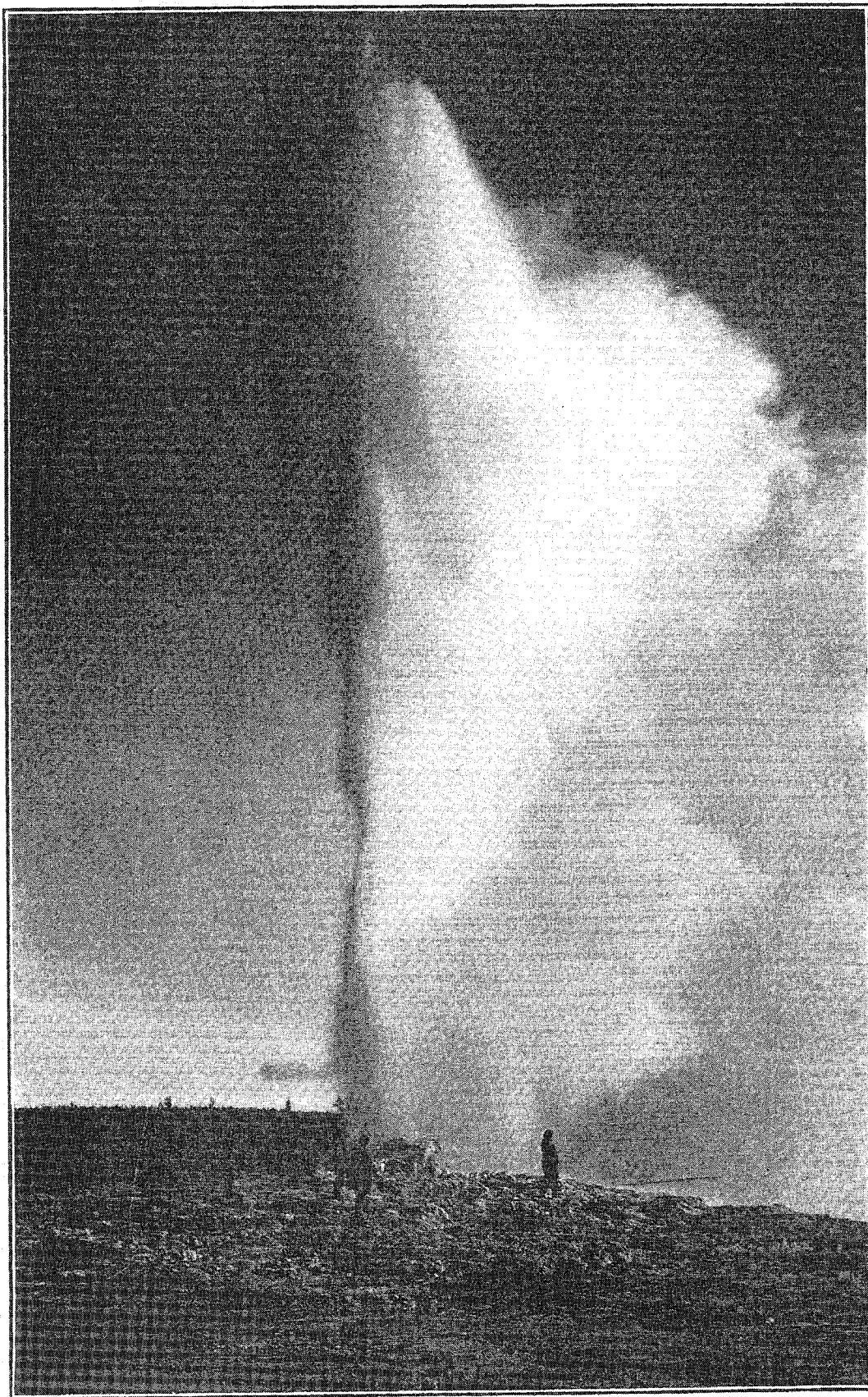
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YELLOWSTONE NATIONAL PARK LIBRARY

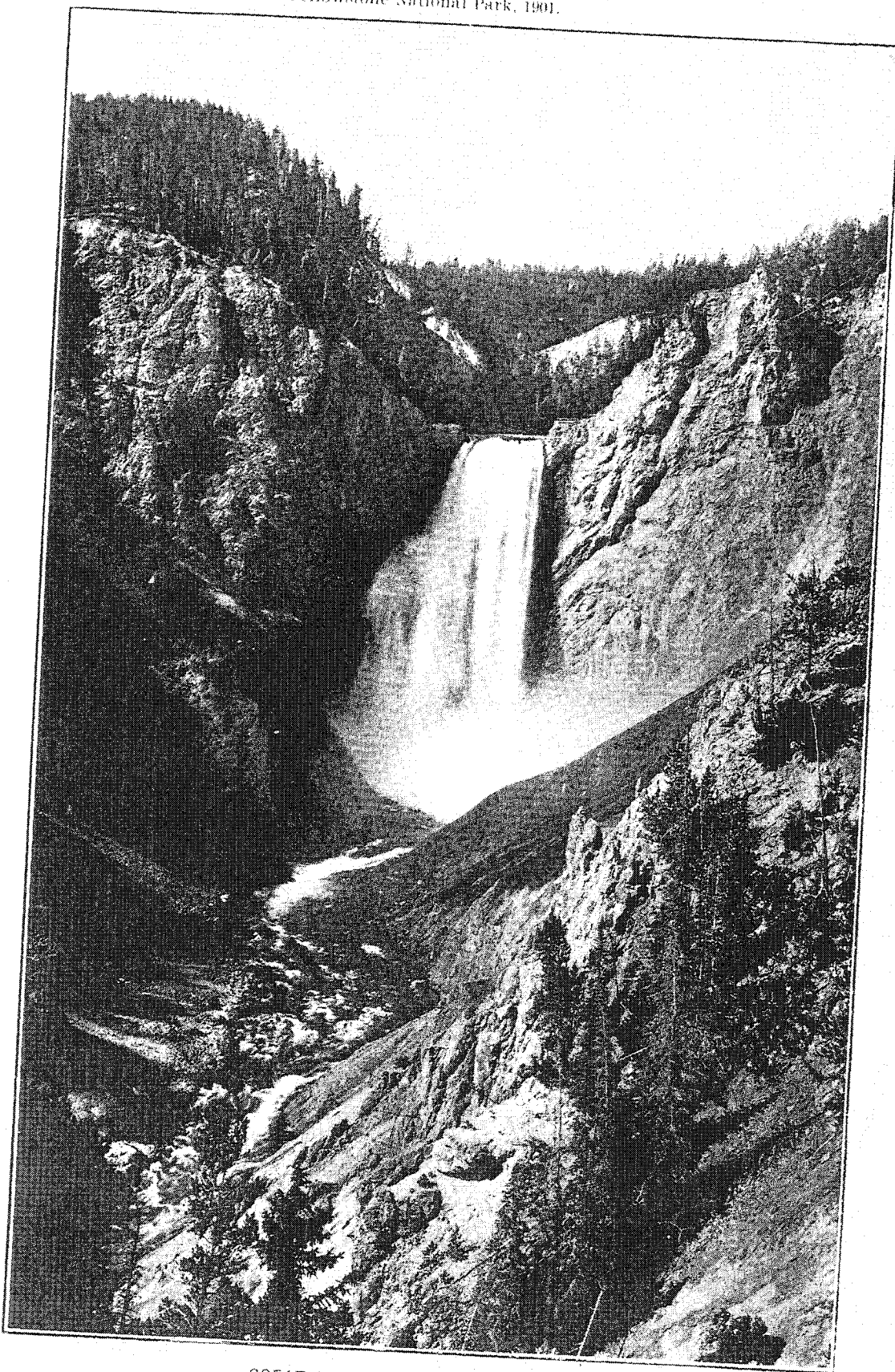
ATTACHED MAP / DRAWING

SEE ORIGINAL





OLD FAITHFUL GEYSER.



GREAT FALLS OF THE YELLOWSTONE.



GRAND CANYON FROM GRAND VIEW.



REPORT

OF THE

ACTING SUPERINTENDENT

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

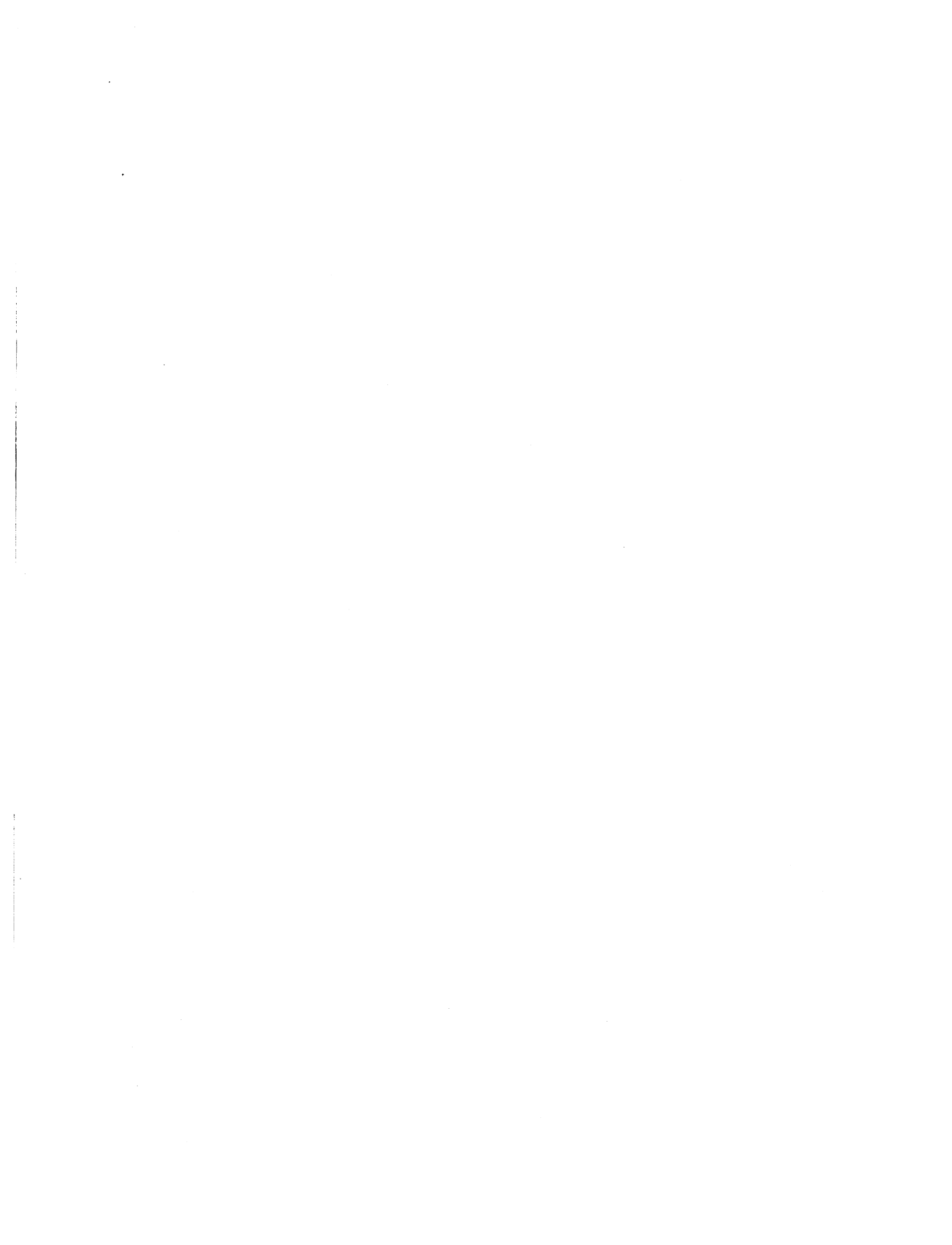
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WASHINGTON:
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R E P O R T
OF THE
ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Mammoth Hot Springs, Wyo., October 14, 1901.

SIR: In compliance with instructions contained in your letter of June 22, 1901, I have the honor to submit the following report of the condition of affairs in, and the management of, the Yellowstone National Park since the fiscal year ended June 30, 1900.

I arrived at Fort Yellowstone May 8, 1901, and, in compliance with the provision of Special Orders, No. 98, Headquarters of the Army, dated April 27, 1901, assumed command of the troops in the Yellowstone National Park. Under instructions contained in your letter of May 15, 1901, I also assumed the duties of Acting Superintendent of the Yellowstone National Park, receipting to Capt. Geo. W. Goode, First Cavalry, my predecessor, for all Government property pertaining to the Interior Department.

I found but one troop of cavalry stationed here, which force was entirely inadequate for the proper protection and police of the park, but, knowing that there were no other troops available, did not ask for more men until later, when, on account of the unusually dry season and the large number of camping parties in the park, I found it absolutely necessary to ask for another troop. In compliance with my request to the adjutant-general, Department of Dakota, dated July 22, 1901, Capt. E. Lindsley, First Cavalry, with 40 men of his troop, were sent to report to me for temporary duty, and later on the remainder of his troop joined him. Captain Lindsley arrived at Fort Yellowstone with his troop on August 3, and was at once sent to a camp in the Lower Geyser Basin, where they did much hard work and rendered valuable service in extinguishing some large forest fires.

*
WATER SUPPLY.

The unusually dry season soon developed the fact that the existing water supply for the post and the Mammoth Hotel was entirely too small, and that as a consequence much inconvenience was experienced by both tourists and all who were living at the Mammoth Hot Springs. To remedy this trouble, a new reservoir has been built which holds about 2,000,000 gallons of water. This reservoir is entirely completed and the work of laying the necessary pipes to connect with our present system will be completed in a few days. The new system will give an

ample supply of good water for the post of Fort Yellowstone and the Mammoth Hot Springs Hotel, and also permit the irrigation and beautifying of all of the plateau upon which the post and hotel are located. We are greatly indebted to Capt. Hiram M. Chittenden, United States Corps of Engineers, for this good work. He made all of the necessary surveys, prepared the plans, and supervised the work of construction. The Quartermaster's Department furnished the necessary funds and material.

FIRES IN PARK.

There have been three serious fires in the park during the past season—one in the Gibbon Canyon, one at the Upper Geyser Basin, and one on Pelican Creek. The first, in Gibbon Canyon, was started by a camper by the name of John Baegle. This man was traveling through the park alone, with one saddle and one pack horse. He camped close to one of the Wylie lunch stations, and at night, becoming frightened by the bear, he built three large fires about his camp. These he was compelled to extinguish some time during the night by the patrol from Norris, and he was cautioned about the danger of forest fires, but he rebuilt the fires after the patrol left him and the next morning failed to properly extinguish them, and as a result about noon these fires started up again and soon spread into a serious forest fire, which caused some slight delay for one day in the travel over that part of the road through the canyon.

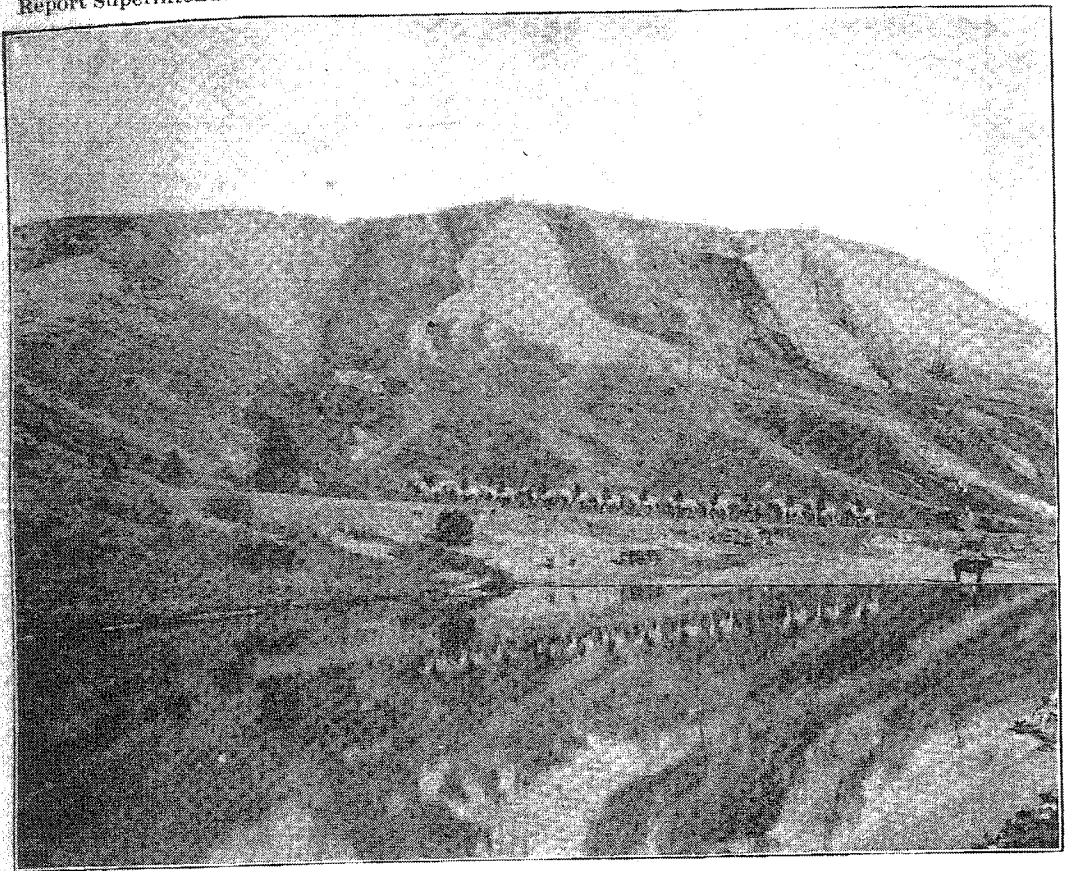
The man who started this fire was arrested at the Riverside Station, brought to Fort Yellowstone and sent before Judge Meldrum, the United States commissioner. He was fined \$50 and costs, and being unable to pay his fine, served out his sentence in the post guardhouse. This arrest and the sentence, though light, had a good effect in rendering other campers more careful about their fires.

The second fire commenced near the Riverside Geyser, at a point where there had been no camping, and its cause could not be ascertained. It was probably caused by some tourist or fisherman lighting a pipe or cigar and carelessly throwing away the lighted match. This fire gave much trouble and kept Captain Lindsley's entire troop at work with it for nearly a month.

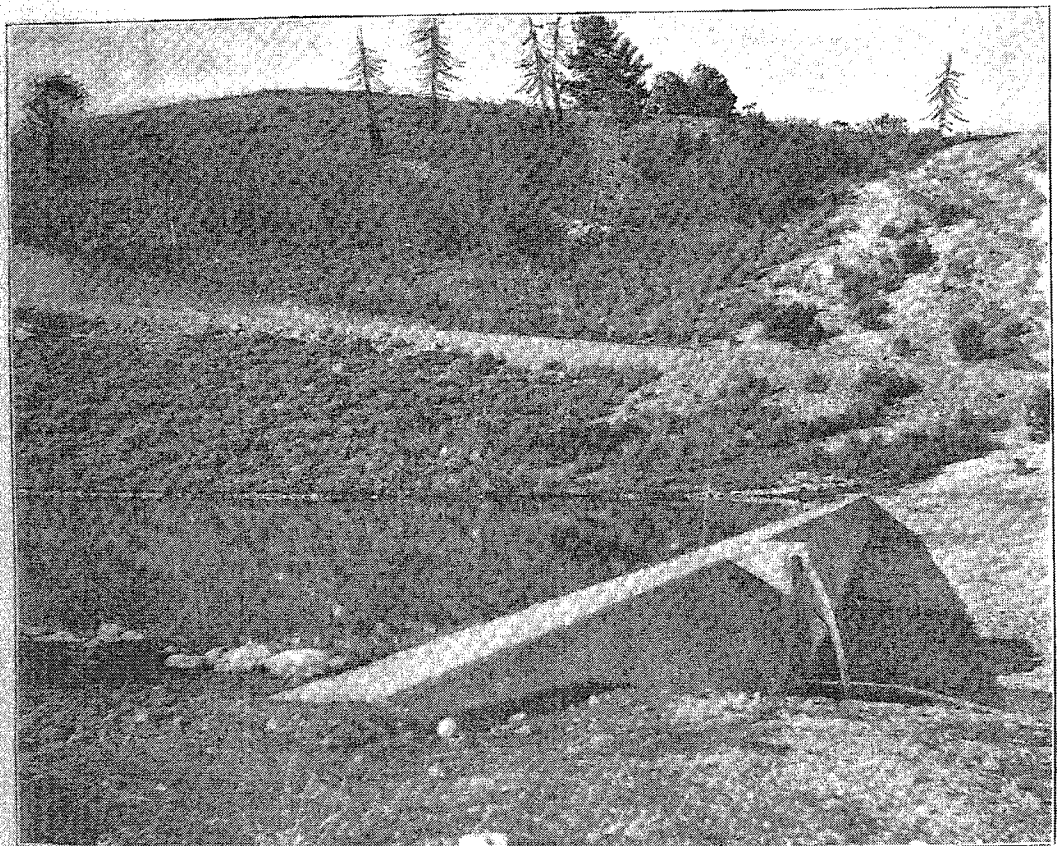
The third fire, on Pelican Creek, was caused by lightning and did but little damage, as it was soon extinguished by a heavy rain. All of these fires commenced about the same time and just before the arrival of Captain Lindsley's troop. Had this additional troop been sent into the park a little sooner it is probable that both of the fires, at the Gibbon Canyon and the Upper Geyser Basin, could have been checked or extinguished much more quickly than they were; with more men to patrol the roads they might have been prevented entirely.

FISH AND FISH HATCHERY.

There is scarcely any feature in the park which tourists enjoy more than the trout fishing, which is now to be had in almost any stream in the park. These trout have been planted in nearly all streams in the park except in those that are tributary to the Yellowstone River, and the experiment has been so successful that there are now but few places in this country where better sport can be had by the fisherman than in the park. It is particularly interesting to the true sportsman for the reason that five different species of trout can be taken within the limits



VIEW ALONG NEW RESERVOIR.



NEW RESERVOIR, SHOWING DAM.

Report Superintendent Yellowstone National Park, 1901.



BIRD'S-EYE VIEW OF NEW RESERVOIR.

of the park. These are the native or black-spotted trout, the rainbow, the Von Behr, the Loch Leven, and the eastern brook trout.

There is no restriction placed on the fishing in the park save that fish can not be caught and sold for the market, and in order that it may never be necessary to make any restrictions it is strongly urged that a small fish hatchery be established here. If this can be done the streams can be kept so full of trout that it will be impossible for the tourists to deplete them. Mr. D. C. Booth, who is in charge of the United States hatchery at Spearfish, S. Dak., visited the park this summer, and has reported a favorable location for a hatchery on Willow Creek, about eight miles from the Mammoth Hot Springs. Mr. Booth collected about 1,000,000 eggs from the Yellowstone Lake trout, and sent them to the hatchery at Spearfish. He brought into the park and placed in Willow Creek about 10,000 eastern brook trout, and has just informed me that he now has about the same number of rainbow trout, which can be had on application to the United States Fish Commissioner. Application for them has just been submitted, and as soon as received they will be planted in the Gibbon River.

WEATHER BUREAU.

Prof. Willis L. Moore, Chief of the Weather Bureau, visited the park a short time since, and expressed a desire to establish a weather station here. He wishes to establish a regular station on Capitol Hill, near the Mammoth Hot Springs, and a substation at the lake. I believe that such a station would be of advantage to the park as well as the Weather Bureau. The publication of the temperature here during the summer would call attention to the desirability of the park as a summer resort and add to its popularity. It is therefore recommended that the Chief of the Weather Bureau be authorized to establish the station, as suggested.

BOUNDARY SURVEYS.

The boundaries of the park on the north, west, and south sides are now surveyed and marked in such a way that hereafter there can be little or no excuse for persons entering the park from those three sides without knowing that they have done so. There still remains unsurveyed about 50 miles of the boundary on the eastern side of the park, extending from the monument established by Captain Bromwell, United States Engineers, on the boundary east of Yellowstone Lake, to the northern boundary of the park. It has been estimated by Mr. Edw. F. Stahle, who completed the surveys of the north, south, and west boundaries this year, that the unsurveyed portion of the line on the east could be measured and marked for \$3,000, or at the rate of \$60 per mile. This line will traverse some of the roughest mountains of the park, and it is of the greatest importance that it should be clearly marked. I therefore strongly urge that the necessary authority be granted the Commissioner of the General Land Office to complete this survey.

GAME.

The large game in the park, with the exception of the buffalo, seems to be even more numerous than ever; at least more has been seen this year by the tourists than ever before, and it is believed that this is due

to the fact that the regulation concerning dogs in the park has been pretty strictly enforced. This regulation will be even more strictly enforced next year, for it is a well-known fact that one small dog running at large, while it will do no harm to the large game, will drive it so far back from the roads that none will be seen by the average tourist. As the game is one of the most interesting features of the park to visitors, it is desirable that an opportunity should be given them to see it, and with this end in view it should be disturbed as little as possible. So far as I have been able to find out, not a single head of large game has been killed in the park during the past year, and but one case of poaching has been reported. This was the case of Henry W. Meyer, charged with trapping two beaver near Soda Butte.

It has been impossible for me up to the present time to ascertain accurately the number of buffalo in the park, but their number will be accurately determined as soon as the snow falls, and a special report of the matter will be submitted as soon as possible. It has been reported that one buffalo bull was killed last winter in the Jackson Hole country, south of the park. This was in violation of the laws of Wyoming, and the offender should certainly be punished if possible. I will report the matter to the Wyoming authorities if I can get any evidence in the case. The buffalo are protected by the laws of Wyoming, Idaho, and Montana, and it is now possible that the small herd remaining in the park may increase, though it may be necessary to introduce some new blood in this herd, and possibly it may be well to start an entirely new one and to keep it under fence, turning the animals loose gradually as the herd increases. From what I can hear I do not believe there are more than 25 buffalo left in the park.

The elk are very numerous, but unless something is done to prevent the encroachment of settlers on their winter range south of the park and the slaughter of them merely for their tusks, it is possible that they will soon be reduced to the number that can live entirely within the limits of the park; and this number I believe to be about 25,000. It is reported to me that the Teton Forest Reserve is the winter range for the elk that live in the southern part of the park during the summer; it is therefore to be hoped that this reserve will never be thrown open for settlement, and that it may eventually be acquired as a part of the National Park.

The deer in the park are quite numerous and very tame.

The antelope would undoubtedly have become extinct in the park in a short time but for the fact that Montana has this year passed a law which absolutely prohibits the killing of these beautiful animals for an indefinite period. This will give them a chance, and they will probably increase very rapidly in the future.

The bear have increased greatly in numbers, and during the past season they have been a source of great amusement and interest to the tourists, for at both the Fountain and the Canyon hotels anywhere from fifteen to twenty bear—grizzly, black, and brown—could be seen about the garbage piles every evening. They could also be seen in greater or less numbers at any of the other hotels or lunch stations.

Of the smaller game the beaver have probably increased more rapidly than anything else, and their dams and houses are now to be found in almost all of the smaller streams in the park.

MILITARY POST, FORT YELLOWSTONE.

This is one of the most neatly built and attractive-looking little posts in the country, but it is too small for the growing needs of the park. As the park is opened up by new roads and as the travel of all kinds increases the danger of forest fires and the opportunities for poaching and other violations of the park rules increases. This will necessitate more outposts and more patrols throughout the reservation. It is therefore recommended that the post be enlarged to a four troop or squadron post. It is further recommended that a suitable house be constructed for the use of the commanding officer and acting superintendent of the park, in order that he may properly entertain the many distinguished visitors who come into the park, with letters of introduction to him, from all parts of the country.

The post should be lighted by electricity instead of by oil, as a matter of safety and convenience. A suitable location for an electric plant can be found within 300 yards of the post, which plant could be run by water power and therefore at a very reasonable cost.

YELLOWSTONE LAKE BOAT COMPANY.

The boat provided by this company is apparently seaworthy, in good repair, stanch, and safe. The trip in this boat from the Thumb to the Lake Hotel is greatly enjoyed by the majority of tourists who take it.

While the service on steamer has apparently been entirely satisfactory to the tourists, there have been many verbal complaints concerning the excessive charges for the hire of small boats, fishing tackle, etc., by this company. The tourists who made these complaints declined to put their statements in writing, on the ground that they did not care to be bothered further about the matter, yet they wished it corrected. The only written complaint received was from the Hon. Alex. Beitler, judge of court of common pleas, of Philadelphia, Pa.

The house occupied by Mr. Waters, the president of the company, is a very neat and pretty structure. The small boats and boathouse are in good condition. The store is an unsightly building and badly located, for it is entirely too near the proposed addition to the Lake Hotel. The barns and corrals are also too near the hotel, and are objectionable for the reason that the cattle and other stock owned by the company collect about them at various times of the day, and render the place filthy and unsightly by their manure. A remedy for this trouble has been suggested in a special report on the subject.

The Lake Hotel has been a very popular place during the past season on account of the delightfully cool weather always to be found there, and also on account of the fine fishing in the lake. This place will increase in popularity as its advantages as a summer resort become known, and in order to remedy the complaints about the boat question it is recommended that some competition be introduced in this business. A few naphtha launches would add greatly to the attractions of the lake.

REGULAR TRANSPORTATION COMPANIES IN THE PARK.

THE YELLOWSTONE NATIONAL PARK TRANSPORTATION COMPANY.

This company is by far the finest and best-equipped transportation company operating in the park, and there are few, if any, better to be found anywhere in the country. Their Concord coaches, seating from seven to ten people, are the finest and most comfortable wagons made. They also have a number of small surreys seating three persons besides the driver, which are intended to carry small parties who prefer to travel by themselves. That their teams are excellent and drivers skillful and careful is shown by their remarkable freedom from accidents during the past season. This company has operated in perfect harmony during the past season with the Yellowstone Park Association or Hotel Company, and has done away with many things which have heretofore caused friction between the two companies and inconvenience to the tourist. This company has recently suffered a serious loss in the death of its manager, Mr. S. S. Huntley. Mr. Huntley, by his ability as a manager, by his sterling integrity and honesty, and by his genial and courteous treatment of all who came in contact with him, had made a host of friends not only for himself and his company, but for the park as well. In all of his business transactions Mr. Huntley never lost sight of the true interest of the Yellowstone National Park, and was at all times exceedingly careful not to ask for anything or to do anything that would in the least mar the beauty of the park or conflict with its best interest in any way. By his death the park has lost a true and valuable friend. No complaints have been received concerning this company.

MESSRS. HUMPHREY AND HAYNES.

This new company, which commenced operations in 1898, and is known as the Monida and Yellowstone Stage Company, is also well equipped with fine Concord coaches and surreys and has given entire satisfaction to its patrons. Their business has shown a slight increase each year, and it will probably be much greater when a proposed branch of the Oregon Short Line Railroad is completed to a point near the border of the park. This company has also operated in perfect harmony with the Yellowstone Park Association hotels, and there has been no distinction shown between the patrons of the two regular transportation companies. No complaints have been received concerning this company.

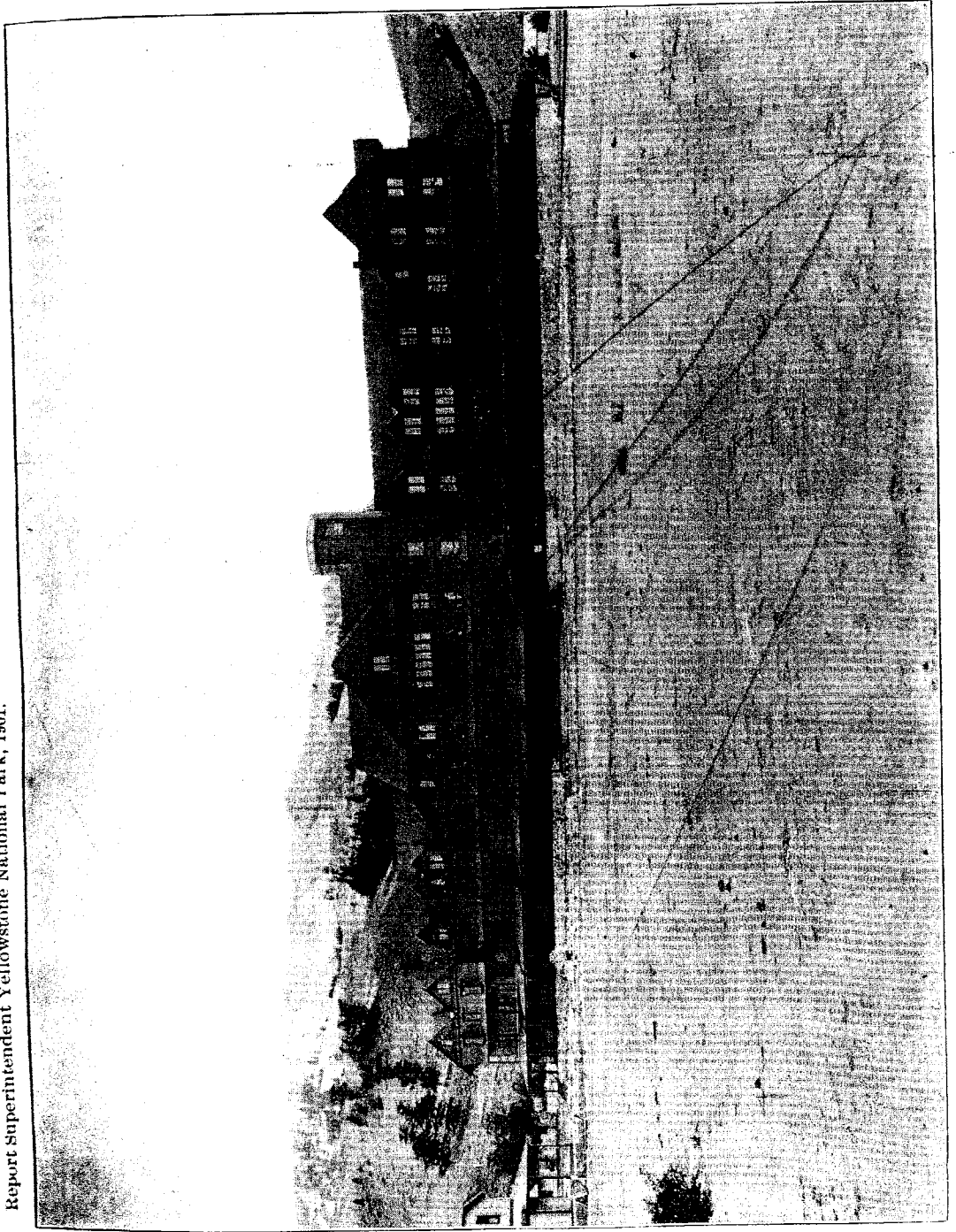
HOTELS.

The Yellowstone Park Association has done much during the past season to improve the hotels throughout the park, and are still going on with their good work. Their task is by no means an easy one, and much consideration should be shown them, for all of their hotels, with the exception of the Mammoth, are located a long distance from the railroads. This necessitates the use of wagon transportation for supplies of all kinds, and under the best conditions this is a slow and expensive business.

THE MAMMOTH HOT SPRINGS HOTEL.

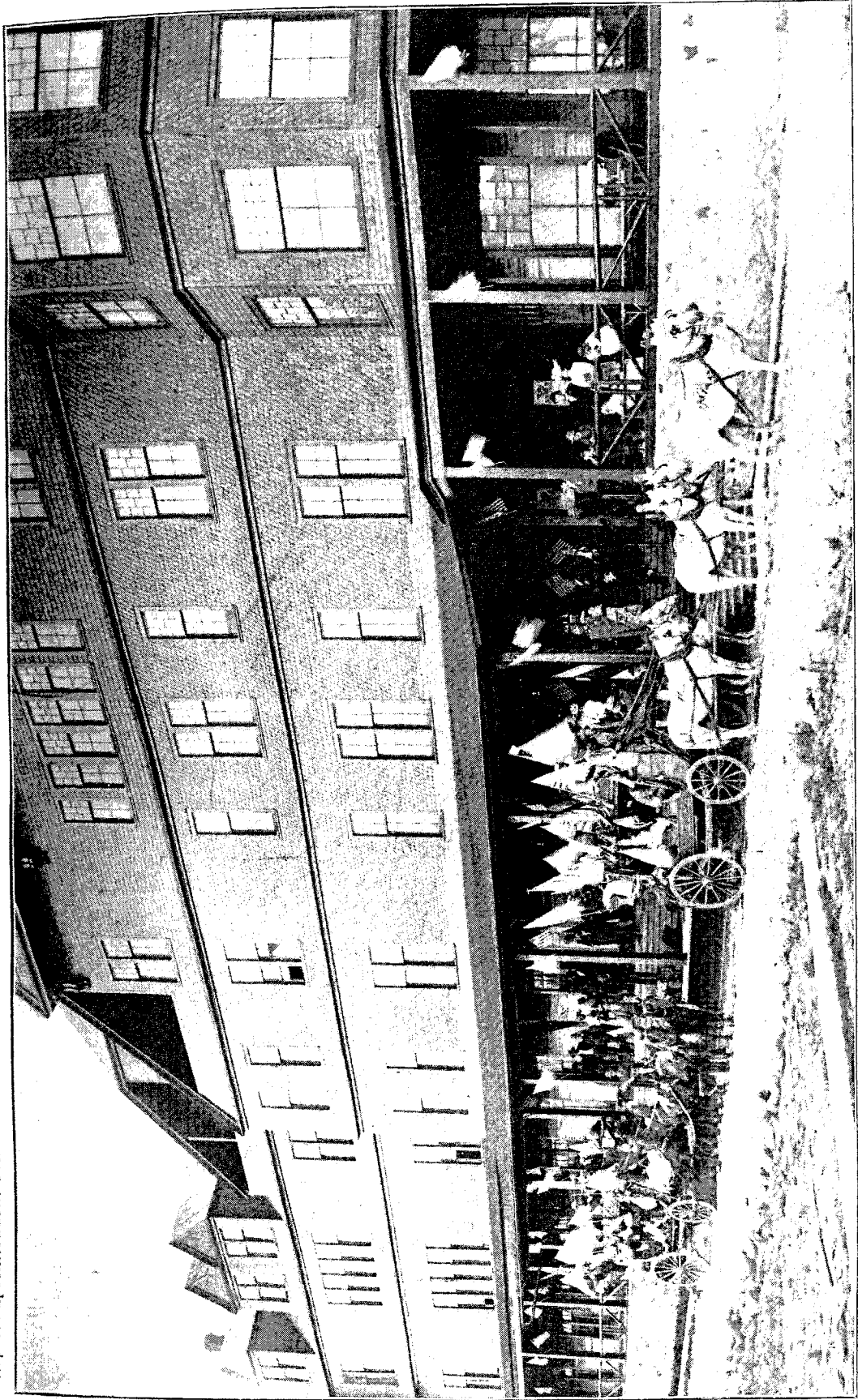
Much time and money have been expended in improving the exterior appearance and modernizing the interior of this structure. The exterior has been neatly painted a terra-cotta color with brown trimmings,

Report Superintendent Yellowstone National Park, 1901.



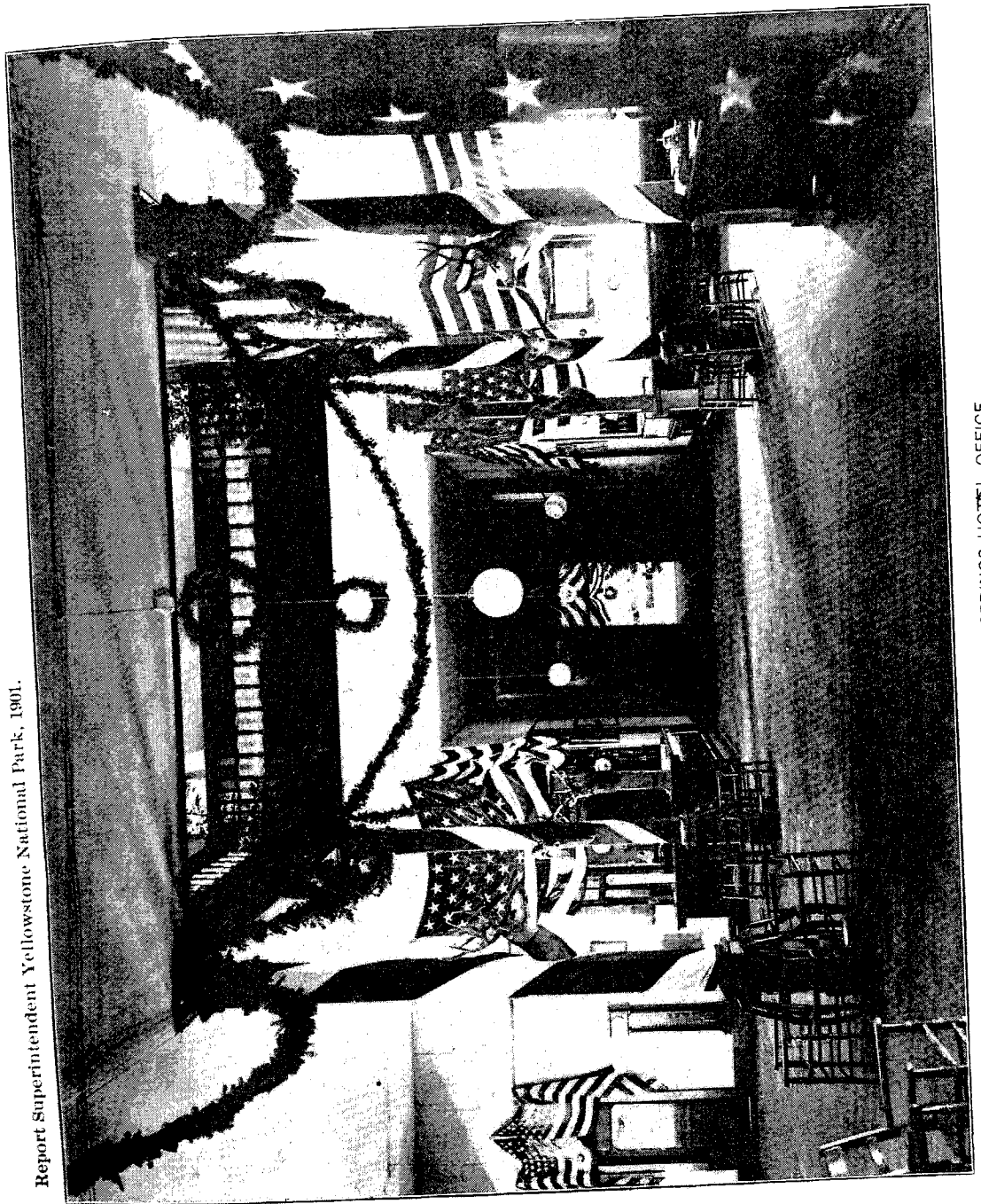
MAMMOTH HOT SPRINGS HOTEL.

Report Superintendent Yellowstone National Park, 1901.



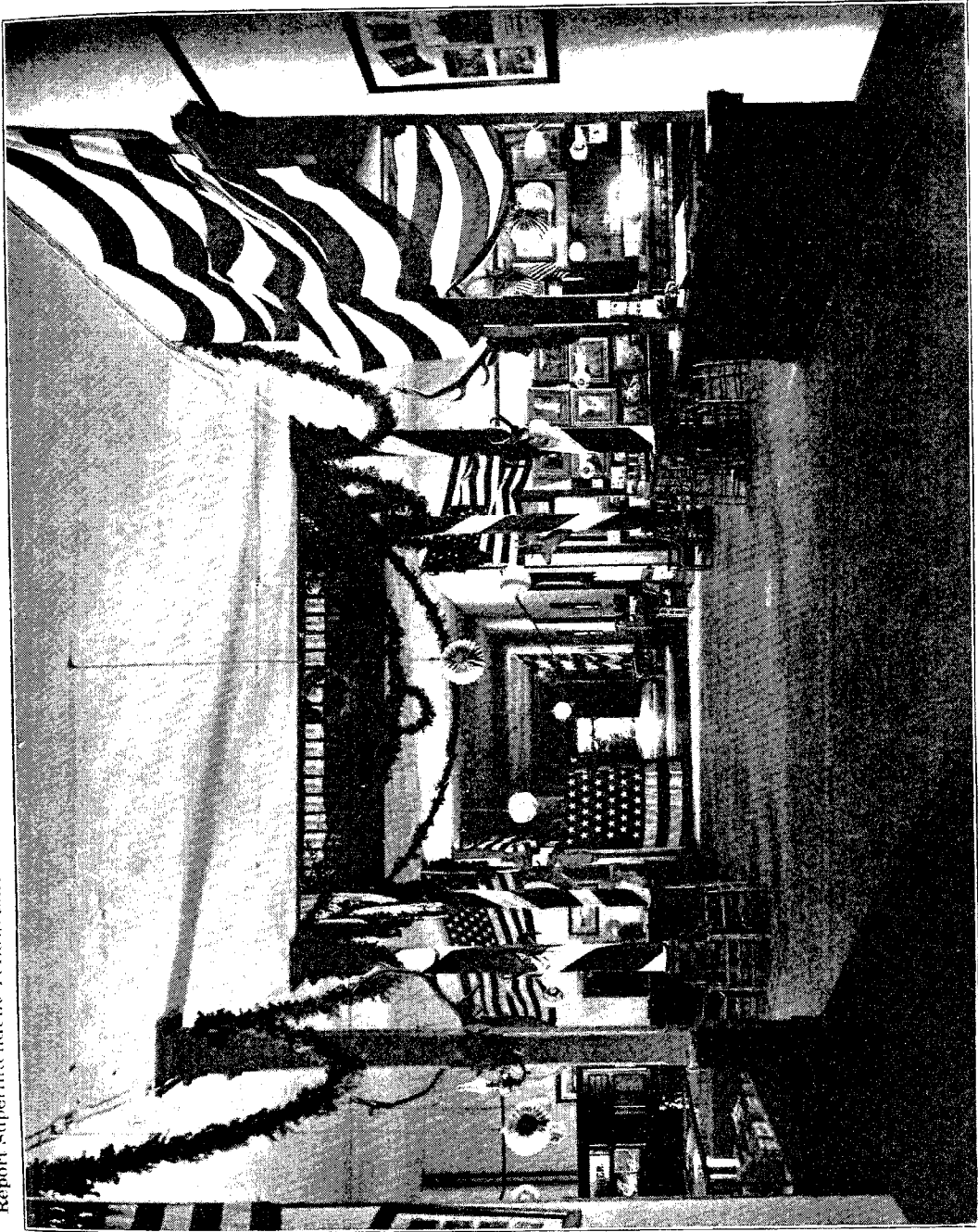
MAMMOTH HOT SPRINGS HOTEL, SHOWING NEW VERANDAS.

Report Superintendent Yellowstone National Park, 1901.



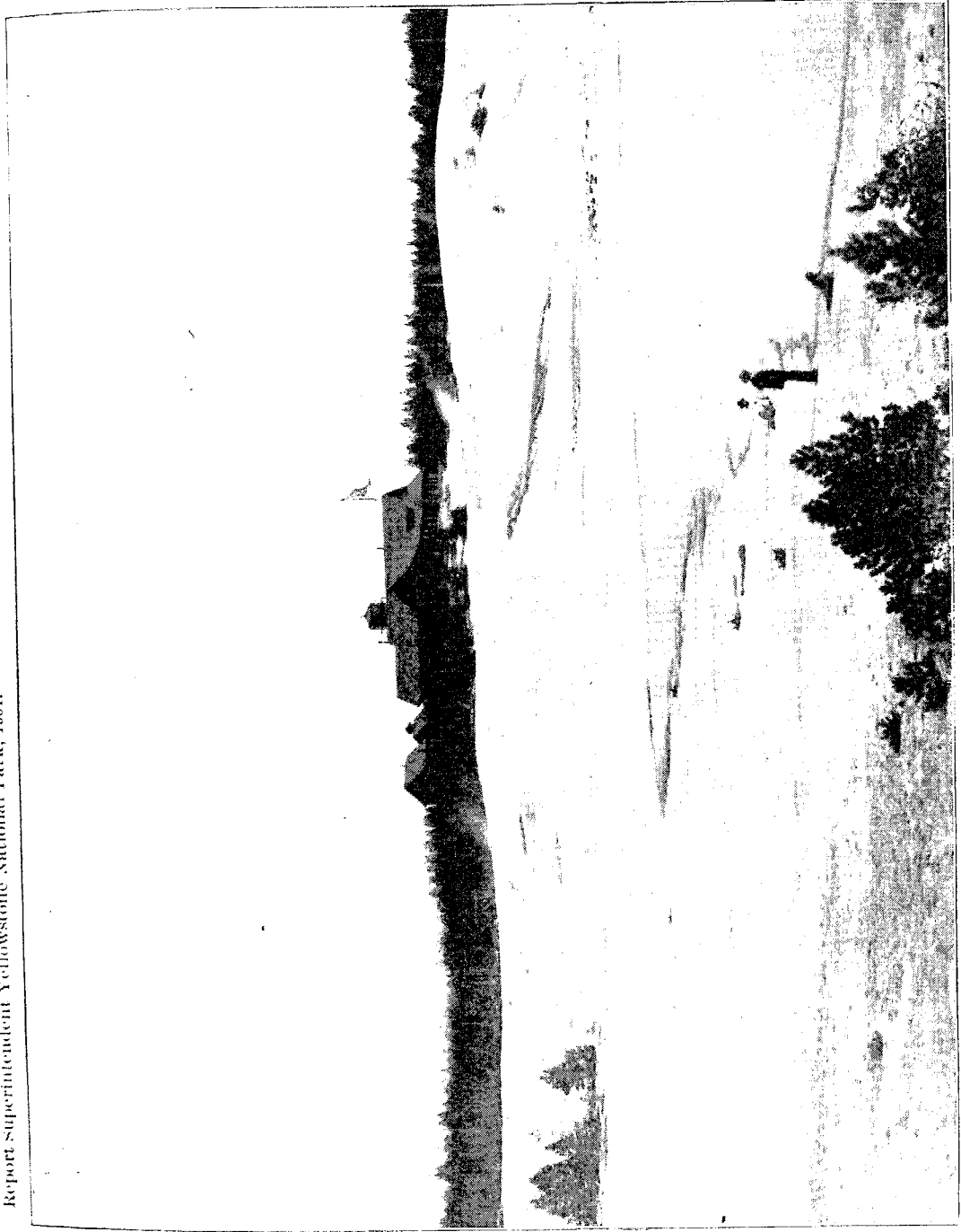
MAMMOTH HOT SPRINGS HOTEL OFFICE.

Report Superintendent Yellowstone National Park, 1901.



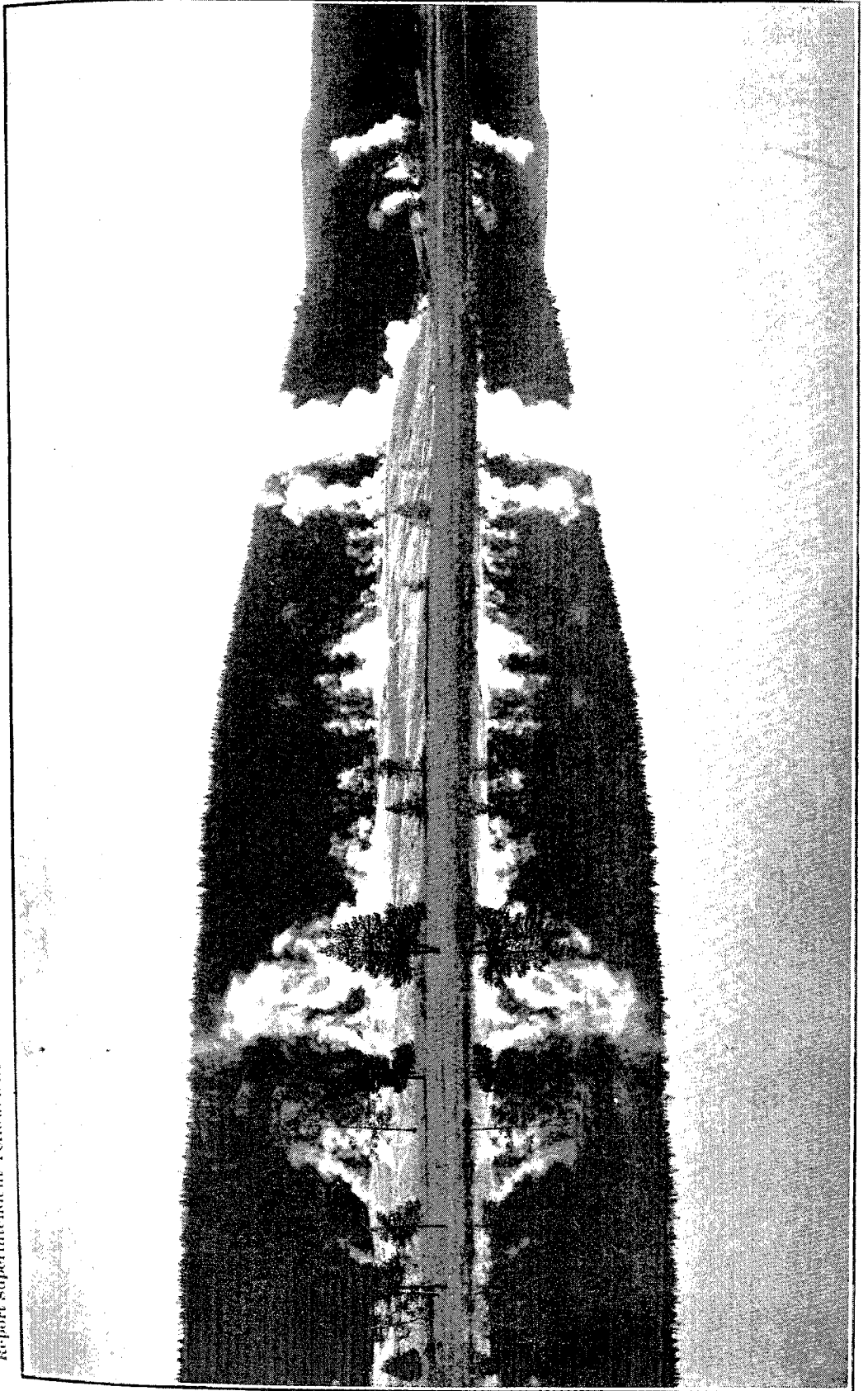
MAMMOTH HOT SPRINGS HOTEL LOBBY.

Report Superintendent Yellowstone National Park, 1901.

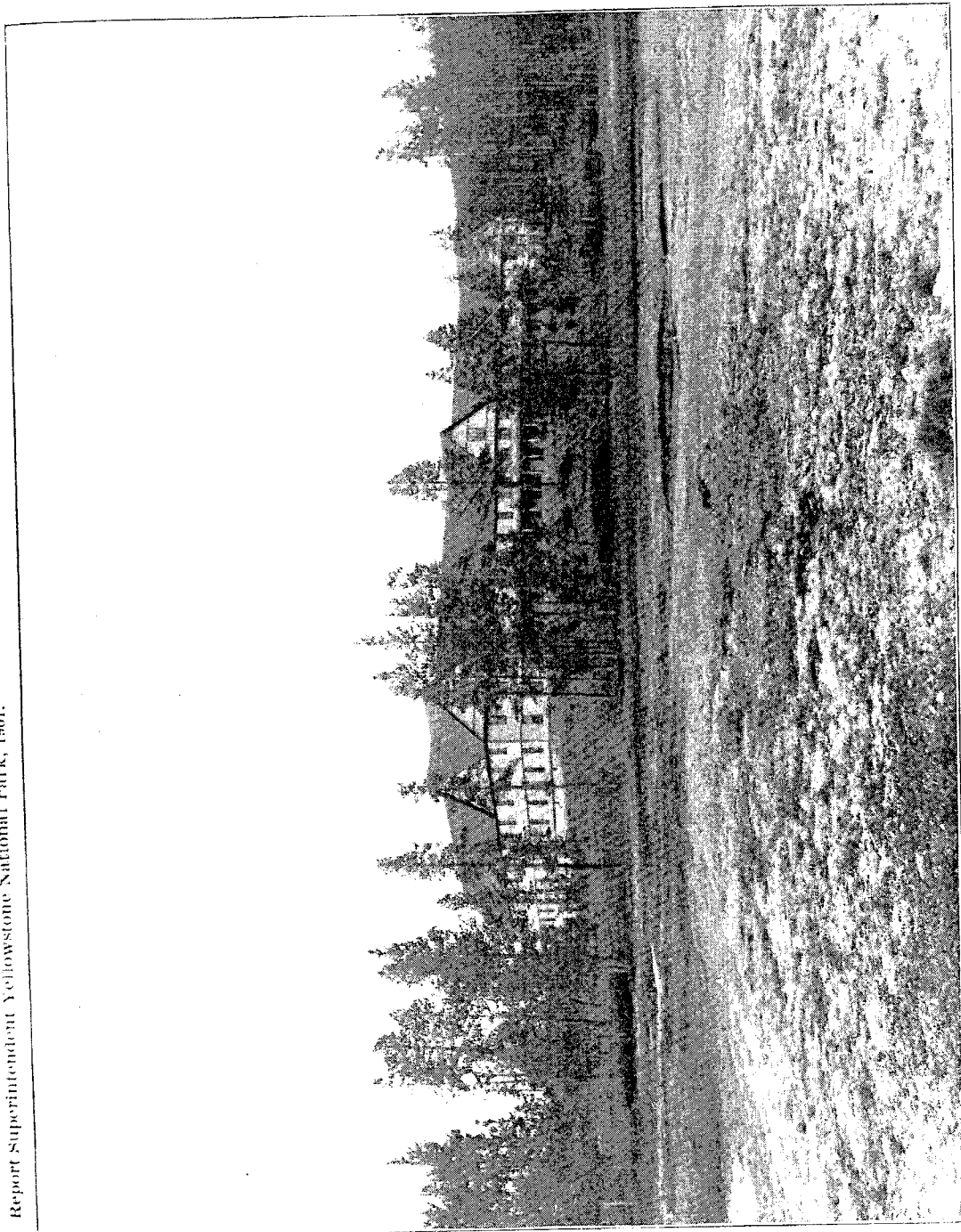


NEW HOTEL AT NORRIS, GEYSER BASIN.

Report superintendent Yellowstone National Park, 1901.

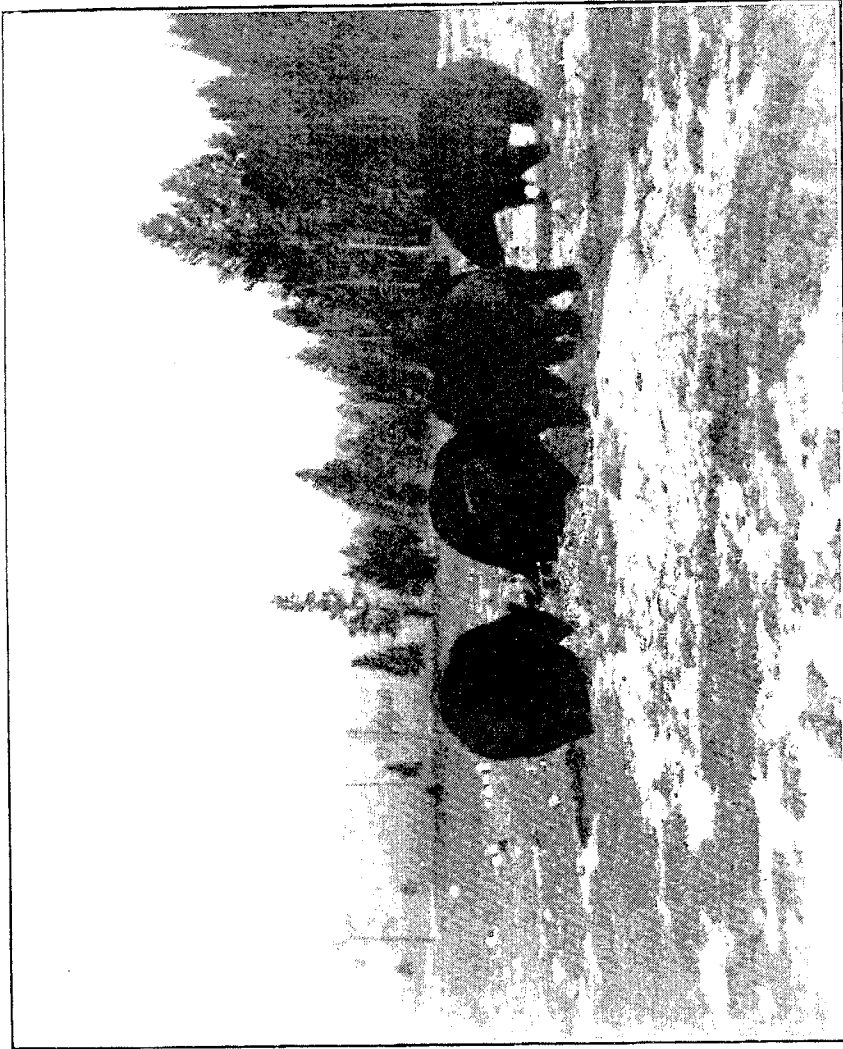


Report Superintendent Yellowstone National Park, 1901.



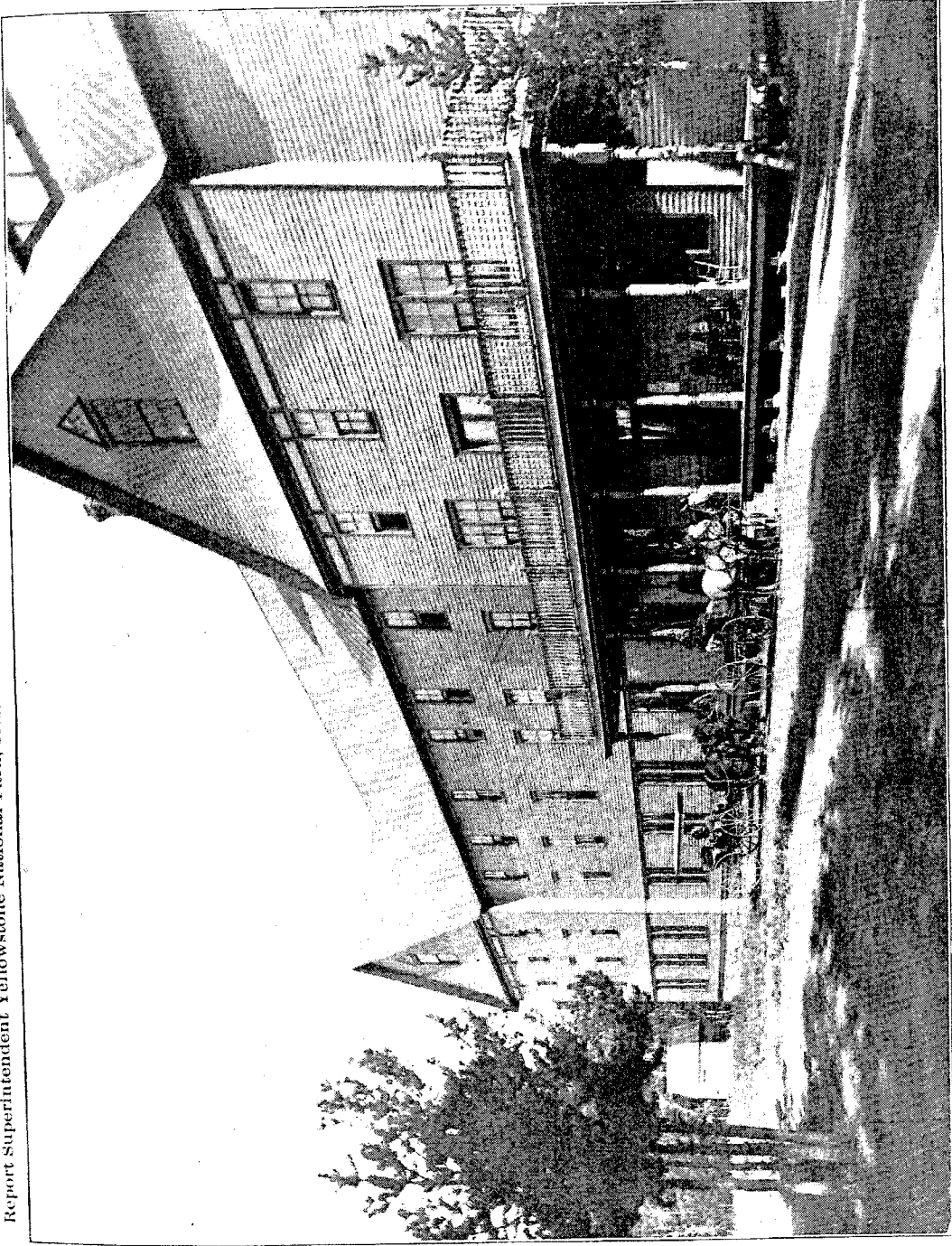
FOUNTAIN HOTEL.

Report Superintendent Yellowstone National Park, 1901.



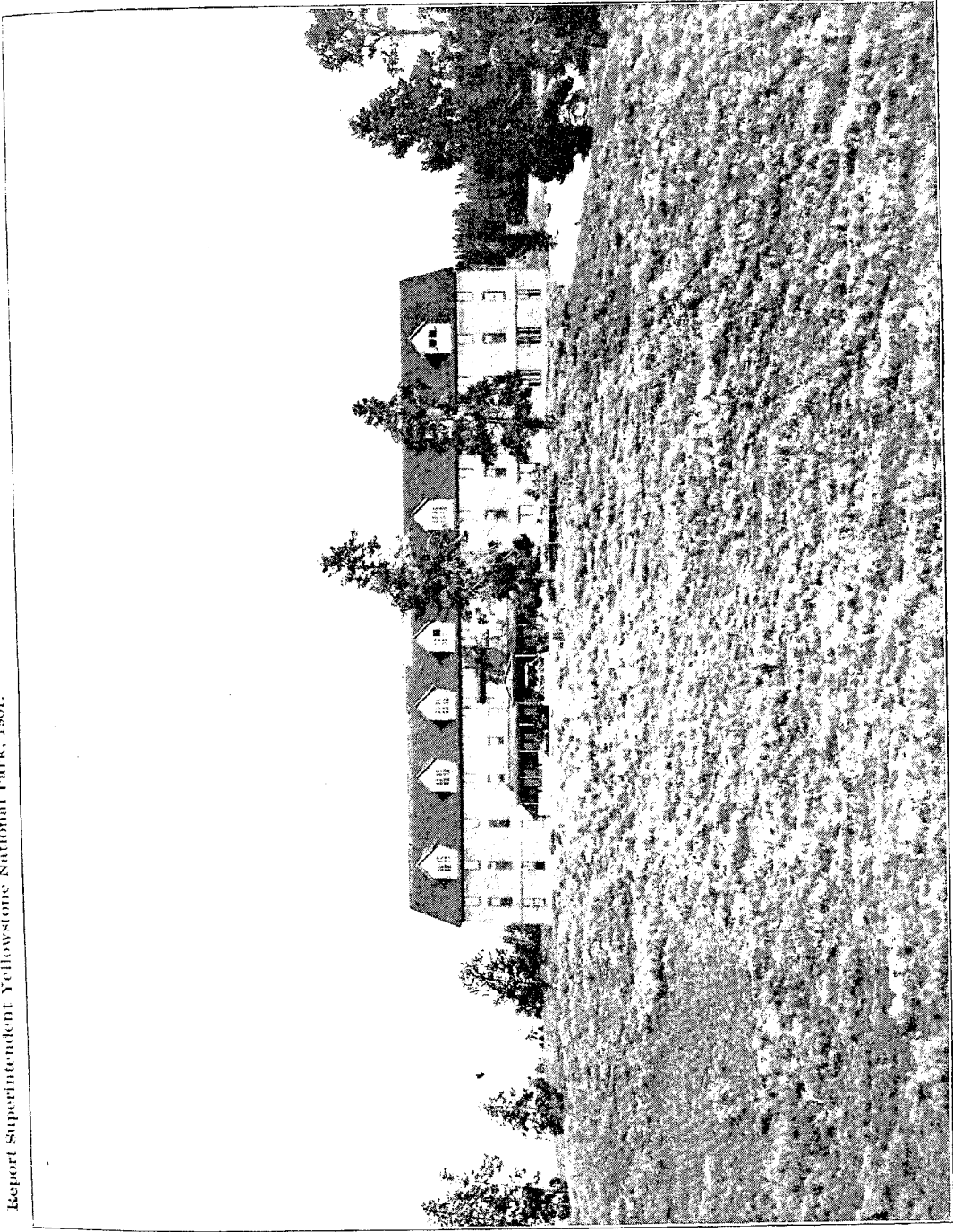
BEARS NEAR FOUNTAIN HOTEL.

Report Superintendent Yellowstone National Park, 1901.



LAKE HOTEL.

Report Superintendent Yellowstone National Park, 1901.



CAÑON HOTEL.

and a new porch and new covered loading platform, 75 feet long, which has been added, have entirely changed and greatly improved the appearance of the front of the house. Among the many interior improvements are noticed the new floors, the two new bathrooms on each floor, with porcelain-lined tubs and closets, the hotel office enlarged and handsomely decorated with heads of elk, deer, mountain sheep, and antelope, 200 new electric lights, and a new and modern steam-heating plant, with radiators in every room. This last improvement will be greatly appreciated by the tourists in the early and the latter part of the season, when they are liable to experience a few exceedingly cold days. Twenty-seven rooms have been added to this hotel for the accommodation of guests.

NORRIS GEYSER BASIN HOTEL.

A new and very comfortable little hotel has been constructed at the Norris Geyser Basin. It has been built on a far better site than that occupied by the old lunch station, which was some distance from the geyser basin—entirely too far for the majority of tourists to walk. The new hotel is so conveniently located that the tourists can now sit on its broad and sheltered veranda, after having their luncheon, and while awaiting the arrival of their coaches, they will be greatly interested in watching the playing of the geysers in the distance below them; or if they prefer to do so, they can stroll leisurely through the basin and await the arrival of their coaches at the Monarch Geyser, where comfortable seats and a shelter have been provided. This hotel has been greatly needed for a long time, and will be frequently patronized by people who can not afford the time to go entirely around the park, and also by many who wish to go out of the park by the Monida route.

FOUNTAIN HOTEL.

This is a very comfortable and quite a modern establishment. It is well lighted by electricity and heated with steam. The water which is used in the bathrooms comes from a large hot spring, and is strongly impregnated with borax, which renders it soft and delightful water to bathe in.

UPPER GEYSER BASIN.

The association is preparing to build a new hotel at this point. They have at present a frame building where meals are served, and a number of very comfortably arranged tents, where 96 tourists can be accommodated if they wish to remain over night. The tents are neatly floored, and comfortably warmed with stoves.

LAKE HOTEL.

This, like the Fountain Hotel, is a very comfortable and quite a modern structure, and during the past season has been one of the most popular places in the park. A number of people have spent a good part of the summer here, and were so much pleased with the place that they expressed their intention of returning again next year. This hotel has been improved by the addition of 17 new rooms during the past summer.

CANYON HOTEL.

This building is similar in character to the Lake and Fountain hotels and is very comfortable. It has been much improved in appearance by putting nine dormer windows in the roof, and by painting. Twenty-four new rooms have also been added. It can be still further improved in appearance and comfort by the addition of a larger veranda.

THE WYLIE PERMANENT CAMPS.

Mr. W. W. Wylie, of Bozeman, Mont., was licensed to conduct camping parties through the park during the past season, and authorized to occupy certain parcels of ground as permanent camps.

No complaints have been received concerning him save that some of his agents outside of the park have made false statements concerning the routes, etc., traveled by other regular transportation companies in the park. This report was received in such a way that no action could be taken in the matter, but an effort will be made to see that it does not occur again.

IMPROVEMENTS IN THE YELLOWSTONE NATIONAL PARK.

Attention is invited to the following letter from Capt. H. M. Chittenden, United States Engineers, in charge of improvements in the Yellowstone National Park; also to his memorandum showing the work accomplished under his direction during the season of 1901. It is strongly urged that the additional appropriations asked for by him may be secured if possible. The experiment in road sprinkling has been a decided success, and has added much to the comfort of tourists and kept that portion of the roads which were sprinkled in fine condition, for, in addition to keeping down the dust, the broad tires of sprinkling wagons acted as rollers and kept the roads perfectly smooth and free from ruts.

The small log buildings now used by the outposts should be made as neat and comfortable as possible, for the men who occupy them suffer many hardships, especially during the winter, when they are entirely cut off from the outside world for several months.

The improvements recommended about the Mammoth Hot Springs will also add greatly to the attractions of the park, but this matter has been previously referred to in my report.

The substantial and permanent character of the road work that can be done by Captain Chittenden, when he has sufficient funds at his disposal, is illustrated by the fine piece of road just completed between the town of Gardiner and the Golden Gate. A few photographs of the most difficult parts of this road are inclosed herewith.

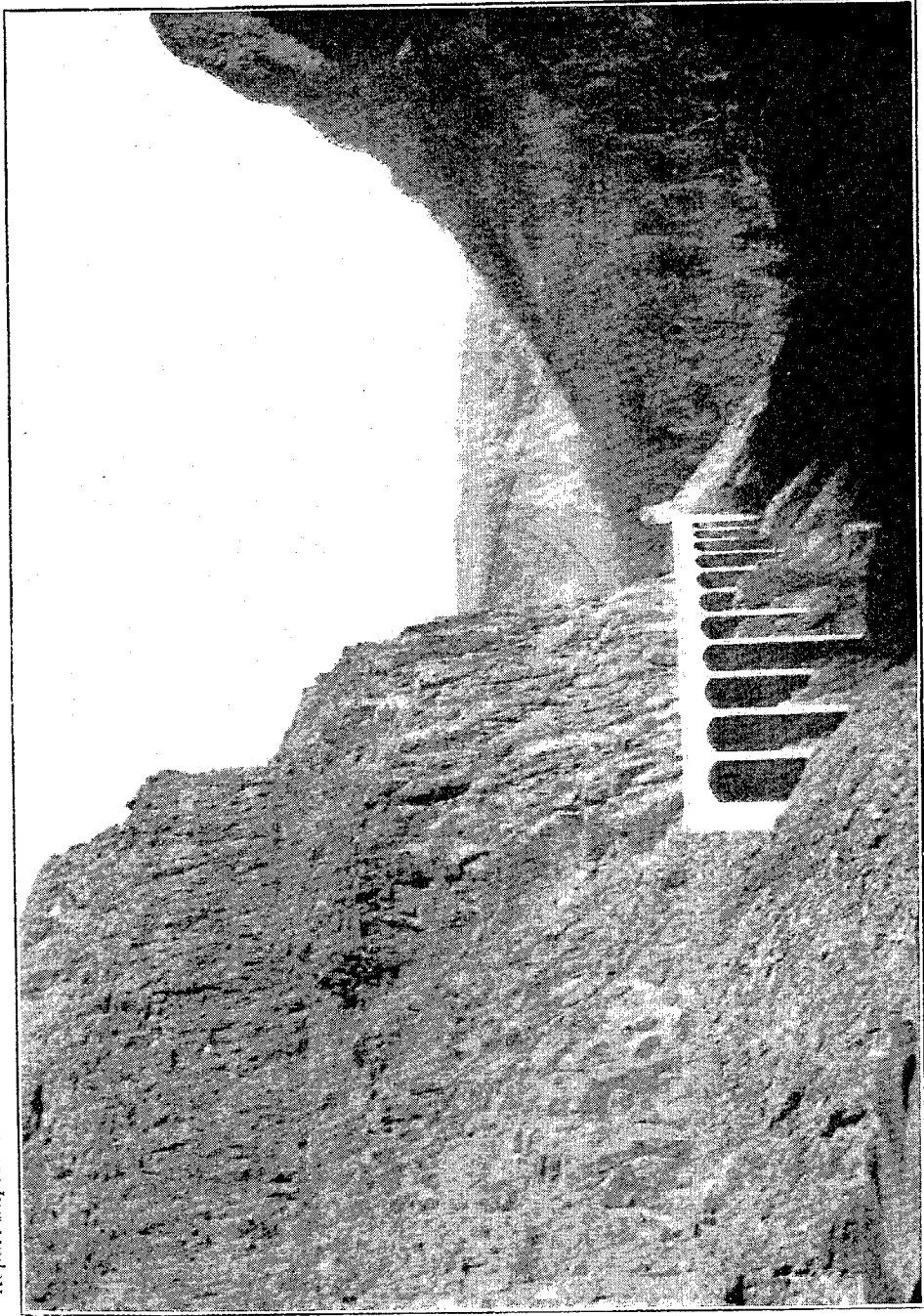
IMPROVEMENT YELLOWSTONE NATIONAL PARK.

U. S. ENGINEER OFFICE,

Mammoth Hot Springs, Wyo., October 3, 1901.

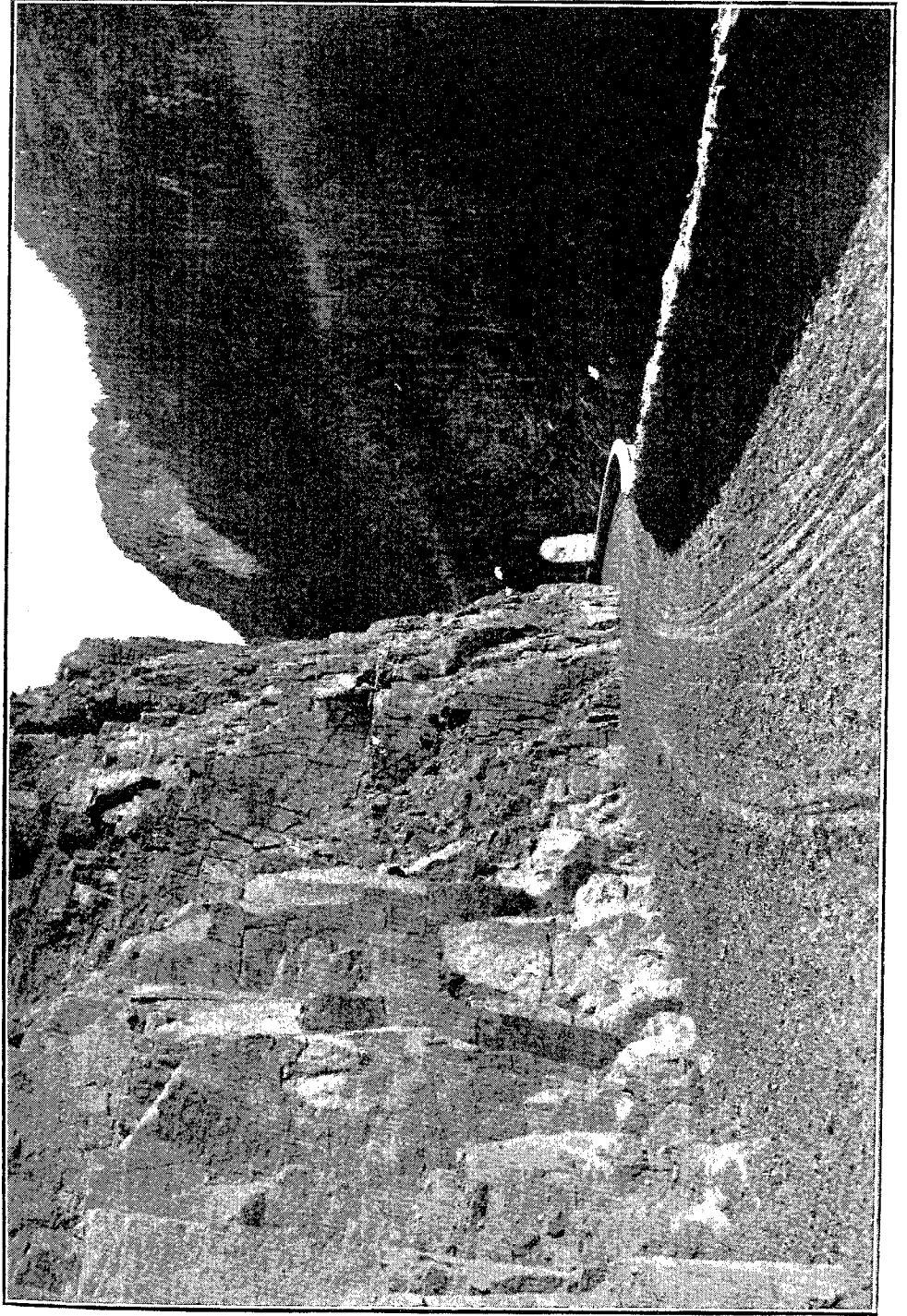
CAPTAIN: Since the date of rendering my annual report for the last fiscal year, with estimates for the fiscal year ending June 30, 1903, and also for the entire work yet remaining to be done under the existing project, certain conditions have developed that make it important to increase somewhat the estimates as submitted. As it is now too late to do this in my annual report, and as it is important that this increase of the estimate shall come before Congress in some official way, I should think it would be advisable for you to make mention of it in your own report about to be

Report Superintendent Yellowstone National Park, 1901.



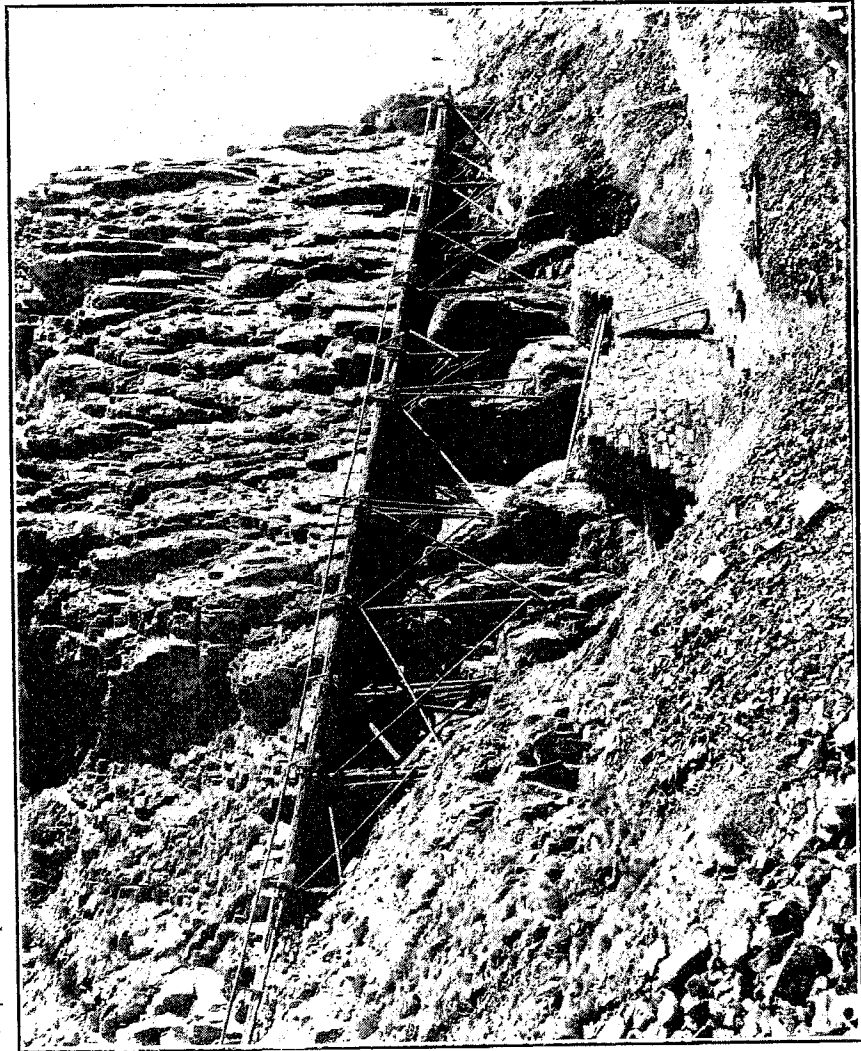
ERECTION OF GOLDEN GATE VIADUCT. GENERAL VIEW FROM UP THE CANYON.

Report Superintendent Yellowstone National Park, 1901.

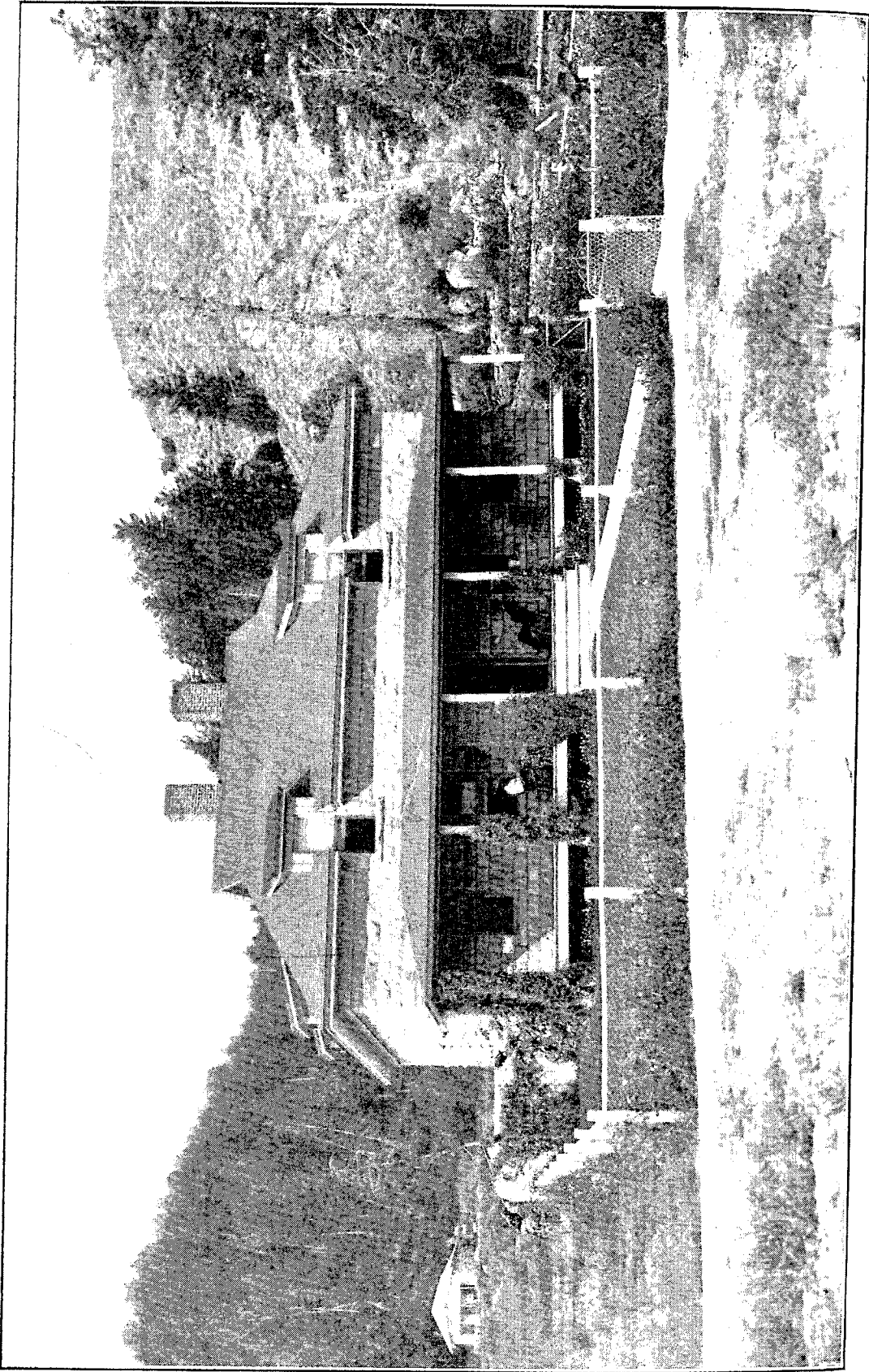


ERECTOR OF GOLDEN GATE VIADUCT. TOP VIEW OF COMPLETED WORK FOR ROAD ABOVE VIADUCT.

Report Superintendent Yellowstone National Park, 1901.



OLD VIADUCT GOLDEN GATE.



UNITED STATES COMMISSIONER'S BUILDING, YELLOWSTONE PARK.

submitted. The following are the items which ought to be included in the final estimate for the work:

1. *Sprinkling*.—The experiments conducted during the past season of sprinkling a certain stretch of carefully built road has demonstrated the great value of extending this work over the main roads of about 150 miles. It will require one sprinkler and seven filling tanks to every 5 miles. This will cost at the least calculation the sum of \$30,000 and should be included in the estimates for permanent plant, which ought to be procured within the next three years.

2. *Buildings*.—For the use of your troops in patrolling the park; for the use of the Engineer Department when sending parties over the road system, and for the use of the officers of the Government when traveling on duty through the park the present station houses should be enlarged and improved, and certain additional ones should be built. The total number will be 12, and possibly 13, and will cost on the average, if properly built, \$2,000 each, including outhouses, and taking into consideration the great distance to which much of the material will have to be hauled. There should be provided for this purpose the sum of \$25,000.

3. *Work at Mammoth Hot Springs*.—The completion of the new water supply for Fort Yellowstone and the bringing of the waters of Glen Creek to this point have made possible the irrigation of the Mammoth Hot Springs plateau and the conversion of this dusty tract of ground, where the main business of the park is conducted, into permanent turf. This improvement is very urgently needed. To complete it as it should be, and at the same time realign and thoroughly rebuild the roads of the plateau, with proper sidewalks, will cost about \$15,000.

The total estimate for these three purposes is therefore \$70,000.

Very respectfully,

H. M. CHITTENDEN,
Captain, Corps of Engineers, U. S. A.

Capt. JOHN PITCHER,
*First U. S. Cavalry, Acting Superintendent Yellowstone National Park,
Fort Yellowstone, Wyo.*

WORK ACCOMPLISHED DURING SEASON OF 1901.

New road opened in valley of Gardiner, replacing dangerous road under cliff. Includes three steel bridges.

About 1,600 feet of new road built on hill below Mammoth Hot Springs, replacing a 15 per cent grade with one of 8 per cent.

A single-track survey road opened from Glen Creek to Middle Gardiner Falls, 2 miles.

One-fourth mile of very difficult construction in upper end of Golden Gate Canyon.

Entire length of road from Mammoth Hot Springs to Golden Gate resurfaced. Same stretch of road sprinkled throughout the season.

Water supply for Mammoth Hot Springs put in, including the construction of a ditch to carry the water of Glen Creek to Mammoth Hot Springs, the construction of a reservoir holding 1,800,000 gallons, and the laying of a pipe line to connect with the points where supply is to be used.

The construction of about 7 miles of road near Yancey's, the grading of bridge approaches over the Yellowstone, and the survey of the proposed line as far as Tower Falls and through Granite Canyon on the road to Cooke City. The erection of the Yellowstone bridge has been prevented by failure of the mills to furnish the material, owing to the steel strike.

The construction of 9 miles of road between the Thumb and Lake Hotel to cut out the Lake Shore road.

Construction of 12 miles of road on the eastern approach, carrying that road into the valley of Middle Creek beyond Sylvan Pass. This work includes the construction of new pile bridges over Yellowstone River and Pelican Creek.

The opening of 6 miles of road near Jackson Lakes and the extensive reconstruction of the southern approach, including new bridges over Lewis River and Crawfish Creek, placing this road in very fair condition from Yellowstone Lake to Buffalo Fork of Snake River, the western terminus of the Fort Washakie military road.

The annual repairs have been extensive and have covered the entire existing system. The roads were all open by the 1st of June, something never before accomplished since the main circuit of the roads was opened. Extensive resurfacing has been done near Norris, in the Lower Geyser Basin and, on the Continental Divide road. About 200,000 feet of lumber has been manufactured both for new work and the repairs of old bridges. The station houses throughout the park have been placed in repair, temporarily.

RULES AND REGULATIONS OF PARK.

Attention is invited to the following letter from Judge John W. Meldrum, United States commissioner for the Yellowstone National Park.

The changes in the rules and regulations of the park suggested by him are approved and recommended, except that instead of "striking out the last subdivision from the last sentence of rule 4" the following be substituted therefor: "And anyone failing to comply therewith shall be punished as prescribed by law." This is provided for in paragraph 11, but it is desirable that the attention of all persons coming into the park should be clearly called to the necessity of carefully extinguishing their fires, and that a punishment will certainly follow carelessness and failure to carry out the requirements of paragraph 4. An amended copy of the rules and regulations in accordance with the above suggestions is appended hereto.

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., July 1, 1900.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.
2. It is forbidden to ride or drive upon any of the geyser or hot spring formations, or to turn loose stock to graze in their vicinity.
3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.
4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and any one failing to comply therewith shall be punished as prescribed by law.
5. Hunting or killing, wounding or capturing of any bird or wild animal, except dangerous animals, when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.
6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for the purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.
7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden; except in such cases where authority therefor is granted by the Secretary of the Interior.

9. No drinking saloon or bar room will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased grounds.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, may be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine, as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than one thousand dollars, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

E. A. HITCHCOCK,
Secretary of the Interior.

UNITED STATES COMMISSIONER,
YELLOWSTONE NATIONAL PARK, DISTRICT OF WYOMING,
Mammoth Hot Springs, October 4, 1901.

SIR: Complying with your request of recent date, I have the honor to inclose herewith a statement of cases tried before me since the 30th day of September, 1900, to the date hereof. In submitting such statement, I deem it a fact worthy of mention that during this time no complaint has been entered against any person for killing large game in the park, and that but one complaint charges the violation of the Yellowstone National Park protective act to as great an extent as the trapping of two beaver.

I beg leave to suggest that when submitting your annual report to the honorable Secretary of the Interior, you will recommend the following changes in the rules and regulations promulgated by that officer with reference to the management and care of Yellowstone National Park: Strike out the last subdivision from the last sentence of rule 4, which reads as follows: "And anyone failing to comply therewith shall be peremptorily removed from the park." In rule 11, change the twentieth word from "will" to "may," so that the section will read, "persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules 'may' be summarily removed from the park."

I suggest these changes for the reason that the act of Congress, approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes," specifically provides for the punishment of all persons who violate any provisions of said act, or any rule or regulation that may be promulgated by the Secretary of the Interior with reference to the management and care of the park. And, further, that a strict enforcement of rule 11, in all cases, would do injustice to persons who have complied with the judgment of the commissioner for inadvertently violating the provisions of the act of Congress herein before mentioned, or the said rules and regulations of the Secretary of the Interior.

Very respectfully,

JOHN W. MELDRUM,
United States Commissioner.

JOHN PITCHER,
*Captain, First United States Cavalry,
Acting Superintendent Yellowstone National Park,
Mammoth Hot Springs, Wyo.*

1900.

Nov. 12. *United States v. Edward Barnes.* Charge, larceny. Defendant held to district court.

Nov. 14. *United States v. Joseph Dalton, Horace Lattin, and David Davis.* Charge, violation of Yellowstone Park protective act. Defendants fined \$5 each and costs.

- Nov. 17. United States *v.* Clyde L. Gillam and Edward Robinson. Charge, violation of Yellowstone Park protective act. Defendants fined \$10 each and costs.
- Nov. 27. United States *v.* John Mikolis and Antone Kaveick. Charge, violation of Yellowstone Park protective act. Defendant Mikolis sentenced to ten days imprisonment and to pay one-half of the costs in case. Defendant Kaveick fined \$10 and one-half of the costs in case.
- Dec. 5. United States *v.* Otto Stegelmeier and James C. Nedrow. Charge, violation Yellowstone Park protective act. Defendants fined \$10 each and costs.
- Dec. 27. United States *v.* Joseph Smith and Mike Comschar. Charge, violation of Yellowstone Park protective act. Defendants fined \$10 each and costs.

1901.

- Apr. 29. United States *v.* Henry H. Meyer. Charge, violation of Yellowstone Park protective act. Defendant not found within jurisdiction of the commissioner.
- July 20. United States *v.* William L. Holt and Michael Burns. Charge, larceny. Defendants not apprehended.
- Aug. 3. United States *v.* Charles Mitchell. Charge, assault. Defendant fined \$10 and costs.
- Aug. 3. United States *v.* John Baegle. Charge, violation of Yellowstone Park protective act. Defendant fined \$50 and costs.
- Aug. 26. United States *v.* Thomas Reardon. Charge, larceny. Defendant held to district court.
- Sept. 6. United States *v.* William Blevins. Charge, violation of Yellowstone Park protective act. Defendant fined \$10 and costs.

TOURIST TRAVEL THROUGH THE PARK.

The aggregate number of persons carried through the park over the regular route during the season of 1901 is as follows:

Carried by Yellowstone National Park Transportation Company, entering via northern entrance of park	3,468
Carried by Messrs. Humphrey & Haynes, entering via western entrance of park	509
Others at hotels, traveling with private transportation, bicyclers, etc..	494
<hr/>	
Total	4,471
Carried by W. W. Wylie and accommodated at his permanent camps.	1,371
Carried by other licensees of personally conducted camping parties ...	815
<hr/>	
Total number camping, traveling with licensed transportation	2,186
Total number of tourists traveling through the park with private transportation as "camping parties"	4,112
<hr/>	
Grand total of all visitors to the park, season 1901	10,769

During the season 3,378 tourists took the trip across Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 1,702 entered the park with the Yellowstone National Park Transportation Company, 141 with Messrs. Humphrey & Haynes, 1,370 with W. W. Wylie, and the balance, 165 people, were campers.

Very respectfully,

JNO. PITCHER,

Captain, First Cavalry, Acting Superintendent.

The SECRETARY OF THE INTERIOR.

Meteorological report.

SEPTEMBER, 1900.							OCTOBER, 1900.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	71	50	21	NW.	.....		1.....	53	32	21	SW.	0.35	Snow.
2.....	75	31	44	NW.	.....		2.....	54	32	22	SW.	.02	Rain.
3.....	80	40	40	SW.	0.10	Rain.	3.....	63	34	29	S.	.....
4.....	60	50	10	NW.	.25	Rain.	4.....	59	37	22	E.	.07	Snow.
5.....	73	45	28	SW.	.....		5.....	53	37	16	W.	.18	Snow.
6.....	78	41	37	SW.	.....		6.....	40	29	11	SE.	.....
7.....	82	40	42	SW.	.....		7.....	51	37	14	SW.	.....
8.....	78	45	33	S.	.....		8.....	59	27	32	SE.	.....
9.....	75	43	32	SW.	.....		9.....	62	30	32	SW.	.....
10.....	71	39	32	W.	.....		10.....	62	32	30	W.	.....
11.....	72	42	30	NW.	.075	Rain.	11.....	65	30	35	SW.	.....
12.....	73	37	36	SW.	.....		12.....	62	32	30	SW.	.....
13.....	73	39	34	SW.	.....		13.....	61	42	19	SE.	.....
14.....	63	44	19	SW.	.....		14.....	65	34	31	SW.	.....
15.....	60	37	23	NW.	.....		15.....	62	31	31	SW.	.....
16.....	64	35	29	SW.	.....		16.....	67	32	35	SW.	.....
17.....	57	35	22	NW.	.10	Rain.	17.....	66	33	33	S.	.....
18.....	45	32	13	N.	.20	Rain.	18.....	61	36	25	S.	Trace	Rain.
19.....	58	35	23	NW.	.....		19.....	50	40	10	SW.	.4	Snow.
20.....	62	32	30	NW.	.....		20.....	45	37	8	SW.	.....
21.....	59	33	26	N.	.....		21.....	50	29	21	S.	.....
22.....	65	31	34	SW.	.....		22.....	49	40	9	S.	.10	Snow.
23.....	65	48	17	SW.	.....		23.....	50	22	28	SW.	.....
24.....	49	29	20	N.	.....		24.....	42	27	15	SW.	.....
25.....	31	20	11	N.	.....		25.....	44	22	22	SE.	.....
26.....	42	12	30	N.	.....		26.....	46	30	16	SE.	.10	Snow.
27.....	54	17	37	N.	.....		27.....	46	28	18	SE.	.....
28.....	59	35	24	NW.	.....		28.....	51	28	23	SW.	Trace	Rain.
29.....	61	36	25	SW.	.14	Rain.	29.....	42	37	5	NW.	Trace	Rain.
30.....	57	32	25	SW.	.....		30.....	34	18	16	SW.	Trace	Rain.
31.....	.....	.....	.....	.....	.....		31.....	34	22	12	SW.	Trace	Rain.
Total	1,912	1,085	827	.....	.865		Total	1,648	977	671	.....	1.22	
Mean	63.74	36.17	27.57	SW.	.....		Mean	53.16	31.51	21.65	SW.	.....

Maximum, 82° on the 7th instant; minimum, 12° on the 26th instant; mean, 49.96°; total precipitation, 0.865 inch; prevailing winds, southwest.

Maximum, 67° on the 16th instant; minimum, 18° on the 30th instant; mean, 42.34°; total precipitation, 1.22 inches; prevailing winds, southwest.

16 REPORT OF ACTING SUPT. YELLOWSTONE NATIONAL PARK.

Meteorological report—Continued.

NOVEMBER, 1900.							DECEMBER, 1900.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	41	21	20	SW.	.....		1.....	34	24	10	N.	0.10	Snow.
2.....	45	28	17	S.	.....		2.....	32	14	18	S.	.....
3.....	52	39	13	S.	.....		3.....	33	24	9	S.	.....
4.....	54	34	20	S.	.....		4.....	37	29	8	S.	.....
5.....	54	30	24	S.	.....		5.....	40	30	10	SW.	.....
6.....	57	32	25	S.	.....		6.....	41	32	9	SW.	.....
7.....	56	26	30	SE.	.....		7.....	43	30	13	S.	.....
8.....	53	26	27	NW.	.....		8.....	44	31	13	SW.	.....
9.....	51	28	23	NW.	.....		9.....	38	17	21	N.	.....
10.....	41	13	28	W.	.....		10.....	36	15	21	S.	.....
11.....	52	20	32	SW.	.....		11.....	39	14	25	S.	.....
12.....	52	23	29	W.	.....		12.....	35	16	19	S.	.....
13.....	54	34	20	SW.	.....		13.....	33	21	12	SE.	.....
14.....	51	32	19	S.	.....		14.....	38	20	18	SE.	.....
15.....	49	24	25	SW.	.....		15.....	38	21	17	S.	.05	Snow.
16.....	47	35	12	S.	.....		16.....	39	28	11	S.	.....
17.....	46	14	32	NW.	.....		17.....	35	22	13	S.	.225	Snow.
18.....	10	1	9	NE.	0.62	Snow.	18.....	31	18	13	S.	.....
19.....	5	-10	15	SW.	.10	Snow.	19.....	38	18	20	S.	.10	Snow.
20.....	-2	-12	10	N.	.20	Snow.	20.....	38	31	7	S.	.20	Snow.
21.....	20	-11	31	S.	.10	Snow.	21.....	38	28	10	NW.	.....
22.....	25	-11	36	SE.	.10	Snow.	22.....	30	19	11	SW.	.....
23.....	30	20	10	SW.	.05	Snow.	23.....	20	-1	21	SW.	.....
24.....	28	13	15	S.	.....		24.....	27	10	17	S.	.050	Snow.
25.....	32	18	14	S.	.....		25.....	26	14	12	SW.	.050	Snow.
26.....	40	26	14	SW.	.....		26.....	28	18	10	N.	.10	Snow.
27.....	34	15	19	SW.	.....		27.....	24	12	12	NW.	.150	Snow.
28.....	32	9	23	S.	.....		28.....	18	-5	23	NW.	.....
29.....	34	15	19	S.	.....		29.....	20	10	10	NE.	.....
30.....	39	22	17	SW.	.....		30.....	18	-9	27	N.	.150	Snow.
31.....					.....		31.....	-4	-25	21	N.	.....
Total.	1,182	554	628	.....	1.17		Total.	987	526	461	.....	1.175	
Mean.	39.40	18.47	20.93	S.	.....		Mean.	31.84	16.97	14.87	S.	.....

Maximum, 57° on the 6th instant; minimum, 12° on the 20th instant; mean, 28.94°; total precipitation, 1.17 inches; prevailing winds, south.

Maximum, 44° on the 8th instant; minimum 25° on the 31st instant; mean, 24.41°; total precipitation, 1.175 inches; prevailing winds, south.

Meteorological report—Continued.

JANUARY, 1901.							FEBRUARY, 1901.						
Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.
1.....	7	-15	22	S.	.....	.....	1.....	12	-11	23	W.	.....	.....
2.....	19	3	16	S.	0.050	Snow.	2.....	15	-11	26	W.	.....	.....
3.....	27	16	11	S.	.150	Snow.	3.....	10	-3	13	SW.	0.025	Snow.
4.....	36	23	13	SE.	.050	Snow.	4.....	11	-10	21	S.	Trace	Rain.
5.....	34	29	5	SW.	.200	Snow.	5.....	26	-3	29	W.	.....	.....
6.....	35	23	12	SW.	.200	Snow.	6.....	25	11	14	NW.	.....	.....
7.....	35	20	15	N.	.900	Snow.	7.....	15	4	11	N.	Trace	Rain.
8.....	22	11	11	NW.	.125	Snow.	8.....	12	-8	20	S.	.050	Snow.
9.....	20	6	14	NW.	.050	Snow.	9.....	19	-15	34	S.	.....	.....
10.....	13	-6	19	S.	.250	Snow.	10.....	27	10	17	S.	.....	.....
11.....	18	3	15	S.	.050	Snow.	11.....	28	-1	29	W.	.....	.....
12.....	30	15	15	SW.	.050	Snow.	12.....	35	4	31	SW.	.....	.....
13.....	37	26	11	SW.	.075	Snow.	13.....	39	7	32	SW.	.....	.....
14.....	38	31	7	SW.	.050	Snow.	14.....	35	21	14	S.	.025	Snow.
15.....	37	15	22	SW.	.025	Snow.	15.....	34	19	15	SW.	.....	.....
16.....	31	18	13	SW.	.200	Snow.	16.....	40	29	11	S.	.025	Snow.
17.....	26	10	16	W.	.....	.....	17.....	38	18	20	S.	.175	Snow.
18.....	36	6	30	S.	.....	.....	18.....	24	5	19	S.	.....	.....
19.....	41	12	29	SW.	.....	.....	19.....	22	10	12	S.	Trace	Rain.
20.....	37	19	18	S.	.....	.....	20.....	41	8	33	N.	.100	Snow.
21.....	35	11	24	S.	.....	.....	21.....	37	10	27	W.	.050	Snow.
22.....	35	29	6	SW.	Trace	Snow.	22.....	21	-6	27	W.	.....	.....
23.....	32	23	9	SW.	.025	Snow.	23.....	25	0	25	S.	.050	Snow.
24.....	30	17	13	SW.	.....	.....	24.....	36	20	16	SW.	.200	Snow.
25.....	30	12	18	S.	.....	.....	25.....	41	25	16	SW.	.025	Snow.
26.....	31	18	13	SW.	Trace	Snow.	26.....	38	25	13	SW.	Trace	Rain.
27.....	31	21	10	SW.	Trace	Snow.	27.....	42	32	10	S.	Trace	Rain.
28.....	31	11	20	S.	.....	.....	28.....	41	31	10	S.	.....	.....
29.....	31	12	19	N.	.050	Snow.							
30.....	22	2	20	SW.	.....	.....					
31.....	18	2	16	S.	.....	.....					
Total.	905	423	482	.....	2.275	.....	Total.	789	221	568	.....	.725	.....
Mean.	29.19	13.64	15.55	SW.	.....	.....	Mean	28.18	7.89	20.29	S.	.....	.....

Maximum, 41° on the 19th instant; minimum, 15° on the 1st instant; mean, 21.42°; total precipitation, 2.275 inches; prevailing winds, southwest.

Maximum, 42° on the 27th instant; minimum, 10° on the 19th instant; mean, 18.04; total precipitation, 0.275 inches; prevailing winds, south.

8356-01-2

Meteorological report—Continued.

MARCH, 1901.						APRIL, 1901.							
Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.
1.....	46	35	11	S.	.....		1.....	30	7	23	S.W.	Trace	Snow.
2.....	43	30	13	N.W.	.....		2.....	37	25	12	S.	0.15	Snow.
3.....	38	22	16	W.	Trace	Snow.	3.....	37	20	17	S.W.	.30	Snow.
4.....	29	1	28	S.	0.10	Snow.	4.....	31	15	16	S.	.13	Snow.
5.....	40	5	35	W.	.....		5.....	33	12	21	S.	.....
6.....	46	25	21	W.	.....		6.....	39	24	15	S.	.13	Snow.
7.....	39	27	12	N.W.	.35	Snow.	7.....	30	20	10	W.	.05	Snow.
8.....	34	22	12	N.W.	.....		8.....	29	15	14	N.W.	.01	Snow.
9.....	35	16	19	S.W.	Trace	Snow.	9.....	42	14	28	N.W.	.....
10.....	33	19	14	S.	.05	Snow.	10.....	44	23	21	N.W.	.....
11.....	35	26	9	S.	.20	Snow.	11.....	51	21	30	N.W.	.....
12.....	35	16	19	S.W.	.10	Snow.	12.....	51	27	24	N.W.	.....
13.....	35	15	20	W.	.....		13.....	44	25	19	N.W.	Trace	Snow.
14.....	44	16	28	S.W.	.....		14.....	46	25	21	S.	.....
15.....	49	13	36	S.W.	.....		15.....	29	20	9	N.	.01	Snow.
16.....	48	19	29	S.W.	.....		16.....	33	10	23	N.W.	.....
17.....	43	28	15	N.	Trace	Snow.	17.....	45	25	20	S.	.....
18.....	32	13	19	W.	Trace	Snow.	18.....	49	25	24	S.	.....
19.....	34	13	20	W.	.075	Snow.	19.....	55	27	28	S.	.....
20.....	37	14	23	W.	.....		20.....	63	32	31	S.	.....
21.....	47	21	26	S.W.	.....		21.....	54	37	17	S.	.....
22.....	42	26	16	N.	.20	Snow.	22.....	64	25	39	S.W.	.....
23.....	29	15	14	N.W.	.10	Snow.	23.....	61	35	26	S.	.....
24.....	31	19	12	N.W.	Trace	Snow.	24.....	58	38	20	S.	.30	Rain.
25.....	35	13	22	N.W.	.....		25.....	56	31	21	S.	Trace	Rain.
26.....	30	23	7	N.W.	.25	Snow.	26.....	52	28	24	S.	Trace	Rain.
27.....	34	13	21	N.	.....		27.....	51	16	35	S.	Trace	Rain.
28.....	34	1	33	N.	Trace	Snow.	28.....	61	29	32	S.	.....
29.....	32	10	22	N.	.02	Snow.	29.....	61	38	23	S.	.....
30.....	33	4	29	S.W.	.....		30.....	70	38	32	S.	.....
31.....	33	13	20	S.E.	.01	Snow.							
Total	1,155	534	621	.....	1,455		Total	1,406	731	675	.....	1.08	
Mean	37.26	17.23	20.03	S.W.	.....		Mean	46.87	24.36	22.5	S.	.....

Maximum, 49° on the 15th instant; minimum, 1° on the 4th and 28th instants; mean, 27.25°; total precipitation, 1.455 inches; prevailing winds, southwest.

Maximum, 70° on the 30th instant; minimum, 7° on the 1st instant; mean, 35.62°; total precipitation, 1.08 inches; prevailing winds, south.

Meteorological report—Continued.

MAY, 1901.							JUNE, 1901.						
Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.
1.....	75	36	39	S.	.....		1.....	65	35	30	N.	.....
2.....	66	42	24	NW.	0.40	Rain.	2.....	55	43	12	N.	0.05	Rain.
3.....	54	39	15	NW.	.60	Rain.	3.....	59	35	24	S.	.20	Rain.
4.....	56	35	21	NW.	.02	Rain.	4.....	46	26	20	S.	.400	Snow.
5.....	57	30	27	NW.	.....		5.....	47	20	27	S.	.....
6.....	63	32	31	S.	.....		6.....	61	31	30	S.	.....
7.....	64	34	30	S.	.....		7.....	67	41	26	S.	.....
8.....	62	37	25	SW.	.05	Rain.	8.....	62	36	26	N.	.15	Rain.
9.....	60	46	14	SW.	Trace	Rain.	9.....	58	30	28	W.	.....
10.....	58	29	29	NW.	.....		10.....	42	32	10	N.	Trace	Rain.
11.....	69	31	38	S.	.....		11.....	58	36	22	S.	.02	Rain.
12.....	69	42	27	NW.	.05	Rain.	12.....	58	33	25	S.	.....
13.....	70	41	29	N.	.10	Rain.	13.....	54	38	16	S.	.02	Rain.
14.....	71	37	34	S.	.....		14.....	62	31	31	N.	.....
15.....	72	40	32	S.	.....		15.....	62	34	28	W.	.....
16.....	76	42	34	S.	.....		16.....	66	34	22	S.	.05	Rain.
17.....	78	46	32	S.	.....		17.....	65	49	16	S.	.02	Rain.
18.....	71	49	22	S.	.....		18.....	71	41	30	W.	.10	Rain.
19.....	68	48	20	S.	.....		19.....	70	43	27	N.	.02	Rain.
20.....	61	38	23	S.	Trace	Rain.	20.....	65	47	18	S.	.30	Rain.
21.....	60	42	18	N.	.60	Rain.	21.....	73	39	34	N.	.....
22.....	48	35	13	N.	.30	Rain.	22.....	76	43	33	S.	Trace	Rain.
23.....	58	32	26	N.	.....		23.....	73	46	27	W.	.....
24.....	61	40	21	N.	Trace	Rain.	24.....	68	38	30	W.	.....
25.....	71	35	36	N.	.....		25.....	69	46	23	N.	Trace	Rain.
26.....	73	42	31	S.	.10	Rain.	26.....	60	38	22	W.	.10	Rain.
27.....	75	43	32	S.	.05	Rain.	27.....	68	40	28	S.	.....
28.....	74	43	31	S.	.05	Rain.	28.....	70	48	22	S.	.....
29.....	68	44	24	S.	.....		29.....	73	42	31	W.	.....
30.....	64	41	23	N.	.20	Rain.	30.....	61	36	25	W.	.....
31.....	58	37	21	.....	.....						
Total.	2,030	1,208	822	.....	2.72		Total.	1,884	1,131	753	.....	1.43	
Mean.	65.49	38.97	26.52	S.	.....		Mean.	62.8	37.7	25.1	S.	.....

Maximum, 78° on the 17th instant; minimum, 29° on the 10th instant; mean, 52.23°; total precipitation, 2.72 inches; prevailing winds, south.

Maximum, 76° on the 22d instant; minimum, 20° on the 5th instant; mean, 49.58°; total precipitation, 1.43 inches; prevailing winds, south.

Meteorological report—Continued.

JULY, 1901.							AUGUST, 1901.						
Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Mean.	Winds.	Precipitation.	Remarks.
1.....	79	30	49	S.	.....		1.....	88	57	31	NW.	0.30	Rain.
2.....	81	54	27	SW.	.....		2.....	72	52	20	N.	.50	Rain.
3.....	78	51	27	W.	.....		3.....	73	47	26	N.	.....
4.....	67	39	28	W.	.....		4.....	80	49	31	S.	.....
5.....	78	41	37	SW.	.....		5.....	86	48	38	W.	.....
6.....	87	45	42	S.	.....		6.....	79	57	22	N.	.....
7.....	93	49	44	S.	.....		7.....	83	51	32	SE.	.05	Rain.
8.....	85	55	30	S.	Trace	Rain.	8.....	77	54	23	N.	.05	Rain.
9.....	83	52	31	NW.	0.30	Rain.	9.....	77	47	30	S.	.....
10.....	85	49	36	S.	.....		10.....	74	45	29	N.	.....
11.....	86	53	33	S.	Trace	Rain.	11.....	80	40	40	SW.	.....
12.....	82	54	28	S.	.10	Rain.	12.....	79	47	32	N.	.....
13.....	84	39	35	S.	.125	Rain.	13.....	82	44	38	N.	.....
14.....	80	50	30	S.	.....		14.....	82	48	34	S.	.....
15.....	82	44	38	S.	.....		15.....	88	47	41	SW.	.10	Rain.
16.....	85	47	38	S.	.....		16.....	82	52	30	W.	.05	Rain.
17.....	89	51	38	S.	.....		17.....	82	47	35	SW.	.....
18.....	92	51	41	SW.	.....		18.....	77	50	27	S.	.....
19.....	90	52	38	SW.	.....		19.....	68	55	13	N.	Trace	Rain.
20.....	91	51	40	W.	.....		20.....	60	49	11	N.	.60	Rain.
21.....	93	52	41	S.	.....		21.....	69	42	27	N.	Trace	Rain.
22.....	92	55	37	SW.	.....		22.....	79	43	36	S.	.....
23.....	87	58	29	SW.	.30	Rain.	23.....	84	43	41	S.	Trace	
24.....	85	54	31	N.	.....		24.....	84	50	34	S.	.....
25.....	87	54	33	N.	Trace	Rain.	25.....	85	45	40	S.	.....
26.....	85	55	30	S.	.10	Rain.	26.....	81	54	27	S.	.....
27.....	82	51	31	S.	Trace	Rain.	27.....	76	45	31	S.	.....
28.....	79	48	31	N.	.....		28.....	77	39	38	S.	.....
29.....	85	41	44	N.	.....		29.....	81	40	41	W.	.....
30.....	91	47	44	N.	.....		30.....	76	43	33	SE.	.....
31.....	96	56	40	S.	.....		31.....	77	43	34	S.	.....
Total.	2,639	1,538	1,101	.....	.80		Total.	2,438	1,473	965	.....	1.65	
Mean.	84.87	49.61	35.52	S.	.....		Mean.	78.64	47.51	31.13	S.	.....

Maximum, 96° on the 31st instant; minimum, 30° on the 1st instant; mean, 67.24°. Total precipitation, 0.80 inch; prevailing winds, south.

Maximum, 88° on the 1st and 15th instants; minimum, 39° on the 28th instant; mean, 63.8°. Total precipitation, 1.65 inches; prevailing winds, south.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., July 1, 1900.

The following instructions for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned:

(1) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished where water is not available by a complete covering of earth, well packed down.

(2) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other debris must be either buried or taken to some place where they will not offend the sight.

(3) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must, therefore, be exercised by their riders. In meeting teams, riders will always dismount and stand at the side of

the road—the lower side if the meeting be on a grade. In passing teams from the rear, riders will ring their bells as a warning and inquire of the driver if they may pass. If it appear from the answer that the team is liable to be frightened, they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(4) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(5) *Dogs.*—When dogs are taken through the park they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling, and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(6) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the roads.

(7) *Miscellaneous.*—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

(8) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

JNO. PITCHER,
Acting Superintendent of the Yellowstone National Park.

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ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT

OF THE

ACTING SUPERINTENDENT

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1902.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.

1902.

REPORT
OF THE
ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyoming, October 14, 1902.

SIR: In compliance with instructions contained in your letter of July 2, 1902, I have the honor to submit the following report of the condition of affairs in, and of the management of, the Yellowstone National Park since the fiscal year ended June 30, 1901:

The American people, or at least the traveling public of the United States, seem at last to have awakened to the fact that there are many wonderful things to be seen on our own continent as well as in the Old World, and travel throughout the Western States has vastly increased during the past summer. The Yellowstone National Park, which has frequently been called "Wonderland," and which is, in fact, one of the most wonderful and interesting sections on our continent, has not been neglected, and during the past season has been visited by more tourists and travelers than ever before. Congress has also realized the fact that in the park we have something of great value and interest to the people of the United States, and the liberal appropriations for improvements in the park made last year will enable the engineer officer in charge to place the roads throughout the park in such a condition as to greatly increase the pleasure and comfort of travel through it in the future. Unfortunately for the tourist of the past season, the appropriation for the improvement of the roads did not become available this year until July 1, too late to enable the officer in charge to do much work which would add to the comfort of the tourist, but this work will be continued in many places during the entire winter, so that by the opening of the next season great improvement in the condition of the roads will be seen.

The railroads are also beginning to show an interest in the park and desire to make it easy of access to the traveling public. The Northern Pacific road, which has heretofore brought its passengers nearer to the park than any other, has, during the past summer, extended its line to Gardiner, a little town just outside of the northern boundary of the park and only 5 miles from the Mammoth Hot Springs. It is the intention of this road to build a handsome and comfortable little depot at this point, something that has been badly needed in the past; and when this is completed the tourist, after leaving the train and getting aboard a stage, will at once strike as fine a piece of road as we have in

the park, and entirely avoid what has heretofore been an exceedingly rough and somewhat dangerous piece of country road between Cinnabar and Gardiner.

The Union Pacific Railroad, or the Oregon Short Line, is also showing considerable interest in the travel in the park, and I am informed that this line, in connection with the Monida Stage Company, contemplate the building of a road from Monida to Dwelles, over which they intend to run automobiles, for the purpose of bringing their passengers more quickly and comfortably to the western entrance of the park.

WATER SUPPLY FOR MAMMOTH HOT SPRINGS.

In my last report I stated that the new reservoir at the Mammoth Hot Springs had been completed, but that the work of laying the necessary pipes had not been finished. This work has been completed and we now have a most satisfactory set of waterworks, which furnishes an ample supply of fine, clear water for all possible purposes. It affords sufficient water to irrigate or sprinkle the entire plateau near the hotel and post of Fort Yellowstone, and the overflow from the reservoir, together with the hot water from a part of the Mammoth Hot Springs, will be utilized for the purpose of running an electric-light plant which is also in the course of construction. This extremely satisfactory piece of work has been done under the direction of Capt. Hiram M. Chittenden, United States Engineers.

FOREST FIRES.

Considering the fact that the past summer has been an exceedingly dry one, we have been very fortunate in regard to the matter of forest fires. Only two fires of any consequence have occurred in the park—the first one in the vicinity of Blacktail Deer Creek, which was extinguished by the troops from this post before it had done any great amount of damage, and another that occurred in the high mountains east of the Yellowstone River near Tower Falls. This fire was in an almost inaccessible place and soon burnt itself out without doing any great amount of damage.

Many camp fires were left burning along the roads throughout the park by camping parties, but these were all extinguished by the mounted patrols before they had an opportunity of spreading.

Only two arrests were made of campers who failed to extinguish their fires, and but one case was brought before the United States commissioner for trial. In the other case the man who left his camp fire burning was taken back by the patrol and required to properly extinguish it. He was also required to report to the acting superintendent of the park at Mammoth Hot Springs and show cause why he should not also be sent before the United States commissioner for trial. He proved that he had used reasonable precautions in the matter of extinguishing his fire, and was let off with an admonition to be more careful in the future.

FISH AND FISH HATCHERY.

The trout fishing in the park during the past summer has been unusually good, and was a source of great amusement and enjoyment to many of the tourists.

It was recommended in my last annual report that a small fish hatchery be established in the park, with a view to keeping the stream so well stocked with trout as to avoid the necessity of placing any restriction upon legitimate fishing during the tourist season. I regret exceedingly that this hatchery could not be constructed, and still hope that the United States Fish Commission will see their way to build such an establishment next summer. The United States Fish Commissioner has authorized Mr. D. C. Booth, superintendent of the hatchery at Spearfish, S. Dak., to construct a building at the West Thumb of the Yellowstone Lake for the purpose of eyeing the eggs of the black-spotted trout. This establishment, while very useful for the purpose of distributing black-spotted trout throughout the country, will be of no special benefit to the park, except that these trout may be exchanged for other varieties which we want for the park and which may be hatched at other stations outside of the park.

Mr. Booth succeeded in collecting and hatching several million eggs of the black-spotted trout at his camp on the Yellowstone Lake during the past summer, which were sent to his station at Spearfish and distributed from that point. In exchange for these eggs he sent into the park about 50,000 small brook trout, which were planted in the tributaries of the Gardiner River. He also brought in about 40,000 eggs of the rainbow trout, which he hatched at his camp and planted in a small stream which flows into the Yellowstone Lake.

WEATHER BUREAU.

I am informed that an appropriation of \$15,000 was made for the purpose of establishing a weather-bureau station at or near the Mammoth Hot Springs, and a suitable site was selected and set aside, under authority from the honorable Secretary of the Interior, on which to build the station. I understand that bids for the construction of the necessary buildings were called for, but do not know as yet whether or not any definite arrangements have been made for their construction. I believe that the establishment of this station is a matter of great importance to the park, as the publication of the weather reports from here during the summer would call attention to the desirability of the park as a summer resort and would add greatly to its popularity.

BOUNDARY SURVEY.

The boundaries of the park on the north, west, and south sides have been carefully surveyed and fairly well marked. There still remains unsurveyed about 50 miles of the boundary on the east side of the park, extending from the monument established by Capt. Charles S. Bromwell, United States Engineers, on the boundary east of the Yellowstone Lake to the northern boundary of the park. I have been informed that the necessary funds to pay for the survey and marking of this portion of the eastern boundary have been appropriated, and that the Commissioner of the General Land Office has been directed to complete this survey. It is believed that it is the intention of the General Land Office to finish this work early next summer. It is of the greatest importance that the boundaries of the park should be thoroughly established and well marked, and it is therefore urgently recommended that this work may be done just as soon as possible.

It was my intention during the past summer to send out detachments for the purpose of cutting a wide swath along the entire boundary line of the park wherever timber existed, and also for the purpose of setting up additional monuments where the country was open, and thus marking the boundary in such a way that it would be impossible for anyone to cross it without being aware of the fact, but this I was unable to accomplish, owing to the frequent and unavoidable changes of troops stationed in the park during the past season.

GAME.

The large game in the park continues to be one of its most interesting features to the tourist, and during the early part of the season large bands of elk and many deer and antelope were seen by them. Late in the summer, when the tourist travel becomes heavy and the flies and mosquitoes become troublesome, nearly all of the elk and deer move back into the high mountains and are seldom seen by the tourists who travel through the park by stage or wagon; they, however, can easily be found by anyone who knows where to look for them, or who is sufficiently interested in the matter to take a horse and ride out into the mountains for the purpose of finding them.

Last winter was an exceedingly favorable one and there should be a considerable increase in every species of large game throughout the park, but this can not be determined until after the snow falls and the game is driven down from the high mountains to their winter feeding grounds.

Already a number of mountain sheep have been seen on Mount Everts, where a band of 56 wintered last year. There were several young ones among those seen, and I am greatly in hopes that there will be a considerable increase in the band. These rare and interesting animals could be seen any day during last winter feeding along the hillside and close to the road between Gardiner and the Mammoth Hot Springs, and they were so tame that one could approach within 30 yards or nearer, on foot, without their being in the least disturbed.

The antelope are still protected by the laws of Montana, and are rapidly increasing. A number of bands of from 50 to 100 could be seen at any time last winter on the northern slope of Mount Everts and in the vicinity of the town of Gardiner. The inhabitants of Gardiner have become much interested in the preservation of these beautiful little animals, and not only refrained from killing them themselves, but saw to it that no one else in their vicinity disturbed them. I believe that there were but two antelope killed on their range along the Yellowstone River last winter. This killing was done by two Italian miners from Horr, who were arrested by Scout McBride, but while he was bringing them in to the Springs during the night, his horse fell with him and the men escaped, but lost their guns and equipments, which remained in the hands of the scout.

The bear have certainly increased in numbers and continue to be a great source of interest to the tourists, for they can be seen at any time during the season, feeding at the garbage piles at the various hotels and permanent camps.

They are perfectly harmless as long as they are let alone and kept in a perfectly wild state, but when they are fed and petted, as some of them have been in the past, they lose all fear of man.

liable to do considerable damage to property and provisions at the various hotel and camp kitchens. They are also liable to frighten tourists by following them with the expectation of being fed. The black and brown bear are the ones that become the most friendly, and consequently give the most trouble. Three of these animals became such a nuisance during the past summer that it became necessary to have them killed.

It is a difficult matter to make some of the tourists realize that the bear in the park are wild, and that it is a dangerous matter to trifle with them. The possibility of an accident or injury to some indiscreet individual was anticipated, and on August 8, 1902, a circular was issued and posted at all of the hotels and permanent camps, absolutely prohibiting the interference with or molestation of bear or any other wild game in the park, etc. It was also forbidden for anyone to feed them except at the regular garbage piles. A violation of the instructions contained in this circular resulted in the serious injury of Mr. R. E. Southwick, a tourist from Hart, Mich. Since the accident to Mr. Southwick, barriers have been put up at all of the garbage piles, and signs indicating the danger of approaching too near the bear have been posted.

It is recommended that the gist of the circular relative to the bear be made a part of the regulations governing the park, in order that any cases of violation of its provisions may be promptly brought before the United States Commissioner. A copy of the regulations amended so as to cover this point is appended hereto. In my opinion, a strict compliance with the requirements of this circular is all that is needed to render the bear in the park perfectly harmless, and during the next season timely measures will be taken to see that they are complied with.

The beaver have also apparently increased, and fresh signs of their work and their dams and houses can be seen along any of the streams in the park.

The scarcity of birds of all kinds has frequently been noted, and it has been suggested that the capercaillie and blackcock, game birds of northern Europe, might be introduced in the park. The capercaillie is said to be the largest of grouse species, and is found in large numbers in Norway and Sweden. Its home is in the pine forests, and when the deep snows come it can live on the pine leaves. The blackcock is a fine game bird, and I believe it would also do well in many places in the park. If these birds could be successfully raised here they would spread into the neighboring country and soon afford fine bird shooting where there is little or none at present.

There are some blue and ruffed grouse in the park, but they are by no means numerous.

In order to afford perfect protection to game in the park, it is absolutely necessary to have public sentiment of the people surrounding it on our side, and every possible effort has been made to secure their good will in this matter. The friendly spirit that has been shown by the large majority of these people has been very encouraging, and it is my opinion that they now realize the fact that the protection of game in the park is a matter in which they are, or should be, quite as much if not more interested than anyone else in the whole country. The recent formation of a game protective association in the Jackson Hole country, and the promise of this association to back up the game

warden of Wyoming in his efforts to execute the game laws of that State, is an indication of what is being done along the southern border of the park.

The following extract from the monthly report of the noncommissioned officer in charge of the Soda Butte Station will show to some extent the amount of game that can be seen in the park during the winter.

[Extract from monthly report of Soda Butte Station for month of December, 1901.]

Date.	From—	To—	Number of men.	Transportation.	Game seen.	Its condition.
Dec. 2	Station	Devil's Well	1	Mounted	8 elk	Good.
2	do	Fort Yellowstone	1	do	200 elk	Do.
3	do	Slough Creek	2	do	1,000 elk	Do.
5	do	Slough Creek Cabin	2	do	do	Do.
6	Slough Creek Cabin.	Boundary line on creek	2	do	100 elk	Do.
7	do	Hellroaring Cabin	2	do	20,000 elk	Do.
8	Hellroaring Cabin	Knowles Cabin and return.	2	do	3,000 elk	Do.
9	do	Fort Yellowstone	2	do	800 elk	Do.
9	Station	do	1	do	4,000 elk	Do.
10	Fort Yellowstone.	Hellroaring Cabin	2	do	600 elk	Do.
10	do	Station	1	do	3,000 elk	Do.
11	Hellroaring Cabin	do	2	do	8,000 elk	Do.
13	Station	Cache Creek	1	do	400 elk	Do.
14	do	Trout Lake	1	do	200 elk	Do.
16	do	Fort Yellowstone	1	do	2,000 elk	Do.
17	do	Cache Creek	1	do	1,000 elk	Do.
18	do	Chalcedony Creek	2	do	do	Do.
18	Fort Yellowstone.	Station	1	do	2,500 elk	Do.
19	Station	Willow Creek Cabin	2	Ski	400 elk	Do.
20	Willow Creek Cabin.	East line of park	2	do	18 elk	Do.
21	do	Vicinity of cabin	2	do	8 elk	Do.
22	do	Station	2	do	200 elk	Do.
23	Station	Fort Yellowstone	1	Mounted	2,000 elk	Do.
26	do	Yancey's	1	do	500 elk	Do.
27	Yancey's	Fort Yellowstone	1	do	14 deer	Do.
27	Fort Yellowstone.	Station	1	do	800 elk	Do.
28	Station	Yancey's	1	do	1,500 elk	Do.
29	Yancey's	Fort Yellowstone	1	do	do	Do.
30	Fort Yellowstone.	Station	2	do	1,500 elk	Do.
31	Station	Trout Lake	2	do	8 elk	Do.

This report covers only that section of the park along the northern border from the Mammoth Hot Springs to the eastern boundary. That portion of the park where these elk were seen is the only good winter range that we have which is located within the limits of the park, but reports from scouts and other stations made at the same time as the one referred to above showed that many other large bands of elk wintered in various parts of the park.

The chief winter range for the elk that summer in the southern part of the park is located in or about the Teton Forest Reserve. It is therefore to be hoped that some day both this reserve and the entire Yellowstone Park Forest Reserve may be either included within the limits of the park or that they may be designated as game preserves.

MEETING OF STATE GAME WARDENS.

Early last spring I received a letter from Mr. W. F. Scott, game warden of Montana, in which he suggested the idea of holding a convention or meeting of the game wardens of the Northwestern States, at the Mammoth Hot Springs in the Yellowstone Park, with a view to

discussing the matter of game preservation, and to secure better cooperative action among the officers of the interested States.

He further suggested that the national park, which is the greatest game preserve in this country, appeared to be a singularly appropriate place for such a meeting, and requested my views and suggestions in the matter. In my reply to Mr. Scott I informed him that I agreed with him in every way as to the propriety and advisability of holding such a convention, and that if he would arrange the meeting we would do all that we could to make the visit of the wardens both pleasant and interesting. Also that I was particularly anxious to meet and to know the wardens of our neighboring States, as we desired to cooperate with them in every way in the matter of game protection.

In accordance with the programme arranged by Mr. Scott, the convention of wardens was held at the Mammoth Hot Springs July 21. Among those present were W. F. Scott and Dr. James A. Henshall, of Montana; D. C. Nowlin, of Wyoming; John Sharp, of Utah; L. P. Q. Quimby, of Oregon; Samuel T. Fullerton, of Minnesota; Charles W. Harris, of Colorado; and T. R. Kershaw, of Washington.

Several interesting papers relative to the matter of game protection were read before the convention, and a national association of game and fish wardens was formed.

It is to be hoped that this association will become popular with the game wardens throughout the country, and that in the future they may hold their meetings each year in the park.

BUFFALO.

Near the close of the last session of Congress I was called upon to submit an estimate of funds required to build a suitable inclosure and to purchase from 30 to 60 buffalo, with a view to starting a new herd of these animals in the park. The estimate submitted for this purpose amounted to \$30,000. The appropriation which was made by Congress amounted to \$15,000.

Mr. C. J. Jones (better known as "Buffalo Jones") arrived here on July 16, 1902, and in compliance with instructions from the honorable Secretary of the Interior reported to me for duty in the park as game warden. Shortly after his arrival here we proceeded on a trip through the park with a view to determining the best place on which to construct a corral or inclosure for the buffalo, and after carefully examining and considering all of the available places in the park we finally agreed upon the place which was originally suggested by myself to the honorable Secretary of the Interior as the most suitable point on which to locate the corral or inclosure.

It is situated about 1 mile from the Mammoth Hot Springs, and will afford considerable shelter and feed for the buffalo in the way of timber and grass during the winter. A fine stream of clear, cold water runs through it, and it is easy of access from this point at all times during the summer and winter. As soon as the location of the corral had been determined upon, steps were at once taken to proceed with the construction of the necessary wire fence. Proposals for the construction of the fence were solicited, but all bids received were so high that it was determined to purchase the material and set up the fence by day labor. Pending the construction of the fence, correspondence was had with all of the owners of pure-bred buffalo in the

United States with a view to ascertaining at what price per head they could be secured and delivered in sound condition in the corral to be constructed.

The necessary Page woven-wire fencing was purchased, and the fence is now completed and ready to receive any buffalo that may be purchased. A contract has been entered into for the delivery in the corral of 15 cows from the Allard herd, located on the Flathead Agency in Montana, and three bulls from the Goodnight herd in Texas.

In addition to the large corral that has been constructed near the Mammoth Hot Springs, a small corral has been constructed on Pelican Creek, with a view to capturing therein the few remaining buffalo in the park. During the past winter we succeeded in locating 22 of these animals on the head of Pelican Creek, and there are probably a few more that we were unable to find. This herd is exceedingly wild, and will probably never increase in size, and may possibly die out completely. It is thought that we can catch up some of the young animals of this herd during the ensuing winter, and bring them in to this point and turn them out in the inclosure with the other buffalo that are to be purchased.

It is my opinion that if we succeed in raising a new herd of buffalo under fence they will become very tame, and when the herd is sufficiently increased in numbers we can gradually turn them loose in the park and they will become so accustomed to seeing people about them that when turned loose they will not be frightened out of the country or driven into the high mountains by the appearance of the summer tourist.

It is considered desirable to introduce new blood in the new herd to be started in the park, and it is with this view that part of this herd is purchased from the animals located on the Flathead Agency and part from the Goodnight herd in Texas.

This mixture of blood will further be increased by the capture of a few animals from the wild herd that we now have in the park.

It is our intention to feed and handle the new herd of buffalo in the same manner that domestic cattle are handled in this country, and before turning them loose to brand them "U. S." in such a way that they can always be identified as United States property.

Since writing the above 14 buffalo cows have been received in fine condition and safely located in the inclosure built to receive them. Before turning them loose they were branded "U. S." on the horn, in small letters, and on the left hip in large letters, such as are used in branding Government horses.

These cows came from the Allard herd and were delivered under contract with Mr. Howard Eaton, of Medora, N. Dak.

Mr. C. J. Jones has gone to Texas for the purpose of selecting three buffalo bulls from the Goodnight herd, and they will probably be delivered in the park some time before the end of October.

YELLOWSTONE PARK TRANSPORTATION COMPANY.

The Yellowstone Park Transportation Company has this year largely increased its plant both as to coaches and horses, and the service continues exceedingly satisfactory in every respect.

This company has also improved and increased its equipment, and has given entire satisfaction to its patrons. Their business has shown a decided increase during the past season.

WYLIE PERMANENT CAMPS.

Mr. W. W. Wylie, of Bozeman, Mont., was licensed to conduct camping parties through the park during the past season, and authorized to occupy certain parcels of ground as permanent camps. His services have also been satisfactory to his patrons.

HOTELS.

The Yellowstone Park Association, which runs the hotels throughout the park, has done much to improve them, but, as stated in my last report, their task is by no means an easy one and much consideration should be shown them, for the majority of their hotels are located a long distance away from the railroad and from all markets. The hotels are exceedingly clean, the beds are comfortable, and the fare very good.

CHANGES AMONG THE GEYSERS.

On the 3d of last January the winter keeper at the Norris Hotel reported that some time during the previous night he was awakened by a loud report and the shaking of the hotel, which he supposed was caused by an earthquake. The next day, however, he found that the disturbance had been caused by the blowing out of a new steam vent about 50 yards below the Black Growler. The new vent was emitting an immense quantity of steam, with a roar that could be heard some distance away, while the Black Growler had become almost perfectly quiet and gave out but little steam. At the same time that this new steam vent broke out what appeared to be a new geyser commenced playing a short distance away from the steam vent.

This alleged new geyser is located about 45 yards east of the Constant Geyser. Its crater is about 24 by 41 inches and its eruptions are similar to those of the Constant, but considerably greater in volume. The durations of eruptions vary from eight to eleven minutes and the length of time between eruptions from one hour and fifteen minutes to one hour and fifty minutes.

The new steam vent has continued to emit about the same amount of steam, and the new geyser has continued to play with considerable regularity from the 3d of last January up to the present date.

The Monarch Geyser, which is also located in the Norris Basin, ceased to play some time during the month of August. A new vent for this geyser has broken out a few yards up the hill from the old one.

The Roaring Mountain appears to be much more active this year than it has been for some time past, and the noise of the escaping steam can be heard quite a long distance away.

MILITARY POST OF FORT YELLOWSTONE.

It is again recommended that this post be enlarged to a four-troop or squadron post, and that it be garrisoned by the troops of two different regiments, in order that when it becomes necessary to make a change in the troops stationed here the movements could be so arranged as to leave at least one-half of the old men in the park, who could take proper care of it until the new detail had a chance to become familiar with the park and their new duties. In view of the fact that the area of the park proper is about 3,000 square miles, this is something that can not be accomplished in a few days.

The changes during the past season, due to the movement of troops to and from the Philippines, has practically resulted in there being three different sets of men guarding the park within four months. This has rendered the matter of properly caring for it during the tourist season a difficult problem. Authority has recently been requested to increase the strength of the two troops now stationed here to 100 men each, and if this request be granted there will then be enough men in the command for all of the necessary outposts and yet leave a sufficient number to properly garrison Fort Yellowstone.

The post has been much improved in appearance by the planting of lawns about the officers' houses and in front of the men's quarters.

An electric-light plant for the use of the post is now being constructed, and when completed will add greatly to the comfort and convenience of everyone in or about the post.

YELLOWSTONE LAKE BOAT COMPANY.

If the trip on the Yellowstone Lake is ever to be included in the regular trip around the park it will be necessary to place a larger boat or more small ones on the lake, as the one now in use is entirely too small to carry with safety and comfort all of the passengers to whom tickets would have to be issued.

Very little use is made of the lake at present beyond taking the trip from the Thumb to the Lake Hotel, but I believe that its beauties and attractions would be greatly enjoyed by many tourists if the boating facilities were better. I therefore renew my recommendation of last year that some competition be permitted in the boat business on the lake.

IMPROVEMENTS IN THE YELLOWSTONE NATIONAL PARK.

The following letter from Capt. H. M. Chittenden, United States Engineers, in charge of roads and improvements in the park, shows the work accomplished under his direction during the season of 1902:

IMPROVEMENT YELLOWSTONE NATIONAL PARK,
U. S. ENGINEER OFFICE,
Yellowstone Park, Wyoming, September 29, 1902.

MAJOR: In response to your verbal request for a statement to accompany your annual report showing the work done during the past season under the appropriation for the improvement of Yellowstone National Park, I take pleasure in submitting the following:

The appropriation for the current year did not become available until the 1st of July, and several months of fine weather were thus lost on the work. Extensive preparations had, however, been made for the season's operations, and a force was

put into the field immediately upon the passage of the appropriation act. Within two weeks there were about 500 men at work in various parts of the park, and this force was gradually increased until it reached a maximum of about 1,000 men.

GENERAL REPAIRS.

The general repair work has covered the entire system of roads and a far greater amount of work has been done in this respect than in any other single season in the history of the park. Unfortunately the lateness of the appropriation prevented this work being commenced until after dry weather had set in, and as the material would not pack without rain the immediate effect, so far as travel was concerned, was rather detrimental than otherwise. The work will, however, all come into beneficial use in another season.

Extensive reconstruction and surfacing of the main line has been carried as far as the tenth milepost from this place, and will leave the road in a thoroughly complete condition as a macadamized highway. A large amount of surfacing, which will form a part of the finished work, has also been done at various points along the line, particularly in the vicinity of the Fountain Hotel.

As soon as sprinklers could be purchased the road was sprinkled from Gardiner to the Golden Gate with sufficient effectiveness to prevent any unpleasantness on account of dust over that stretch of the road. Sprinkling was also carried on to some extent farther on the road toward Norris, but the time required to provide watering places and the deep dust that had formed before the sprinkling could be commenced made this work less effective than that just referred to.

WORK AT MAMMOTH HOT SPRINGS.

A large working force has been employed at Mammoth Hot Springs during the entire season, and a great deal of work has been accomplished in the development of the grounds at this place.

About 7,150 feet of 20-foot roadway has been thoroughly graveled and will, when finally rolled, make a permanent and satisfactory highway.

About 31,380 square feet of concrete sidewalk has been laid.

Eleven thousand three hundred and seventy linear feet of ditch for the maintenance of shade trees has been dug.

One thousand two hundred and thirty linear feet of water main has been laid. Hydrants have been put in for sprinkling and irrigation of the entire tract, including in all about 30 acres within the exterior line of roads.

The grounds have been entirely cleared off, graded, and covered with fertile loam and placed in a condition ready for seeding in the ensuing spring. Before the season is over some of the shade trees will have been set out, leaving the rest until next spring.

The electric-light plant will be installed before the end of the season, which will have sufficient capacity to serve any future needs of this place. The plant will be in every particular first class and as good as any in the United States for its size. The motive power is water, and a large ditch has been dug, bringing a portion of the waters of the Gardiner River into Glen Creek and thence, by the ditch constructed last year, to the reservoir above the post. The flume leading from the reservoir to the power house includes 345.5 feet of concrete aqueduct. The machinery in the power house is all in duplicate and has a combined capacity of 100 kilowatts.

The work at this place has also included the demolition of one building and the removal of another and the erection of several pertaining to the improvement work.

WORK ON MOUNT WASHBURN DIVISION.

Two large parties have been at work on this line since about July 15, one working from the Canyon Hotel toward Mount Washburn and the other from the vicinity of Yanceys toward the same point. The party working from the canyon has opened the road as far as Dunraven Pass and has completed it to within 1 mile of that point. The length of road actually opened to September 30 on the south side of the mountain is about 6½ miles. The party on the north side of the mountain has completed about 5 miles of roadway, leaving about one-half mile near Tower Falls to be finished by winter work.

NATURAL BRIDGE CUT-OFF.

A considerable amount of work has been done toward the completion of this road, but there was not sufficient time to finish it entirely.

YELLOWSTONE NATIONAL PARK.

EAST ROAD.

Two large parties were on this work from about July 15 to September 20, and one of them will continue until about the middle of October, after which a small party will work in the valley of the Shoshone River long enough to blast away several cliffs and build two large bridges. The entire amount of road that will have been opened before the close of the season is about 23 miles. This will leave about 12 miles to be opened next spring, and it is hoped that this may be done before the 1st of July.

SOUTH ROAD.

One large repair party went over this entire line, doing extensive repair work as far as Jackson Hole, from which point they passed over the Fort Washakie military road, doing repair work under a balance remaining from an old appropriation for that road.

WORK AT GRAND CANYON.

Before the close of the season a new alignment of roads near the Canyon Hotel will have been completed and the road surfaced with macadam for about 1 mile leading toward Norris.

WORK ON VIRGINIA CASCADE AND BLANDEN HILL.

These three bad hills, namely, the one called Blanden Hill and the other two at the Virginia Cascade, will have been cut out and replaced by easy grades before the end of the season. This will practically remove the last of the heavy grades on the main road system. A swath has been cut through the timber along this road over the entire divide between Norris and the canyon in order to let the sun in and cause a more rapid melting of the snow in the spring.

LUMBER MANUFACTURED.

The Government sawmill has manufactured about 300,000 feet of lumber for the use of the work.

PATROL STATIONS.

The soldier station located on the Snake River has been torn down and removed to a point where the road crosses the boundary of the park. The impossibility of securing carpenters at this season of the year has made it impracticable to repair as many of these stations as was contemplated.

WORK ON GARDINER RIVER ROAD.

Before the end of the season it is expected to regrade the road between Mammoth Hot Springs and Gardiner over those portions that have not yet been completed and to erect an entrance lodge and station house at the boundary of the park near the new Northern Pacific Railway station.

ROCK-CRUSHING PLANT.

Work has been begun in the use of the rock crusher, but the macadamization of the roads with crushed rock has not yet been carried to any great extent, only about a mile of finished roadway having been constructed.

WORK IN GIBBON CANYON.

It is expected before the end of the season to reconstruct about one-half mile of road in the Gibbon Canyon and to place abutments for one of the new bridges contemplated over the Gibbon River.

BRIDGE WORK.

Owing to the impossibility of securing steel in time for use during the present season none of the contemplated bridges have been constructed. It is expected to let a contract for about 30 bridges on the 15th of the coming month in order that the steel may be on hand and ready for erection at the opening of the next season.

Very respectfully,

Maj. JOHN FITCHER,
Acting Superintendent Yellowstone Park, Wyo.

H. M. CHITTENDEN,
Captain, Corps of Engineers.

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TOURIST TRAVEL THROUGH THE PARK.

The aggregate number of persons carried through the park over the regular route during the season of 1902 is as follows:

Carried by Yellowstone National Park Transportation Company, entering via northern entrance of park	4,570	
Carried by Messrs. Humphrey & Haynes, entering via western entrance of park	1,408	
Others at hotels, traveling with private transportation, bicyclers, etc..	329	
Total		6,307
Carried by W. W. Wylie and accommodated at his permanent camps.	1,870	
Carried by other licensees of personally conducted camping parties ...	571	
Total number camping, traveling with licensed transportation		2,441
Total number of tourists traveling through the park with private transportation as "camping parties"		4,685
Grand total of all visitors to the park, season 1902		13,433

During the season 3,728 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 1,621 entered the park with the Yellowstone National Park Transportation Company, 304 with Messrs. Humphrey & Haynes, 1,681 with W. W. Wylie, and the balance, 122 people, were campers.

Very respectfully,

JNO. PITCHER,
Major, Sixth Cavalry, Acting Superintendent.

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

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., February 7, 1902.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents, or to deface the same by written inscription or otherwise, or to throw any substance into the springs or geyser vents, or to injure or disturb in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.

4. Fires shall be lighted only when necessary and completely extinguished when no longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and anyone failing to comply herewith shall be punished as prescribed by law.

5. Hunting or killing, wounding or capturing of any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, insnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than described above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the

sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. The feeding, interference with, or molestation of the bear or any other wild animal in the park in any way by any person is absolutely prohibited.

7. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

8. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

9. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior.

10. No drinking saloon or barroom will be permitted within the limits of the park.

11. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

12. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, may be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

E. A. HITCHCOCK,
Secretary of the Interior.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH THE PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyoming, February 7, 1902.

The following instructions for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned:

(1) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished where water is not available by a complete covering of earth, well packed down.

(2) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other débris must be either buried or taken to some place where they will not offend the sight.

(3) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must therefore be exercised by their riders. In meeting teams riders will always dismount and stand at the side of the road—the lower side if the meeting be on a grade. In passing teams from the rear, riders will ring their bells as a warning and inquire of the driver if they may pass. If it appears from the answer that the team is liable to be frightened they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(4) *Fishing*.—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(5) *Dogs*.—When dogs are taken through the park they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling, and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(6) *Grazing animals*.—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the roads.

(7) *Miscellaneous*.—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

(8) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

JNO. PITCHER,
Major, Sixth Cavalry, U. S. Army,
Acting Superintendent of the Yellowstone National Park.

Meteorological report, 1901-2.

SEPTEMBER, 1901.							OCTOBER, 1901.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	81	44	37	S.	.....		1....	71	35	36	E.	.....
2.....	74	48	26	N.	Trace	Rain.	2....	65	32	33	S.	.....
3.....	60	45	15	S.	0.50	Rain.	3....	65	32	33	N.	.....
4.....	61	43	18	S.	.20	Rain.	4....	59	37	22	S.	Trace	Rain.
5.....	60	35	25	N.	.20	Rain.	5....	56	37	19	S.	0.20	Rain.
6.....	53	36	17	N.	.20	Rain.	6....	55	29	26	N.	.....
7.....	55	35	20	N.	.10	Rain.	7....	59	31	28	S.	.....
8.....	71	33	38	N.	.....		8....	55	40	15	S.	.125	Rain.
9.....	63	34	29	S.	.....		9....	50	30	20	SW.	.25	Rain.
10.....	65	32	33	SW.	.....		10....	45	33	12	SW.	Trace	Snow.
11.....	61	37	24	SW.	.....		11....	57	39	18	N.	.....
12.....	59	35	24	S.	.....		12....	50	33	17	N.	.....
13.....	55	46	9	N.	.25	Rain.	13....	62	29	33	S.	.....
14.....	61	31	30	W.	.10	Rain.	14....	62	36	26	S.	.....
15.....	59	35	24	W.	.....		15....	61	31	30	N.	.....
16.....	51	26	25	W.	.....		16....	64	31	33	S.	.....
17.....	59	26	33	W.	.....		17....	57	33	34	S.	.....
18.....	57	30	27	SW.	.....		18....	66	30	36	S.	.....
19.....	68	25	43	SW.	.....		19....	66	29	37	S.	.....
20.....	75	37	38	SW.	.....		20....	66	30	36	N.	.....
21.....	69	47	22	S.	.....		21....	67	35	32	N.	.....
22.....	57	33	24	SW.	.60	Rain.	22....	63	31	32	N.	.....
23.....	44	31	13	SW.	.10	Rain.	23....	66	29	37	S.	.....
24.....	38	32	6	S.	.60	Snow	24....	61	32	29	N.	.....
25.....	50	33	17	S.	.....		25....	59	31	28	S.	.....
26.....	56	36	20	S.	Trace	Rain.	26....	57	30	27	S.	.....
27.....	55	28	27	SW.	.....		27....	55	39	16	N.	Trace	Rain.
28.....	55	32	23	SW.	.....		28....	57	39	18	N.	.20	Rain.
29.....	67	36	31	S.	.....		29....	43	31	12	SW.	.05	Snow.
30.....	71	32	39	S.	.....		30....	38	26	12	S.	.10	Snow.
31.....	71	32	39	S.	.....		31....	45	32	13	S.	.....
Total.	1,810	1,053	757	S.	2.85		Total.	1,812	1,012	800	.....	.90	
Mean.	60.33	35.10	25.33	S.	.....		Mean.	58.46	32.64	35.80	S.	.....

Maximum, 81° on the 1st instant; minimum, 25° on the 19th instant; mean, 47.72°; total precipitation, 2.85 inches; prevailing winds, southwest.

Maximum, 71° on the 1st instant; minimum, 26° on the 30th instant; mean, 45.35°; total precipitation, 0.90 inch; prevailing winds, south.

Meteorological report, 1901-2—Continued.

NOVEMBER, 1901.							DECEMBER, 1901.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	50	31	19	S.	.....		1.....	38	25	13	S.	Trace	Snow.
2.....	46	19	27	SW.	0.25	Snow.	2.....	36	30	6	S.	0.10	Rain.
3.....	36	15	21	NE.	.10	Rain.	3.....	40	28	12	S.	Trace	Snow.
4.....	46	29	17	S.	Trace	Snow.	4.....	37	30	7	S.	.15	Snow.
5.....	50	34	16	S.	Trace	Rain.	5.....	32	21	11	S.	.15	Snow.
6.....	48	27	21	S.	Trace	Rain.	6.....	35	20	15	S.	.30	Snow.
7.....	51	29	22	S.	.....		7.....	23	9	14	S.	.....
8.....	48	26	22	S.	.....		8.....	27	13	14	S.	Trace	Snow.
9.....	51	32	19	S.	.25	Rain.	9.....	34	23	11	S.	.25	Snow.
10.....	47	26	21	S.	.15	Snow.	10.....	27	14	13	N.	.15	Snow.
11.....	27	11	16	S.	.10	Rain.	11.....	16	4	12	N.	.05	Snow.
12.....	40	23	17	S.	.....		12.....	10	5	5	N.	Trace	Snow.
13.....	46	16	30	S.	.....		13.....	11	-3	14	N.	.25	Snow.
14.....	48	22	26	S.	.....		14.....	16	0	16	N.	.25	Snow.
15.....	46	23	23	SE.	.....		15.....	19	10	9	N.	.15	Snow.
16.....	51	27	24	S.	.....		16.....	29	16	13	N.	.20	Snow.
17.....	45	26	19	S.	Trace	Snow.	17.....	30	18	12	S.	.....
18.....	38	25	13	S.	.....		18.....	35	22	13	S.	.....
19.....	43	19	24	S.	.....		19.....	28	10	18	S.	Trace	Snow.
20.....	39	29	10	S.	.....		20.....	31	4	27	S.	.....
21.....	39	25	14	S.	.05	Snow.	21.....	32	17	15	S.	.....
22.....	40	25	15	S.	Trace	Snow.	22.....	35	21	14	S.	.05	Snow.
23.....	42	32	10	S.	.20	Snow.	23.....	41	29	12	S.	.03	Rain,
24.....	48	20	28	S.	.....		24.....	37	15	22	S.	Trace	Snow.
25.....	39	16	23	S.	.....		25.....	25	18	7	S.	.05	Snow.
26.....	43	29	14	S.	.10	Snow.	26.....	26	15	11	S.	.40	Snow.
27.....	46	31	15	S.	.....		27.....	24	14	10	S.	Trace	Snow.
28.....	44	27	17	S.	.....		28.....	27	13	14	S.	.....
29.....	45	26	19	S.	Trace	Rain.	29.....	28	9	17	S.	.....
30.....	42	29	13	S.	.05	Snow.	30.....	29	8	21	S.	.....
							31.....	37	19	18	S.	.....
Total.	1,324	749	575	.....	1.25		Total.	893	477	416	.....	2.53	
Mean.	44.13	24.97	19.11	S.	.....		Mean.	25.81	15.31	13.42	S.	.....

Maximum, 51° on the 7th, 9th, and 16th instant; Minimum, 11° on the 11th instant; mean, 34.55°; total precipitation, 1.25 inches; prevailing winds, south.

Maximum, 41° on the 31st instant; Minimum, -3° on the 13th instant; mean, 22.10°; total precipitation, 2.53 inches; prevailing winds, south.

Meteorological report, 1901-2—Continued.

JANUARY, 1902.							FEBRUARY, 1902.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	36	18	18	S.	.....		1....	8	-19	27	S.	.....
2.....	39	29	10	S.	.....		2....	26	-5	31	SE.	Trace	Snow.
3.....	38	26	12	S.	0.05	Snow.	3....	29	-13	16	S.	.....
4.....	40	27	13	S.	Trace	Snow.	4....	31	11	20	S.	.....
5.....	36	20	16	SW.	.....		5....	27	20	7	N.	0.20	Snow.
6.....	36	28	8	S.	.....		6....	28	0	28	S.	.....
7.....	40	32	8	S.	.02	Snow.	7....	37	14	23	S.	.02	Snow.
8.....	44	32	12	S.	Trace	Rain.	8....	32	5	27	N.	.20	Snow.
9.....	38	23	15	SS.	.....		9....	39	15	24	S.	.10	Snow.
10.....	31	8	23	S.	.....		10....	45	34	11	S.	Trace	Snow.
11.....	34	13	21	S.	.....		11....	42	33	9	S.	Trace	Snow.
12.....	39	16	23	S.	.....		12....	42	29	13	S.	.02	Snow.
13.....	33	11	22	S.	.....		13....	32	14	18	S.	.....
14.....	35	17	18	S.	.....		14....	32	19	13	S.	.....
15.....	37	11	26	SE.	.....		15....	36	23	13	S.	Trace	Snow.
16.....	39	12	27	SE.	.....		16....	45	30	15	S.	Trace	Snow.
17.....	34	20	14	SW.	.02	Snow.	17....	42	32	10	S.	Trace	Rain.
18.....	26	16	10	S.	Trace	Snow.	18....	36	26	10	S.	.02	Snow.
19.....	33	19	14	S.	.15	Snow.	19....	37	13	24	S.	.....
20.....	29	14	15	SW.	.20	Snow.	20....	47	15	32	SW.	.....
21.....	24	11	13	SW.	.20	Snow.	21....	41	23	18	S.	.....
22.....	22	11	11	S.	.20	Snow.	22....	43	18	25	SW.	.....
23.....	14	-10	24	SE.	.....		23....	39	9	30	SW.	.....
24.....	9	-15	24	N.	.12	Snow.	24....	39	27	12	S.	Trace	Snow.
25.....	-12	-24	12	N.	.10	Snow.	25....	39	31	8	S.	.05	Snow.
26.....	-2	-30	28	S.	Trace	Snow.	26....	40	29	11	W.	.....
27.....	-2	-19	17	S.	.....		27....	36	22	14	S.	Trace	Snow.
28.....	-2	-23	21	S.	.....		28....	32	11	21	NE.	Trace	Snow.
29.....	+11	-22	33	S.	.....		Total.	1,002	492	510	.....	.61	
30.....	12	-1	13	SW.	.....		Mean.	35.76	17.57	18.20	S.	.....
31.....	16	+4	12	SW.	.....							
Total.	807	274	533	.....	.96								
Mean.	26.03	8.84	17.19	S.	.....							

Maximum, 44° on the 8th instant; minimum, -30° on the 26th instant; mean, 17.44°; total precipitation, 0.96 inch; prevailing winds, south.

Maximum, 47° on the 20th instant; minimum, -19° on the 1st instant; mean, 26.66°; total precipitation, 0.61 inch; prevailing winds, south.

Meteorological report, 1901-2—Continued.

MARCH, 1902.							APRIL, 1902.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	32	13	19	S.	Trace	Snow.	1....	51	13	38	NE.	.....
2.....	33	19	14	S.	0.60	Snow.	2....	47	24	23	N.	0.50	Snow.
3.....	30	15	15	N.	.20	Snow.	3....	42	28	14	S.	Trace	Snow.
4.....	29	10	19	S.	Trace	Snow.	4....	47	28	19	S.	.....
5.....	39	18	21	S.	.....		5....	45	30	15	SW.	.....
6.....	35	16	19	SW.	.....		6....	47	25	22	S.	.....
7.....	34	22	12	S.	.02	Snow.	7....	50	34	16	SW.	.15	Rain.
8.....	44	23	21	SW.	.....		8....	41	26	15	S.	.20	Snow.
9.....	41	29	12	SW.	.10	Snow.	9....	37	19	18	N.	.07	Snow.
10.....	34	16	18	S.	.....		10....	39	16	23	SW.	.....
11.....	41	21	20	S.	Trace	Snow.	11....	46	14	32	N.	.....
12.....	36	20	16	SW.	.....		12....	47	29	18	SW.	Trace	Snow.
13.....	32	19	13	N.	.60	Snow.	13....	43	11	32	NW.	.20	Snow.
14.....	28	4	24	N.	Trace	Snow.	14....	42	9	33	S.	.....
15.....	24	2	26	N.	.02	Snow.	15....	39	30	9	NW.	.02	Snow.
16.....	25	5	20	N.	Trace	Snow.	16....	52	19	33	S.	.....
17.....	36	20	16	S.	.05	Snow.	17....	54	33	21	S.	.....
18.....	43	31	12	S.	Trace	Snow.	18....	59	31	28	S.	.....
19.....	38	24	14	N.	.15	Snow.	19....	65	41	24	SE.	.....
20.....	37	20	17	W.	Trace	Snow.	20....	59	33	26	NW.	.50	Rain.
21.....	42	16	26	SW.	.....		21....	40	26	14	N.	.20	Snow.
22.....	35	13	22	S.	Trace	Snow.	22....	39	19	20	N.	Trace	Snow.
23.....	37	9	28	S.	.....		23....	47	26	21	S.	Trace	Snow.
24.....	35	24	11	S.	.....		24....	46	28	18	N.	Trace	Snow.
25.....	39	23	16	N.	.50	Snow.	25....	44	29	15	N.	.05	Snow.
26.....	36	14	22	N.	.02	Snow.	26....	50	28	22	S.	.10	Snow.
27.....	34	23	11	N.	.05	Snow.	27....	49	30	19	S.	.10	Snow.
28.....	27	10	17	NW.	.15	Snow.	28....	50	21	29	S.	.....
29.....	23	5	18	N.	Trace	Snow.	29....	51	34	17	S.	.05	Rain.
30.....	33	0	33	S.	.....		30....	61	34	27	S.	.....
31.....	39	4	35	NE.	.....							
Total.	1,071	484	587	.....	2.46		Total	1,429	768	651	.....	2.14	
Mean.	34.55	15.61	18.94	S.	.....		Mean	47.63	25.60	21.70	S.	.....

Maximum, 44° on the 8th instant; minimum, -2° on the 15th instant; mean, 25.80°; total precipitation, 2.46 inches; prevailing winds, south.

Maximum, 65° on the 19th instant; minimum, 9° on the 14th instant; mean, 36.60°; total precipitation, 2.14 inches; prevailing winds, south.

Meteorological report, 1901-2—Continued.

MAY, 1902.							JUNE, 1902.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	49	32	17	S.	0.02	Snow.	1....	62	36	26	S.	0.12	Rain.
2.....	41	27	14	S. W.	.12	Snow.	2....	52	36	16	S.	.....
3.....	44	24	20	S. W.	.....		3....	67	35	32	S. W.	.....
4.....	49	23	26	S. E.	.....		4....	68	38	30	S. W.	.....
5.....	57	25	32	S.	.....		5....	66	36	30	S. W.	.....
6.....	60	29	31	S. W.	.....		6....	63	41	22	N.	.....
7.....	65	35	30	S.	.....		7....	70	39	31	S. W.	.02	Rain.
8.....	68	35	33	S. W.	Trace	Rain.	8....	78	42	36	S. W.	.....
9.....	67	36	31	S.	.....		9....	84	49	35	W.	.20	Rain.
10.....	68	40	28	S.	.10	Rain.	10....	79	47	32	S. W.	.....
11.....	63	41	22	S.	.....		11....	78	42	36	S. W.	.....
12.....	70	35	35	S.	.....		12....	75	43	32	S. W.	.....
13.....	71	40	31	S. W.	.....		13....	71	45	26	N.	.42	Hail.
14.....	75	37	38	S. W.	.....		14....	55	38	17	N.	.41	Rain.
15.....	63	41	22	S.	Trace	Rain.	15....	62	37	25	N.	.....
16.....	59	39	20	S.	.....		16....	67	35	32	S. W.	.....
17.....	57	37	20	S. W.	.65	Rain.	17....	56	30	26	N.	.....
18.....	47	30	17	S. W.	.55	Rain.	18....	60	38	22	S. W.	.....
19.....	44	30	14	N.	Trace	Rain.	19....	58	41	17	N.	.....
20.....	44	31	13	N.	.10	Snow.	20....	62	31	31	N.	.....
21.....	50	35	15	S. W.	Trace	Rain.	21....	77	34	43	S.	.....
22.....	56	36	20	S. W.	.05	Rain.	22....	82	47	35	Calm.	Trace	Rain.
23.....	55	38	17	S. W.	Trace	Rain.	23....	81	54	27	Calm.	.....
24.....	62	39	23	S. W.	.....		24....	74	47	27	Calm.	.08	Rain.
25.....	68	41	27	N. W.	Trace	Rain.	25....	76	43	33	S. W.	.06	Rain.
26.....	73	38	35	N.	.....		26....	70	42	28	S.	.03	Rain.
27.....	77	41	36	N. W.	.....		27....	56	42	14	N.	.35	Hail.
28.....	73	43	30	S. W.	Trace	Rain.	28....	56	41	15	N.	.14	Rain.
29.....	77	43	34	S.	.....		29....	65	37	28	S.	.02	Rain.
30.....	70	43	27	S.	.....		30....	61	41	20	S.	.22	Rain.
31.....	72	42	30	N.	.....							
Total.	1,894	1,116	788	.....	1.59		Total.	2,031	1,207	824	.....	1.87	
Mean.	61.09	36.00	25.42	S. W.	.....		Mean.	67.70	40.23	27.46	S. W.	.....

Maximum, 77° on the 27th and 29th instant; minimum, 23° on the 4th instant; mean, 48.54°; total precipitation, 1.59 inches; prevailing winds, southwest.

Maximum, 84° on the 9th instant; minimum, 30° on the 17th instant; mean, 53.96°; total precipitation, 1.87 inches; prevailing winds, southwest.

YELLOWSTONE NATIONAL PARK.

Meteorological report, 1901-2—Continued.

JULY, 1902.							AUGUST, 1902.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	70	38	32	S.	Trace	Rain.	1....	83	49	34	SW.		
2.....	64	46	18	Calm.	0.34	Rain.	2....	80	47	33	SW.		
3.....	55	37	18	S.	.19	Snow.	3....	84	52	32	S.		
4.....	50	36	14	S.	1.40	Snow.	4....	83	44	39	S.		
5.....	55	37	18	S.	.05	Rain.	5....	77	45	32	NW.		
6.....	56	40	16	SW.	Trace	Rain.	6....	84	43	41	NW.		
7.....	62	36	26	SW.			7....	82	48	34	NW.	.02	Rain.
8.....	53	35	18	SW.	.18	Rain.	8....	79	42	37	NW.		
9.....	70	28	32	SW.			9....	74	43	31	N.		
10.....	75	40	35	SW.			10....	71	30	41	N.		
11.....	80	45	35	SW.			11....	83	40	43	SW.		
12.....	79	45	34	SW.	Trace	Rain.	12....	85	39	46	S.	.12	Rain.
13.....	77	44	33	S.	.05	Rain.	13....	74	45	29	S.	.05	Rain.
14.....	83	43	40	SW.			14....	74	43	26	S.	.02	Rain.
15.....	82	55	27	SW.			15....	73	50	23	S.	Trace	Rain.
16.....	75	42	33	SW.			16....	78	44	34	S.		
17.....	69	42	27	NW.	.06	Rain.	17....	72	44	28	SW.		
18.....	59	42	17	NW.			18....	65	34	31	SW.		
19.....	70	35	35	W.			19....	70	33	37	NW.		
20.....	80	41	39	N.			20....	79	36	43	NW.		
21.....	81	46	35	N.			21....	80	41	39	SW.	Trace	Rain.
22.....	82	47	35	N.			22....	75	37	38	SW.		
23.....	83	49	34	Calm.			23....	79	40	39	SW.		
24.....	86	47	39	W.			24....	80	40	40	SW.		
25.....	81	52	29	NW.			25....	83	40	43	SW.		
26.....	79	45	34	W.			26....	81	43	38	SW.	Trace	Rain.
27.....	81	46	35	NW.			27....	73	45	28	NW.	.02	Rain.
28.....	82	49	33	SW.			28....	72	40	32	SW.	.38	Rain.
29.....	78	50	28	SW.			29....	72	37	35	SW.		
30.....	80	46	34	S.	.02	Rain.	30....	65	39	26	SW.		
31.....	85	53	32	SW.	Trace	Rain.	31....	66	43	23	SW.		
Total.	2,262	1,387	915	.....	229		Total	2,376	1,301	1,065	.....	.61	
Mean.	72.97	44.74	29.57	SW.	.....		Mean	76.64	41.96	34.35	SW.	.....

Maximum, 86° on the 24th instant; minimum, 35° on the 8th and 19th instant; mean, 58.85°; total precipitation, 2.29 inches; prevailing winds, southwest.

Maximum, 85° on the 12th instant; minimum, 30° on the 10th instant; mean, 59.30°; total precipitation, 0.61 inch; prevailing winds, southwest.

ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT

OF THE

ACTING SUPERINTENDENT

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1903.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1903.

REPORT
OF THE
ACTING SUPERINTENDENT OF YELLOWSTONE NATIONAL
PARK.

YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 14, 1903.

SIR: In compliance with instructions contained in your letter of June 27, 1903, I have the honor to submit the following report of the condition of affairs in and of the management of the Yellowstone National Park since the fiscal year ended June 30, 1902:

The Northern Pacific Railway Company has completed the extension of its road referred to in my last report, and its terminus is now at Gardiner, a little town just outside of the northern boundary of the park and only 5 miles distant from the Mammoth Hot Springs. Here this company has built a handsome and comfortable depot.

The completion of this extension to the road and the building of the depot has added greatly to the convenience and comfort of tourists entering the park. Heretofore the tourists who have entered the park from the north have never been certain when they had crossed the boundary line, but to-day immediately after leaving the depot they pass through a stone archway, or gate, which indicates to them at once that they are within the bounds of the park. The corner stone of this arch was laid April 24, 1903, by President Roosevelt, on the occasion of his recent visit to the park.

In connection with this gateway a wire fence has been constructed, which extends for about 4 miles along the northern boundary of the park. This fence has long been needed, and it now affords a means of keeping stock of all kinds off that section of the park in the vicinity of Gardiner and Cinnabar, thereby saving for the antelope, deer, and elk the grass which they badly needed in the winter.

IMPROVEMENTS ABOUT THE MAMMOTH HOT SPRINGS.

The new system of roads and the cement sidewalks about the springs have been completed, and a fair crop of grass and clover has been grown on that portion of the plateau, where it is hoped that we will eventually produce a handsome lawn.

Mr. F. Jay Haynes's house and barn, which formerly stood near the center of the plateau, have been removed to a point near the foot of Capitol Hill, and their removal has added greatly to the appearance of things on the plateau.

The completion of the roads referred to above and growth of the

lawns have almost entirely done away with the drifting sand and dust which was formerly an exceedingly objectionable feature about the springs.

The engineer officer in charge of improvements, etc., in the park has had an exceedingly fine and accurate map made, showing the location of all of the roads, walks, buildings, etc., in the vicinity of the springs, and a copy of this map will be forwarded as soon as one can be obtained.

FOREST FIRES.

Owing to the unusual and frequent rains that we have had during the past season and to the vigilance and activity of the troopers who have patrolled the roads the park has been remarkably free from forest fires, and only two of any consequence have occurred. These were both extinguished by troopers from this post.

FISH AND FISH HATCHERY.

The United States Fish Commission was unable to establish a hatchery in the park, as recommended in my last annual report, but they have, however, constructed a small frame and log building at the West Thumb of the lake for the purpose of eyeing the eggs of the black-spotted trout.

During the past season Mr. Booth, who is the superintendent of the United States hatchery at Spearfish, S. Dak., has succeeded in collecting and hatching several million of these eggs which were sent to his station, from there to be distributed to various points throughout the United States, and I am informed that some of them were destined to be sent to various points in Europe. In exchange for these eggs secured in the park Mr. Booth brought from his station 35,000 brook trout, 15,000 of which were planted in Tower Creek above the Tower Falls and 20,000 in the Upper Gardiner River, and 10,000 Loch Leven trout, which were planted in Nez Perce Creek. Tower Creek is a fine stream for trout, but none have ever been planted in it before.

WEATHER BUREAU.

Quite a handsome frame building has just been completed by the Weather Bureau, and a representative of that Bureau has arrived and is now engaged in establishing his station. This building is located between the office of the engineer officer in charge of improvements in the park and the new stables recently built by the Yellowstone Park Transportation Company.

BOUNDARY SURVEY.

The entire boundary line of the park has now been surveyed, with the exception of about 6 miles near the northeastern corner. In order to close out this survey it will be necessary to survey about $4\frac{1}{2}$ miles of the eastern boundary and nearly 1 mile of the northern boundary. Fifty miles of the eastern boundary line was surveyed during the past summer by Mr. Edward F. Stahle under a contract awarded him by the honorable Secretary of the Interior. Mr. Stahle commenced his survey at the monument established by Captain Bromwell, and which was

reported to have been established at a point 10 miles east of the easternmost point of the Yellowstone Lake; but it was found that this monument was about $4\frac{1}{2}$ miles south of that point, and in consequence the survey of 50 miles of the boundary line northward from this point only reached to a point about east of the head of Amphitheater Creek and nearly $4\frac{1}{2}$ miles south of the north boundary line of the park. In addition to this fact it has been found that the northeast corner of the park, as fixed by United States Deputy Surveyor Gallaher, is about 1 mile west of its proper location. It is therefore necessary to survey about 1 mile of the northern boundary of the park in order to accurately fix the location of the monument at the northeastern corner.

The examiner of surveys, Mr. J. Scott Harrison, is at present engaged in finishing this work, having been authorized to do so by the honorable Secretary of the Interior. The completion of this small piece of work will finish the survey of the entire park boundary.

It is of the greatest importance that the boundary lines of the park, in addition to being surveyed, should be so thoroughly well marked as to render it impossible for anyone to cross the line without knowing that he has entered the reservation. With this end in view, it is exceedingly desirable that a wide swath should be cut along the entire boundary line wherever timber exists, and also that additional monuments should be set up wherever the country is open. It was my intention to have this done by labor of troops stationed in the park, but the frequent changes in the stations of these troops has again interfered with the accomplishment of this most important work. As there is no certainty that such work will not again be interfered with by changes of troops during the next season, it is earnestly recommended that the marking of the boundary lines as suggested above may, if possible, be taken up and completed by the Commissioner of the General Land Office, or, if it can not be done in this way, that an appropriation be secured from Congress for this purpose.

GAME.

In spite of the predictions of many of the old settlers in this section of the country to the contrary, the past winter was an exceedingly favorable one for all of the various kinds of game that live entirely within the limits of the park, and the percentage of loss through starvation or the effect of the weather was very small.

Many startling reports were sent out from the country south of the park concerning the great loss of elk in that section through starvation, but from information received from one of the park scouts, who was located there during the entire winter, I am of the opinion that the reports were greatly exaggerated and that the loss was very slight.

The danger of heavy loss by starvation during the winter of the large game that spends the summer in the park is increasing each year, due to growing settlements on the winter ranges of the game and destructive effect of the large bands of sheep on the ranges. It is to be hoped that every possible support will be given to Supt. A. A. Anderson in his effort to regulate in a reasonable way the number of sheep that will be permitted to graze on the timber reserve, and that as soon as practicable the grazing of sheep on the reserves may be absolutely prohibited.

It is of course impracticable to feed all of the large game of the

park at any time, but there are certain portions of it that we should be prepared to feed when on account of deep snows it becomes necessary to do so. The animals that should be thus cared for are the antelope and the mountain sheep, and as their winter range is close to Fort Yellowstone, they can be easily cared for.

About 900 antelope have already been seen this fall on the northern slope of Mount Everts and near the town of Gardiner, and I believe the number in the park to be about 1,000.

The mountain sheep have begun to come back to their winter range on Mount Everts, and a number have already been seen. I believe that they have increased considerably in numbers during the past year and that there are now over 100 in the park.

The bear seem to be about as numerous as they were last year, and as they can always be seen about the various hotels, they continue to be a great source of amusement and interest to the tourists. They have done no harm to anyone during the past season.

The deer seem to be increasing more rapidly than any other game in the park, at least they are becoming tamer and more fearless than any other species, and during the past winter from 50 to 75 could be seen any day grazing on the parade ground of Fort Yellowstone.

The new buffalo herd, which is under the immediate charge of Mr. C. J. Jones, is doing exceedingly well. This herd now consists of 27 buffaloes—20 old ones and 7 calves. Five of the calves are from the cows of the Allard herd purchased last fall, and two of them were captured last spring from the wild herd of the park. The addition of these two calves from the wild herd will give three distinct strains of blood in the new herd, for the bulls purchased last year were from the Goodnight herd in Texas and the cows were from the Allard herd of Montana. The increase in the herd this year was not as great as was hoped for, but was due to the fact that many of the cows purchased were quite young and all were badly shaken up in transporting them from their range to the park.

TRANSPORTATION COMPANIES.

The Yellowstone Park Transportation Company has still further increased its plant, both as to coaches and horses, and the service rendered has been very satisfactory.

Messrs. Humphrey and Haynes have also improved their equipment and have given entire satisfaction in the matter of transportation.

PERMANENT CAMPS.

Mr. W. W. Wylie, of Bozeman, Mont., is licensed to conduct camping parties through the park, and is authorized to occupy certain parcels of ground as permanent camps. His services during the past season have been entirely satisfactory to his patrons.

HOTELS.

The Yellowstone Park Association, which runs the hotels throughout the park, has done much to improve these establishments, and its hotels and lunch stations have never been run in better shape than during the past season.

A handsome new hotel is being built at the Upper Geyser Basin and will be ready for occupancy next summer.

A new lunch station has been built at the Thumb and has been in use during the greater part of the past season.

The hotel at the lake has been improved and added to in such a way as to more than double its capacity.

IMPROVEMENTS IN THE YELLOWSTONE NATIONAL PARK.

The following statement from Capt. H. M. Chittenden, U. S. Engineers, in charge of roads and improvements in the park, shows the work accomplished under his direction during the past year:

IMPROVEMENT YELLOWSTONE NATIONAL PARK,
UNITED STATES ENGINEER OFFICE,
Yellowstone Park, Wyo., October 7, 1903.

MAJOR: I inclose herewith a condensed statement of the more important parts of the work of the past year under this department.

Very respectfully,

H. M. CHITTENDEN,
Captain, Corps of Engineers.

Maj. Jno. PITCHER,
Acting Superintendent Yellowstone Park, Fort Yellowstone, Wyo.

STATEMENT OF WORK DONE DURING YEAR 1903, IMPROVEMENT OF YELLOWSTONE NATIONAL PARK.

MAMMOTH HOT SPRINGS TO GARDINER.

Nearly entire distance of 5 miles regraded, widened most of the way to 25 feet; all grades reduced to within 8 per cent; over one-half mile retaining wall built; three-fourths mile entirely new road built, entire distance of 5 miles resurfaced, about one-half mile being with crushed rock and the rest with gravel.

NORTH ENTRANCE.

Entrance gate of columnar basalt built near the new station of the Northern Pacific, with wing walls extending from gate to boundary. Small park laid out within loop terminus of Government road. Park fenced with pipe fence, supported by turned cedar posts. Park ornamented with small pond provided with running water. Park to be seeded and planted with trees next spring. Road from entrance arch to the bluffs of the Gardiner River newly built over an even plain, which is to be planted with shrubbery on both sides. To provide water a large ditch was brought from the Gardiner River about a mile distant. It was carried in a substantial flume along that portion of the roadway which is built on the side of a steep, gravelly bluff, about half a mile above the entrance gate.

MOUNT WASHBURN ROAD.

Work has been done on both sides of the mountain. The loop road is open on the south side for a mile and a half beyond the junction of the loop and main line in Craven Pass, making in all about 9 miles from the Canyon Hotel. On the north side the road is open nearly to the junction of the loop and main line. This leaves practically the work between the two junction points to open up. The work in the vicinity of the high cliff near Tower Falls was of a very heavy character.

EAST ROAD.

This road was open for travel about July 10 and was used by the public the balance of the season. It is nearly 60 miles long, and a considerable portion of the distance through the roughest and most difficult country on the road system.

GIBBON CANYON.

The high retaining wall near Gibbon Falls was entirely rebuilt in a very substantial way. It is about half a mile long and is a permanent improvement of a piece of road that has always given much difficulty.

In the upper part of Gibbon Canyon two remaining hills have been cut out by grades along the river about half a mile long each.

VIRGINIA CASCADE.

This work, commenced last fall, was added to this spring and placed in a condition for travel during the summer. It still requires widening and a guard wall on the outside.

GRAND CANYON.

A new junction of the Lake road, Norris road, and Mount Washburn road was located about 1,000 feet from the old junction; a new crossing of Cascade Creek was located and roads opened to correspond. The work eliminates two bad hills and a sliding slope which it had been found impossible to hold.

MAMMOTH HOT SPRINGS TO MIDDLE GARDINER.

About 1½ miles of road have been built to replace the old wagon trail between these points. An excellent line was found, shortening the old distance by fully one-third and eliminating nearly all gradients above 3 or 4 per cent.

BRIDGES.

Material has been purchased and delivered for nine bridges, four of which have been erected. These include the steel-concrete bridge over the Yellowstone above the Upper Falls—an arch of 120 feet span and a length of 160 feet, including the abutments; the steel arch bridge over Cascade Creek, with a span of 120 feet and a total length of 220 feet; the deck steel truss over the Yellowstone at Yancey's, 130-foot span; and a small steel bridge over the Gibbon River, in Gibbon Canyon.

CULVERTS.

A large number of vitrified clay-pipe culverts have been put in in various places, the more important being at Glen Creek and Swan Lake Creek crossings, where bridges have been replaced by culverts.

SPRINKLING.

Ten new sprinkling wagons of 850 gallons capacity each were purchased. The installation of filling tanks was kept up all summer. It was found to be a matter of very great difficulty to get water in the right places in sufficient quantity. Sprinkling was kept up nearly all summer on the 25 miles from Gardiner to Norris. On the Yellowstone River road sprinkling began about August 10 and continued until about the 6th of September. It began about August 15 from Norris down the Gibbon River for 10 miles. Filling tanks are now installed nearly to the Upper Basin, and it is certain that not less than 75 miles of road will be sprinkled next season. The experience of the past season has shown that a complete sprinkling system can be combined with road maintenance in a way to produce excellent results, both for the comfort of the traveling public and the preservation of the roads.

OPENING AND REPAIRING THE ROADS.

A very large expenditure has been made under this head during the past year. The roads were opened earlier than they should have been, and the amount of snow shoveling was prodigious. A large amount of gravel and other surfacing material was hauled onto the roads in all parts of the park. Parties were sent over both the south and west roads and the road to Cooke City. The Natural Bridge cut-off was widened in numerous places. The new road over Swan Lake Flat was widened and the ditches partially filled on one side to reduce danger from accidentally getting off the road.

BUILDINGS, ETC.

The new engineer office and the storehouses, sheds, etc., pertaining to the improvement work have been completed; the station houses throughout the park are being

repaired; a new station house and stable will be built at Gardiner before the end of the year; about 4 miles of substantial fence was built along the north boundary in the vicinity of Gardiner.

TOURIST TRAVEL THROUGH THE PARK.

The aggregate number of persons carried through the park over the regular route during the season of 1903 is as follows:

Carried by Yellowstone Park Transportation Company, entering via northern entrance of park.....	4,363	
Carried by Messrs. Humphrey & Haynes, entering via western entrance of park.....	1,346	
Others at hotels, traveling with private transportation, bicyclers, etc..	246	
Total.....		5,955
Carried by W. W. Wylie and accommodated at his permanent camps.	1,767	
Carried by other licensees of personally conducted camping parties...	614	
Total number camping, traveling with licensed transportation.....	2,381	
Total number of tourists traveling through the park with private transportation as "camping parties".....	4,829	
Grand total of all visitors to the park, season 1903.....		13,165

During the season 3,598 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 1,527 entered the park with the Yellowstone Park Transportation Company, 253 with Messrs. Humphrey & Haynes, 1,690 with W. W. Wylie, and the balance, 128 people, were campers.

Very respectfully,

JNO. PITCHER,

Major, Sixth Cavalry, Acting Superintendent.

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

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., February 7, 1902.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7,

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn loose stock to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.

4. Fires shall be lighted only when necessary, and completely extinguished when no longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and anyone failing to comply herewith shall be punished as prescribed by law.

5. Hunting or killing, wounding or capturing of any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park

under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, may be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

E. A. HITCHCOCK,
Secretary of the Interior.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH THE PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., May 27, 1903.

The following instructions for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned:

(1) The feeding, interference with, or molestation of the bear or any other wild animal in the park in any way by any person is absolutely prohibited.

(2) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished where water is not available by a complete covering of earth well packed down.

(3) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other debris must be either buried or taken to some place where they will not offend the sight.

(4) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must, therefore, be exercised by their riders. In meeting teams, riders will always dismount and stand at the side of

the road—the lower side if the meeting be on a grade. In passing teams from the rear, riders will ring their bells as a warning and inquire of the driver if they may pass. If it appear from the answer that the team is liable to be frightened, they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(5) *Fishing*.—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(6) *Dogs*.—When dogs are taken through the park, they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling, and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(7) *Grazing animals*.—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the roads.

(8) *Hotels*.—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the Yellowstone Park Association hotels without extra charge for transportation. However, twenty-four hours' notice must be given to the managers of the transportation companies at Mammoth Hot Springs for reservations in other coaches.

(9) *Boat trip on Yellowstone Lake*.—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(10) *Driving on roads of park*.—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on side-hill grades throughout the park will take the outside of the road while being passed by passenger vehicles in either direction.

(e) In halting on the road for any purpose all teams will be pulled out to one side of the road far enough to leave a free and unobstructed passageway.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will keep well on the right-hand side of the road, and will slow down to a walk unless there is ample room to pass vehicles approaching from the opposite direction.

(g) Stage companies, contractors, and all others using the park roads will see that their drivers are furnished with copies of this regulation.

(11) *Miscellaneous*.—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park, as well as at the office of the superintendent of the reservation.

(12) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

JNO. PITCHER,
Major, Sixth Cavalry, U. S. Army,
Acting Superintendent of the Yellowstone National Park.

Meteorological report, 1902-3.

SEPTEMBER, 1902.							OCTOBER, 1902.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.	74	34	40	SW.			1.	46	27	19	NW.		
2.	74	43	31	NW.			2.	47	28	19	NW.		
3.	75	34	41	NW.			3.	60	30	30	NE.		
4.	76	47	29	SW.			4.	70	30	40	N.		
5.	70	38	32	SW.			5.	68	32	36	SW.		
6.	78	48	30	SW.			6.	71	33	38	SW.		
7.	78	40	38	SW.			7.	72	35	37	SW.		
8.	75	38	37	SW.			8.	68	38	30	SW.		
9.	75	40	35	SW.			9.	56	30	26	SW.		
10.	70	35	35	NW.			10.	50	38	12	SW.	0.2	Rain.
11.	55	32	23	NW.			11.	51	32	19	NW.		
12.	66	27	39	NW.			12.	49	29	20	SW.	Trace	Rain.
13.	75	35	40	NW.			13.	60	28	32	SW.		
14.	74	42	32	SW.			14.	68	32	36	S.		
15.	68	40	28	SW.	0.30	Rain.	15.	58	35	23	SW.		
16.	45	33	12	NW.			16.	62	35	27	Calm.		
17.	60	25	35	SW.			17.	57	28	29	SW.		
18.	67	32	35	SW.			18.	55	35	20	SW.		
19.	67	42	25	SW.			19.	64	30	34	SW.		
20.	47	35	12	SW.	Trace	Rain.	20.	62	31	31	SW.		
21.	63	31	32	SW.			21.	65	35	30	SW.		
22.	70	32	38	SW.			22.	55	38	17	SW.		
23.	73	40	33	SW.			23.	48	30	18	SW.	Trace	Snow.
24.	74	42	32	SW.			24.	48	32	16	SW.	Trace	Rain.
25.	68	40	28	SW.			25.	45	32	13	SW.		
26.	47	25	22	SW.	.50	Snow.	26.	49	29	20	SW.		
27.	57	39	18	SW.	.10	Snow.	27.	55	34	21	SW.		
28.	56	29	27	SW.			28.	45	25	20	SW.		
29.	54	28	26	SW.			29.	46	30	16	SW.		
30.	49	38	11	NW.			30.	49	33	16	SW.		
							31.	52	35	17	NW.	Trace	Rain.
Total.	1,975	1,084	891		.90		Total	1,151	989	762		.2	
Mean.	65.83	36.13	29.7	SW.			Mean	56.48	31.90	24.58	SW.		

Maximum 78° on the 6th and 7th instant; minimum 25° on 17th instant; mean 50.98°; total precipitation 0.9 inch; prevailing winds, southwest.

Maximum, 72° on 7th instant; minimum, 25° on 28th instant; mean, 44.19°; total precipitation, 0.2 inch; prevailing winds, southwest.

Meteorological report, 1902-3—Continued.

NOVEMBER, 1902.							DECEMBER, 1902.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	43	23	20	SW.	0.10	Snow.	1....	25	10	15	SW.	.....
2.....	40	28	12	NE.	.....		2....	34	16	18	W.	0.20	Snow.
3.....	44	28	16	SW.	Trace	Snow.	3....	24	- 3	27	W.	.15	Snow.
4.....	34	6	28	SW.	Trace	Snow.	4....	32	16	16	W.	.....
5.....	32	3	29	W.	.....		5....	30	25	5	W.	.10	Snow.
6.....	38	18	20	NW.	.10	Snow.	6....	25	12	13	Calm.	Trace	Snow.
7.....	40	32	8	NW.	.35	Rain.	7....	22	5	17	Calm.	Trace	Snow.
8.....	49	38	11	SW.	.....		8....	45	25	20	SW.	Trace	Snow.
9.....	55	44	11	Calm.	.....		9....	43	35	8	SW.	Trace	Snow.
10.....	57	35	22	SW.	.....		10....	42	33	9	E.	Trace	Snow.
11.....	48	33	15	SW.	.35	Rain.	11....	35	25	10	E.	Trace	Snow.
12.....	48	29	19	SW.	.10	Snow.	12....	26	7	19	Calm.	Trace	Snow.
13.....	35	25	10	SE.	.05	Snow.	13....	21	- 5	26	Calm.	Trace	Snow.
14.....	37	26	11	SE.	Trace	Snow.	14....	17	- 3	20	Calm.	.....
15.....	35	13	22	SW.	.....		15....	21	1	20	Calm.	.....
16.....	35	21	9	SE.	.....		16....	26	8	18	SW.	.....
17.....	35	25	10	SW.	.40	Snow.	17....	34	14	20	SW.	.....
18.....	32	25	7	E.	.30	Snow.	18....	31	13	18	SW.	.....
19.....	33	24	9	N.	.30	Snow.	19....	25	1	24	SW.	.....
20.....	28	12	16	Calm.	.10	Snow.	20....	28	16	12	SE.	.....
21.....	34	10	24	Calm.	.....		21....	32	18	14	SE.	.....
22.....	35	13	22	Calm.	.....		22....	32	24	8	SE.	.....
23.....	36	20	16	Calm.	.....		23....	40	22	18	SE.	.....
24.....	34	23	11	SW.	.....		24....	43	34	9	SE.	.15	Snow.
25.....	33	13	20	SW.	.....		25....	40	25	15	SW.	.10	Snow.
26.....	30	10	20	S.	.....		26....	44	27	17	Calm.	.....
27.....	29	16	13	S.	.....		27....	40	18	22	SE.	.....
28.....	23	9	14	S.	.....		28....	23	3	20	SW.	.15	Snow.
29.....	25	10	15	SW.	.....		29....	24	9	15	SW.	Trace	Snow.
30.....	24	15	9	SW.	.20	Snow.	30....	26	5	21	SW.	.....
							31....	32	15	17	SW.	.....
Total.	1,101	632	469	.....	2.35		Total	982	471	511	.....	.85	
Mean.	36.7	21.06	15.63	SW.	.....		Mean	31.67	15.19	16.48	SW.	.....

Maximum, 0.57°, on 10th instant; minimum, 3°, on 5th instant; mean, 28.88°; total precipitation, 2.35 inches; prevailing winds, southwest.

Maximum, 45°, on 8th instant; minimum, -5°, on 13th; mean, 23.11°; total precipitation, 0.85 inch; prevailing winds, southwest.

YELLOWSTONE NATIONAL PARK.

Meteorological report, 1902-3—Continued.

JANUARY, 1903.							FEBRUARY, 1903.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	30	20	10	SW.	.....		1.....	21	- 2	23	NW.	.....
2.....	28	15	13	SW.	Trace	Snow.	2.....	16	- 3	19	NW.	.....
3.....	30	25	5	SW.	Trace	Snow.	3.....	13	-13	26	NW.	.....
4.....	39	26	13	SW.	Trace	Snow.	4.....	15	- 5	20	NW.	.....
5.....	36	25	11	SW.	.....		5.....	15	0	15	NW.	Trace	Snow.
6.....	45	29	16	SW.	.....		6.....	13	-13	26	NW.	.....
7.....	40	9	31	SW.	.....		7.....	20	- 1	21	SW.	.....
8.....	28	12	16	SE.	.....		8.....	26	8	18	SW.	.....
9.....	35	16	19	SE.	.....		9.....	26	13	13	SW.	.....
10.....	29	13	16	NW.	0.05	Snow.	10.....	36	20	16	SW.	.....
11.....	28	5	23	NW.	.....		11.....	32	8	24	SW.	.....
12.....	25	3	22	NW.	.....		12.....	10	-18	28	NW.	.....
13.....	28	3	25	NW.	.....		13.....	10	-20	30	SW.	.....
14.....	30	8	22	Calm.	.....		14.....	12	- 3	15	NE.	.....
15.....	34	9	25	SW.	.....		15.....	10	-14	28	N.	.....
16.....	30	8	22	SW.	.....		16.....	15	3	12	NW.	0.10	Snow.
17.....	28	7	21	SW.	.....		17.....	20	8	12	SW.	.....
18.....	29	7	22	SW.	.....		18.....	33	11	22	SW.	.....
19.....	29	18	11	SW.	.....		19.....	35	8	27	SW.	.....
20.....	26	10	16	SW.	.....		20.....	35	8	27	SW.	.....
21.....	34	20	14	SW.	.....		21.....	40	13	27	SW.	.....
22.....	35	28	7	N.	Trace	Snow.	22.....	39	14	25	SW.	.....
23.....	32	15	17	N.	Trace	Snow.	23.....	35	10	25	SW.	.....
24.....	40	28	12	N.	Trace	Snow.	24.....	32	10	22	SW.	.....
25.....	41	25	16	N.	Trace	Snow.	25.....	30	2	28	SW.	.....
26.....	26	1	25	NW.	.20	Snow.	26.....	33	3	30	NW.	.....
27.....	26	15	11	NW.	.15	Snow.	27.....	31	- 3	34	NW.	.15	Snow.
28.....	25	15	10	NW.	.10	Snow.	28.....	28	- 3	28	NW.	.....
29.....	17	- 1	18	SW.	.....							
30.....	28	12	16	SW.	.10	Snow.							
31.....	26	18	8	SW.	.....							
Total	958	444	514	.....	.60		Total	678	41	637	.....	.25	
Mean	30.90	14.32	16.58	SW.	.....		Mean	24.21	1.46	22.75	SW.	.....

Maximum, 45° on the 6th instant; minimum, -1° on the 29th instant; mean, 22.59°; total precipitation, 0.60 inch; prevailing winds, southwest.

Maximum, 40° on 21st instant; minimum, -20° on 13th instant; mean, 12.83°; total precipitation, 0.25 inch; prevailing winds, southwest.

Meteorological report, 1902-3—Continued.

MARCH, 1903.							APRIL, 1903.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	31	-3	34	SE.	.....		1.....	35	29	6	NW.	0.30	Snow.
2.....	30	15	15	NE.	0.25	Snow.	2.....	36	16	20	SW.	Trace	Snow.
3.....	27	8	19	N.	.20	Snow.	3.....	38	25	13	SW.	.30	Snow.
4.....	20	0	20	NE.	.....		4.....	42	30	12	SW.	.....
5.....	38	10	28	NE.	.....		5.....	32	15	17	SW.	Trace	Snow.
6.....	34	13	21	SW.	.....		6.....	30	16	14	SW.	Trace	Snow.
7.....	28	15	13	SW.	.....		7.....	40	25	15	SW.	Trace	Snow.
8.....	35	5	30	SW.	.....		8.....	52	35	17	SW.	.....
9.....	32	19	13	W.	.25	Snow.	9.....	56	37	19	SW.	.....
10.....	35	17	18	NW.	Trace	Snow.	10.....	46	34	12	SW.	.....
11.....	45	27	18	SW.	.....		11.....	35	18	17	SW.	.....
12.....	47	37	10	SW.	.....		12.....	32	8	24	SW.	.....
13.....	26	17	9	SW.	.....		13.....	48	11	37	SW.	.....
14.....	44	12	32	SW.	.....		14.....	55	23	32	SW.	.....
15.....	42	25	17	SW.	.....		15.....	52	26	26	SW.	.....
16.....	40	26	14	SW.	.....		16.....	50	32	18	SW.	.....
17.....	42	24	18	NW.	Trace	Snow.	17.....	55	27	28	SW.	.....
18.....	32	12	20	NW.	Trace	Snow.	18.....	49	30	19	NW.	.....
19.....	30	4	26	NW.	.....		19.....	48	31	17	SW.	.....
20.....	35	3	32	SW.	.....		20.....	57	27	30	SW.	.....
21.....	38	21	17	N.	Trace	Snow.	21.....	60	31	29	SW.	.....
22.....	30	13	17	NW.	Trace	Snow.	22.....	63	33	30	SW.	.....
23.....	47	12	35	NW.	.....		23.....	58	29	29	SW.	.....
24.....	50	18	32	SW.	.....		24.....	61	28	33	SW.	.....
25.....	48	22	26	SW.	.....		25.....	66	30	36	SW.	Trace	Rain.
26.....	49	23	26	SW.	.....		26.....	68	38	30	SW.	Trace	Rain.
27.....	47	30	17	SW.	.....		27.....	50	30	20	NW.	Trace	Snow.
28.....	53	37	16	SW.	.....		28.....	35	21	14	NW.	.20	Snow.
29.....	50	38	12	SW.	.....		29.....	38	13	25	N.	.....
30.....	54	29	25	SW.	Trace	Rain.	30.....	43	25	18	NW.	.....
31.....	49	32	17	SW.	.15	Rain.							
Total.	1,208	564	647	.....	.85		Total	1,430	773	657	.....	.80	
Mean.	39.06	18.19	20.87	SW.	.....		Mean	47.66	25.76	21.89	SW.	.....

Maximum, 54° on the 30th instant; minimum, -3° on the 1st instant; mean, 28.57°; total precipitation, 0.85 inch; prevailing winds, southwest.

Maximum, 68° on 26th instant; minimum, 8° on 12th instant; mean 36.71°; total precipitation, 0.80 inch; prevailing winds, southwest.

Meteorological report, 1902-3—Continued.

MAY, 1903.						JUNE, 1903.							
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	45	27	18	N.	0.20	Snow.	1.....	78	38	40	SW.		
2.....	47	21	26	SW.	.05	Snow.	2.....	75	40	35	SW.	Trace	Rain.
3.....	56	27	29	SW.			3.....	63	45	18	NW.	0.20	Rain.
4.....	58	32	26	SW.			4.....	67	45	22	SW.		
5.....	55	33	22	SW.	Trace	Rain.	5.....	72	40	32	NW.		
6.....	63	30	33	SW.			6.....	67	40	27	SW.		
7.....	62	35	27	SW.	.30	Rain.	7.....	72	38	34	SW.		
8.....	55	38	17	SW.			8.....	74	40	34	SW.		
9.....	53	34	19	SW.			9.....	70	43	27	NW.		
10.....	47	28	19	SW.			10.....	62	36	26	NW.		
11.....	57	28	29	SW.			11.....	71	32	39	S.		
12.....	70	38	32	SW.			12.....	78	40	38	S.		
13.....	76	40	36	SW.			13.....	78	48	30	SW.	Trace	Rain.
14.....	75	48	27	SW.			14.....	70	46	24	NE.	Trace	Rain.
15.....	67	38	29	SW.			15.....	72	42	30	SW.		
16.....	62	35	27	SW.	Trace	Snow.	16.....	78	43	35	SW.		
17.....	45	30	15	NW.	.05	Snow.	17.....	79	46	33	SW.		
18.....	39	23	16	NW.			18.....	75	42	33	SW.		
19.....	43	30	13	NW.	Trace	Snow.	19.....	73	43	30	SW.	Trace	Rain.
20.....	50	28	22	NW.			20.....	62	45	17	NW.	Trace	Rain.
21.....	43	31	12	NW.	.05	Rain.	21.....	68	43	25	SW.	.20	Rain.
22.....	41	30	11	NW.	Trace	Rain.	22.....	68	45	23	SW.	Trace	Rain.
23.....	50	28	22	NW.			23.....	60	40	20	NW.	.30	Rain.
24.....	53	27	26	NW.			24.....	67	38	29	SW.		
25.....	52	35	17	SW.			25.....	75	41	34	SW.		
26.....	61	31	30	SW.			26.....	77	50	27	SW.		
27.....	60	45	15	NW.			27.....	75	50	25	SW.		
28.....	56	38	18	SW.	Trace	Rain.	28.....	68	52	16	SW.		
29.....	65	35	30	SW.	Trace	Rain.	29.....	73	45	28	SW.	.20	Rain.
30.....	75	37	38	SW.			30.....	64	43	21	E.		
31.....	76	40	36	SW.									
Total	1,757	1,020	737		.65		Total	2,131	1,279	852		.90	
Mean	56.67	32.90	23.77	SW.			Mean	71.03	42.63	28.40	SW.		

Maximum, 76° on 13th and 31st instant; minimum, 21° on 2d instant; mean, 44.78°; total precipitation 0.65 inch; prevailing winds southwest.

Maximum, 79° on 17th instant; minimum, 32° on 11th instant; mean, 56.83°; total precipitation, 0.90 inch; prevailing winds, southwest.

Meteorological report, 1902-3—Continued.

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JULY, 1903.							AUGUST, 1903.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	68	42	26	SW.	.....		1....	60	43	17	NE.	0.45	Rain.
2.....	68	37	31	NW.	0.10	Rain.	2....	70	40	30	SW.	Trace	Rain.
3.....	57	38	19	NE.	.....		3....	82	40	42	SW.	.....
4.....	68	34	34	SW.	.....		4....	78	43	35	SW.	.....
5.....	65	45	20	W.	.20	Rain.	5....	75	43	32	SW.	.....
6.....	62	42	20	NW.	.10	Rain.	6....	76	42	34	SW.	.....
7.....	60	37	23	SW.	.....		7....	81	47	34	SW.	.....
8.....	71	35	36	SW.	.....		8....	80	41	39	SW.	.....
9.....	73	43	30	SW.	.....		9....	75	45	30	SW.	.....
10.....	74	38	36	SW.	.....		10....	76	45	31	SW.	.....
11.....	77	40	37	SW.	.....		11....	78	43	35	SW.	.....
12.....	86	42	44	SW.	.....		12....	79	42	37	SW.	.....
13.....	84	50	34	SW.	.....		13....	80	44	36	SW.	.....
14.....	80	50	30	SW.	.....		14....	75	43	32	SW.	.....
15.....	80	43	37	SW.	.....		15....	83	42	41	SW.	.....
16.....	79	50	29	SW.	.....		16....	85	43	42	SW.	.....
17.....	65	49	16	E.	.15	Rain.	17....	87	48	39	W.	.....
18.....	75	40	35	S.	.....		18....	85	44	41	SW.	.....
19.....	81	45	36	SW.	.....		19....	86	43	43	SW.	.....
20.....	81	47	40	SW.	.....		20....	90	48	42	SW.	.....
21.....	69	47	22	SW.	.....		21....	89	65	24	SW.	.....
22.....	82	50	32	SW.	.....		22....	82	45	37	SW.	.....
23.....	80	53	27	SW.	.....		23....	78	50	28	SW.	.....
24.....	80	51	29	SW.	.....		24....	78	40	38	SW.	.....
25.....	84	43	41	SW.	.....		25....	80	40	40	SW.	.....
26.....	85	52	33	SW.	Trace	Rain.	26....	68	48	20	NW.	Trace	Rain.
27.....	82	49	33	SW.	.....		27....	58	40	18	E.	Trace	Rain.
28.....	78	45	33	SW.	.....		28....	75	36	39	SW.	.....
29.....	71	50	21	SW.	Trace	Rain.	29....	80	41	39	SW.	.....
30.....	77	48	29	SW.	.....		30....	79	43	36	SW.	.....
31.....	68	43	25	SW.	.....		31....	83	44	39	SW.	.....
Total.	2,316	1,378	938	.....	.55		Total	2,431	1,361	1,070	.....	.45	
Mean.	74.70	44.45	30.25	SW.	.....		Mean	78.41	43.90	34.51	SW.	.....

Maximum, 86° on 12th instant; minimum, 34° on 4th instant; mean, 59.57°; total precipitation, .55 inch; prevailing winds, southwest.

Maximum, 90° on the 20th instant; minimum, 36° on the 28th instant; mean, 61.15°; total precipitation, 0.45 inch; prevailing winds, southwest.

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ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT

OF THE

ACTING SUPERINTENDENT

OF THE

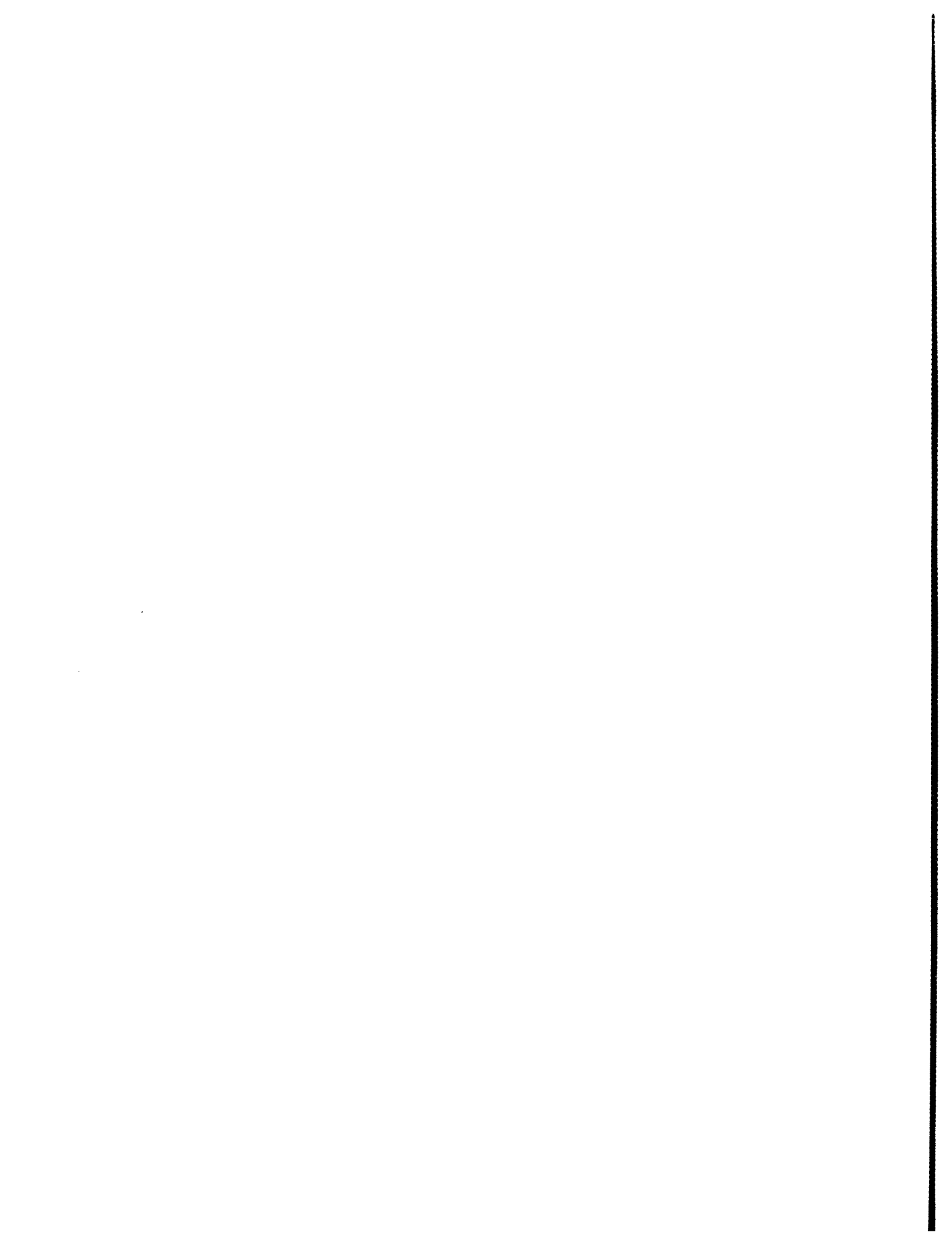
YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1904.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1904.



REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 13, 1904.

SIR: I have the honor to submit the following report of the condition of affairs in the Yellowstone National Park and its management since the fiscal year ended June 30, 1903:

IMPROVEMENTS ABOUT THE ROOSEVELT ARCH AT NORTH ENTRANCE TO PARK.

With a view to improving the appearance of things at the northern entrance to the park near Gardiner, but more especially for the purpose of insuring an ample supply of feed for the herd of antelope which winters in that section, the entire flat in front of the town of Gardiner has been planted with alfalfa, and to-day this flat, which in the past has been a barren and unsightly waste, is a beautiful green field and presents a very pleasing picture to the tourists as they enter the park. This alfalfa was planted rather late in the season, and it is not likely that we will get anything of a crop of hay from it this year, but next season it is more than likely that it will yield a good one. This hay, when cut, will be placed in a stack near the field, surrounded by a good strong fence, and fed to the antelope and other animals whenever it may become necessary to do so.

The fence, which was constructed for a distance of about 4 miles along the northern border of the park, in the vicinity of Gardiner, has been of great use in keeping all kinds of stock off the reservation, and during the coming winter the antelope will find a supply of winter feed on the hills near Gardiner, such as they have not had in many years. By actual count there were 1,150 of these beautiful animals within the limits of the park near Gardiner last fall, and as they passed the winter in good shape there should be a considerable increase in their number this year.

In addition to the field of alfalfa, above referred to, there has been planted a line of trees along both sides of the road for a distance of about half a mile from the arch or gateway, and when these have grown to a considerable height they will add much to the attractiveness of this entrance to the park.

BOUNDARY SURVEY.

The entire boundary line of the park has now been surveyed and the line has been marked in such a way that it can be easily followed, but

it is not so marked that a person who is unfamiliar with the country could not cross it without being aware of the fact. As stated in my last report, it is of the greatest importance that the boundary should be so plainly marked as to render it impossible for anyone to cross it without knowing that he has entered the reservation, and with this end in view it is again recommended that a wide swath be cut through the forest along the entire boundary line wherever timber exists, and that additional monuments be set up wherever the country is open. Last fall we re-marked a portion of the southern line, and lately have done the same for a part of the northern line where hunters are most likely to cross it, but owing to the fact that I have no funds at my disposal to use for this purpose, and that the few troops under my command are called on for so many other things, it has been impossible for me to do the work in a satisfactory manner.

I again strongly recommend that an appropriation be obtained from Congress to do this work. It is believed that \$2,000 will be sufficient for the purpose.

FOREST FIRES.

The past summer has been marked by extreme drought in the northern Rocky Mountains, and extensive forest fires have taken place in Montana and to the westward. The park, however, has been remarkably free from forest fires during the summer, only one of any consequence having occurred. This fire was located on the western boundary near the western entrance to the park, yet some distance from the road, and not near any camping place. It burned over an area of about 1 square mile and did no great damage. This fire was put out by the men of Troop C, Third Cavalry, under the command of Lieut. Consuelo Seoane.

It has been found in the past that it is almost useless to send a small detachment to handle a forest fire after it has once gotten well started, and it is for this reason that an entire troop of cavalry has been kept in camp at the fountain during each summer. The presence of Lieutenant Seoane and his troop and his prompt action in the case above named undoubtedly saved us from a serious forest fire, and our freedom from smaller ones speaks well for the work of the men who patrolled the roads. Their warnings to tourists and campers seem to have resulted in the gradual education of the traveler as to the importance of care in the use of fires.

TELEPHONE LINES.

The recent opening of the eastern entrance to the park and the establishment of a station near the Sylvan Pass on the eastern boundary of the park makes it almost absolutely necessary that a telephone line be constructed connecting that point with the lake station. The distance between these stations is about 28 miles. Another line should be constructed connecting Fort Yellowstone with the station at Soda Butte, near the northeastern corner of the park. The distance between these two points is about 35 miles. If these two lines could be constructed we would have fairly good telephone communication with all the principal stations throughout the park.

At present nearly all telegraphic or telephonic communication with our stations is had through the wires belonging to the Yellowstone

Park Association, and as these wires are frequently loaded with business pertaining to the hotel and transportation companies it would be much better if the Government could own its own line.

FISH AND FISH HATCHERY.

During the past summer the United States Fish Commission has constructed a small frame building at the West Thumb of the Yellowstone Lake, for the purpose of eyeing the eggs of the black-spotted trout. This station has heretofore been in charge of the superintendent of the hatchery at Spearfish, S. Dak., but on account of the distance and inconvenient railroad communication between this point and Spearfish it would seem much better to place the station in the park under the care of the superintendent of the hatchery at Bozeman, Mont.

It was the intention of Mr. Booth, the superintendent of the Spearfish station, to place quite a large plant of eastern brook and Loch Leven trout in the park this spring, but owing to a flood or cloud-burst at his station, which interfered with his plans, only 21,000 brook trout could be shipped. This shipment, however, was very acceptable, and these young trout were all planted in Willow Creek, the stream where they were most needed.

GAME.

The past winter was an exceedingly favorable one for all game in the park, except the wild herd of buffalo. There is danger that this herd may become extinct in the course of time, and our new herd was started none too soon. As stated in previous reports, the remnant of the wild herd is located on the head of Pelican Creek. This is an exceedingly unfavorable country for them to winter in for in that section the snowfall is very heavy and the only way that they can keep alive is by grazing on the few places kept open by the hot springs. This herd could be driven out of that locality and possibly a few of them caught up, but it is more than likely that the greater part of them would be killed in the attempt. Instead of attempting to catch up the old ones, men are sent out each spring for the purpose of capturing the young calves, which are brought in to this place, raised by a domestic cow, and then turned out in the inclosure with the tame herd. The capture and transportation of these animals to a point where they can be cared for is an exceedingly difficult and somewhat dangerous matter, for at the season when it is necessary to make the attempt, the men have to travel on snow shoes, and the snow is usually in wretched condition for such work.

Last summer a lot of hay was cut and stacked up for these buffalo at what was supposed to be the most convenient point for them, but when the scouts went out there in the spring this stack was so deeply covered with snow that they were unable to find it. Up to the present time three calves have been caught up from the wild herd and placed with the new or tame herd. Two of these are males and one is a female.

If for any reason the wild herd should abandon their present range on the head of Pelican Creek and should move down to the lower country where they formerly lived, the chances of their survival

would be greatly increased, and they might become the progenitors of a considerable wild herd. The increase in certain semidomesticated herds justifies a hope that this wild herd may be saved.

THE NEW BUFFALO HERD.

The increase in this herd during the past season has been very encouraging. It now consists of 39 animals and they are all in fine condition. The following table shows the yearly increase in the herd since its establishment, and also gives the number of males and females. The bull which is noted as having died, is the one which was turned out with the wild herd on Pelican Creek. He wandered away from the herd and died on the edge of the lake near the Thumb station. The cow which died broke her leg by stepping into a badger hole while running in the pasture. Every effort was made to save her, but it was impossible to do so.

	Males.	Females.	Total.
Purchased October, 1902.....			
Born spring of 1903.....	3	18	21
Caught spring of 1903.....	2	3	5
Total October 1, 1903.....	2		2
Born spring of 1904.....	7	21	28
Caught spring of 1904.....	6	6	12
Total.....		1	1
Died spring and summer, 1904.....	13	28	41
Total October 1, 1904.....	1	1	2
	12	27	39

ANTELOPE.

The herd of antelope which winters on the northern slope of Mount Everts and near the town of Gardiner is doing exceedingly well and seems to be increasing in numbers. About 1,150 were seen and counted last winter by both the scouts and members of the detachment now permanently located at the new station near the gate at Gardiner. As all stock has been kept off this range during the past year, or ever since the fence near Gardiner has been completed, the grass or winter feed for these animals should be in better shape than it has been for a number of years, and unless a very deep snow falls in the late spring they will certainly do well this winter. A few have already discovered the new alfalfa field that has been started this year in front of the town of Gardiner. While this field, which is about 50 acres in extent, will not yield much of a crop of hay this season, next year it should produce a crop of from 100 to 200 tons, which will be sufficient to carry the antelope through the winter, no matter how severe it may be.

DEER.

The blacktail or mule deer are also undoubtedly increasing in numbers, and are becoming more tame and fearless each year. One hundred and twenty were counted on the parade ground of Fort Yellowstone one day last winter, and this is considerably more than have ever been seen at any time in the past.



BEAR AT THE FOUNTAIN.



MULE DEER.



MOUNTAIN SHEEP.



NEW BUFFALO HERD.



BEAR AT THE LAKE.

MOUNTAIN SHEEP.

The band of mountain sheep which winters on Mount Everts was fed quite liberally last spring, and therefore passed through the winter in good shape. A few have been seen during the past summer in the vicinity of their feeding corral, but as yet we have been unable to determine the increase in this band. A new band of about 100 was seen last winter near the northwestern corner of the park. Where they came from or where they spent the past summer no one at present knows, but we are in hopes that they have taken up their permanent residence within the limits of the park. If this band is still in the park it will be located within the next month or so.

BEAR.

There seems to be about the same number of bear in the park as we had last year, and, as they can be seen at any time about the various hotels, they still continue to be a great source of interest to the tourists and give but little trouble, except where people fail to obey the few simple rules concerning them. One man, an employee of the hotel at the lake, was slightly injured by a bear during the past summer, but from the best information that I could get I believe that this man got simply what he deserved for his violation of the rules and regulations, and that his punishment by the bear was a good lesson for others.

In almost every case where a bear has become unruly or troublesome it has been due to the fact that he has been fed and petted by some misguided individual. This is a mistaken kindness, as sooner or later it usually results in the death of the bear, for whenever it is reported that they have become troublesome or dangerous a scout is sent out to investigate the matter, and if he finds the facts to be as stated he quietly executes the offender.

MOUNTAIN LION, LYNX, AND COYOTES.

With the increase of horned game in the park, a corresponding increase has taken place in the carnivora. Mountain lions or panthers, formerly not abundant, are now quite common though rarely seen. They prey chiefly, perhaps, upon the elk, but are known to be very destructive also to deer and mountain sheep. Deer and elk are so abundant that the number killed by the panthers could perhaps be spared, but the case is very different with the mountain sheep which, on account of their small numbers, should be carefully protected.

It therefore seemed necessary to destroy the panthers, and a pack of hounds has been procured which last winter rendered good service and enabled our game warden and scouts to kill 15 of these animals.

The mountain sheep which winter near the Mammoth Hot Springs range chiefly on Mount Everts, and this is therefore a favorite winter hunting ground for the panthers. After each fresh snow during the winter hunters with the dogs are sent around Mount Everts, and if a panther has visited it the hounds take up the fresh trail and usually bring the animal to bay, when the hunters coming up shoot it. Usually the lions take to the trees, but last winter one was driven into an abandoned shaft sunk years ago by coal prospectors. Here he drove off

the dogs, but traps were set just within the entrance, which was then stopped up, and the next day the animal was found in the trap and killed.

The Canada lynx and bay lynx are not abundant, and owing to their habits are seldom seen. They prey chiefly on birds and small mammals and probably seldom attack the large game, though now and then they may kill a chance calf elk or fawn. The injury that they do is trifling, and no measures have been taken for their destruction.

It is the general impression that coyotes are protected in the park, but this is far from true, for it is a well-known fact that they are very destructive to the young game of all kinds, and we therefore use every means to get rid of them. The game warden, scouts, and certain good shots among the soldiers are directed to kill them whenever the opportunity is offered. They are also destroyed by the use of traps and poison, and during the past winter between 75 and 100 of these animals were killed.

FEED FOR LARGE GAME.

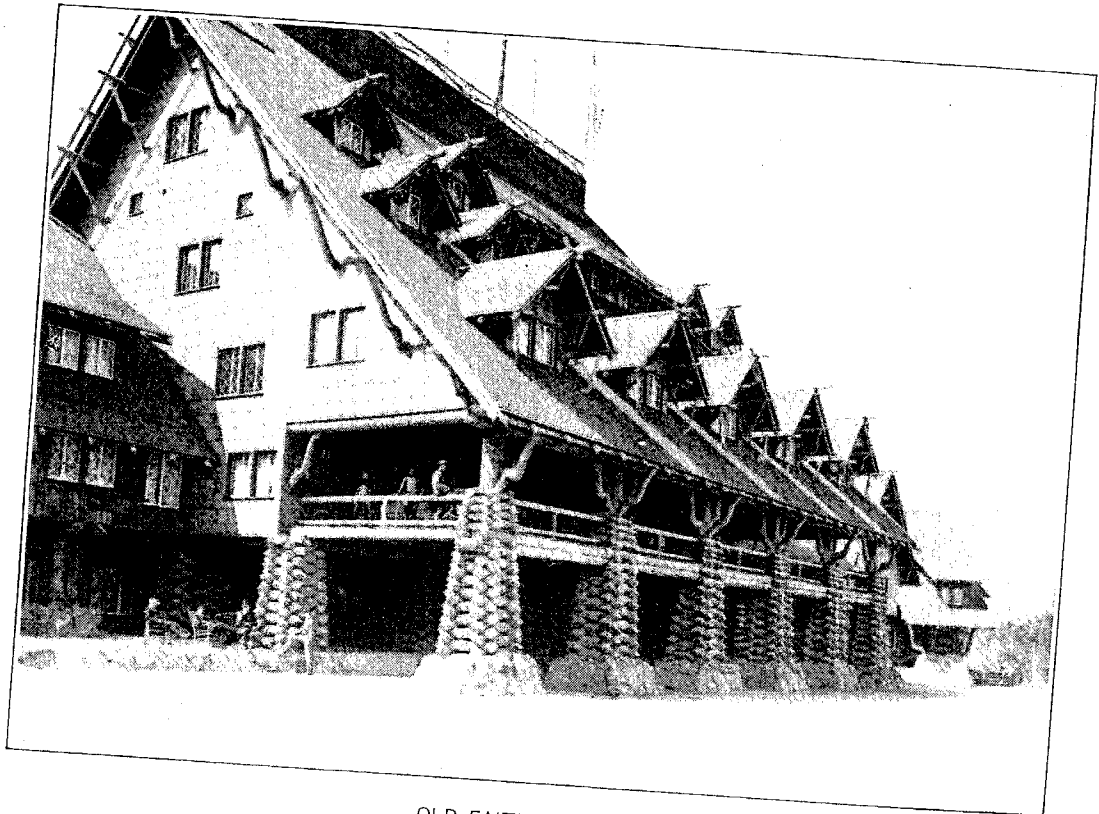
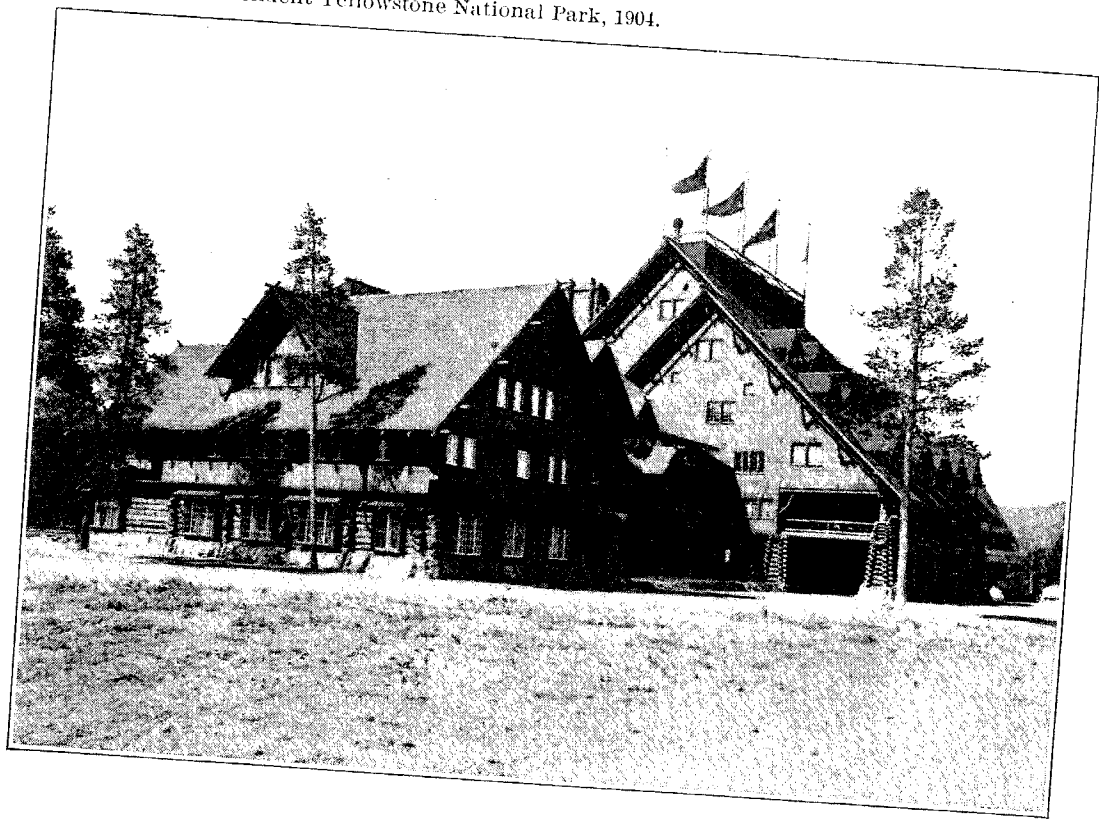
Owing to the limited winter range for all large game, both within the boundary of the park and in the surrounding country, it is only a question of time when it will become absolutely necessary to provide feed for this game during at least a portion of the winter. There are a number of places in the park, particularly along the Yellowstone and Lamar rivers, near the northern border of the park and in the midst of the chief winter range of the large game, where a large quantity of alfalfa and hay could be raised at a comparatively small cost. As I have already stated, we have experimented in a small way in feeding the mountain sheep, deer, and antelope in the vicinity of the Mammoth Hot Springs, and the marked improvement in the condition and increase in the number of these animals seem to warrant carrying this experiment to a much greater extent.

It will probably never be necessary to feed any of our game during the entire winter, but I am of the opinion that in the future it should be treated in about the same way that the cattlemen handle their range stock; in other words, in case of a very bad winter or a spring, when the snow falls very deep and a crust forms over it, we should have a number of haystacks scattered about the range, so that the greater part of the game could be fed just a sufficient amount to carry them over the dangerous period, which in most cases would not continue for more than a week or two.

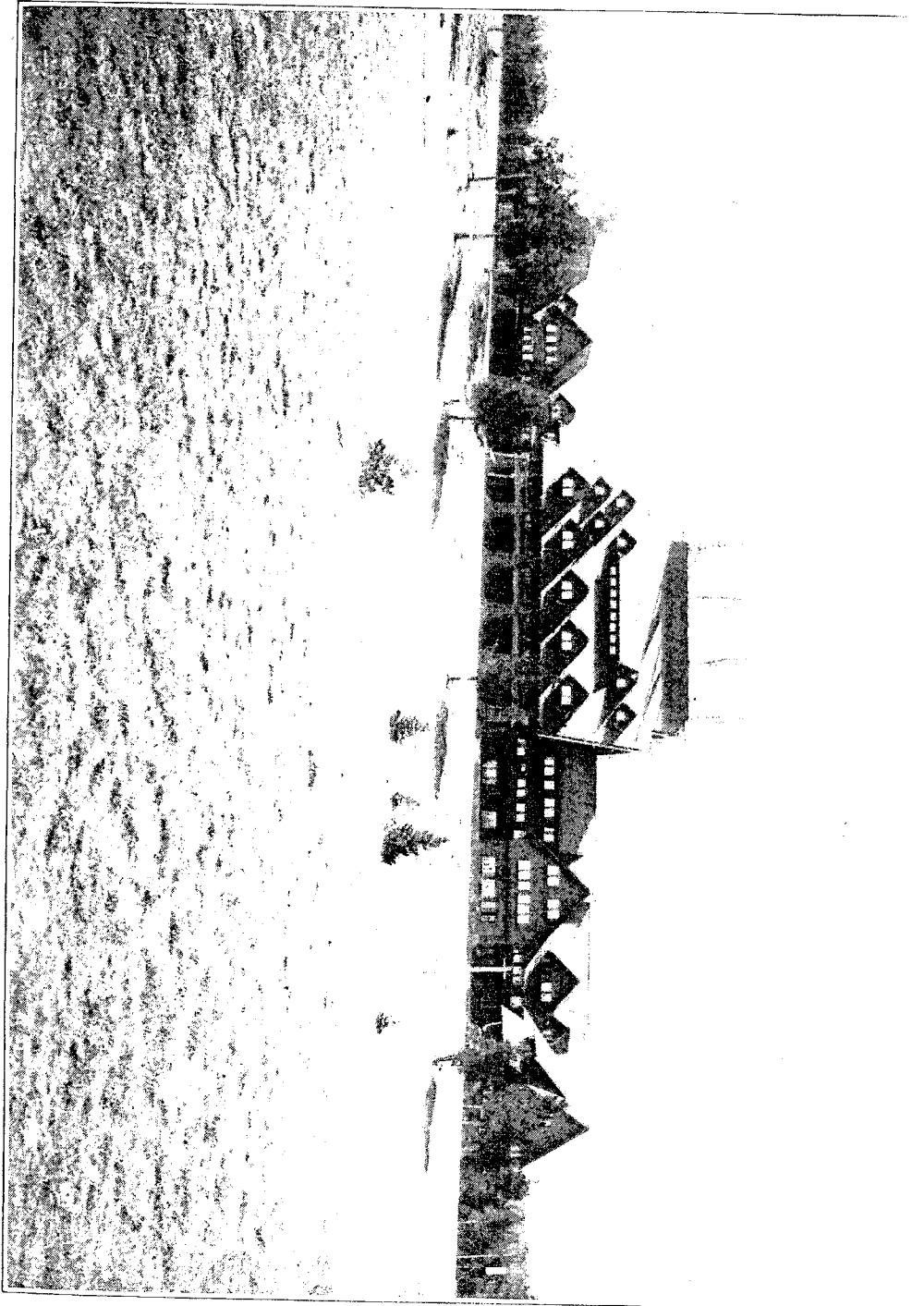
During the time that I have been in the park the winters have been particularly favorable for the large game, and only a small percentage have died of starvation at any time, but this can not continue indefinitely, and in the near future we are liable to lose a large amount of game if the precaution suggested above is not taken.

TRANSPORTATION COMPANIES.

The Yellowstone Park Transportation Company has increased and improved its plant both as to coaches and horses, and during the past season has carried more passengers than ever before in the history of the company. The remarkable freedom of this company from accidents during the past season speaks well for the service rendered.



OLD FAITHFUL INN.



OLD FAITHFUL INN.

all that could be spared for its protection. The present post has been laid out with a view to its extension for the accommodation of our troops, and I believe that the plans for the necessary buildings are now on file in the War Department.

TOURIST TRAVEL THROUGH THE PARK.

The aggregate number of persons carried through the park over the regular route during the season of 1904, is as follows:

Carried by Yellowstone Park Transportation Company, entering via northern entrance of park.....	6,044
Carried by Monida and Yellowstone Stage Company, entering via western entrance of park.....	2,241
Persons at hotels, traveling with private transportation, bicyclers, etc..	203
Total.....	8,488
Carried by W. W. Wylie and accommodated at his permanent camps.....	1,285
Carried by other licensees of personally conducted camping parties....	441
Total number camping, traveling with licensed transportation.....	1,726
Total number of tourists traveling through the park with private transportation as "camping parties".....	3,513
Grand total of all visitors to the park, season 1904.....	13,727

During the season 3,826 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 2,141 entered the park with the Yellowstone Park Transportation Company, 476 with the Monida and Yellowstone Stage Company, and with W. W. Wylie, and the balance, 117 people, were campers.

Very respectfully,

JNO. PITCHER,
Major, Sixth Cavalry, Acting Superintendent.
SECRETARY OF THE INTERIOR,
Washington, D. C.

IMPROVEMENT YELLOWSTONE NATIONAL PARK,
UNITED STATES ENGINEER OFFICE,
Yellowstone Park, Wyo., October 24, 1904.

Sir: In compliance with your verbal request I hand you herewith a statement of work done in the park during the present season under the appropriation for improvement. My absence from the park for some time has prevented the preparation of the statement at an earlier date. The remarks upon estimates for next year's work are substantially taken from my report to the Chief of Engineers for the current year.

Very respectfully,

H. M. CHITTENDEN,
Major, Corps of Engineers.

JOHN PITCHER,
Acting Superintendent, Fort Yellowstone, Wyo.

NORTH ENTRANCE.

Considerable amount of work was done at the north entrance to the park in fixing the grounds and enlarging the road across the Gardiner flat. A good deal of vegetation was planted in the little park near the station and around the entrance. The storm water from the hills having proven to be a drawback of serious

The Monida and Yellowstone Stage Company has also improved equipment, its service has been entirely satisfactory, and it has been entirely free from accidents.

PERMANENT CAMPS.

Mr. William W. Wylie, of Bozeman, Mont., is licensed to conduct camping parties through the park, and is authorized to occupy certain parcels of ground as permanent camps. His service as to transportation and the conduct of his camps has been entirely satisfactory in every respect.

HOTELS.

The Yellowstone Park Association, which runs all of the hotels throughout the park, has greatly improved its accommodations during the past season. The new hotel at the Upper Geyser Basin known as "Old Faithful Inn" is a remarkably beautiful and comfortable establishment. It is constructed chiefly of stone and logs, and while rustic in appearance, it contains all of the modern conveniences which the traveler of to-day is accustomed to, such as electric lights, bath, etc. This establishment is a great improvement on the tents which were used at this place for a number of years.

The hotel at the lake outlet has been practically rebuilt and refurnished, and like the Old Faithful Inn it also has all of the modern conveniences, including suites of rooms with baths attached. This is the largest hotel in the park. It has 210 rooms and can accommodate 466 guests. The Old Faithful Inn has 140 rooms and can accommodate 316 guests.

FORT YELLOWSTONE.

Fort Yellowstone is built and equipped for the accommodation of two troops of cavalry, but it is now garrisoned by three. In order to care for the three troops it is necessary to keep the equivalent of a troop constantly on detached service in the park, and while this is not too many to perform the work required, it necessitates a very inconvenient division of quarters in the post and a combination of two troops in one mess, which is a very undesirable arrangement. I would strongly urge that the garrison be increased to a 4-troop post, but in order to do so the necessary quarters for their accommodation should be built. This post is seen and visited by many distinguished people from all over the world, and for this reason, if for none other, it should be made a model post in every way.

If it could be increased in size as suggested above, it would, in my opinion, be not only beneficial to the interests of the park, but to the interests of the service as well, for it would then permit the work in connection with the protection of the park to go on as usual, and would also enable us to carry on considerable military instruction in and about the post, which would be of benefit to the men, and also give our many visitors some idea of what is being done in the Army in the way of drill and instruction. During the greater part of the past summer the garrison was so much reduced by the necessary detached service that it was almost impracticable to keep the post properly policed, and a guard of one noncommissioned officer and three private

importance to the maintenance of the grounds at the entrance, a large intercepting ditch was built to carry these waters around beyond the station, letting them down into the valley below.

This work was done in connection with the development of the Gardiner flat as an alfalfa field. The necessity for some provision for winter feed for game in the vicinity of Gardiner having developed, and the flat in that vicinity offering an excellent opportunity to raise alfalfa hay, it was decided to put it in cultivation during the present season, and this Department cooperated with the superintendent to that end, expending in the neighborhood of \$2,000. Authorities upon the subject of alfalfa growth state that the stand is an excellent one for the first year, and that it will develop, under proper care, into a first-class field. In connection with this work, the ditch built last year to bring water from the Gardiner was materially enlarged, and there is now an ample supply for all needs in that vicinity.

ROAD FROM GARDINER TO SPRINGS.

This road was entirely resurfaced during the past spring. The material for the lower half of the road was taken from the bluff half a mile above Gardiner, which is composed entirely of bowlders and good road gravel. The excavation of so much material resulted in widening the road to an average of about 40 feet along the bluff.

GROUNDS AT MAMMOTH HOT SPRINGS.

The grounds in the vicinity of Mammoth Hot Springs were thoroughly irrigated throughout the season and the growth of turf was very satisfactory. Some extra shrubbery was planted, and that planted last season has, most of it, attained a good hold and will eventually develop into a substantial growth. Probably in two years more the turf will have attained so firm a hold as to become quite permanent without the use of so much water as at present.

BUNSEN PEAK ROAD.

This road was materially widened on the steep grade up the side of the mountain during the past spring and was maintained in good condition throughout the season.

ALIGNMENT, COMPLETION, AND SURFACING OF ROADS ON THE MAIN SYSTEM.

A large amount of work was done throughout the park during the past season in the matter of correcting alignments in grades, surfacing and ballasting the road. The heavier work began at about the eleventh mile post from this place and covered the road from that point to the Upper Geyser Basin, except in some places that were surfaced last season. Portions of this work were of a quite heavy character, consisting of ballasting the road with rock to a depth of about 1 foot and covering this with good road gravel. It is believed that nearly all the places which have been boggy and miry in the spring of the year will now sustain heavy travel without giving way. The more important places where this class of work was done are Brickyard Hill and that vicinity, Elk Park, and Gibbon Meadows, although there are many other places which were treated in the same way.

At Nez Percé Creek about half a mile of new road was built to form connection with the new bridge over that stream.

From the bridge over the Firehole River, near Excelsior Geyser, to the old bridge over the same stream, about three-fourths of a mile above, a new road was built to connect with the new bridge which replaces the last one above mentioned.

A large amount of work was done between Excelsior Geyser and Upper Geyser Basin in the matter of cutting down grades and ballasting and surfacing the road.

On the road between Norris and the Canyon the grade was corrected in many places so as to cut down the small elevations which characterize that stretch of road, and give it a more even and correct alignment. In particular, a new alignment was made down the hill near the 1-milepost from the Canyon Junction, and it is hoped that that troublesome piece of road has been placed in permanently good condition.

Along the Yellowstone River in the vicinity of the rapids and for about 2 miles above a large amount of work was done in the spring. This road is always excessively bad in the spring of the year owing to the ground being composed almost entirely of clay. It has been materially widened and ballasted with rock and covered with good gravel over the greater portion of this distance.

At Trout and Antelope creeks entirely new crossings have been built in order to

cut out unnecessary curves of the road and particularly to avoid a situation where the snow drifts excessively. These drifts have been a great source of annoyance every spring and the new cut-off, it is believed, will eliminate them entirely.

The Natural Bridge road has been widened and completed throughout its entire length, and a swath has been cut through the timber to give more ready access to the sun during the period of snow melting.

Along the lake shore, between the first and second mileposts from the Thumb station, the road has been rebuilt and the existing irregularities in alignment corrected.

On the East road a large amount of work was done widening the narrow places below Sylvan Pass and also in general repairs over the entire length of road.

The existing road on the Yancey Hill from the northern end of Crescent Hill Canyon to the foot of the hill has been extensively widened, enlarged, and surfaced.

The road from the Middle Gardiner bridge to the top of the hill near the East Gardiner Falls has also been widened up to full width and practically rebuilt.

GENERAL REPAIRS.

The general repairs to the roads have extended over the entire system, and have been continued during the summer largely by the aid of grading machines.

The roads were opened as early as the conditions of the season would permit. The season was late, and a large amount of snow shoveling had to be done.

NEW ROADS.

From the steel concrete arch bridge over the rapids of the Yellowstone to Artist Point, a distance of about 2 miles, a road was opened during the month of June and was used the remainder of the season.

On Mount Washburn about 9 miles of new road was opened. This road has proven exceptionally difficult in construction. The difficulties were not simply those which would ordinarily be foreseen, such as the character of the excavation, but it was found more difficult than it had been anticipated to conduct work at that altitude. There was no way to get near the top of the mountain to establish camps until the road was open, and the lack of water made it difficult to camp there anyway. The late melting of the snow in the spring and the early arrival of snow in the autumn left barely two months in each season to work there. The work itself has been of a very heavy character all the way, so that on the whole the difficulties of constructing this line of road have considerably exceeded what was expected. The road itself will undoubtedly be the most attractive of any in the park, and the drive over Mount Washburn to Tower Falls will form a feature of interest second only to the Grand Canyon.

From the summit of Crescent Hill divide above Yancey's to East Gardiner Falls an entirely new road has been opened for a distance of about 8 miles. This road has been very carefully laid out, and is believed to utilize every advantage which the topography of the country affords. It will be one of the best driving roads in the park.

Unless positively prevented by the weather, about 9 miles of new road will be opened along the valley of the Lamar River before the close of the season. This road will not be of the complete character of that on the main system, but a single-track wagon road mainly for the purpose of accommodating traffic to Cooke City. This will make a total of about 30 miles of road opened during the season.

BRIDGES.

Five steel bridges and five wooden bridges have been erected during the season, with a total length of span of about 800 feet. The largest of these bridges is that over the Middle Gardiner, near Mammoth Hot Springs, which is a 5-span steel arch structure with a total length of 410 feet.

The other steel bridges are one across the Middle Gardiner, at the 7 milepost south of Mammoth Hot Springs; another across Nez Percé Creek; another across the Firehole, above Excelsior Geyser, and another over Tower Creek above the falls.

The wooden bridges are over Antelope and Trout creeks, the Little and Big Black Tail, and over the Lamar River.

CULVERTS.

A great number of wooden culverts on all parts of the system have been replaced by vitrified clay pipe during the season. This improvement has already afforded

much relief in the maintenance of the park roads by removing the annoyance that was constantly arising from broken wooden culverts.

SPRINKLING.

The sprinkling system has been extended to embrace about 85 miles of the road system. As this work develops it is becoming much more effective than at first. There has been a great deal to learn about it in the matter of securing water at the proper places and in proper quantities, and in learning the best ways of distributing it upon the roads. The work of the past season seems to have given general satisfaction, and it is believed that this system will combine admirably with annual repairs in keeping the roads in good order and free from dust. It is hoped to extend the system next year to cover 110 miles.

STATION HOUSES.

Two new station houses were erected during the season, one at the Thumb of the Lake and the other east of Sylvan Pass. Unless prevented by the weather a third will be built near Cooke City by the close of the season. In addition to these station houses eleven small buildings for officers' quarters have been erected at the various stations.

PAINTING.

All the mileposts on the road system have been repainted, some of them corrected in numbering, and new mileposts placed along the line from Mammoth Hot Springs by way of Tower Falls to the Grand Canyon. The various signs pertaining to the road work have also been repainted. Signs have been posted marking the points of interest connected with General Howard's campaign after the Nez Percés in 1877.

DITCH AND RESERVOIR.

The large reservoir has been twice cleaned during the present season, and the ditch has been thoroughly repaired, and will be covered with ties nearly its entire length to prevent snow from falling in it and damming it up.

ESTIMATES.

Following is the substance of my annual report for the past fiscal year so far as it relates to estimates for the fiscal year 1905-6:

The essential features of the project upon which the appropriation of June 28, 1902, was based, will have been carried out at the close of this season, but in a few instances it has not been possible to accomplish all that has been expected. This is due (1) to an increase in the cost of hire and materials over that when the estimate was made; (2) to the necessity of doing certain work that was not foreseen at the time of the estimate; and (3) to the very heavy character of certain portions of the work, notably on Mount Washburn and on the East road near Sylvan Pass.

The contracts for 1900 and 1901 for team hire, upon which the estimates were based, were at the rate of \$1.60 and \$1.95 per day per team respectively, but the lowest bid obtainable under the continuing appropriation was \$2.57, an increase of over 44 per cent on the mean of the rates for 1900 and 1901. The total increase of cost under this heading amounts to nearly \$20,000. There has also been a general rise in the cost of materials, but this is not very important.

In the year 1902, after the appropriation had been made, the Northern Pacific extended its park branch from Cinnabar, the former terminus, to the boundary of the park. This necessitated certain changes in the road system and it was thought advisable to make a suitable entrance at this most important approach to the park. The Northern Pacific contributed largely to this cost by granting half freight on their lines for one year on all material used in the park work. This contribution amounted to about \$5,500. The cost to the Government was about \$9,000.

The extensive building carried on by the hotel association, and the largely increased work under the Engineer Department, caused such a great increase in the amount of freight between Gardiner and Mammoth Hot Springs, that the radical enlargement of that road became a necessity. The work amounted practically to reconstruction and was a heavy item of cost.

Reference has already been made to the expenditure of about \$2,000 for an alfalfa field on the Gardiner Flat.

The development of the grounds at Mammoth Hot Springs, which has been such a relief from the conditions that prevailed there three years ago, has cost more than was anticipated owing to the growth of business and the necessity for work which was not foreseen.

The exceptionally heavy character of the work over Mount Washburn has already been referred to. The same experience was encountered on that portion of the East road which lies directly east of Sylvan Pass.

The foregoing conditions have caused a deficiency in the estimates and a portion of the work over Mount Washburn has been left in a state of partial completion. While there is a good road all the way across the mountain it is still too narrow in places, considering the precipitous character of the ground over which it passes, to be considered safe for four-horse vehicles. It should be widened in many places and strong guard walls should be erected on the outer edge of the road to give an appearance of security in all dangerous places. Some work should be done on the summit of the mountain in the matter of erecting a wind wall to shelter tourists during the high gales that sometimes prevail there. As already stated, this road will be the finest for scenery in the park and one of the finest in the world, and it is urgently recommended that it be not left in an incomplete condition.

Following is an explanation of each item in the estimate asked for:

General repairs.—A minimum of \$35,000 is necessary for the thorough annual repair of the roads on the main system, including the northern and western approaches.

Sprinkling.—The sprinkling system should be extended next year so as to embrace the following roads:

Northern approach	Miles.
Belt line Mammoth Hot Springs to 10-mile post in Gibbon Canyon; Fire-hole River at 15-mile post from Norris to De Lacey Creek; 10 miles in vicinity of Thumb; Natural Bridge to Grand Canyon; 8 miles on Norris Canyon road, and other small portions—say	5
Western approach	95
	10
Total	110

This will require the purchase of 5 new sprinklers, at about	\$2, 000
The installation of tanks, pipes, etc., for filling same	2, 000
Operating 26 sprinklers for one season, at about \$1,000 each	26, 000

Total for next season	30, 000
Grounds: Maintenance of grounds at Gardiner and Mammoth Hot Springs and care of alfalfa field	4, 000
Bridges: Five new bridges to replace those nearly worn-out	10, 000
Plant: New sawmill	3, 000

Mount Washburn road.—From the Grand Canyon, over Mount Washburn and via Tower Falls, to Mammoth Hot Springs, \$50,000.

East road.—This road was commenced in 1890, under an appropriation of \$20,000. It was opened to travel July 10, 1903, and since that time a considerable amount of money has been expended upon it. There still remains an important piece of work on the eastern slope of Sylvan Pass, involving a loop and a high trestle to reduce the grade. A bridge over Grinell Creek is required and considerable widening below Sylvan Pass. It is estimated that these three items will cost \$20,000. There should also be expended about \$5,000 in regular annual repairs. This makes an estimate of \$25,000 for the next year.

The opinion of the officer in charge of the work is that this road will be mainly used by camping parties from the Bighorn Basin, and that therefore a good single-track wagon road will answer every requirement until the railroad is considerably nearer the park. With the exception of the improvements asked for above such a road now exists, and an annual outlay after next year of \$5,000 ought to keep it in good repair.

The observations just made in regard to the East road apply also to the South road. Until a railroad is built into Jackson Hole, this approach will be used in the main only by camping parties, and the present road will answer that purpose with such improvements as can be made under the head of annual repairs. The sum of \$5,000 is recommended as sufficient.

Several applications have come to me during the past year to construct a road from Jackson Hole across the Teton Pass to give access to the park from the southwest

Such a road is very desirable, but as it has never been considered a part of the park road system I do not feel authorized to submit an estimate for it unless called upon officially to do so.

Office, etc.: Office and miscellaneous expenses \$6,000

SUMMARY OF ESTIMATES.

General repairs	\$35,000
Sprinkling	30,000
Grounds	4,000
Bridges on main system	10,000
Plant	3,000
Mount Washburn road	50,000
East road	25,000
South road	5,000
Office, etc.	6,000
Total	168,000

It is urgently recommended that the above amount be appropriated for the next fiscal year. In the work of the past three years the utmost effort has been made to exercise the strictest economy in expenditures and to make the appropriation cover as much work as possible, but for the reasons above stated there remains some work to do which should not be neglected.

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., February 7, 1902.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.
2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn loose stock to graze in their vicinity.
3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.
4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and anyone failing to comply herewith shall be punished as prescribed by law.
5. Hunting or killing, wounding, or capturing of any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.
6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the

superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior.

9. No drinking saloon or bar room will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, may be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

E. A. HITCHCOCK,
Secretary of the Interior.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH THE PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., May 27, 1903.

The following instructions for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned:

(1) The feeding, interference with, or molestation of the bear or any other wild animal in the park in any way by any person is absolutely prohibited.

(2) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished where water is not available by a complete covering of earth, well packed down.

(3) *Camps.*—No camp will be made at a less distance than 10 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other debris must be either buried or taken to some place where they will not offend the sight.

(4) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must therefore be exercised by their riders. In meeting teams riders will always dismount and stand at the side of the road—the lower side if the meeting be on a grade. In passing teams from the rear riders will ring their bells as a warning and inquire of the driver if they may pass. If it appear from the answer that the team is liable to be frightened, they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(5) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(6) *Dogs.*—When dogs are taken through the park they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(7) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the roads.

(8) *Hotels.*—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the Yellowstone Park Association hotels without extra charge for transportation. However, twenty-four hours' notice must be given to the managers of the transportation companies at Mammoth Hot Springs for reservations in other coaches.

(9) *Boat trip on Yellowstone Lake.*—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(10) *Driving on roads of park.*—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on side-hill grades throughout the park will take the outside of the road while being passed by passenger vehicles in either direction.

(e) In halting on the road for any purpose all teams will be pulled out to one side of the road far enough to leave a free and unobstructed passageway.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will keep well on the right-hand side of the road and will slow down to a walk unless there is ample room to pass vehicles approaching from the opposite direction.

(g) Stage companies, contractors, and all others using the park roads will see that their drivers are furnished with copies of this regulation.

(11) *Miscellaneous.*—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park as well as at the office of the superintendent of the reservation.

(12) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

JNO. PITCHER,
Major, Sixth Cavalry, U. S. Army,
Acting Superintendent of the Yellowstone National Park.

Meteorological record, 1903-4—Continued.

DECEMBER, 1903.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	° F. 45	° F. 32	° F. 13	.....		18.....	° F. 29	° F. 10	° F. 20	Inch. 0.14	Partly cloudy.
2.....	28	20	24	.....	Partly cloudy.	19.....	24	5	14	.01	Do.
3.....	25	11	18	Trace.	Do.	20.....	31	22	26	.01	Cloudy.
4.....	23	2	12	.....	Clear.	21.....	28	23	26	Trace.	Do.
5.....	29	5	17	.....	Do.	22.....	27	19	23	Trace.	Partly cloudy.
6.....	32	6	19	.....	Do.	23.....	24	12	18	.06	Do.
7.....	34	16	25	0.01	Partly cloudy.	24.....	26	14	20	.03	Cloudy.
8.....	28	12	20	.....	Do.	25.....	31	15	23	.....	Clear.
9.....	38	22	30	.....	Do.	26.....	30	11	20	.....	Partly cloudy.
10.....	31	17	24	.....	Do.	27.....	33	22	28	.....	Clear.
11.....	30	10	20	.10	Cloudy.	28.....	27	7	17	.....	Do.
12.....	28	2	15	.04	Do.	29.....	35	9	22	.....	Partly cloudy.
13.....	33	24	28	Trace.	Partly cloudy.	30.....	40	13	26	.....	Clear.
14.....	29	16	22	Trace.	Clear.	31.....	33	14	24	.....	Partly cloudy.
15.....	33	22	28	.....	Cloudy.	Mean.	30.4	14.4	22.4		
16.....	40	22	31	.....	Partly cloudy.						
17.....	34	28	31	Trace.	Do.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.33; highest, 30.75, on 26th; lowest, 29.63, on 11th.

Temperature.—Highest, 40°, on 30th; lowest, 2°, on 4th; greatest daily range, 27°, on 30th; least daily range, 5°, on 21st. Mean for this month in 1903, 22°.

Wind.—Prevailing direction, south; total movement, 5,077 miles; maximum velocity (for five minutes), 28 miles per hour, from northwest, on 11th.

Precipitation.—Total this month in 1903, 0.40 inch.

Sunshine and cloudiness.—Number of clear days, 8; partly cloudy, 16; cloudy, 6; on which 0.01 inch or more of rain fell, 8.

JANUARY, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	° F. 24	° F. 6	° F. 15	.....		18.....	° F. 29	° F. 15	° F. 22	Inch. 0.03	Cloudy.
2.....	24	8	16	Trace.	Do.	19.....	22	12	17	.03	Partly cloudy.
3.....	21	6	14	0.03	Partly cloudy.	20.....	19	4	12	.02	Do.
4.....	28	12	20	Trace.	Do.	21.....	15	5	10	.02	Cloudy.
5.....	23	4	14	.....	Clear.	22.....	21	8	14	.15	Do.
6.....	26	12	19	Trace.	Partly cloudy.	23.....	19	2	10	.02	Partly cloudy.
7.....	26	12	19	.....	Do.	24.....	20	11	16	.01	Cloudy.
8.....	32	7	20	.....	Clear.	25.....	14	1	6	Trace.	Partly cloudy.
9.....	24	9	16	.....	Partly cloudy.	26.....	21	8	14	Trace.	Do.
10.....	24	10	17	.05	Cloudy.	27.....	19	7	13	.06	Cloudy.
11.....	26	15	20	.01	Partly cloudy.	28.....	25	5	15	Trace.	Partly cloudy.
12.....	31	20	26	.01	Cloudy.	29.....	22	12	17	.01	Cloudy.
13.....	37	27	32	Trace.	Partly cloudy.	30.....	26	16	21	.43	Do.
14.....	33	23	28	Trace.	Do.	31.....	34	14	24	.....	Partly cloudy.
15.....	31	22	26	.02	Do.	Mean.	25.5	11.6	18.5		
16.....	34	28	31	.03	Do.						
17.....	40	22	31	Trace.	Clear.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.20; highest, 30.54, on 7th and 28th; lowest, 29.48, on 18th.

Temperature.—Highest, 40°, on 17th; lowest, -1, on 25th; greatest daily range, 25°, on 8th; least daily range, 6°, on 10th. Mean for this month in 1904, 19°.

Wind.—Prevailing direction, south; total movement, 6,119 miles; maximum velocity (for five minutes), 28 miles per hour, from south, on 16th.

Precipitation.—Total this month in 1904, 0.93 inch.

Sunshine and cloudiness.—Number of clear days, 4; partly cloudy, 17; cloudy, 10; on which 0.01 inch or more of rain fell, 16.

Meteorological record, 1903-4—Continued.

FEBRUARY, 1904.

Date.	Temperature.				Character of day.	Date.	Temperature.				Character of day.
	Maximum.	Minimum.	Mean.	Precipitation.			Maximum.	Minimum.	Mean.	Precipitation.	
1.....	° F. 29	° F. 15	° F. 22	Inch. Trace.	Partly cloudy.	17.....	° F. 30	° F. 8	° F. 19	Inch.	Clear.
2.....	27	7	17	.....	Cloudy.	18.....	29	-4	12	.....	Do.
3.....	31	11	21	Trace.	Do.	19.....	29	6	18	Trace.	Partly cloudy.
4.....	42	27	34	Trace.	Do.	20.....	29	11	20	0.01	Do.
5.....	40	18	29	0.08	Do.	21.....	31	10	20	Trace.	Cloudy.
6.....	21	8	14	.01	Partly cloudy.	22.....	41	28	34	.01	Partly cloudy.
7.....	26	14	20	.01	Do.	23.....	39	25	32	Trace.	Do.
8.....	26	10	18	.....	Do.	24.....	39	25	32	.07	Cloudy.
9.....	18	3	10	Trace.	Do.	25.....	41	27	34	.03	Partly cloudy.
10.....	23	2	12	.....	Do.	26.....	42	26	34	.01	Do.
11.....	32	18	25	.01	Cloudy.	27.....	38	22	30	.07	Cloudy.
12.....	34	28	31	.35	Do.	28.....	34	16	25	Trace.	Partly cloudy.
13.....	34	10	22	.23	Partly cloudy.	29.....	29	24	26	.29	Cloudy.
14.....	25	5	15	Trace.	Do.	Mean.	32.3	15.4	23.7	.....
15.....	38	25	32	.01	Cloudy.						
16.....	39	21	30	.31	Do.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.95; highest, 30.59, on 18th; lowest, 29.35, on 5th.

Temperature.—Highest, 42°, on 26th; lowest, -4°, on 18th; greatest daily range, 33°, on 18th; least daily range, 5°, on 29th. Mean for this month in 1904, 24°.

Wind.—Prevailing direction, southwest; total movement, 7,552 miles; maximum velocity (for five minutes), 36 miles per hour, from southwest, on 12th.

Precipitation.—Total this month in 1904, 1.50 inches.

Sunshine and cloudiness.—Number of clear days, 2; partly cloudy, 15; cloudy, 12; on which 0.01 inch or more of rain fell, 15.

Total snowfall (unmelted), 15.4 inches.

MARCH, 1904.

Date.	Temperature.				Character of day.	Date.	Temperature.				Character of day.
	Maximum.	Minimum.	Mean.	Precipitation.			Maximum.	Minimum.	Mean.	Precipitation.	
1.....	° F. 34	° F. 27	° F. 30	Inch. 0.22	Cloudy.	18.....	° F. 43	° F. 27	° F. 35	Inch. 0.06	Cloudy.
2.....	36	3	20	.16	Partly cloudy.	19.....	39	26	32	.03	Do.
3.....	30	-1	14	Trace.	Do.	20.....	37	20	28	.86	Do.
4.....	40	20	30	.06	Cloudy.	21.....	27	16	22	Trace.	Partly cloudy.
5.....	31	17	24	Trace.	Partly cloudy.	22.....	28	12	20	.03	Do.
6.....	40	30	35	Trace.	Cloudy.	23.....	38	8	23	.29	Cloudy.
7.....	44	36	40	.....	Partly cloudy.	24.....	8	-7	0	.44	Do.
8.....	43	34	38	.22	Cloudy.	25.....	10	-16	-3	.....	Clear.
9.....	36	11	24	.11	Do.	26.....	27	-1	13	Trace.	Partly cloudy.
10.....	36	11	24	Trace.	Do.	27.....	33	-2	16	Trace.	Do.
11.....	35	24	30	.08	Partly cloudy.	28.....	42	22	32	.02	Do.
12.....	31	16	24	.....	Do.	29.....	40	30	35	.01	Do.
13.....	33	18	26	.....	Do.	30.....	41	24	32	.03	Do.
14.....	34	22	28	.02	Cloudy.	31.....	34	18	26	.08	Do.
15.....	37	22	30	.22	Partly cloudy.	Mean.	34.1	16.3	25.2	.....
16.....	33	12	22	Trace.	Do.						
17.....	37	27	32	.04	Cloudy.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.89; highest, 30.65 on 31st; lowest, 29.05, on 20th.

Temperature.—Highest, 44°, on 7th; lowest, -16°, on 25th; greatest daily range, 35°, on 27th; least daily range, 7°, on 1st. Mean for this month in 1904, 26°.

Wind.—Prevailing direction, south; total movement, 7,076 miles; maximum velocity (for five minutes), 39 miles per hour, from northwest, on 2d.

Precipitation.—Total this month in 1904, 2.98 inches.

Sunshine and cloudiness.—Number of clear days, 1; partly cloudy, 17; cloudy, 13; on which 0.01 inch or more of rain fell, 19.

Frosts.—Dates of killing, 12th, 27th.

Total snowfall (unmelted), 25.6 inches.

Meteorological record, 1903-4—Continued.

APRIL, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	° F. 49	° F. 10	° F. 30	Inch.	Clear.	17.....	° F. 51	° F. 26	° F. 38	Inch. Trace.	Clear.
2.....	54	16	35	.....	Do.	18.....	61	26	44	.....	Do.
3.....	50	20	35	.....	Do.	19.....	51	36	44	0.19	Cloudy.
4.....	45	32	38	0.04	Partly cloudy.	20.....	48	33	40	.06	Partly cloudy.
5.....	42	24	33	.....	Do.	21.....	41	30	36	.07	Cloudy.
6.....	37	21	29	.12	Do.	22.....	46	32	39	.10	Do.
7.....	34	13	24	Trace.	Clear.	23.....	44	27	36	Trace.	Partly cloudy.
8.....	47	14	30	.....	Do.	24.....	45	30	38	.18	Do.
9.....	53	28	40	.....	Do.	25.....	58	26	42	.....	Clear.
10.....	60	33	46	.....	Partly cloudy.	26.....	64	29	46	.....	Do.
11.....	57	31	44	.....	Clear.	27.....	69	35	52	.....	Partly cloudy.
12.....	67	28	48	.....	Do.	28.....	55	31	43	Trace.	Do.
13.....	67	32	50	.....	Do.	29.....	48	29	38	.....	Clear.
14.....	65	34	50	.....	Partly cloudy.	30.....	48	27	38	Trace.	Partly cloudy.
15.....	41	14	28	.18	Cloudy.	Mean.	51.4	26.0	38.7	.....
16.....	44	14	29	.02	Do.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.03; highest, 30.56, on 1st; lowest, 29.56, on 21st.

Temperature.—Highest, 69°, on 27th; lowest, 10°, on 1st; greatest daily range, 39°, on 12th; least daily range, 11°, on 21st; mean for this month in 1904, 39°.

Wind.—Prevailing direction, southwest; total movement, 4,975 miles; maximum velocity (for five minutes), 30 miles per hour, from northwest, on 6th.

Precipitation.—Total this month in 1904, 0.96 inch.

Sunshine and cloudiness.—Number of clear days, 14; partly cloudy, 11; cloudy, 5; on which 0.01 inch or more of rain fell, 9.

Total snowfall (unmelted), 7.9 inches.

MAY, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	° F. 53	° F. 27	° F. 40	Inch. Trace.	Partly cloudy.	18.....	° F. 70	° F. 41	° F. 56	Inch.	Partly cloudy.
2.....	53	35	44	0.17	Do.	19.....	59	42	50	0.02	Do.
3.....	50	39	44	.06	Cloudy.	20.....	62	42	52	.....	Do.
4.....	51	36	44	.06	Do.	21.....	70	39	54	.....	Do.
5.....	50	34	42	.02	Partly cloudy.	22.....	70	44	57	.....	Do.
6.....	46	37	42	.04	Cloudy.	23.....	69	43	56	.....	Do.
7.....	38	28	33	.16	Do.	24.....	53	28	40	.08	Cloudy.
8.....	48	21	34	Trace.	Clear.	25.....	41	25	33	.02	Partly cloudy.
9.....	61	34	48	.....	Partly cloudy.	26.....	56	20	38	.....	Clear.
10.....	51	36	44	.05	Cloudy.	27.....	68	30	49	.....	Do.
11.....	56	28	42	Trace.	Partly cloudy.	28.....	68	34	51	.....	Do.
12.....	45	25	35	Trace.	Do.	29.....	68	38	53	.17	Partly cloudy.
13.....	62	22	42	.....	Clear.	30.....	64	38	51	.27	Do.
14.....	57	35	46	.03	Partly cloudy.	31.....	60	41	50	.....	Do.
15.....	54	30	42	.04	Do.	Mean.	57.3	33.3	45.3	.....
16.....	58	26	42	.....	Clear.						
17.....	66	34	50	.....	Partly cloudy.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.93; highest, 30.39, on 8th; lowest, 29.51, on 23d.

Temperature.—Highest, 70°, on 18th; lowest, 20°, on 26th; greatest daily range, 40°, on 13th; least daily range, 9°, on 6th. Mean for this month in 1904, 45°.

Wind.—Prevailing direction, northwest; total movement, 6,418 miles; maximum velocity (for five minutes), 38 miles per hour, from northwest, on 29th.

Precipitation.—Total this month in 1904, 1.31 inches.

Sunshine and cloudiness.—Number of clear days, 6; partly cloudy, 19; cloudy, 6; on which 0.01 inch or more of rain fell, 15.

Frosts.—Dates of light, 11th, 15th, 16th, 27th; dates of heavy, 1st, 13th, 26th; date of killing, 8th.

Total snowfall (unmelted), 2.7 inches.

YELLOWSTONE NATIONAL PARK.

Meteorological record, 1903-4—Continued.

JUNE, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	53	37	45	0.15	Cloudy.	17.....	80	42	61	Inch.	Clear.
2.....	53	34	44	.37	Do.	18.....	78	46	62	Trace.	Do.
3.....	49	37	43	.36	Do.	19.....	67	48	58	.....	Do.
4.....	54	39	46	Trace.	Partly cloudy.	20.....	71	42	56	0.03	Do.
5.....	65	32	48	.....	Clear.	21.....	77	43	60	.....	Do.
6.....	69	40	54	.....	Partly cloudy.	22.....	74	48	61	.01	Partly cloudy.
7.....	57	40	48	.10	Cloudy.	23.....	63	39	51	Trace.	Do.
8.....	61	34	48	.....	Partly cloudy.	24.....	47	35	41	Trace.	Cloudy.
9.....	68	36	52	.....	Clear.	25.....	62	28	45	.....	Clear.
10.....	60	39	50	.....	Do.	26.....	68	34	51	.....	Partly cloudy.
11.....	57	28	42	.....	Do.	27.....	70	35	52	Trace.	Do.
12.....	64	29	46	.....	Do.	28 ^a	72	41	56	.....	.....
13.....	71	34	52	.....	Partly cloudy.	29 ^a	80	39	60	.....	.....
14.....	72	40	56	Trace.	Do.	30 ^a	82	43	62	.....	.....
15.....	76	40	58	Trace.	Do.	Mean.	66.6	38.2	52.4	.....	.....
16.....	77	44	60	.01	Do.						

Atmospheric pressure, *b*—[Reduced to sea level; inches and hundredths.] Mean, 29.97; highest, 30.44 on 25th; lowest, 29.60, on 22d.
 Temperature.—Highest, 82°, on 30th; lowest, 28°, on 25th; greatest daily range, 41°, on 29th; least daily range, 12°, on 3d. Mean for this month in 1904, 52°.
 Wind.—Prevailing direction, west; total movement, 5,889 miles; maximum velocity (for five minutes), 42 miles per hour, from southwest, on 10th.
 Precipitation.—Total this month in 1904, 1.03 inches.
 Sunshine and cloudiness.—Number of clear days, *b* 11; partly cloudy, *b* 11; cloudy, *b* 5; on which 0.01 inch or more of rain fell, 7.
 Frosts.—Dates of light, 5th, 12th, 25th; dates of heavy, 0; dates of killing, 0.
 Total snowfall, trace.

^a Thermograph readings. ^b For 27 days.

JULY, 1904.

Date.	Temperature. ^a			Precipitation.	Character of day.	Date.	Temperature. ^a			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	75	48	62	0.04		18.....	72	37	54	Inch.	
2.....	67	42	54	.12		19.....	78	39	58	.....
3.....	67	47	57	.02		20.....	79	44	62	.....
4.....	71	38	54	.....		21.....	79	43	61	.03	
5.....	70	44	57	.....		22.....	80	46	63	.05	Partly cloudy.
6.....	74	39	56	.....		23.....	79	51	65	.02	Do.
7.....	77	41	59	.....		24.....	79	46	62	.09	Clear.
8.....	71	45	58	.....		25.....	77	43	60	.....	Do.
9.....	77	42	60	.....		26.....	81	45	63	.....	Partly cloudy.
10.....	78	42	60	.....		27.....	81	53	67	.08	Do.
11.....	79	44	62	.....		28.....	77	47	62	.22	Clear.
12.....	73	49	61	.08		29.....	64	49	56	.....	Do.
13.....	64	46	55	.19		30.....	71	35	53	.....	Do.
14.....	70	39	54	.02		31.....	74	39	56	.....	Do.
15.....	68	44	56	.15		Mean.	73.5	43.1	58.3	.....
16.....	62	34	48	.....						
17.....	63	36	50	.....						

Atmospheric pressure, *b*—[Reduced to sea level; inches and hundredths.] Mean, 30; highest, 30.15, on 24th; lowest, 29.68, on 28th.
 Temperature.—Highest, 81°, on 26th; lowest, 34°, on 16th; greatest daily range, 39°, on 19th; least daily range, 15°, on 29th. Mean for this month in 1904, 58°.
 Wind.—Prevailing direction, southwest; total movement, 5,265 miles; maximum velocity (for five minutes), 52 miles per hour, from southwest, on 14th.
 Precipitation.—Total this month in 1904, 1.11 inches.
 Sunshine and cloudiness.—Number of clear days, *b* 6; partly cloudy, *b* 4; cloudy, *b* 0; on which 0.01 inch, or more, of rain fell, 13.
 No snowfall.

^a Temperature data 1st to 21st inclusive from thermograph records. ^b For 10 days.

Meteorological record, 1903-4—Continued.

AUGUST, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
	° F.	° F.	° F.	Inch.		° F.	° F.	° F.	Inch.		
1.....	79	41	60	0.01	Clear.	18.....	76	46	61	0.01	Partly cloudy.
2.....	79	41	60	.....	Do.	19.....	74	41	58	.....	Do.
3.....	78	46	62	.....	Do.	20.....	62	43	52	.08	Do.
4.....	81	42	62	.....	Do.	21.....	62	30	46	.....	Clear.
5.....	82	44	63	.....	Do.	22.....	71	36	54	.....	Do.
6.....	76	41	58	Trace.	Partly cloudy.	23.....	70	45	58	.....	Partly cloudy.
7.....	82	40	61	.....	Clear.	24.....	73	51	62	.....	Clear.
8.....	78	44	61	.01	Do.	25.....	78	36	57	.....	Do.
9.....	82	42	62	.....	Partly cloudy.	26.....	79	45	62	Trace.	Partly cloudy.
10.....	74	52	63	.01	Do.	27.....	78	48	63	Trace.	Do.
11.....	74	49	62	.52	Do.	28.....	68	52	60	.13	Do.
12.....	79	44	62	.....	Do.	29.....	65	47	56	.25	Do.
13.....	83	53	68	.....	Clear.	30.....	70	43	56	.01	Do.
14.....	85	46	66	.....	Do.	31.....	67	47	57	Trace.	Do.
15.....	79	54	66	Trace.	Partly cloudy.	Mean.	75.5	44.7	60.1	.....	Do.
16.....	79	50	64	.08	Do.						
17.....	77	48	62	Trace.	Do.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.03; highest, 30.27, on 25th; lowest, 29.71, on 20th.

Temperature.—Highest, 85°, on 14th; lowest, 30°, on 21st; greatest daily range, 42°, on 25th; least daily range, 16°, on 28th. Mean for this month in 1904, 60°.

Wind.—Prevailing direction, southwest; total movement, 4,734 miles; maximum velocity (for five minutes), 27 miles per hour, from southwest, on 10th.

Precipitation.—Total this month in 1904, 1.11 inches.

Sunshine and cloudiness.—Number of clear days, 13; partly cloudy, 18; cloudy, 0; on which 0.01 inch, or more, of rain fell, 10.

Frost.—Date of light, 21st.

Solar halos, 23d, 31st.

SEPTEMBER, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
	° F.	° F.	° F.	Inch.		° F.	° F.	° F.	Inch.		
1.....	64	36	50	.....	Clear.	17.....	73	39	56	.....	Clear.
2.....	68	33	50	.....	Do.	18.....	71	43	57	.....	Do.
3.....	72	35	54	.....	Do.	19.....	61	32	46	.....	Do.
4.....	77	40	58	.....	Do.	20.....	70	29	50	.....	Do.
5.....	78	38	58	.....	Do.	21.....	69	43	56	.02	Partly cloudy.
6.....	80	42	61	.....	Do.	22.....	64	39	52	.10	Do.
7.....	82	44	63	.....	Do.	23.....	61	36	48	.08	Do.
8.....	82	47	64	.....	Do.	24.....	59	32	46	.....	Cloudy.
9.....	75	50	62	.....	Do.	25.....	67	32	50	.....	Partly cloudy.
10.....	60	40	50	Trace	Do.	26.....	58	38	48	.45	Do.
11.....	67	30	48	.....	Do.	27.....	45	37	41	.07	Cloudy.
12.....	57	39	48	.....	Partly cloudy.	28.....	57	35	46	.01	Partly cloudy.
13.....	58	27	42	.....	Clear.	29.....	67	31	49	.....	Clear.
14.....	73	32	52	.....	Do.	30.....	68	37	52	.....	Partly cloudy.
15.....	75	36	56	.....	Do.	Mean.	67.7	36.9	52.3	.....
16.....	74	35	54	.....	Do.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.04; highest, 30.32, on 29th; lowest, 29.72, on 17th.

Temperature.—Highest, 82°, on 8th; lowest, 27°, on 13th; greatest daily range, 41°, on 20th; least daily range, 8°, on 27th. Mean for this month in 1904, 52°.

Wind.—Prevailing direction, southwest; total movement, 4,705 miles; maximum velocity (for five minutes), 34 miles per hour, from west, on 22d.

Precipitation.—Total this month in—^a

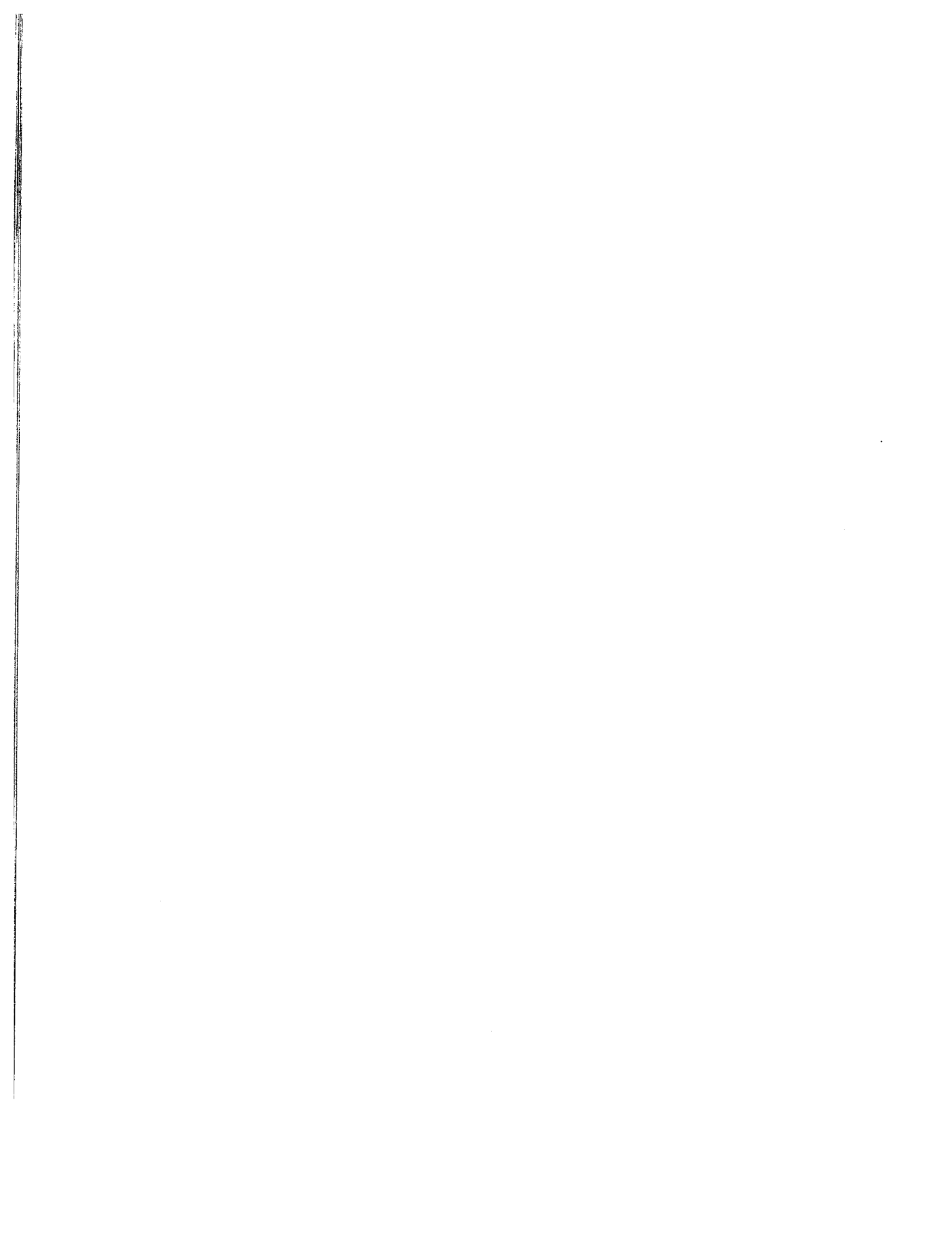
	Inches.		Inches.		Inches.
1889	0.59	1895	0.43	1901	2.85
1890	.19	1896	1.10	1902	3.06
1891	1.74	1897	.31	1903	.60
1892	1.60	1898	.90	1904	.73
1893	1.44	1899	.90		
1894	.71	1900	.87		
				Average for 16 years..	1.13

Deficiency (—) of this month as compared with average of sixteen years, 0.40 inch.
Sunshine and cloudiness.—Number of clear days, 20; partly cloudy, 8; cloudy, 2; on which 0.01 inch or more of rain fell, 6.
Frosts.—Dates of light, 1st, 2d, 3d, 11th, 14th, 15th, 16th, 19th, 25th; dates of heavy, 13th, 20th, 24th, 29th; killing, 0.
 No snow fall.

^a Record of post surgeon prior to 1904.

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ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT


OF THE

ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

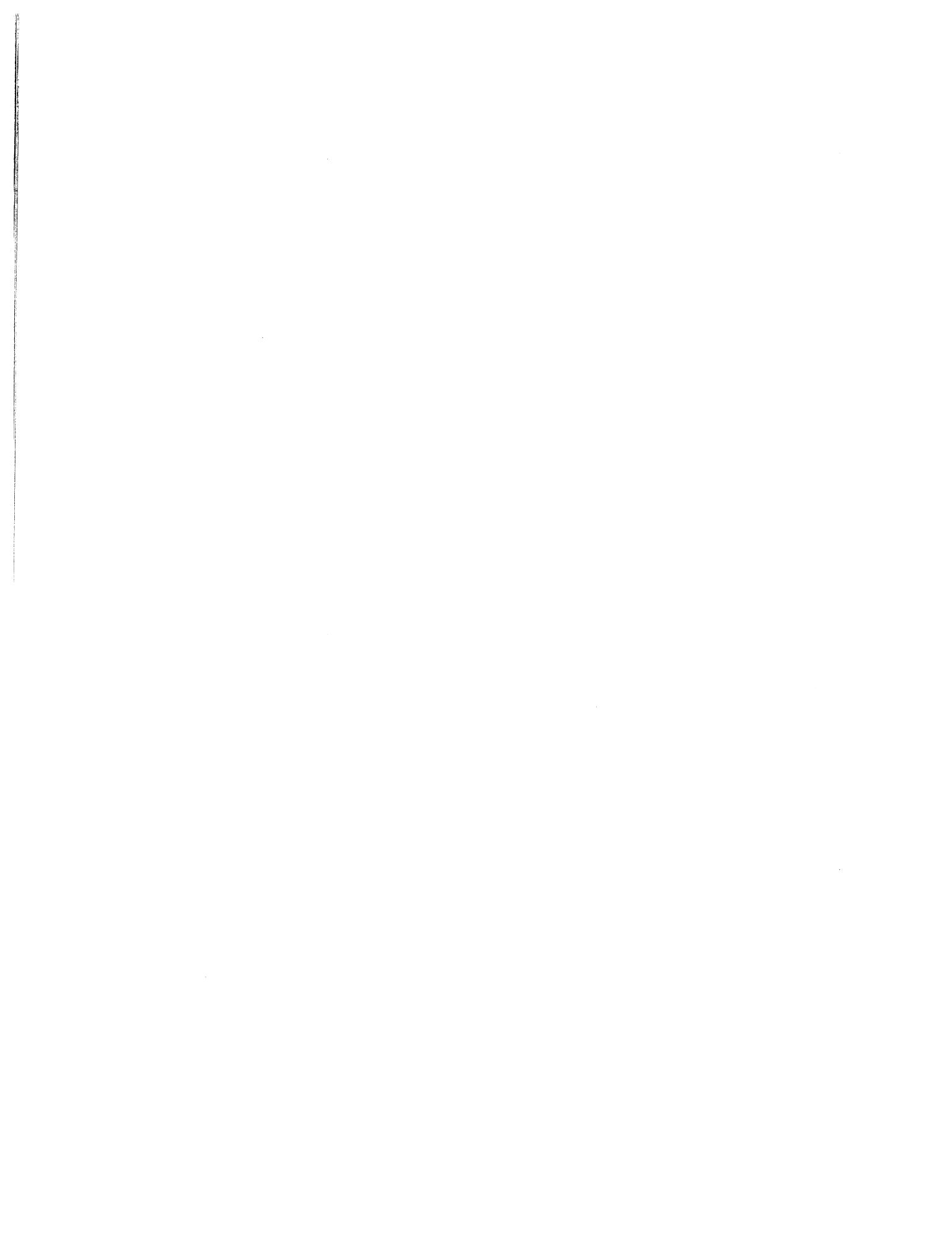
TO THE

SECRETARY OF THE INTERIOR.

1905.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1905.



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REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 14, 1905.

SIR: I have the honor to submit the following report of the condition of affairs in the Yellowstone National Park and its management since the fiscal year ended June 30, 1904:

IMPROVEMENTS ABOUT THE ROOSEVELT ARCH AT NORTH ENTRANCE TO THE PARK.

The alfalfa field which was planted last year on both sides of the road leading through the archway near the town of Gardiner has proved a great success, and during the past summer has yielded about 100 tons of fine hay. This hay has been stacked up near the soldiers' station, and will be fed out during the coming winter to the antelope and other game at such times as they may need it. This will insure these animals having an ample supply of feed during the entire winter and prevent them from leaving the park in search of food. It has also greatly improved the appearance of the grounds near the main entrance to the park, and presents a very pleasing sight to the tourists immediately after they have passed through the archway.

Some time since 12 small Sequoia trees (*Sequoia gigantea*), from the giant forests in Sequoia National Park, Cal., were, by direction of the Department, shipped to this place with a view to their propagation in the park. Six of these trees have been planted near the Roosevelt Arch and the remainder in suitable places on the plateau at the Mammoth Hot Springs. If we are successful in growing these trees, they will in the future be a matter of great interest to the tourists.

BOUNDARY SURVEY.

As stated in my last report, the entire boundary line of the park has been surveyed, but it has not yet been plainly marked in such a way that a person unfamiliar with the country could cross it without being aware of the fact. I again strongly recommend that an appropriation be obtained from Congress to do this work, and believe that \$2,000 will be sufficient for the purpose.

FOREST FIRES.

During the past summer we have again been remarkably free from forest fires in the park. During the early part of the season this was due to frequent rains, but during the latter part it was exceedingly dry and a number of small fires were started, which would have been very serious but for the fact that they were quickly discovered by the patrols and extinguished before they had gotten a good start.

TELEPHONE LINES.

The telephone system throughout the park is not in a satisfactory condition, so far as the administration and police of the park is concerned, and it would greatly facilitate matters in this direction if the Government owned its own line, running directly to all stations throughout the park. We now have on hand 70 miles of telegraph wire, pertaining to the Signal Department, which is intended for use in constructing a line from Fort Yellowstone to Soda Butte station and from the lake to Sylvan Pass station, on the eastern entrance to the park, but on account of the lack of funds and men we have been unable to construct these lines.

The Yellowstone Park Association has placed its lines in excellent condition during the past season by putting up new poles and lines wherever they were needed, and if arrangements could be made with this company to put up cross-arms on their poles and to string a Government wire on them it would greatly improve matters, so far as the park authorities are concerned, and a line such as is needed could be constructed at a comparatively small cost.

HOTELS.

The unusually heavy tourist travel through the park during the past season has shown the necessity for increased accommodations at the Mammoth Hot Springs and at the Grand Canyon. A new hotel should be built at the Mammoth Hot Springs and the one at the Canyon should be remodeled and enlarged.

The hotels throughout the park have generally been run in a very satisfactory manner, and in spite of the heavy travel there have been fewer complaints this year than ever before.

PERMANENT CAMPS.

Mr. William W. Wylie, of Bozeman, Mont., is licensed to conduct camping parties through the park, and is authorized to occupy certain parcels of ground as permanent camps.

His services as to transportation and the conduct of his camps have been entirely satisfactory in every respect.

TRANSPORTATION COMPANIES.

The Yellowstone Park Transportation Company has again increased and improved its plant both as to coaches and horses. During the past season they have been called upon to carry nearly double the number of passengers ever carried before in one season in the history of the company, but in spite of this fact there have been no delays

whatever in the transportation of their patrons through the park, and their service has been satisfactory in every respect. Considering the large number transported through the park, they have been remarkably free from serious accidents of all kinds.

The travel over the Monida and Yellowstone Stage Company's line has also increased considerably, and its service has been entirely satisfactory.

YELLOWSTONE LAKE BOAT COMPANY.

The time has arrived when the Department should take some action as to the matter of transportation on the Yellowstone Lake. For several years past every effort has been made to bring about some amicable arrangement by which the tourists who travel by the various stage companies could have the option of going from the Thumb to the lake outlet, either by stage or by boat, without additional charge; but it seems to be impossible to accomplish anything in this direction.

The Yellowstone Lake Boat Company several years ago, and before any road was constructed from the Upper Geyser Basin to the Thumb, was granted the privilege of placing a small steamboat on the lake, to be run as an excursion boat. After the completion of the road from the Upper Geyser Basin to the Thumb it was permitted to carry such passengers as desired to go from the Thumb to the Lake Hotel, a distance of about 18 miles, for a charge of \$3 per head. Tourists who take this trip over the lake regard the charge as exorbitant, and many complaints have been made concerning it.

Many complaints having been made in the past concerning the excessive charges, etc., for the hire of small boats on the lake, it is therefore recommended that some competition be also introduced in this business and that some other individual or company in addition to the Yellowstone Lake Boat Company be authorized to keep small boats for hire, both at the Lake Hotel and at the Thumb lunch station.

The introduction of competition in the small boat business will be no violation of the provisions of the lease of the present boat company, for it is distinctly stated therein that no exclusive privilege is granted to this company to carry on a boat business on the lake.

LARGE GAME IN THE PARK.

The summer tourists in the park seldom have an opportunity of seeing much of the large game, which, to the lover of wild animals, constitutes one of its most interesting features.

The proper time to see and study the wild animals of the park is during the winter, or after the snow has fallen on the mountains to such a depth as to drive them down into the lower country. Up to the present time there have been no proper accommodations in the park during the winter for taking care of those who would like to come in at that season, but in the near future it is probable that this trouble will be remedied by the building of a suitable hotel at Mammoth Hot Springs, within 5 miles of the main entrance of the park. After the snow has fallen it is not necessary to go any farther into the park than this point in order to see all of the wild animals that are to be found within its limits at any season, with the exception of the bear.

It has been only within the last two or three years that these animals could be seen in such close proximity to the Mammoth Hot Springs, and the reasons for this fact are due to a few simple changes in the park management, as follows:

First. No dogs are allowed to run at large in the park, and when they are brought in by campers or others passing through they must be carried in wagons and kept tied up when in camp. It is a fact that any kind of a dog running at large, while he will probably do no harm to the game, will run it all out of the section where it is ranging.

Second. A fence about 4 miles long has been built along the northern line of the park, which excludes all stock that for a number of years has grazed within the limits of the park and completely used up the grass, which is now preserved for the wild animals. No stock of any kind is now permitted to run at large in the vicinity of the Mammoth Hot Springs, and where they formerly grazed during the summer elk and deer can now be seen feeding during the winter. In order to be successful in keeping wild game on any reserve it is absolutely necessary either to preserve their natural feed for them or to supply them with hay, etc., and even where the natural supply of feed is preserved it is well to have a supply of hay on hand, in order to help out the weaker animals each spring, for there is always a period when the old grass is nearly all gone and before the new grass is ready for use which is very trying for all wild animals.

It is for this reason that an effort has been made to a limited extent in the park to feed certain kinds of game each spring. The animals so fed are the sheep, the deer, and the antelope, and the results have been remarkable in at least two ways—it has rendered them exceedingly tame and caused them to recognize man as their friend instead of an enemy; and while they will not permit one to touch them, they can be approached within a reasonable distance at any time without their showing the least sign of fear. It has also resulted in a great improvement in their physical condition, and starts them off in the spring, when the females are about to have their young, in such good shape that few are lost from any cause.

Three years ago a deer was seldom seen anywhere about the Mammoth Hot Springs, and only occasionally a few tracks could be seen in the snow showing where they had crossed over the parade ground of Fort Yellowstone during the night. As a matter of experiment, and with a hope that some of these animals which passed through the post might be induced to come around where they could be seen, a few bales of alfalfa hay were scattered about the parade ground. The result was remarkable, for on the second day after the hay had been put out about a dozen blacktail deer appeared. The next day this number was doubled, and from day to day the number increased, until finally they numbered considerably over 100.

It was extremely interesting to see how quickly these animals lost all fear of human beings, and even when the evening gun is fired within 100 yards of them they pay little or no attention to it, but show much more interest in the lowering of the flag from the staff, which is located in the center of their feeding ground.

The mountain sheep, which are supposed to be the wildest of all our western animals, have also shown the same friendly disposition under the same conditions, and have become even tamer and

more fearless than the deer. These animals are becoming very rare, and are difficult to find in any section of the country. It is therefore desirable that the few we have in the park should be carefully preserved and their number increased as rapidly as possible. There are now about 100 of these animals that make their home at all times entirely within the limits of the park.

Next to the mountain sheep the antelope are probably the most interesting and attractive animals that we have in the park, and, like the sheep, they are rapidly disappearing throughout the West. The park herd consists of about 1,500 animals, and seems to be increasing in numbers quite rapidly. This increase is due to the fact that they are protected not only in the park, but throughout the State of Montana. The summer range for the antelope is well up on the Yellowstone River and entirely within the park, and in old days their winter range extended far down the Yellowstone and they seldom remained in this section after the first heavy fall of snow. The valley of the Yellowstone north of the park is now completely taken up by ranchers, and their wire fences running in every direction have completely shut off the old winter range of the antelope, and they are now compelled to remain at all times entirely within the limits of the park or very close to its borders. Last fall 800 antelope were counted upon the alfalfa field near Gardiner, and at the same time a number of smaller bands could be seen in the foothills above the field and on the slopes of Mount Everts, on the opposite side of the Gardiner River.

The elk are by far the most numerous of all the large game which we have in the park, and it is a very difficult matter to determine exactly, or even approximately, how many there are. During the summer nearly all of the elk pertaining to the neighboring sections of Wyoming, Idaho, and Montana range entirely within the limits of the park, but during the winter it is probable that at least one-half of this entire number goes out into the neighboring States, but, owing to the rapid settlement of the country and the consequent decrease in the amount of feed, their outside or winter range is decreasing from year to year, and each year they show a greater inclination to remain within or near the borders of the park.

Few people know or realize that each year the bull elk shed their wonderful antlers. Many of these shed antlers have been collected from time to time and are used as fences for protecting the lawns about the Mammoth Hot Springs, but their use for such purposes has been discouraged for the reason that the average tourist, seeing them lying about in such numbers, imagines that there has been a terrible slaughter of elk in the park. The bull elk begin shedding their horns usually about the 1st of March, but sometimes they lose them much earlier, and others carry them until sometime in May. During the period when they are shedding and while the new horns are growing, the bulls are usually found in bands of various sizes, separated entirely from the cows, and living peaceably among themselves. Later on, when their horns become fully developed, which is about the last of September, a change comes over their peaceful natures; they separate and are ready for a fight at any time. This is the beginning of the rutting season, and each bull makes an effort to gather into a herd all of the cows that he can persuade to stay with him, and it is the most interesting period dur-

ing which to study the habits of the elk. The bulls are easily located at this season by their whistling. This is a peculiarly weird sound, which commences with a high, shrill whistle and ends with a roar. It is apparently used as a call for his band of cows or a challenge to other bulls. It is frequently answered by the younger bulls, which roam about some distance away from the herd of cows, but the challenge to fight is seldom accepted.

When President Roosevelt and Mr. John Burroughs were in the park, about two years ago, they climbed to the top of a hill which overlooked a part of the valley of the Yellowstone, near the point where the Lamar River flows into it, and by the aid of powerful field glasses they counted the elk in view, and as a result of their count they concluded that there were 3,000 elk in sight. A number of other bands were seen by the President, but no effort was made to count them. The President's trip, while quite an extensive one, did not cover all of the winter range of the elk, but the number seen by him gave him a very fair idea of what he could find if he wished to do so. As none of these elk ever leave the park and but few of them have died or been killed by mountain lions, it is evident that we still have a goodly number of them in the park, and quite enough to stock it well, even if there were no more.

A large band of elk, some 400 or 500 in number, makes its winter home close to the Mammoth Hot Springs. As long as the condition of the snow will permit, they remain on the south side of the ridge just back of the Mammoth Hot Springs Hotel, but occasionally they can be seen trooping down from this ridge, passing within a few hundred yards of the hotel, on their way to a lower feeding ground, and whenever this happens, it is said, you can look out for a big snowstorm.

In passing from one feeding ground to another the elk frequently encounter very deep snow, and this they pass through in single file, the strongest of the bulls taking the lead so as to break the trail, the leaders falling out one after another as they become exhausted.

There are a number of moose in the park, but they are seldom seen, as they range chiefly along the Upper Yellowstone River and in the southeastern corner of the park, which is a very inaccessible country at present, owing to the lack of roads or trails. The killing of these animals is now prohibited in the State of Wyoming, and it is hoped that they will rapidly increase in numbers, and also move farther up into the park.

When the park was first set aside as a Government reserve, there was quite a large herd of buffalo within its limits, but as there was no law or regulation prohibiting hunting for a number of years after its establishment, this herd was soon reduced to a very small one, and what was left of it was driven back into the most inaccessible part of the park, and into an exceedingly unfavorable country for buffalo to winter in. There are now about 30 of these animals left, and they have been located for a number of years on the head of Pelican Creek. The only way that they can keep alive during the winter is by grazing on the few places kept open by the hot springs, for their range is very high and snow falls there very deep and remains until late in the spring. They could be driven out of that locality and possibly a few of them caught up, but it is more

than likely that a greater part of them would be killed in the attempt. Instead of attempting to catch up the old ones, men are sent out early in the spring for the purpose of capturing the young calves, which are brought in to the Mammoth Hot Springs, raised by a domestic cow, and then turned out in an inclosure with the tame herd.

With a view to preventing the buffalo from becoming extinct, in the year 1902 Congress appropriated \$15,000 for the purpose of starting a new herd in the park. With this fund a herd of 21 animals was purchased and the necessary inclosures in which to keep them were constructed. The herd purchased consisted of 3 bulls from the Goodnight herd of Texas and 18 cows from the Allard herd of Montana. One of the bulls was turned out with the wild herd on Pelican Creek with a view to introducing new blood in that herd, but he wandered away from them last winter and died on the edge of Yellowstone Lake near the Thumb station. The increase in this new herd has been exceedingly encouraging, and, including the 3 calves which have been caught up from the wild herd, it now consists of 44 animals, which is more than double the number with which we started.

The beaver are certainly increasing rapidly throughout the park, and to-day the signs of their work can be seen along every stream. These exceedingly interesting and valuable little fur-bearing animals have become almost extinct in the greater part of the United States, and should it ever become desirable to restock any section a sufficient number of these animals can, with the permission of the Interior Department, be provided for the purpose.

The bear are about the only animals that the summer tourists can not fail to see, and they are always a great source of amusement and interest to them. It is a difficult matter to make some of the tourists realize that the bear in the park are wild, and that it is a dangerous matter to trifle with them. The black and the brown bear are exceedingly afraid of the grizzly, and with good cause, for they will kill and eat the young of the black and the brown whenever they can get hold of them. It is said the grizzly will also eat its own cubs, and for this reason the females always desert the males when they have their young, and keep away until the cubs are large enough to take care of themselves.

In addition to the above-named animals mountain lions, lynx, and coyotes are also to be found within the limits of the park. As the lions and coyotes are somewhat destructive to other game, such as elk, deer, and sheep, and also a pest to stockmen of the surrounding country, they are destroyed whenever the opportunity affords. The killing of these animals is, however, made a matter of business and not of sport, and only a few persons are permitted to do this killing, and they are scouts and certain good shots among the soldiers. A general permit to kill these animals would result in endless trouble in the matter of protection of other game.

At the last session of the legislature of the State of Wyoming a tract of land extending for a distance of about 25 miles south of the Yellowstone Park and along nearly its entire southern border was set aside and designated as a game preserve. This was an exceedingly wise provision on the part of this State, as it will not only tend to preserve the large game of the State of Wyoming, but will also

assist greatly in the protection of game pertaining to the park along its southern border. In spite of reports to the contrary, large numbers of elk which spend the summer in the Yellowstone Park now winter in this preserve.

FISH AND FISH HATCHERY.

The following report from the United States Bureau of Fisheries shows what work has been done in the park during the past season by the Fish Commission:

DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF FISHERIES,
Spearfish, S. Dak., September 28, 1905.

SIR: Your letter of September 24, with reference to the work of the Bureau of Fisheries at Yellowstone National Park during the present calendar year, was received upon my return from Hill City to-day.

The following plants of brook trout (*Salvelinus fontinalis*) were made:

May 25, 1905:		
Ice Lake.....	11,000	
Gibbon River, above Virginia Cascade.....	17,000	
May 26, 1905:		
Swan Lake.....	10,000	
Indian Creek and headwaters of Gardiner River.....	25,000	
May 27, 1905, Willow Creek.....	40,000	

The Bureau of Fisheries operated the hatchery at West Thumb from May 29 until August 1, collecting during that time 5,100,000 black-spotted trout eggs (*Salmo clarkii*). Of these eggs 200,000 were shipped to the Government fisheries exhibit, Portland, Oreg.; 50,000 to C. H. Townsend, director New York Aquarium, New York; 565,000 to the Bureau of Fisheries station, Bozeman, Mont.; 91,000 to the Bureau of Fisheries station, White Sulphur Springs, W. Va.

The following plants of fry were made:

July 26, 1905:		
Duck Lake.....	200,000	
Fisheries Creek, West Thumb.....	127,600	
July 31, 1905, Ice Lake, between Fountain Hotel and Excelsior Geyser.....	47,000	

During the period of incubation 450,000 were lost from imperfect fertilization and other causes, and the balance, 3,369,400, were shipped to Spearfish, S. Dak., for hatching.

All the shipments were received in excellent condition, and the fish were unusually vigorous.

Yours, very truly,

D. C. BOOTH,
Superintendent Fisheries Station.

Maj. JOHN PITCHER,
Acting Superintendent Yellowstone National Park.

ENLARGEMENT OF FORT YELLOWSTONE.

My recommendation of last year that this post be increased to a four-troop, or squadron, post is renewed, and it is earnestly hoped that the necessary buildings for the two more troops required may be soon provided. The need of this enlargement is now urgent. At present the buildings and equipment accommodate only two troops of cavalry, which was a sufficient force for the protection of the park at the time the post was built, in 1892, but it is now far from adequate. In the thirteen years that have elapsed since then the game in the park has multiplied almost beyond belief, and there has also been an enormous increase in the number of visitors, the number during the season just ended being 26,188, whereas in 1892 it was only about 4,000.

There has likewise been a steady growth in population around the park, making necessary greater vigilance in guarding the park bound-

aries throughout the year, and all these elements of growth have more than doubled the duties and labors of the troops.

During the summer season this post and its garrison are constantly under the critical observation of visitors from all over the world, and it should therefore be made in all respects a model post.

With the enlargement of the post and its garrison it will be possible to carry on much military training, drill, and other instruction so necessary to the efficiency of troops, but now impracticable.

The Board of General Officers of the Army that considered and reported on the permanency of army posts in, I think, 1903 recommended that Fort Yellowstone be made a squadron post; a similar recommendation has been made by the commanding general of this department in his report for this year, and an enlargement of the post was recommended by the Chief of the General Staff in 1904.

In my opinion there will be no difficulty in getting the two additional troops as soon as accommodations are provided for them at this post, for the reason that at present there are not sufficient barracks and quarters in this department to accommodate all of the cavalry troops belonging to it.

TOURIST TRAVEL THROUGH THE PARK.

The aggregate number of persons carried through the park over the regular route during the season of 1905 is as follows:

Carried by Yellowstone Park Transportation Company, entering via northern entrance of park.....	10,881
Carried by Monida and Yellowstone Stage Company, entering via western entrance of park.....	2,654
Others at hotels, traveling with private transportation, bicyclers, etc.....	1,279
Total.....	14,814
Carried by William W. Wylie and accommodated at his permanent camps.....	3,668
Carried by other licensees of personally conducted camping parties.....	1,719
Total number camping, traveling with licensed transportation.....	5,387
Total number of tourists traveling through the park with private transportation as "camping parties".....	5,987
Grand total of all visitors to the park, season 1905.....	26,188

During the season 7,362 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 3,092 entered the park with the Yellowstone Park Transportation Company, 552 with the Monida and Yellowstone Stage Company, 3,510 with William W. Wylie, and the balance, 208 people, were campers.

CONSTRUCTION AND REPAIRS OF ROADS, BRIDGES, ETC.

The following statement, furnished by Maj. H. M. Chittenden, Corps of Engineers, U. S. Army, who is in charge of improvement work in the park, shows what has been done in the way of building and repairing roads and bridges and other improvements in the park, under the appropriations made by Congress for this purpose. It also gives an estimate of what should be appropriated for future work along the same lines.

IMPROVEMENT OF YELLOWSTONE NATIONAL PARK.

The work which has been done during the past fiscal year, and which will be practically completed by the close of the present season, has been carried on under the appropriation of April 28, 1904, and that of March 3, 1905. The following are the main features of this work:

RECONSTRUCTION AND IMPROVEMENT OF EXISTING ROADS.

Beginning at about the eleventh mile post from Mammoth Hot Springs on the road to Norris, the road was practically reconstructed by correction of grades and thorough resurfacing with a foundation of broken rock over all soft ground. The same character of work was carried on from Norris Geyser Basin to Gibbon Canyon, and was particularly thorough over the marshy tracts known as Elk Park and the Gibbon Meadows.

From Excelsior Geyser to the Upper Geyser Basin similar work was done, all the sharp pitches being cut out and evened up so as to reduce them to an easy gradient.

From the Upper Geyser Basin to the head of Spring Creek Canyon on the Continental Divide much work of a similar character was done.

A large portion of the road along the Yellowstone River between the lake and the Grand Canyon has been resurfaced with a foundation of rock and a wearing surface of gravel.

The road from Norris to the Grand Canyon, which is the most unsatisfactory location in the park, never having been laid out on any rational system, was largely improved by cutting down the hills and filling the hollows, widening and surfacing and otherwise compensating as far as possible for the defects of the original location. In particular the road down the high hill at the Grand Canyon was relocated so as to give an easy gradient. This stretch of road lies entirely in heavy clay deposits and is exceedingly hard to maintain during the periods of wet weather. It was heavily paved with broken rock which was covered with gravel, and it is believed that it will stand in good shape.

The road from Thumb Station to Lake Outlet, by way of Natural Bridge, was completed by grading to full width and surfacing with the best material available. Along the lake shore at the Thumb the alignment was in many places corrected so as to shorten the distance and even up the gradients.

The road across the summit of Mount Washburn was practically completed, including both the low line through Dunraven Pass and the high line passing over the summit of the mountain. There remains about a half mile on the low line that will require further widening. This road has been one of great difficulty of construction, not only because of the general presence of solid rock in all portions, but particularly because of the shortness of season and the very wet condition of the ground until late in the summer. The road over the summit has been made 18 to 20 feet wide instead of 12 feet as contemplated in the original estimate. This road, it is fully believed, will meet all the expectations of those who have favored its construction and will form one of the finest attractions in the tour of the park.

From Tower Falls to Mammoth Hot Springs the road has been entirely opened and completed as a permanent part of the system, thus completing the belt line or general circuit.

Much work was done on the Cooke City road from Yellowstone River to the northeast boundary of the park. An entirely new alignment was made from the Yellowstone River to near Soda Butte, the road crossing the Lamar River near the mouth of Slough Creek instead of near the mouth of Soda Butte Creek as formerly, and the greater part of it has been opened to travel. The very dangerous piece of road near Soda Butte, known as the Jackson Grade, has been cut out by new road 4,000 feet long on the immediate bank of the Lamar River.

The road from the Grand Canyon to Inspiration Point, which serves to give a fine view of the Grand Canyon, has been largely widened and otherwise improved near its terminus at Inspiration Point.

The road opened early last season from the steel-concrete bridge over the Yellowstone to Artist Point has been completed.

On the east road a large amount of work has been done from Sylvan Pass 12 miles east where it was too narrow for safe travel.

Considerable work has also been done on the west road in the matter of widening it in narrow places and resurfacing and otherwise improving its condition.

• BRIDGES

The following bridges have been built during the period above mentioned:

The 5-span steel arch bridge over the Middle Gardiner River which was in progress of erection at the date of the last annual report was duly completed.

The steel truss over the same river at the 7-mile post between Mammoth Hot Springs and Norris was also constructed.

Steel truss bridges were built over Nez Perce Creek near the Fountain Hotel and over the Firehole River above Excelsior Geyser.

A fine steel arch bridge was erected over Tower Creek where the road crosses a short distance above Tower Falls.

A number of wooden bridges were also built, the principal ones being the following:

A large crib structure without trusses over the Lamar River on the Cooke City road.

Bridges over the Big and Little Blacktail creeks on the road between Mammoth Hot Springs and Tower Falls.

Reconstruction of the bridge over the Gibbon River at Norris.

Reconstruction of two bridges over the Firehole River; one on the old road from the Lower Basin to Excelsior Geyser, and the other just above the Upper Geyser Basin.

Relocation and reconstruction of bridges over Trout and Antelope creeks.

Construction of a new bridge over Grinnell Creek on the east road, and the construction of a viaduct by which the road down the mountain on the east side of Sylvan Pass is made to pass over itself in order to secure the necessary reduction of gradient.

Numerous small bridges have been built or reconstructed and most of the existing wooden bridges have been redecked.

CULVERTS.

The policy of the replacing of wooden culverts with vitrified clay pipe has been steadily continued until this work now extends over a greater part of the system.

SPRINKLING.

The sprinkling system heretofore inaugurated has been extended until it now covers 100 miles of road, in accordance with the existing project. The system has given very general satisfaction and works in admirably with the maintenance and repair of the roads.

STATION HOUSES.

Three station houses were built at different points in the park for the use of the superintendent, and small quarters for officers' use were erected at 11 of the stations.

GUARD RAILS, ETC.

A new platform and guard rail was built at the brink of the Lower Fall of the Yellowstone and an inclined stairway built for the convenience of tourists in descending the Canyon on the right bank a short distance below the falls. Guard rails have also been built around the Paintpots at the Fountain and around Mud Geyser.

SIGNS.

The mile posts and sign boards at the road junctions and some other signs have all been repainted.

MAMMOTH HOT SPRINGS.

The grounds at Mammoth Hot Springs have been maintained and the effort to improve conditions at this point has been highly successful; in fact, the improvements amount to a complete revolution of the former unsatisfactory state of things.

GARDINER ENTRANCE.

The improvements at the north entrance to the park have also been maintained and are in satisfactory condition. The Northern Pacific has recently done considerable work at this point under the supervision of this office.

The alfalfa field, which was established for the use of the superintendent in the maintenance of game in the northern part of the park, has proven very successful and has improved the appearance of the roadway for three-fourths of a mile from the north entrance.

PLANT.

The plant pertaining to the work has been brought to a satisfactory state of completeness, and, together with the buildings at Mammoth Hot Springs, forms an ample provision for any future work that is likely to be required.

ESTIMATES.

The work which was undertaken under the continuing appropriation four years ago has been practically completed, and there has also been done considerable work not contemplated in the original estimates. All the roads which it has ever been proposed to build are now open to travel. The road over the summit of Mount Washburn, from Dunraven Pass to the north side of the mountain, 7 miles, has been made an 18 to 20 foot road nearly all the way, instead of a 12-foot road as at first planned. Only a few minor changes of location in some of the older roads remain to be made, and the eastern and southern approaches will not require general enlargement until railway facilities in those directions are materially advanced beyond their present condition. The sprinkling system has been developed to the full extent contemplated and has largely mitigated the dust annoyance on the main circuit. There are but few portions of the roads that can not now be traveled with speed, safety, and comfort equal to what it was hoped to obtain with the funds granted by Congress.

The estimate herewith submitted is therefore for maintenance only, no additional work having been authorized by Congress. It is based upon careful records of the cost of similar work during the past fiscal year, taking into account also the considerable expansion of the system due to the completion of the road from the canyon to Mammoth Hot Springs via Mount Washburn and Tower Falls. It is made up as follows:

General work.....	\$45,000
Sprinkling (an average of 30 sprinklers for 80 days per season).....	30,000
Total.....	75,000

This figure must be considered a minimum. It should be granted in a lump sum under the general head of maintenance.

FUTURE WORK.

Having complied with official requirements in regard to estimates for the maintenance of a completed project, I desire now to submit a statement as to the future needs of this work. While the park is now provided with a thoroughly good road system, the traffic upon it is continually increasing and has in fact practically doubled since the work began four years ago. It has completely outrun the expectations upon which the original estimate was based. If this increase is to continue, and the managers of the park business believe it is, a new situation is created which must be met in the near future.

Main circuit.—There will be first considered the main circuit or belt line which all tourists travel, and also the northern and western approaches which are the only ones that now have important railroad connections. The mileage is about 180 miles, including some extra roads at Mammoth Hot Springs and Gardiner.

Width.—The standard width of 18 feet for the road surface must be widened to at least 25 feet.

Guard walls.—Owing to the more frequent meeting of vehicles and the necessity of turning out where the road is on steep side hill slopes, guard walls will have to be built in all these places. Such walls should be built in mortar and the existing retaining walls should be rebuilt in the same manner.

Fallen timber.—The dead and down timber should be cleared up for a width of 100 feet along each side of the roads as a precaution against forest fires and as a general improvement to the appearance of the roads.

Bridges and culverts.—It has been the policy during the past four years to replace worn-out bridges with concrete or steel, and culverts with vitrified clay pipe. This policy should be continued until all the old structures are so replaced.

Ditches, etc.—As a result of the increase in travel, there has developed a strong demand on the part of the stage companies that the road grade and the ditches be so modified, wherever at all practicable, that teams may be driven off the road on one side or the other in case of meeting runaways. To carry out this requirement generally in a country like this will be an expensive matter, but when the stage companies declare it to be essential to the safety of their passengers it is difficult to resist the demand.

Western approach.—The great development of business on the western approach and the decision of the Union Pacific lines to build to the west boundary make necessary the immediate enlargement of that approach to the full standard of the main circuit.

Sprinkling.—The sprinkling system will have to be somewhat extended, although I do not think that sprinklers will be found necessary on the greater portion of the Mount Washburn division. There should be added 2 sprinklers for the road from Norris to the canyon, 4 for the western approach, and 6 for the road between the canyon and Mammoth Hot Springs via Tower Falls—12 sprinklers in all.

The widening of the roads and making them so that teams can drive out of them, the erection of guard walls where necessary, the reconstruction of the western approach, extension of the sprinkling system, the clearing up of dead and down timber, the replacing of existing wooden bridges and culverts with steel and concrete or vitrified clay pipe, will cost on an average for the 180 miles, \$3,000 per mile, or \$540,000.

The road surface.—The great problem to be solved is the road-surface problem. During the past four years probably nine-tenths of the main circuit has been surfaced with one kind of material or another. In some places machine-crushed rock has been used, in others hand-broken stone in large pieces for a foundation, with some other material for a surface. Gravel has been used wherever it could be found, and where neither rock nor gravel has been available resort has been had to such local material as actual experience has shown to wear best. The results have been on the whole good, but not sufficient for present needs; and the greater part of the system must be redealt with in a more thorough manner.

There is a dearth of good material nearly everywhere and an entire absence of it in many places. Wherever the cost will not be prohibitory, crushed rock should be used for both foundation and surface, and should be put in by the most approved method and with subdrainage wherever necessary. In some few places a fine quality of natural crushed rock is found. Where rock can not be found that will stand wear and exposure, inferior rock may be used for a foundation, to be covered with the best surfacing material available. Wherever good gravel can be found it should of course be utilized to the utmost. It makes an easier road for horses than rock does and is, altogether, an excellent material. But after all these resources are exhausted there will still remain many miles where there is none of the above material within practicable distance and where it will be necessary to rely upon a well-built dirt road. While it is not possible to make a precise division of the mileage to which these different grades of surfacing will apply, I would roughly estimate that of the 180 miles here considered, about 75 miles can be treated entirely with crushed rock; about 40 miles with rock foundation and gravel or earth surface, and about 40 miles with gravel alone. For the remaining 25 miles, where neither rock nor gravel can be had, recourse must be had to the best natural material that can be found within economical distances. Estimating a width of surfacing of 25 feet and an average depth of 8 inches, the quantity of material required will be about 3,260 cubic yards per mile. The cost of this material in place, including preparation of road bed, rolling, and finishing, and taking an average for all localities near and remote, will be not less than \$2.50 per cubic yard for crushed rock, \$2 for mixed rock and gravel, \$1.50 for gravel, and \$1 for selected earth. Applying these figures to the above mileage gives the following results:

75 miles rock work, at \$8,150 per mile.....	\$611, 250
40 miles mixed work, at \$6,520 per mile.....	260, 800
40 miles gravel work, at \$4,890 per mile.....	195, 600
25 miles earth work, at \$3,260 per mile.....	81, 500
Total.....	1, 149, 150

Less important roads.—The 170 miles of the park road system not included in the above embraces the eastern and southern approaches, the road from near Tower Falls to Soda Butte and Cooke City and the various short side roads throughout the park. Until railroads come much nearer the park boundaries on the east and south than at present, these approaches will not need material enlargement beyond their actual condition. The same is true of the Cooke City road. The side roads, where they are constantly in use, should be developed to keep pace with the rest of the system. From the present outlook I believe that the development work necessary on these roads in the next ten years ought not to exceed in cost \$150,000.

Summary.—The total cost, therefore, of developing the 350 miles of roads in the park system as outlined above will be:

Widening, guard walls, etc.....	\$540, 000
Surfacing.....	1, 149, 150
Less important roads.....	150, 000
Add for contingencies, etc., 10 per cent.....	183, 915
Total.....	2, 023, 065

Lest the above cost, with what has already been expended on the roads, may appear excessive, I would invite attention to the fact that the cost of good macadamized roads in eastern sections of the country, where economy of construction is at a maximum, ranges from \$5,000 to \$8,000 per mile. The Government roads in Porto Rico cost about \$12,000 per mile. The total cost to date of actual construction of the 350 miles of roadway in the park is only a little over \$3,000 per mile, while the average cost of the completed system

as recommended above will be about \$8,700. The cost per mile on the main circuit is of course much greater than this and will probably average \$12,000 per mile. But considering the remoteness of the work, the fact that all supplies have to be hauled on an average 40 miles from the railroad, the shortness of the season, which limits general work to about four months, and, lastly, the fact that the work is all in a mountainous country, where conditions are particularly unfavorable, the above cost must, I think, be considered very reasonable.

I submit, for the consideration of the Department and of Congress, the foregoing estimate of the probable cost of perfecting the present system of roads in the park and of bringing them up to the standard of the best European roads. Without making any definite recommendation in the premises, I believe that it would be a measure of sound economy to adopt a new project looking to the accomplishment of this work within a limited time—say ten years. It is a work which can not be indefinitely postponed. The park is growing in importance year by year and the demands upon the roads are increasing. It will be better to recognize and anticipate these needs and provide for them by a regular annual allowance than to wait until necessity compels much larger appropriations.

Very respectfully,

JNO. PITCHER,
Major, Sixth Cavalry, Acting Superintendent.

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

ACTING SUPERINTENDENT YELLOWSTONE NATIONAL PARK. 17

Meteorological record, Yellowstone Park, Wyoming, 1904-5.

OCTOBER, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	°F. 68	°F. 45	°F. 56	.....	Clear.	18.....	°F. 36	°F. 17	°F. 26	.....	Partly cloudy.
2.....	66	42	54	.....	Do.	19.....	46	29	38	.....	Do.
3.....	65	46	56	.....	Partly cloudy.	20.....	53	30	42	.....	Do.
4.....	60	36	48	Tr.	Do.	21.....	59	37	48	.....	Do.
5.....	54	29	42	.....	Clear.	22.....	60	32	46	.....	Clear.
6.....	62	33	48	0.01	Cloudy.	23.....	61	35	48	.....	Partly cloudy.
7.....	52	38	45	.14	Do.	24.....	45	27	36	.....	Clear.
8.....	56	36	46	.01	Partly cloudy.	25.....	55	21	38	.....	Do.
9.....	49	36	42	.09	Do.	26.....	65	29	47	.....	Do.
10.....	48	33	40	.03	Cloudy.	27.....	65	30	48	.....	Do.
11.....	50	34	42	Tr.	Cloudy.	28.....	64	29	46	.....	Do.
12.....	57	34	46	.....	Partly cloudy.	29.....	61	27	44	.....	Do.
13.....	60	33	46	.....	Clear.	30.....	58	30	44	.....	Do.
14.....	63	33	48	.....	Do.	31.....	56	30	43	.....	Do.
15.....	43	33	38	.14	Cloudy.	Mean .	55.8	32.3	44.0	.....	Do.
16.....	43	33	38	.14	Do.						
17.....	35	24	30	.25	Do.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.10; highest, 30.56, on 18th; lowest, 29.66, on 15th.
 Temperature.—Highest, 68°, on 1st; lowest, 17°, on 18th; greatest daily range, 36°, on 26th; least daily range, 10°, on 16th. Mean for this month in 1904, 44°.
 Wind.—Prevailing direction, southwest; total movement, 5,284 miles; maximum velocity (for five minutes), 32 miles per hour, from west, on 15th.
 Precipitation.^a—Total this month in—

Inches.		Inches.		Inches.	
1889.....	1.32	1896.....	0.06	1902.....	0.20
1890.....	1.68	1897.....	1.72	1903.....	.50
1891.....	1.44	1898.....	2.25	1904.....	.67
1892.....	.79	1899.....	2.02		
1893.....	1.34	1900.....	1.22		
1894.....	.89	1901.....	.92		
1895.....	.44			Average of this month for 16 years.....	1.09

Deficiency of this month as compared with average of sixteen years, 0.42 inch.
 Sunshine and cloudiness.—Number of clear days, 15; partly cloudy, 10; cloudy, 6; on which 0.01 inch or more of rain fell, 7.
 Frosts.—Dates of light, 11th, 14th, 15th; dates of heavy, none; date of killing, 17th.
 Total snowfall, 2.8 inches.

NOVEMBER, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
1.....	°F. 57	°F. 25	°F. 41	.....	Partly cloudy.	17.....	°F. 44	°F. 32	°F. 38	.....	Partly cloudy.
2.....	56	30	43	.....	Do.	18.....	42	29	36	0.03	Cloudy.
3.....	54	22	38	.....	Clear.	19.....	30	14	22	.02	Partly cloudy.
4.....	58	25	42	.....	Do.	20.....	38	25	32	.....	Cloudy.
5.....	55	26	40	.....	Do.	21.....	46	33	40	.....	Partly cloudy.
6.....	52	24	38	.....	Partly cloudy.	22.....	45	33	39	.....	Cloudy.
7.....	56	25	40	.....	Clear.	23.....	51	30	40	.....	Partly cloudy.
8.....	52	29	40	.....	Partly cloudy.	24.....	43	22	32	.....	Do.
9.....	48	33	40	.....	Do.	25.....	45	17	31	.....	Do.
10.....	45	15	30	.....	Clear.	26.....	52	25	38	.....	Do.
11.....	52	19	36	.....	Do.	27.....	51	33	42	Tr.	Do.
12.....	55	21	38	.....	Do.	28.....	38	25	32	.12	Do.
13.....	52	20	36	.....	Do.	29.....	34	18	26	.....	Do.
14.....	49	24	36	.....	Do.	30.....	45	25	35	.....	Cloudy.
15.....	48	29	38	Tr.	Partly cloudy.	Mean .	47.7	25.2	36.4	.....	Partly cloudy.
16.....	37	28	32	0.01	Cloudy.						

^a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.23; highest, 30.55, on 10th; lowest, 29.85, on 30th.

Temperature.—Highest, 58°, on 4th; lowest, 14°, on 19th; greatest daily range, 34°, on 12th; least daily range, 9°, on 16th. Mean for this month in 1904, 36°.

Wind.—Prevailing direction, southwest; total movement, 5,749 miles; maximum velocity (for five minutes), 32 miles per hour, from southwest, on 20th.

Precipitation.^a—Total this month in—

Inches.			Inches.			Inches.		
1889.....	2.19		1896.....	3.92		1902.....	2.35	
1890.....	.49		1897.....	2.98		1903.....	1.40	
1891.....	2.00		1898.....	1.55		1904.....	.18	
1892.....	1.90		1899.....	.03				
1893.....	2.51		1900.....	1.17				
1894.....	.15		1901.....	1.25				
1895.....	1.30					Average of this month for 16 years.....	1.59	

Deficiency of this month as compared with average of sixteen years, 1.41 inches.

Sunshine and cloudiness.—Number of clear days, 9; partly cloudy, 16; cloudy, 5; on which 0.01 inch or more of rain fell, 4.

Total snowfall, 1.6 inches.

DECEMBER, 1904.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
	°F.	°F.	°F.	Inch.			°F.	°F.	°F.	Inch.	
1.....	38	20	29	0.02	Cloudy.	18.....	35	26	30	Tr.	Partly cloudy.
2.....	29	11	20	.....	Clear.	19.....	36	30	33	Tr.	Do.
3.....	22	1	12	.....	Partly cloudy.	20.....	37	28	32	.....	Cloudy.
4.....	26	1	14	.....	Clear.	21.....	40	32	36	.....	Do.
5.....	34	7	20	.....	Do.	22.....	36	12	24	.24	Do.
6.....	34	8	21	.....	Partly cloudy.	23.....	26	9	18	.03	Do.
7.....	42	18	30	.....	Clear.	24.....	27	21	24	.13	Do.
8.....	37	22	30	.....	Partly cloudy.	25.....	23	4	14	.10	Do.
9.....	35	25	30	.....	Cloudy.	26.....	10	9	.....	.01	Clear.
10.....	33	20	26	.10	Do.	27.....	17	10	4	.....	Do.
11.....	28	11	20	Tr.	Do.	28.....	26	3	14	.....	Do.
12.....	27	10	18	Tr.	Do.	29.....	37	20	28	.....	Partly cloudy.
13.....	26	13	20	Tr.	Do.	30.....	38	32	35	.05	Cloudy.
14.....	27	16	22	.01	Do.	31.....	35	25	30	.39	Do.
15.....	32	22	27	.10	Do.						
16.....	24	15	20	.01	Partly cloudy.	Mean.....	30.5	14.9	22.7	.....
17.....	29	18	24	Tr.	Do.						

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.17; highest, 30.67, on 27th; lowest, 29.50, on 22d.

Temperature.^a—Highest, 42°, on 7th; lowest, 10°, on 27th; greatest daily range, 27°, on 27th; least daily range, 6°, on 19th. Mean for this month in—

°F.			°F.			°F.		
1887.....	21		1894.....	20		1901.....	22	
1888.....	22		1895.....	19		1902.....	23	
1889.....	25		1896.....	28		1903.....	23	
1890.....	28		1897.....	19		1904.....	23	
1891.....	18		1898.....	17				
1892.....	16		1899.....	19				
1893.....	24		1900.....	24		Mean of this month for 18 years.....	22	

Average daily excess of this month as compared with mean of 18 years, 1°.

Wind.—Prevailing direction, south; total movement, 6,111 miles; maximum velocity (for five minutes), 30 miles per hour, from northwest, on 15th.

Precipitation.^a—Total this month in—

Inches.			Inches.			Inches.		
1887.....	2.41		1895.....	1.29		1902.....	0.85	
1889.....	8.89		1896.....	.46		1903.....	1.40	
1890.....	.89		1897.....	.80		1904.....	1.19	
1891.....	2.77		1898.....	.67				
1892.....	2.17		1899.....	1.90				
1893.....	1.91		1900.....	1.18		Average of this month for 17 years.....	1.86	
1894.....	1.34		1901.....	2.53				

Deficiency of this month as compared with average of seventeen years, 0.67 inch.

Sunshine and cloudiness.—Number of clear days, 7; partly cloudy, 8; cloudy, 16; on which 0.01 inch or more of rain fell, 12.

Total snowfall (unmelted), 15.1 inches.

^a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

JANUARY, 1905.

Date.	Temperature.			Precipitation.	Snowfall.	Character of day.	Date.	Temperature.			Precipitation.	Snowfall.	Character of day.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	°F.	°F.	°F.	Inch.	In.			°F.	°F.	°F.	Inch.	In.	
1....	24	3	14		0.5	Clear.	18...	37	24	30			Partly cloudy.
2....	27	8	18			Partly cloudy.	19...	34	27	30			Cloudy.
3....	32	15	24			Do.	20...	32	19	26	Tr.	Tr.	Do.
4....	28	12	20			Do.	21...	32	11	22	Tr.	Tr.	Do.
5....	24	6	15	Tr.	Tr.	Do.	22...	33	26	30	.01	Tr.	Do.
6....	26	3	14			Clear.	23...	38	27	32	Tr.	.1	Do.
7....	20	1	10	.06	.4	Cloudy.	24...	42	31	36			Do.
8....	22	-2	10	Tr.	.4	Partly cloudy.	25...	43	27	35			Partly cloudy.
9....	21	-4	8			Do.	26...	38	30	34	Tr.	Tr.	Cloudy.
10....	12	-6	3			Do.	27...	36	27	32	.01	.1	Do.
11....	2	-12	-5			Do.	28...	33	20	26	Tr.	Tr.	Partly cloudy.
12....	9	-10				Do.	29...	20	-4	8	.12	1.8	Cloudy.
13....	23	9	16			Cloudy.	30...	20	-6	7			Partly cloudy.
14....	31	17	24	.02	.3	Do.	31...	4	-16	-6			Do.
15....	39	26	32			Do.	Mean	27.9	11.9	19.9			
16....	42	30	36	.03	.3	Do.							
17....	40	30	35			Do.							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.28; highest, 30.75, on 2d; lowest, 29.98, on 16th.

Temperature.^a—Highest, 43°, on 25th; lowest, -16°, on 31st; greatest daily range, 26°, on 30th; least daily range, 7°, on 22d. Mean for this month in—

	°F.		°F.		°F.
1887.....	19	1895.....	19	1903.....	23
1888.....	11	1896.....	26	1904.....	19
1889.....	15	1897.....	16	1905.....	20
1890.....	10	1898.....	15		
1891.....	20	1899.....	20	Mean of this month	
1892.....	16	1900.....	22	for 19 years.....	18
1893.....	17	1901.....	21		
1894.....	17	1902.....	17		

Absolute maximum for this month for nineteen years, 49°; absolute minimum for this month for nineteen years, -41°; average daily excess of this month as compared with mean of nineteen years, 1.8°; accumulated excess since January 1, 56°; average daily excess since January 1, 1.8°.

Precipitation.^a—Total this month, 0.25 inch; snowfall, 3.9 inches; greatest precipitation in twenty-four hours, 0.12 inch, on 29th; snow on the ground at end of month, 2.6 inches. Total precipitation this month in—

	Inches.		Inches.		Inches.
1887.....	7.70	1895.....	4.76	1903.....	0.60
1888.....	3.93	1896.....	2.21	1904.....	.93
1889.....	1.05	1897.....	1.12	1905.....	.25
1890.....	6.70	1898.....	.31		
1891.....	.48	1899.....	4.21	Average of this	
1892.....	1.40	1900.....	.90	month for 19 years.	2.28
1893.....	1.82	1901.....	2.26		
1894.....	1.82	1902.....	.96		

Deficiency of this month as compared with average of nineteen years, 2.03 inches; accumulated deficiency since January 1, 2.03 inches.

Wind.—Prevailing direction, south; total movement, 4,389 miles; average hourly velocity, 5.9; maximum velocity (for five minutes), 26 miles per hour, from southwest, on 25th.

Weather.—Number of clear days, 2; partly cloudy, 13; cloudy, 16; on which 0.01 inch or more of precipitation occurred, 6.

^a Records prior to 1904 by post surgeon, United States Army.

SUPERINTENDENT YELLOWSTONE NATIONAL PARK.
 Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

FEBRUARY, 1905.

Date.	Temperature.			Precipitation.	Sunshine.	Character of day.	Date.	Temperature.			Precipitation.	Sunshine.	Character of day.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	°F.	°F.	°F.	Inch.	P. ct.		°F.	°F.	°F.	Inch.	P. ct.		
1....	3	-21	-9	.....	100	Clear.	16....	24	.....	12	Tr.	86	Clear.
2....	5	-10	-2	.....	23	Partly cloudy.	17....	30	-8	11	.....	100	Do.
3....	29	-10	10	.....	87	Clear.	18....	39	2	20	.....	80	Partly cloudy.
4....	30	8	19	.....	71	Do.	19....	40	27	34	.....	57	Do.
5....	31	1	16	.....	100	Do.	20....	39	30	34	.33	31	Do.
6....	35	4	20	.....	100	Do.	21....	45	28	36	.....	69	Do.
7....	27	14	20	0.01	73	Partly cloudy.	22....	50	20	35	.....	100	Clear.
8....	21	8	14	.02	37	Do.	23....	43	22	32	.....	60	Partly cloudy.
9....	18	3	10	.....	58	Do.	24....	46	29	38	.....	36	Do.
10....	8	-20	-6	.16	30	Cloudy.	25....	47	28	38	.....	98	Clear.
11....	-11	-32	-22	.....	100	Clear.	26....	43	24	34	Tr.	98	Do.
12....	1	-36	-18	.02	80	Do.	27....	50	18	34	.....	100	Do.
13....	13	-5	4	.06	40	Partly cloudy.	28....	50	16	33	.....	100	Do.
14....	24	-6	9	.....	100	Clear.							
15....	35	-1	17	.....	100	Do.							
Mean	29.1	4.8	17.0										

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.24; highest, 30.69, on 14th; lowest, 29.77, on 8th.
 Temperature.—Highest, 50°, on 22d; lowest, -36°, on 12th; greatest daily range, 39°, on 3d; least daily range, 9° on 20th. Mean for this month in—

Year	°F.	Year	°F.
1887.....	14	1894.....	12
1888.....	27	1895.....	19
1889.....	20	1896.....	25
1890.....	18	1897.....	20
1891.....	14	1898.....	25
1892.....	24	1899.....	11
1893.....	16	1901.....	18
		Mean of this month for 18 years.....	19

Absolute maximum for this month for eighteen years, 50°; absolute minimum for this month for nineteen years, -36°; average daily deficiency of this month as compared with mean of eighteen years, 2°
 Precipitation.—Total this month, 0.60 inch; snowfall, 7.5 inches; greatest precipitation in twenty-four hours, 0.33 inch, on 20th; snow on the ground at end of month, 0.2 inch. Total precipitation this month in—

Year	Inches.	Year	Inches.
1887.....	4.65	1895.....	0.34
1888.....	2.02	1896.....	2.07
1889.....	1.93	1897.....	.80
1890.....	6.65	1898.....	1.21
1891.....	2.79	1899.....	3.40
1892.....	2.10	1900.....	1.65
1893.....	.79	1901.....	.72
1894.....	1.12	1902.....	.61
		Average of this month for 19 years.....	1.85

Deficiency of this month as compared with average of nineteen years, 1.25 inches; accumulated deficiency since January 1, 3.28 inches.

Wind.—Prevailing direction, south; total movement, 4,746 miles; average hourly velocity, 7.1; maximum velocity (for five minutes), 27 miles per hour, from northwest, on 8th.

Weather.—Number of clear days, 16; partly cloudy, 11; cloudy, 1; on which 0.01 inch or more of precipitation occurred, 6.

Miscellaneous phenomena (dates of).—Auroras, 3d.

^a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

MARCH, 1905.

Date.	Temperature.			Precipitation.	Sunshine.	Character of day.	Date.	Temperature.			Precipitation.	Sunshine.	Character of day.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	°F.	°F.	°F.	Inch.	P.ct.			°F.	°F.	°F.	Inch.	P.ct.	
1....	53	20	36	.....	100	Clear.	18...	47	29	38	.....	19	Cloudy.
2....	60	22	41	.....	86	Do.	19...	38	27	32	.....	24	Do.
3....	57	24	40	.....	100	Do.	20...	45	28	36	.03	50	Partly cloudy.
4....	58	26	42	.....	78	Partly cloudy.	21...	42	27	34	.17	22	Cloudy.
5....	54	25	40	.....	72	Do.	22...	37	22	30	Tr.	38	Partly cloudy.
6....	44	27	36	0.02	9	Cloudy.	23...	36	18	27	.04	26	Cloudy.
7....	40	18	29	.....	100	Clear.	24...	37	20	28	.17	10	Do.
8....	55	22	38	.....	100	Do.	25...	42	20	31	.01	38	Partly cloudy.
9....	44	26	35	Tr.	88	Partly cloudy.	26...	42	25	34	.32	.....	Cloudy.
10....	36	18	27	.01	63	Do.	27...	34	18	26	.....	56	Partly cloudy.
11....	18	5	12	.28	36	Cloudy.	28...	32	11	22	.04	43	Do.
12....	25	5	15	.02	39	Do.	29...	37	23	30	.21	1	Cloudy.
13....	44	12	28	.....	.....	Do.	30...	40	21	30	.02	26	Do.
14....	50	30	40	.07	32	Do.	31...	39	13	26	.....	100	Clear.
15....	51	26	38	.....	57	Partly cloudy.							
16....	52	25	38	.....	38	Do.	Mean	43.3	21.3	32.3	.....	.....
17....	54	28	41	.....	53	Do.							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.99; highest, 30.46, on 2d; lowest, 29.44, on 29th.

Temperature.^a—Highest, 60°, on 2d; lowest, 5°, on 11th; greatest daily range, 38°, on 2d; least daily range, 11°, on 19th. Mean for this month in—

°F.	°F.	°F.	°F.
1887.....	36	1894.....	27
1888.....	23	1896.....	25
1889.....	36	1897.....	20
1890.....	26	1898.....	21
1891.....	22	1899.....	23
1892.....	28	1900.....	34
1893.....	24	1901.....	27
		Mean of this month	
		for 18 years.....	27

Absolute maximum for this month for eighteen years, 60°; absolute minimum for this month for nineteen years, -22°; average daily excess of this month as compared with mean of eighteen years, 5.4°; accumulated excess since January 1, 1.67°; average daily excess since January 1, 1.9°.

Precipitation.^a—Total this month, 1.41 inches; snowfall, 17.1 inches; greatest precipitation in twenty-four hours, 0.32 inch, on 26th; snow on the ground at end of month, 0.2 inch. Total precipitation this month in—

Inches.	Inches.	Inches.	
1888.....	3.12	1895.....	2.79
1889.....	.53	1896.....	2.62
1890.....	4.92	1897.....	1.06
1891.....	2.41	1898.....	1.40
1892.....	3.05	1899.....	3.00
1893.....	.96	1900.....	3.13
1894.....	2.30	1901.....	1.46
		Average of this	
		month for 18 years.....	2.08

Deficiency of this month as compared with average of eighteen years, 0.67 inch; accumulated deficiency since January 1, 3.95 inches.

Wind.—Prevailing direction, south; total movement, 5,623 miles; average hourly velocity, 7.6; maximum velocity (for five minutes), 32 miles per hour, from northwest, on 26th.

Weather.—Number of clear days, 6; partly cloudy, 12; cloudy, 13; on which 0.01 inch or more of precipitation occurred, 14.

^a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

APRIL, 1905.

Date.	Temperature.			Precipitation.	Sunshine.	Character of day.	Date.	Temperature.			Precipitation.	Sunshine.	Character of day.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1....	47	14	30	Inch.	P.ct.		17....	45	18	32	Inch.	P.ct.	
2....	46	19	32	.....	100	Clear.	18....	58	26	42	Tr.	79	Partly cloudy.
3....	35	19	27	0.05	85	Do.	19....	47	33	40	0.04	64	Do.
4....	53	12	32	.....	100	Clear.	20....	50	30	40	.....	49	Cloudy.
5....	57	22	40	.....	100	Do.	21....	55	33	44	Tr.	40	Partly cloudy.
6....	60	27	44	.....	100	Do.	22....	59	29	44	.30	61	Do.
7....	61	30	46	.....	87	Partly cloudy.	23....	57	35	46	.....	47	Do.
8....	56	31	44	.25	41	Do.	24....	60	29	44	.....	58	Do.
9....	33	19	26	.40	13	Cloudy.	25....	61	37	49	Tr.	69	Do.
10....	32	16	44	.....	83	Clear.	26....	55	29	42	.02	62	Do.
11....	50	7	28	.....	100	Do.	27....	45	28	36	Tr.	31	Cloudy.
12....	50	25	38	.....	81	Partly cloudy.	28....	50	27	38	.....	66	Partly cloudy.
13....	54	23	38	.....	57	Do.	29....	50	29	40	Tr.	27	Cloudy.
14....	46	19	32	.01	58	Do.	30....	60	33	46	.04	38	Do.
15....	39	23	31	.05	40	Cloudy.							
16....	27	19	23	.36	23	Do.							
							Mean	49.9	24.7	37.3			

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.95; highest, 30.46, on 4th; lowest, 29.43, on 12th.

Temperature.^a—Highest, 61°, on 25th; lowest, 7°, on 11th; greatest daily range, 43°, on 11th; least daily range, 8°, on 16th. Mean for this month in—

°F.	°F.	°F.
1887..... 39	1894..... 38	1902..... 37
1888..... 43	1896..... 34	1903..... 37
1889..... 43	1897..... 38	1904..... 39
1890..... 39	1898..... 40	1905..... 37
1891..... 41	1899..... 36	
1892..... 32	1900..... 42	
1893..... 31	1901..... 36	
	Mean of this month	
	for 18 years.....	38

Absolute maximum for this month for eighteen years, 77°; absolute minimum for this month for nineteen years, zero; average daily deficiency of this month as compared with mean of eighteen years, 0.6°; accumulated excess since January 1, 1.49°; average daily excess since January 1, 1.2°.

Precipitation.^a—Total this month, 1.52 inches; snowfall, 11.9 inches; greatest precipitation in twenty four hours, 0.59 inch, on 8th and 9th. Total precipitation this month in—

Inches.	Inches.	Inches.
1887..... 1.40	1895..... 0.61	1902..... 2.14
1889..... .92	1896..... 1.29	1903..... .80
1890..... 1.39	1897..... 1.21	1904..... .96
1891..... .18	1898..... .95	1905..... 1.52
1892..... .92	1899..... 2.30	
1893..... .97	1900..... 1.93	
1894..... 1.87	1901..... 1.08	
	Average of this month	
	for 18 years.....	1.25

Excess of this month as compared with average of eighteen years, 0.27 inch; accumulated deficiency since January 1, 3.68 inches.

Wind.—Prevailing direction, southwest; total movement, 5,182 miles; average hourly velocity, 7.2; maximum velocity (for five minutes), 38 miles per hour, from south, on 26th.

Weather.—Number of clear days, 6; partly cloudy, 17; cloudy, 7; on which 0.01 inch or more of precipitation occurred, 10.

Miscellaneous phenomena (dates of).—Solar halos, 12th, 13th, and 24th.

^a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

MAY, 1905.

Date	Temperature.			Precipitation.	Sunshine.	Character of day.	Date.	Temperature.			Precipitation.	Sunshine.	Character of day.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1....	°F. 50	°F. 36	°F. 43	Inch. Tr.	P.ct. 14	Cloudy.	18....	°F. 45	°F. 28	°F. 36	Inch. 0.24	P.ct. 19	Cloudy.
2....	44	32	38	0.25	18	Do.	19....	60	24	42	.....	100	Clear.
3....	38	30	34	.....	.....	Do.	20....	65	33	49	.15	49	Partly cloudy.
4....	44	28	36	.....	60	Partly cloudy.	21....	44	30	37	.18	40	Do.
5....	52	21	36	.....	74	Do.	22....	53	25	39	.10	56	Do.
6....	54	30	42	Tr.	42	Do.	23....	49	35	42	.....	14	Cloudy.
7....	62	30	46	.....	83	Do.	24....	56	34	45	Tr.	30	Do.
8....	47	34	40	.39	10	Cloudy.	25....	55	32	44	.03	49	Partly cloudy.
9....	37	29	33	.16	.....	Do.	26....	44	35	40	.40	.....	Cloudy.
10....	40	27	34	Tr.	40	Partly cloudy.	27....	49	33	41	.40	18	Do.
11....	45	26	36	.01	32	Cloudy.	28....	52	35	44	.04	22	Do.
12....	48	29	38	.01	26	Do.	29....	60	39	50	.04	25	Do.
13....	51	32	42	.03	40	Partly cloudy.	30....	64	38	51	.01	59	Partly cloudy.
14....	56	38	47	.....	43	Do.	31....	71	38	54	.01	53	Do.
15....	57	35	46	.....	100	Clear.							
16....	68	28	48	.....	87	Partly cloudy.	Mean	52.5	31.6	42.0	.....	.....
17....	68	37	52	.01	40	Do.							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.88; highest, 30.28, on 16th; lowest, 29.32, on 9th.

Temperature.^a—Highest, 71°, on 31st; lowest, 21°, on 5th; greatest daily range, 40°, on 16th; least daily range, 8°, on 3d. Mean for this month in—

	°F.		°F.		°F.
1887.....	49	1895.....	46	1903.....	45
1888.....	46	1896.....	41	1904.....	45
1889.....	47	1897.....	54	1905.....	42
1890.....	50	1898.....	45		
1891.....	50	1899.....	42	Mean of this month	
1892.....	42	1900.....	50	for 19 years.....	47
1893.....	43	1901.....	52		
1894.....	50	1902.....	48		

Absolute maximum for this month for eighteen years, 89°; absolute minimum for this month for nineteen years, 15°; average daily deficiency of this month as compared with mean of nineteen years, 4.7°; accumulated excess since January 1, 3°.

Precipitation.—Total this month, 2.46 inches; snowfall, 6.7 inches; greatest precipitation in twenty-four hours, 0.48 inch, on 8th and 9th. Total precipitation this month in—

	Inches.		Inches.		Inches.
1889.....	1.40	1896.....	3.85	1903.....	0.65
1890.....	2.00	1897.....	1.55	1904.....	1.31
1891.....	2.12	1898.....	1.95	1905.....	2.46
1892.....	2.06	1899.....	2.52		
1893.....	1.01	1900.....	2.42	Average of this month	
1894.....	2.26	1901.....	2.72	for 17 years.....	1.97
1895.....	1.68	1902.....	1.59		

Excess of this month as compared with average of seventeen years, 0.49 inch; accumulated deficiency since January 1, 3.19 inches.

Wind.—Prevailing direction, northwest; total movement, 5,722 miles; average hourly velocity, 7.7; maximum velocity (for five minutes), 40 miles per hour, from west, on 20th.

Weather.—Number of clear days, 2; partly cloudy, 15; cloudy, 14; on which 0.01 inch or more of precipitation occurred, 18.

Miscellaneous phenomena (dates of).—Thunderstorms, 8th, 17th, 27th. Frost: Light, 6th, 7th, 11th, 16th, 25th; heavy, 5th, 19th.

^a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

JUNE, 1905.

Date.	Temperature.			Precipitation.	Character of day.	Date.	Temperature.			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
	°F.	°F.	°F.	Inch.		°F.	°F.	°F.	Inch.		
1.....	75	39	57	.....	Partly cloudy.	17.....	40	29	34	1.04	Cloudy
2.....	73	44	58	.....	Do.	18.....	52	28	40	.....	Clear.
3.....	74	44	59	.....	Do.	19.....	59	33	46	.....	Do.
4.....	70	42	56	Tr.	Do.	20.....	62	38	50	.....	Partly cloudy.
5.....	55	40	48	0.01	Cloudy.	21.....	67	34	50	.....	Do.
6.....	67	44	56	.....	Partly cloudy.	22.....	62	38	50	.04	Do.
7.....	77	36	56	.....	Clear.	23.....	41	34	38	.31	Cloudy.
8.....	70	42	56	.41	Partly cloudy.	24.....	48	34	41	.08	Do.
9.....	49	40	44	.43	Cloudy.	25.....	56	39	48	.20	Do.
10.....	58	39	48	.11	Do.	26.....	64	43	54	.....	Partly cloudy.
11.....	68	42	55	.....	Clear.	27.....	71	40	56	.....	Clear.
12.....	65	40	52	.25	Partly cloudy.	28.....	65	36	50	.....	Do.
13.....	64	35	50	.....	Do.	29.....	71	37	54	.....	Do.
14.....	67	37	52	.04	Do.	30.....	73	39	56	.....	Partly cloudy.
15.....	55	37	46	.13	Cloudy.						D
16.....	55	31	43	.....	Partly cloudy.	Mean.	62.4	37.8	50.1	.....

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.84; highest, 30.07, on 11th; lowest, 29.60, on 4th.

Temperature.^a—Highest, 77°, on 7th; lowest, 28°, on 18th; greatest daily range, 41°, on 7th; least daily range, 7°, on 23d. Mean for this month in—

°F.	°F.	°F.			
1887.....	57	1895.....	51	1903.....	57
1888.....	55	1896.....	56	1904.....	52
1889.....	57	1897.....	54	1905.....	50
1890.....	54	1898.....	55		
1891.....	51	1899.....	53	Mean of this month	
1892.....	52	1900.....	52	for 19 years.....	54
1893.....	55	1901.....	50		
1894.....	58	1902.....	54		

Absolute maximum for this month for nineteen years, 92°; absolute minimum for this month for nineteen years, 20°; average daily deficiency of this month as compared with mean of nineteen years, 3.7°; accumulated deficiency since January 1, 1.08°; average daily deficiency since January 1, 0.6°.

Precipitation.^a—Total this month, 3.05 inches; snowfall, 8 inches; greatest precipitation in twenty-four hours, 1.04 inches, on 17th. Total precipitation this month in—

Inches.	Inches.	Inches.			
1889.....	0.66	1896.....	0.73	1903.....	0.90
1890.....	.94	1897.....	2.34	1904.....	1.03
1891.....	3.05	1898.....	2.67	1905.....	3.05
1892.....	1.46	1899.....	1.90		
1893.....	.38	1900.....	1.17	Average of this month	
1894.....	3.10	1901.....	1.43	for 17 years.....	1.73
1895.....	2.71	1902.....	1.87		

Excess of this month as compared with average of seventeen years, 1.32; accumulated deficiency since January 1, 1.87 inches.

Wind.—Prevailing direction, southwest; total movement, 5,006 miles; average hourly velocity, 7; maximum velocity (for five minutes), 37 miles per hour, from southwest, on 27th.

Weather.—Number of clear days, 7; partly cloudy, 15; cloudy, 8; on which 0.01 inch or more of precipitation occurred, 12.

Miscellaneous phenomena (dates of).—Solar halos, 1st, 2d; hail, 8th; thunderstorms, 4th, 8th, 12th, 14th, 24th. Frost: Light, 13th, 16th, 19th; heavy, 18th.

^a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

JULY, 1905.

Date.	Temperature.			Precipitation.	Sunshine.	Character of day.	Date.	Temperature.			Precipitation.	Sunshine.	Character of day.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	°F.	°F.	°F.	Inch.	P. ct.			°F.	°F.	°F.	Inch.	P. ct.	
1....	61	41	51	0.13	17	Cloudy.	18...	79	40	60	.....	100	Clear.
2....	62	38	50	Tr.	38	Partly cloudy.	19...	75	50	62	.....	71	Partly cloudy.
3....	71	36	54	.....	90	Clear.	20...	81	47	64	.....	100	Clear.
4....	69	43	56	.....	79	Partly cloudy.	21...	82	45	64	.....	100	Do.
5....	73	37	55	.....	100	Clear.	22...	82	48	65	.....	97	Do.
6....	74	40	57	.....	78	Partly cloudy.	23...	82	47	64	Tr.	93	Do.
7....	71	42	56	.....	96	Clear.	24...	84	48	66	.05	77	Partly cloudy
8....	70	40	55	.....	100	Do.	25...	78	50	64	Tr.	65	Do.
9....	82	40	61	.....	100	Do.	26...	74	49	62	.18	40	Do.
10....	84	48	66	Tr.	86	Do.	27...	73	43	58	Tr.	50	Do.
11....	81	48	64	.05	65	Partly cloudy.	28...	73	46	60	.09	84	Do.
12....	80	44	62	.....	94	Clear.	29...	73	43	58	Tr.	84	Clear.
13....	80	48	64	.....	100	Do.	30...	76	43	60	Tr.	72	Partly cloudy
14....	76	52	64	.02	44	Partly cloudy.	31...	75	49	62	.07	49	Do.
15....	70	46	58	.75	42	Do.							
16....	72	42	57	.04	95	Clear.	Mean	75.2	44.5	59.8	.....	.....
17....	69	47	58	.....	96	Do.							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.99; highest, 30.27, on 8th; lowest, 29.71, on 11th.

Temperature. a.—Highest, 84°, on 10th; lowest, 36°, on 3d; greatest daily range, 42°, on 9th; least daily range, 20°, on 1st. Mean for this month in—

	°F.		°F.		°F.
1887.....	64	1895.....	60	1902.....	58
1888.....	64	1896.....	62	1903.....	60
1889.....	63	1897.....	60	1904.....	58
1890.....	66	1898.....	62	1905.....	60
1891.....	60	1899.....	61		
1892.....	62	1900.....	61	Mean of this month for	
1894.....	66	1901.....	67	18 years.....	62

Absolute maximum for this month for eighteen years, 96°; absolute minimum for this month for eighteen years, 30°; average daily deficiency of this month as compared with mean of eighteen years, 2.1°; accumulated deficiency since January 1, 1.73°; average daily deficiency since January 1, 0.8°.

Precipitation. a.—Total this month, 1.38 inches; greatest precipitation in twenty-four hours, 0.75 inch, on 15th. Total precipitation this month in—

	Inches.		Inches.		Inches.
1889.....	0.56	1896.....	2.09	1903.....	0.55
1890.....	.99	1897.....	1.11	1904.....	1.11
1891.....	3.15	1898.....	1.15	1905.....	1.38
1892.....	.98	1899.....	1.42		
1893.....	.99	1900.....	.80	Average of this month	
1894.....	.99	1901.....	.92	for 17 years.....	1.24
1895.....	.57	1902.....	2.29		

Excess of this month as compared with average of seventeen years, 0.14 inch; accumulated deficiency since January 1, 1.73 inches.

Wind.—Prevailing direction, southwest; total movement, 4,742 miles; average hourly velocity, 6; maximum velocity (for five minutes), 33 miles per hour, from northwest, on 23d.

Weather.—Number of clear days, 16; partly cloudy, 14; cloudy, 1; on which 0.01 inch or more of precipitation occurred, 9.

Miscellaneous phenomena (dates of).—Hail, 11th, 31st; thunderstorms, 1st, 10th, 11th, 14th, 15th, 20th, 23d, 24th, 25th, 26th, 28th, 30th, 31st. Frost: Light, 3d.

a Records prior to 1904 by post surgeon, United States Army.

ACTING SUPERINTENDENT YELLOWSTONE NATIONAL PARK.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

AUGUST, 1905.

Date.	Temperature.			Precipitation.	Sunshine.	Character of day.	Date.	Temperature.			Precipitation.	Sunshine.	Character of day.	
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.				
1....	76	44	60	Inch.	P.ct.		18....	71	38	54	Inch.	P.ct.		
2....	81	45	63	Tr.	80	Clear.	19....	79	41	60	78	78	Partly cloudy.	
3....	77	53	65		74	Partly cloudy.	20....	82	50	66	99	99	Clear.	
4....	78	45	62	0.03	51	Do.	21....	79	46	62	65	65	Partly cloudy.	
5....	71	48	60		81	Clear.	22....	77	52	64	88	88	Clear.	
6....	81	40	60		59	Partly cloudy.	23....	75	51	63	0.05	40	40	Partly cloudy.
7....	84	46	65	Tr.	96	Clear.	24....	83	46	64	.14	73	73	Do.
8....	85	49	67		81	Partly cloudy.	25....	72	57	64	Tr.	90	90	Clear.
9....	79	47	63	Tr.	43	Partly cloudy.	26....	76	52	64	64	64	Cloudy.	
10....	70	46	58	.01	20	Cloudy.	27....	80	49	64	Tr.	62	62	Partly cloudy.
11....	78	41	60	.01	69	Partly cloudy.	28....	79	54	66	Tr.	61	61	Do.
12....	76	44	60		49	Do.	29....	80	52	66		100	100	Clear.
13....	80	47	64	.08	53	Do.	30....	76	56	66	Tr.	68	68	Partly cloudy.
14....	78	44	61		92	Clear.	31....	68	46	57		100	100	Clear.
15....	69	41	55		82	Do.	Mean	76.3	46.8	61.6				
16....	63	36	50		46	Cloudy.								
17....	62	45	54	Tr.	21	Do.								

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.97; highest, 30.27, on 6th; lowest, 29.65, on 15th.
 Temperature. a.—Highest, 85°, on 8th; lowest, 36°, on 16th; greatest daily range, 41°, on 6th; least daily range, 15°, on 25th. Mean for this month in—

1887.....	61	1895.....	62	1902.....	59
1888.....	61	1896.....	60	1903.....	61
1889.....	64	1897.....	62	1904.....	60
1890.....	61	1898.....	63	1905.....	62
1891.....	62	1899.....	57		
1892.....	61	1900.....	61		
1894.....	68	1901.....	63		
				Mean of this month for 18 years.....	62

Absolute maximum for this month for nineteen years, 93°; absolute minimum for this month for eighteen years, 30°; average daily excess or deficiency of this month as compared with mean of eighteen years, 0.0°; accumulated deficiency since January 1, 1.73°; average daily deficiency since January 1, 0.7°.
 Precipitation. a.—Total this month, 0.32 inch; greatest precipitation in twenty-four hours, 0.19 inch, on 22d and 23d. Total precipitation this month in—

1889.....	0.64	1896.....	0.37	1903.....	0.45
1890.....	1.77	1897.....	.57	1904.....	1.11
1891.....	1.22	1898.....	2.05	1905.....	.32
1892.....	.64	1899.....	2.23		
1893.....	1.06	1900.....	.29		
1894.....	1.75	1901.....	1.65		
1895.....	.72	1902.....	.61		
				Average of this month for 17 years.....	1.03

Deficiency of this month as compared with average of seventeen years, 0.7a inch; accumulated deficiency since January 1, 2.44 inches.
 Wind.—Prevailing direction, southwest; total movement, 5,247 miles; average hourly velocity, 7; maximum velocity (for five minutes), 33 miles per hour, from west, on 9th.
 Weather.—Number of clear days, 12; partly cloudy, 15; cloudy, 4; on which 0.01 inch or more of precipitation occurred, 6.
 Miscellaneous phenomena (dates of).—Halos: Solar, 16th, 24th; lunar, 11th. Thunderstorms, 1st, 2d, 3d, 7th, 9th, 10th, 11th, 12th, 13th, 22d, 27th, 29th. Frost: Light, 19th.

a Records prior to 1904 by post surgeon, United States Army.

Meteorological record, Yellowstone Park, Wyoming, 1904-5—Continued.

SEPTEMBER, 1905.

Date.	Temperature.			Precipitation.	Sunshine.	Character of day.	Date.	Temperature.			Precipitation.	Sunshine.	Character of day.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	°F.	°F.	°F.	Inch.	P. ct.		°F.	°F.	°F.	Inch.	P. ct.		
1....	66	35	50	.....	100	Clear.	17....	56	32	44	0.01	44	Partly cloudy.
2....	74	34	54	.....	86	Do.	18....	58	25	42	.....	90	Clear.
3....	75	40	58	.....	36	Partly cloudy.	19....	66	34	50	.....	100	Do.
4....	67	47	57	0.01	20	Cloudy.	20....	70	49	60	.....	63	Partly cloudy.
5....	69	42	56	.06	30	Partly cloudy.	21....	76	46	61	Tr.	74	Do.
6....	72	36	54	.....	85	Clear.	22....	79	43	61	.....	100	Clear.
7....	75	37	56	.....	100	Do.	23....	83	42	62	.....	100	Do.
8....	74	41	58	Tr.	62	Partly cloudy.	24....	71	46	58	.04	28	Partly cloudy.
9....	75	41	58	.....	78	Do.	25....	61	43	52	.01	69	Do.
10....	75	44	60	.....	73	Do.	26....	65	47	56	.....	72	Do.
11....	74	48	61	Tr.	44	Do.	27....	73	41	57	.....	68	Do.
12....	74	45	60	.02	80	Clear.	28....	68	41	54	.11	56	Do.
13....	68	41	54	Tr.	70	Partly cloudy.	29....	41	30	36	.91	.....	Cloudy.
14....	64	36	50	.....	92	Clear.	30....	44	29	36	Tr.	50	Partly cloudy.
15....	66	34	50	.....	74	Partly cloudy.							
16....	69	32	50	.....	77	Do.	Mean	68.3	39.4	53.8	.....	.....

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.93; highest, 30.28, on 2d; lowest, 29.45, on 28th.

Temperature.^a—Highest, 83°, on 23d; lowest, 25°, on 18th; greatest daily range, 41°, on 23d; least daily range, 11°, on 29th. Mean for this month in—

	°F.		°F.		°F.
1887.....	56	1895.....	50	1902.....	51
1888.....	59	1896.....	49	1903.....	49
1889.....	50	1897.....	55	1904.....	52
1890.....	53	1898.....	52	1905.....	54
1891.....	52	1899.....	55		
1892.....	55	1900.....	50	Mean of this month for	
1894.....	54	1901.....	48	18 years.....	52

Absolute maximum for this month for nineteen years, 88°; absolute minimum for this month for eighteen years, 0°; average daily excess of this month as compared with mean of eighteen years, 1.4°; accumulated deficiency since January 1, 1.31°; average daily deficiency since January 1, 0.5°.

Precipitation.^a—Total this month, 1.17 inches; snowfall, 7.1 inches; greatest precipitation in twenty-four hours, 0.98 inch, on 28th and 29th; snow on the ground at end of month, trace. Total precipitation this month in—

	Inches.		Inches.		Inches.
1889.....	0.59	1896.....	1.10	1903.....	0.60
1890.....	.19	1897.....	.31	1904.....	.73
1891.....	1.74	1898.....	.90	1905.....	1.17
1892.....	1.60	1899.....	.90		
1893.....	1.44	1900.....	.87	Average of this month	
1894.....	.71	1901.....	2.85	for 17 years.....	1.00
1895.....	.43	1902.....	.90		

Excess of this month as compared with average of seventeen years, 0.17 inch; accumulated deficiency since January 1, 2.27 inches.

Wind.—Prevailing direction, southwest; total movement, 6,034 miles; average hourly velocity, 8; maximum velocity (for five minutes), 37 miles per hour, from southwest, on 28th.

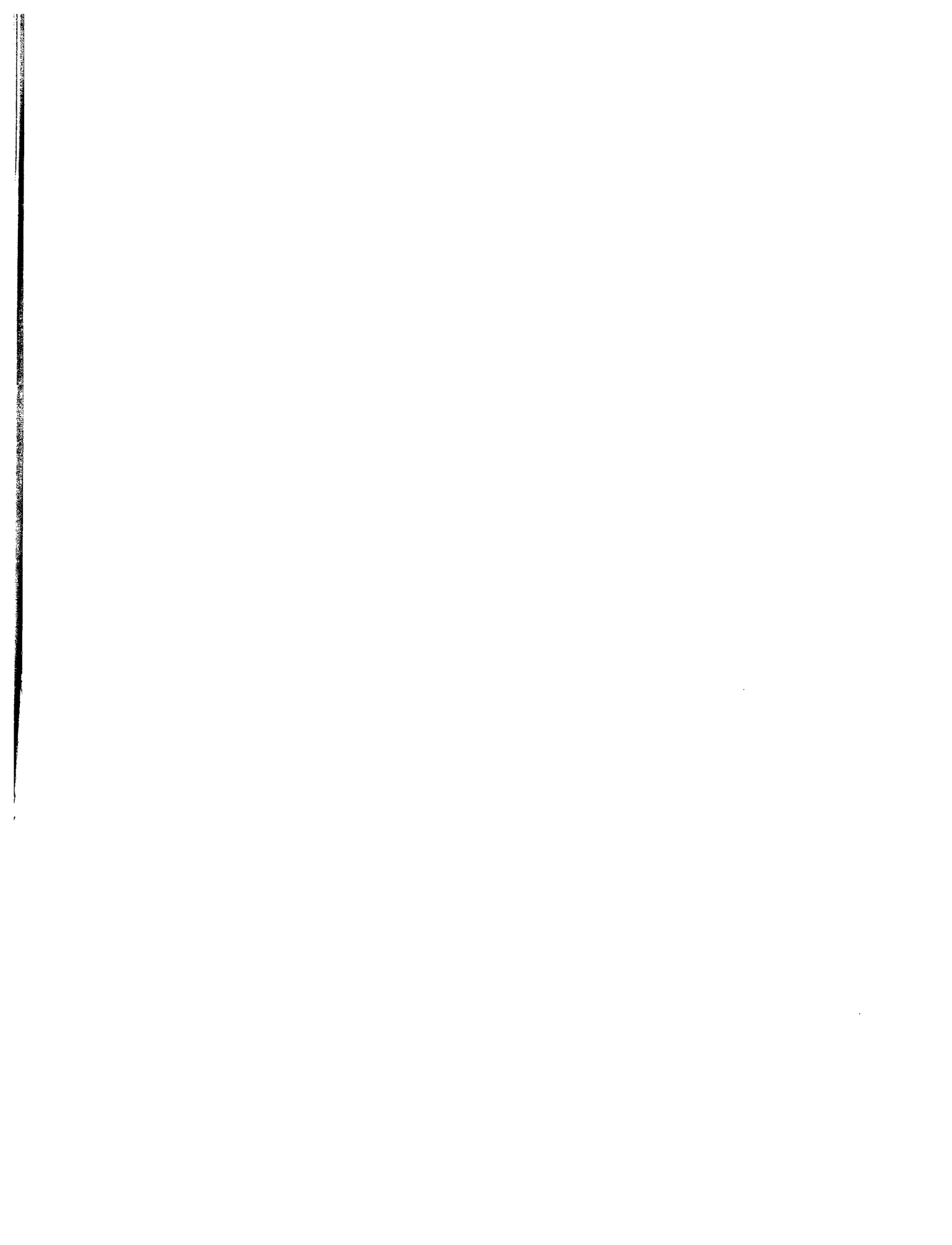
Weather.—Number of clear days, 10; partly cloudy, 18; cloudy, 2; on which 0.01 inch or more of precipitation occurred, 8.

Miscellaneous phenomena (dates of).—Halos: Solar, 9th. Thunderstorms, 4th, 5th. Frost: Light, 1st, 2d, 15th, 16th, 19th, 30th; heavy, 18th.

^a Records prior to 1904 by the post surgeon, United States Army.



YELLOWSTONE NATIONAL PARK LIBRARY



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REPORT

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Sub.

OF THE

ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

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Vol. #7

1906.

WASHINGTON:

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REPORT OF THE ACTING SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK.

OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 3, 1906.

SIR: I have the honor to submit the following report of the condition of affairs in the Yellowstone National Park and its management since the fiscal year ended June 30, 1905:

IMPROVEMENTS ABOUT THE ROOSEVELT ARCH AT NORTH ENTRANCE TO THE PARK.

The alfalfa field, which was planted two years ago near the Roosevelt Arch, has proved to be a complete success, and the hay cut from it was the salvation of the antelope herd and the means of keeping them almost entirely within the limits of the park during the past winter, and sent them off to their summer range in fine condition when the spring opened up.

I regret to report that the 12 small sequoia trees (*Sequoia gigantea*) from the giant forests in the Sequoia National Park, California, which were planted near the arch and on the plateau at the Mammoth Hot Springs have all died. These trees were carefully planted by a professional gardener, in accordance with the instructions which came with them, and during the winter they were partially protected by being covered with barrels which had holes bored thru them, and which were also raised above the ground so as to give all of the light and air needed.

BOUNDARY SURVEY.

It is again recommended that an appropriation be secured from Congress to the amount of \$2,000 for the purpose of plainly marking the boundaries of the park in such a way that persons unfamiliar with the country can not cross it without being aware of the fact.

FOREST FIRES.

During the past summer we have again been remarkably free from forest fires. Only one fire which bid fair to be of any consequence was started, and this was quickly extinguished by the troops from Fort Yellowstone before it had gotten thoroly under way. A few camp fires were left burning by tourists, but these were extinguished by the regular patrols and scouts.

TELEPHONE LINES.

The telephone system in the park is still in a very unsatisfactory condition, so far as the administration and police of the park is concerned, and it will greatly facilitate matters in this direction when

the Government owns its own line thruout the park, and this will probably be an accomplished fact before the winter sets in.

The Yellowstone Park Association has authorized the War Department to put up cross arms on their poles, on which they have but one wire, and as we now have on hand the necessary wire and insulators, but little additional material is required for the purpose of putting up this line. It is believed that the Signal Corps of the Army will furnish the additional material required. The completion of this line will undoubtedly be a source of satisfaction to the Yellowstone Park Association, for at times their line is overcrowded with business, and they will be glad to get rid of all messages which pertain purely to the administration of affairs in the park.

HOTELS.

The hotels thruout the park have been run during the past season in a very satisfactory manner. While the tourist travel this year has not been as heavy as it was during the previous season, it was greater than that of 1904, and it is more than probable that it will increase steadily as time goes on.

The hotel accommodations seem to be ample for the present needs at all places except at the Mammoth Hot Springs and at the Grand Canyon. The hotel at the Mammoth Hot Springs is an old affair, and, while it has been greatly improved of late and is very comfortable for a reasonable number of people, it has not a sufficient number of rooms to accommodate the large crowds which occasionally meet there.

The hotel at the canyon is entirely too small and is also very inconveniently located. It is well up among the hills, and by road about half a mile from the edge of the canyon, which is too great a distance for many tourists to walk. The canyon and falls are absolutely hidden from view from any point at or near this hotel.

The United States laws forbid the erection of a hotel within 220 yards of the canyon or falls. In my opinion the new hotel should be built at a point about 220 yards back of Point Lookout or in that vicinity, where it would still be entirely out of sight of the canyon and yet be within easy walking distance from the edge of the canyon and from a point where a beautiful view of the falls can be had.

PERMANENT CAMPS.

The Wylie permanent camps have been much improved during the past summer and have been run in a very satisfactory manner. The old camp at Apollinaris Spring, which was located in rather a cold and damp spot, has been removed to a new location near the head of Swan Lake Valley, and about six miles from the Mammoth Hot Springs. This location is a better one for the camp and is more conveniently situated with reference to the length of drives for the tourists who patronize this company.

A new camp has been established on Lost Creek, near Tower Falls, which enables this company to take their patrons from the canyon over Mount Washburn to Lost Creek, and from there to Gardiner, the terminus of the railroad.

YELLOWSTONE NATIONAL PARK TRANSPORTATION COMPANY.

This company has greatly improved its plant during the past season. Three new stables or wagon sheds have been erected at the Mammoth

Hot Springs; three new buildings, consisting of a wagon shed, a stable, and a mess house, have been built at Gardiner, and a number of new coaches, surreys, and horses have been purchased.

THE MONIDA AND YELLOWSTONE STAGE COMPANY.

It was fully expected by this company that the Oregon Short Line Railroad would have completed its branch road to the mouth of Ray Canyon on or before the beginning of the past tourist season, but in this they were disappointed by the failure of certain railroad contractors. This would have given the Monida Company but a short drive to the entrance of the park on the west, a distance of about 15 miles. On account of the failure of the contractors to complete this work this company has been compelled to bring in its passengers from Marysville, Idaho, a distance of about 55 miles from the border or western entrance of the park.

The president of the Monida Company informs me that the construction department of the Oregon Short Line has been directed to complete their branch line to the border of the park as soon as it is practicable to do so, and a recent letter from the general manager of this line informs me that owing to the extreme shortage of labor of all classes they do not anticipate that they will be able to build any farther this winter than to Big Springs, Idaho, but that they expect to complete their line next summer, not, however, before the opening of the park tourist season.

YELLOWSTONE LAKE BOAT COMPANY.

The Yellowstone Lake Boat Company several years ago, and before any road was constructed from Upper Geyser Basin to the Thumb, was granted the privilege of placing a small steamboat on Yellowstone Lake, to be run as an excursion boat. After the completion of the road from the Upper Geyser Basin to the Thumb, it was permitted to carry such passengers as desired to go from the Thumb to the Lake Hotel, a distance of about 18 miles, for a charge of \$3 per head. Tourists who take this trip over the lake regard the charge as exorbitant, and many complaints have been made concerning it. In the past, efforts have been made to bring about some amicable arrangement by which the tourists who travel by the various stage companies could have the option of going from the Thumb to the lake outlet either by stage or by boat without additional charge, but without success.

In my last report I stated that the time had arrived when it seemed to me to be absolutely necessary for the Department to take some action as to the matter of transportation on the Yellowstone Lake, and strongly urged the introduction of competition in the boat business, but no action was taken by the Department. The condition of affairs of this corporation as regards its relations with the transportation companies in the reservation is just as bad to-day, and even worse, than it has been at any time during the past eighteen years, and it is about time to end it.

As I have stated before, the solution of this trouble is perfectly simple, and easier now than it has been for some time past, for the reason that the lease of this corporation expires on January 21, 1907, and as it has forfeited all claims to any consideration on the part of the Department, the lease should under no consideration

be renewed. If for reasons, however, which I do not know, it becomes necessary to renew the lease of the Yellowstone Lake Boat Company, then an additional lease should be given to some other individual or company which would be willing to come to some reasonable understanding with the various transportation companies with reference to carrying their passengers across the lake. If the solution to this trouble suggested above is not satisfactory, it is recommended that the various transportation companies doing business in the park be directed or permitted to place a suitable boat on the lake for the purpose of carrying their passengers across the Thumb to the Lake Hotel.

Some time since the Monida and Yellowstone Stage Company express a desire to do this, and made an official application for authority to put on such a boat, and I have no doubt but that the Wylie Permanent Camping Company would now be glad to join them in such a proposition. If this latter suggestion meets with favor, I strongly urge that it be adopted in the interest of peace and harmony for all concerned in the administration of affairs in the park and for the benefit of the many tourists who visit it.

LARGE GAME IN THE PARK.

In spite of the heavy fall of snow in the park last winter, the large game pulled thru in good shape, and the percentage of loss was very small.

As stated before, the alfalfa field near Gardiner and the hay cut from it proved of great benefit to the antelope. This field yielded about one hundred tons of hay, which was fed to the antelope at times when they most needed it. Like all other wild animals that are cared for and protected by man, they soon learned that when the snow fell deeply on the hills, they could find something to eat at the haystack near the soldier station. It was estimated that about 1,500 of these animals came down to the feeding grounds near the haystacks last winter, and as very few of them died or were lost from any cause, the number this year should be at least 2,000.

The elk also learned that forage for wild game was being issued at Gardiner, and after the antelope had been fed they came down in large numbers and cleaned up all of the coarser parts of the alfalfa that was not eaten by the antelope. I was told by an exceedingly reliable man in Gardiner that 1,200 elk had been seen and counted on this alfalfa field one evening during the latter part of the winter. This combination of elk and antelope within a few hundred yards of the town of Gardiner presents a game picture or scene which can not now be duplicated at any other place in the United States, and it is one which the people of Gardiner are doing well to assist in preserving.

The buffalo herd still continues to thrive and now numbers 57. This is a very encouraging increase from the original herd of 2 bulls and 18 cows with which the herd was started four years ago. During the past summer arrangements have been completed to move all of the young buffalo of this herd to a point on the Lamar River, where they will be eventually turned loose. The place selected for the purpose of establishing these young buffalo is at the mouth of Rose Creek, where it flows into the Lamar River. The land along the river bottom at this point is particularly well suited for raising hay of any kind,

and with comparatively little work in the way of clearing and ditching for the purpose of irrigating it almost any quantity of hay can be raised. A very comfortable log cabin has been built for the use of the buffalo keeper, and about 1 square mile of fine grazing land has been inclosed by a suitable fence of smooth wire.

It is intended to keep the young buffalo in this inclosure and to feed them until they have become thoroly at home at this point. After this has been accomplished they will be gradually turned loose, and it is believed that they will not wander far from the haystack which will at all times be kept on hand ready to be fed out to them. All of the old buffalo will be kept in the pasture at the Mammoth Hot Springs as heretofore, and their young will be moved up to the new pasture on the Lamar from time to time as they become old enough to be driven there. If nothing more is accomplished by this division of the herd I am of the opinion that it is advisable to divide it so that in case of sickness or disease of any kind in either band it would not necessarily be communicated to the other.

ENLARGEMENT OF FORT YELLOWSTONE.

I desire to repeat my recommendation concerning the increase in the size of the garrison at Fort Yellowstone. In my opinion it is absolutely necessary for the proper protection of the park that this post should be increased to a four-troop or squadron post. If all the men in the two troops stationed here were selected (as I have requested that they should be), and men suited for the duties required of them, the present garrison would be sufficient, but as it is only a small proportion of them are old soldiers, and it is very difficult to find a sufficient number of suitable men to fill the many important details required of them. This enlargement of the post has been repeatedly recommended by the department commander and other distinguished officers of the Army, but it will probably never be made unless a special appropriation bill is past by Congress for the purpose of constructing the necessary barracks and quarters. The amount required for the construction of the additional buildings will be about \$75,000.

FISH AND FISH HATCHERY.

The United States Bureau of Fisheries has greatly improved its buildings and surrounding grounds at the fish hatchery near the West Thumb of Yellowstone Lake. The large pine trees were trimmed and the fallen timber and underbrush hauled out and burned. The exterior of the hatchery building has been very much improved by the addition of windows, cornice, and cedar shingles for siding, the finish being painted white, and the shingles allowed to weather stain. Timbers were also gotten out for the erection of a log cottage and barn, and the buildings are partially completed.

Mr. D. C. Booth, superintendent of the fisheries station at Spearfish, S. Dak., who has charge of the work in the park during the summer, reports that they collected during the season 2,455,000 eggs of the black-spotted trout (*Salmo clarkii*). These eggs were held at the hatchery until they were sufficiently matured, when the greater part of them were shipped to various parts of the United States for planting. A large number of these were shipped to Spearfish, S. Dak., to

be hatched and later distributed as fry thruout the Northwest. All of the shipments of both eggs and fish were received at their various destinations in excellent condition.

During the season they made the following plants of trout in the park:

Brook trout (<i>Salvelinus fontinalis</i>), brought from the hatchery at Spearfish:	
May 25, Willow Creek.....	35,000
May 26, Lava Creek.....	25,000
May 26, Indian Creek.....	20,000
May 26, Gibbon River, above Virginia Cascades.....	20,000
	100,000
Rainbow trout (<i>Salmo irideus</i>), brought from the hatchery at Spearfish:	
May 25, Gibbon River, below Virginia Cascades.....	10,000
Black spotted trout (<i>Salmo clarkii</i>), from hatchery in the park:	
July 25, Fisheries Creek.....	100,000
July 31, Duck Lake.....	115,000
	215,000
Total number of fish planted in the park.....	325,000

Mr. Booth reports that the shipment of black spotted trout eggs made in July, 1903, from the fish hatchery in the park to North Wales arrived in good condition, and has resulted in introducing the trout of Yellowstone Lake into the waters of Great Britain.

TOURIST TRAVEL THROUGH THE PARK.

The aggregate number of persons carried through the park over the regular route during the season of 1906 is as follows:

Yellowstone National Park Transportation Company, entering via northern entrance of park.....	7,788
Monida and Yellowstone Stage Company, entering via western entrance of park.....	2,059
Others at hotels, traveling with private transportation, bicyclers, etc..	588
	10,435
Total.....	10,435
Wylie Permanent Camping Company, and accommodated at its permanent camps.....	1,745
Other licensees of personally conducted camping parties.....	1,134
	2,879
Total number camping, traveling with licensed transportation.....	2,879
Total number of tourists traveling through the park with private transportation, as "camping parties".....	3,868
	17,182
Grand total of all visitors to the park, season 1906.....	17,182

During the season 5,188 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 2,791 entered the park with the Yellowstone National Park Transportation Company, 618 with the Monida and Yellowstone Stage Company, 1,638 with the Wylie Permanent Camping Company, and the balance, 141 people, were campers.

CONSTRUCTION AND REPAIR OF ROADS, BRIDGES, ETC., AND OTHER IMPROVEMENTS IN THE PARK.

The following statement, furnished by Lieut. E. D. Peek, Corps of Engineers, U. S. Army, who is in charge of improvement work in the park, shows what has been done in the way of improvements in the park, repair of roads and bridges, etc., under the regular appropriations made by Congress for this purpose.

IMPROVEMENT OF YELLOWSTONE NATIONAL PARK.

The work which has been done during the past season was carried on from the funds appropriated June 30, 1906, and the balance remaining from the appropriation of March 3, 1905.

GENERAL REPAIRS.

The entire system, including the western, eastern, and southern approaches, was kept in as fair a state of repair as the limited means at my disposal would permit. Considerable snow had to be shoveled in order to open up the circuit for tourist travel on June 1. The greatest difficulty was experienced on that portion between the Upper Basin and the Thumb, where snow was shoveled until the 10th of June.

On the Cooke City road considerable work was done in the vicinity of Jackson Grade where Soda Butte Creek joins the Lamar River. For a distance of over 1,200 feet the side of the road was thoroly ripped with large rocks in order to prevent the spring freshets from washing out the dirt road. Above Soda Butte to the park boundary all the smaller depressions were filled and the road placed in fairly good condition.

In the Dunraven Pass road the bridges which had been washt out by the spring freshets and the snowslides were replaced, and the policy was to put them out farther from the mountain side in order to allow the snow to pass under the bridges.

The large wooden bridge spanning Sulphur Creek, three miles from the canyon on the road to Yellowstone Lake, was removed and replaced by a large earth fill. An iron culvert 36 inches in diameter was put in place in order to carry off the water. This fill was raised some 16 inches higher than the old bridge and both approaches were materially cut down in order to lessen the grade.

Ten miles from Norris, on the Fountain road, where the road turns off and crosses the Gibbon to go to Riverside, a considerable change was made. On the far side of the Gibbon a very steep hill of about 12 per cent grade was cut down to 5 per cent by cutting down the top of the hill several feet and raising the bridge 18 inches, and then filling in on both sides.

Two miles from Norris, on the canyon road, two very objectionable hills were cut down and the sag between them raised several feet.

A large clearing was made thru the standing timber between the road and the base of Roaring Mountain, in order to allow the tourists to obtain a good view of the mountain.

Five miles from the springs, on the Tower Falls road, a trail was cut and clearing made to reach the falls of the East Gardiner.

At Mud Geyser the road was widened slightly to make a proper alignment with the new passenger platforms which had been recently constructed. A couple of hundred feet of retaining wall was placed on the upper side of the road and the road raised considerably. A walk of gravel was laid from the unloading platform to the Mud Volcano, thence to the Green Gable Spring, and back to the loading platform. This improvement helped considerably in the handling of tourists in a short space of time, and at the same time allowed them to see everything. All dead and down timber and stumps in the vicinity of the geyser were hauled away and either burned or put out of sight.

The ground about Apollinaris Spring was entirely cleared of all decaying vegetation and dead timber. The old spring which was very difficult of approach in wet weather, was boxed up, and conveyed into a suitable well, constructed of rough stones, with drinking cups attached for the public use. The well was surrounded with blind drains and covered over with gravel, in order to keep the surroundings dry. Footpaths of gravel leading from the landing platform to the spring and to the ground surrounding were made.

CLEARING OF FALLEN TIMBER AND REFUSE.

Many protests have been made concerning the large amount of down timber and stumps which borders the roadway over almost the entire circuit. A very vigorous effort was made to begin the carrying away of this unsightly mass. Beginning at Nez Perce Creek, passing the Fountain Hotel, and 2 miles beyond toward the Upper Basin, the ground was entirely cleared of all dead timber for a distance of a couple of hundred feet from the road. This timber was burned or hauled entirely out of sight.

For a distance of two miles and a half from the Thumb toward the Lake Hotel all timber between the road and the lake was hauled away or burned. From the Lake Hotel for two miles toward the canyon all timber and unsightly rubbish was removed for a distance of 200 feet. Along the lake road for a distance of 3 miles from the canyon there was always an unsightly mass, due to the great amount of fallen timber lying in the river. This timber collected all the slime and vegetable matter and always presented an unsightly appearance. This entire stretch, including the adjoining hillsides, was thoroly cleaned and all timber and refuse burned.

In addition to the foregoing a small crew was sent around the park circuit and cleaned all camping sites of cans, glass, bottles, etc. At each place holes were dug in order to afford camping parties places to dispose of cans and refuse. It is to be hoped that during the coming winter suitable signs may be provided in order to instruct campers where to make their disposals.

CULVERTS.

Numerous vitrified clay culverts were placed during the season, replacing old wooden ones which had fallen out due to decay. Two miles from the canyon on the lake road a bridge was replaced by tile culvert, in addition to the large iron culvert at Sulphur Creek.

NORTH ENTRANCE.

The lawns, shrubbery, and vines in the vicinity of the north entrance were kept properly irrigated and trimmed thruout the season.

GARDINER TO MAMMOTH HOT SPRINGS.

Over two miles of this road was entirely resurfaced with a fair quality of material taken from the east slope of Capitol Hill.

Some unexpected expense was incurred in keeping the road cleared at two points between the second and third mile posts, where earth

slides of considerable magnitude occurred at intervals thruout the season, threatening at times to temporarily delay all traffic.

GROUNDS AT MAMMOTH HOT SPRINGS.

Irrigation and mowing of lawns and the care of shrubbery, walks, and roads at Mammoth Hot Springs was continued thruout the season.

A 12-inch culvert was laid and about 500 feet of ditch constructed to convey water from the electric-light plant power ditch to the Mammoth Hot Springs plateau for irrigation purposes.

Some of the very unsightly stumps and down timber about the hot springs was piled and burned. An attractive well was erected at the warm soda spring near Orange Geyser, cups being provided for use by visitors.

A substantial stairway was built to the floor of the Devil's Kitchen.

BUNSEN PEAK ROAD.

This road was examined at intervals and kept free of fallen trees and earth slides.

PETRIFIED TREES.

At a point $16\frac{3}{4}$ miles from the springs on the Tower Falls road a new road a half mile in length was built to the two petrified trees that have long been objects of interest in that vicinity. The surface soil surrounding the trees has been removed to a depth of about 4 feet, at which depth the trees seem to be embedded on all sides in rock. The diameter of the trees below the level of the surrounding earth is much more than above. This is due to the deterioration caused by the weather, and also from the fact that tourists are continually chipping off pieces of the trees. Work is now being carried on to uncover to a considerable depth these trees, which are now embedded in rock, and if possible to expose their roots. When this is done the recess is to be surrounded by a small concrete wall surmounted with an iron fence, in order to protect the trees from any further vandalism. These steps are deemed necessary because these two trees will be practically the only ones that will be accessible to tourists without going on foot or on horse.

STAIRWAYS, PLATFORMS, ETC.

An unloading platform of about 100 feet in length was built at Apollinaris Spring. At Mud Geyser two platforms were built, one for unloading the tourists and another one for loading. These platforms are each 50 feet long and will accommodate two coaches at once. At the Upper Falls a platform 50 feet in length was built at the head of the stairways leading down to the falls. This platform greatly facilitates the handling of the people, and is also of great benefit to tourists, as it is much more convenient than heretofore.

New outhouses were built at Apollinaris Spring, Gibbon River, De Lacy Creek, Mud Geyser, and Dunraven Pass.

Some of the old pole and log stairways and landings along the canyon were replaced by neat, substantial structures, having numerous resting places provided with seats. At the Upper Falls two stairways were built leading directly from the unloading platform down to

the falls. At the foot of the stairways large platforms were built with suitable benches to permit the sightseers to view the falls. At the Lower Falls a stairway some 360 feet in vertical height and some 700 feet long, provided with numerous landings, was built. All these landings were provided with seats in order to permit parties to rest. At Grand View a walk some 150 feet in length was made, and at the extreme end a small platform with seats was provided. At Inspiration Point, which was almost inaccessible on a rainy day or bad weather, on account of the nature of the soil, a long flight of stairs, provided with landings and seats, was constructed, and at the extreme end a suitable platform together with necessary benches. At the head of the stairs a small unloading platform was also constructed. At Artist Point a platform with seats was built on top of the rock, together with a stairway leading to the unloading platform.

In constructing the stairways leading to these points of interest the aim has been to make them accessible for the old as well as the young. All stairways are constructed of heavy plank and 4 feet wide, with very easy rises, in order to allow people to ascend and descend who can not go unassisted. The greater part of these places heretofore were inaccessible to those people who could not climb over rocks and did not feel secure unless they knew they were standing on a well-built foundation. It is to be hoped that before the season is over all the stairways along the canyon can be so stained as to blend in with the surrounding rocks, in order that they may not detract any from the beauty of the canyon.

SPRINKLING.

This work was delayed owing to the lateness of the appropriation for the park work, but about the 10th of July all the wagons were at work, covering about 100 miles of roadway. About thirty new tanks were made and installed at various points on the main circuit, the greater portion of them filling the sprinklers by gravity. A number of pumping tanks were converted into gravity tanks. On the run from Gardiner to Golden Gate, a distance of 9 miles, there are at present no pumping tanks, and this relieves the necessity of carrying pump and suction hose on the sprinkler. It also does away with the necessity of carrying an extra laborer. Two hydraulic rams were installed for supplying water to gravity tanks. One of these tanks is situated on top of the Norris Hill and the other in the vicinity of Virginia Cascades. The installation of these rams was a great benefit to the sprinkling system, because it did away with the doubling of the road and permitted the hauling of the water down hill in place of up.

Both rams proved successful in every way. From the experience gained in the park it is certain that all or nearly all sprinklers must be provided with gravity tanks in order to give the best satisfaction.

SAWMILL.

The sawmill commenced cutting lumber about August 1 and sawed a considerable amount of lumber for stairways, platforms, culverts, bridge repairs, and buildings. The mill at present is cutting lumber for the erection of small section houses to be built on the divide between the Upper Basin and the Thumb. These houses are to be used by the crews in the early spring in shoveling snow and by the repair crews.

Meteorological record, Yellowstone Park, Wyoming, 1905-6.

OCTOBER, 1905.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	52	28	40	.....	Partly cloudy.	Per ct. 50	18.....	19	7	13	0.20	Partly cloudy.	Per ct. 48
2.....	61	43	52	.....	do	58	19.....	30	6	18	.....	Clear	100
3.....	67	48	58	.....	Clear	94	20.....	42	11	26	T.	Partly cloudy.	61
4.....	69	40	54	.....	do	100	21.....	43	21	32	.....	Clear	83
5.....	69	40	54	.....	do	91	22.....	49	14	32	.....	do	100
6.....	65	50	58	T.	Partly cloudy.	43	23.....	51	24	38	.....	do	100
7.....	68	35	52	0.15	Clear	82	24.....	50	25	38	.....	do	100
8.....	39	22	30	.24	Cloudy	19	25.....	45	35	40	.12	Cloudy	3
9.....	37	21	29	T.	Partly cloudy.	21	26.....	38	21	30	.05	Partly cloudy.	71
10.....	45	18	32	.....	Clear	100	27.....	37	16	26	.....	Clear	100
11.....	57	24	40	.....	do	100	28.....	42	15	28	.....	Partly cloudy.	69
12.....	53	32	42	.03	Cloudy	28	29.....	26	10	18	T.	do	57
13.....	35	24	30	.02	do	5	30.....	34	4	19	.....	Clear	100
14.....	39	15	27	.....	Partly cloudy.	60	31.....	45	8	26	.....	do	100
15.....	31	26	28	.34	Cloudy	1	Mean.	45.3	23.0	34.2	.....	.....	.....
16.....	36	19	28	T.	Partly cloudy.	30							
17.....	31	12	22	.27	Cloudy	2							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.16; highest, 30.61 on 10th; lowest, 29.46 on 7th.

Temperature.—Highest, 69° on 5th; lowest, 4° on 30th; greatest daily range, 37° on 31st; least daily range, 5° on 15th. Mean for this month in 1887, 41°; 1888, 43°; 1889, 45°; 1890, 38°; 1891, 41°; 1892, 42°; 1893, —°; 1894, 44°; 1895, 43°; 1896, 42°; 1897, 41°; 1898, 36°; 1899, 38°; 1900, 42°; 1901, 46°; 1902, 44°; 1903, 45°; a 1904, 44°; 1905, 34°. Mean of this month for 18 years, 42°; absolute maximum for this month for 19 years, 82°; absolute minimum for this month for 18 years, -20°; average daily deficiency of this month as compared with mean of 18 years, 7.4°; accumulated deficiency since January 1, 360°; average daily deficiency since January 1, 1.2°.

Precipitation.—Total this month, 1.42 inches; snowfall, 13.7 inches; greatest precipitation in 24 hours, 0.45 inch on 17th and 18th; snow on the ground at end of month, trace. Total precipitation this month in 1889, 1.32; 1890, 1.68; 1891, 1.44; 1892, 0.79; 1893, 1.34; 1894, 0.89; 1895, 0.44; 1896, 0.06; 1897, 1.72; 1898, 2.25; 1899, 2.02; 1900, 1.22; 1901, 0.92; 1902, 0.20; 1903, 0.50; a 1904, 0.67; 1905, 1.42; average of this month for 17 years, 1.11 inches; excess of this month as compared with average of 17 years, 0.31 inch; accumulated deficiency since January 1, 1.96 inches.

Wind.—Prevailing direction, SW.; total movement, 5,707 miles; average hourly velocity, 8 miles; maximum velocity (for five minutes), 39 miles per hour, from SW., on 7th.

Weather.—Number of clear days, 14; partly cloudy, 11; cloudy, 6; on which 0.01 inch or more of precipitation occurred, 9.

Miscellaneous phenomena (dates of).—Frost, killing, 1st.

NOVEMBER, 1905.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	44	15	30	.....	Partly cloudy.	Per ct. 71	17.....	47	28	38	.....	Cloudy	Per ct. 20
2.....	49	28	38	.....	do	93	18.....	43	29	36	T.	Partly cloudy.	73
3.....	47	32	40	.....	do	68	19.....	42	28	35	.....	Cloudy	7
4.....	34	26	30	0.01	do	37	20.....	35	24	30	0.65	do	.....
5.....	40	16	28	.....	Clear	100	21.....	27	13	20	.....	Partly cloudy.	60
6.....	48	21	34	.....	do	85	22.....	36	10	23	.....	Clear	100
7.....	48	21	34	.....	do	88	23.....	32	21	26	.....	Cloudy	26
8.....	44	18	31	.....	Partly cloudy.	68	24.....	32	22	27	T.	do	.....
9.....	50	19	34	.....	Clear	100	25.....	33	27	30	.20	do	.....
10.....	52	21	36	.....	do	100	26.....	35	24	30	.12	do	22
11.....	51	20	36	.....	do	100	27.....	25	4	14	.15	do	11
12.....	54	20	37	.....	do	100	28.....	4	- 8	- 2	.08	do	9
13.....	57	19	38	.....	do	100	29.....	20	- 7	6	T.	do	22
14.....	54	26	40	.....	do	100	30.....	26	15	20	.....	Partly cloudy.	31
15.....	52	28	40	.....	do	100	Mean.	40.4	19.5	30.0	.....	.....	.....
16.....	52	25	38	.....	do	100							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.13; highest, 30.58 on 12th; lowest, 29.44 on 27th.

a Records prior to 1904 by the post surgeon, United States Army.

YELLOWSTONE NATIONAL PARK.

Temperature.—Highest, 57° on 13th; lowest, -8° on 28th; greatest daily range, 38° on 13th; least daily range, 6° on 25th. Mean for this month in 1887, 34°; 1888, 27°; 1889, 27°; 1890, 31°; 1891, 27°; 1892, 30°; 1893, —; 1894, 36°; 1895, 20°; 1896, 19°; 1897, 30°; 1898, 25°; 1899, 36°; 1900, 29°; 1901, 35°; 1902, 89°, 2.19; 1890, 0.49; 1891, 2.00; 1892, 1.90; 1893, 2.51; 1894, 0.15; 1895, 1.30; 1896, 3.92; 1897, 2.98; 1898, 1.55; 1899, 0.03; 1900, 1.17; 1901, 1.25; 1902, 2.35; a 1903, 1.40; 1904, 0.18; 1905, 1.21; average of this month for 17 years, 1.56 inches; deficiency of this month as compared with average of 17 years, 0.35 inches; accumulated deficiency since January 1, 2.31 inches.

Precipitation.—Total this month, 1.21 inches; snowfall, 15.7 inches; greatest precipitation in 24 hours, 1.65 inch on 20th; snow on ground at end of month, 7.8 inches. Total precipitation this month in 1887, 2.11; 1888, 2.11; 1889, 2.11; 1890, 2.11; 1891, 2.11; 1892, 2.11; 1893, 2.11; 1894, 2.11; 1895, 2.11; 1896, 2.11; 1897, 2.11; 1898, 2.11; 1899, 2.11; 1900, 2.11; 1901, 2.11; 1902, 2.11; 1903, 2.11; 1904, 2.11; 1905, 2.11; average of this month for 17 years, 2.11 inches; deficiency of this month as compared with average of 17 years, 0.90 inches; accumulated deficiency since January 1, 1.11°.

Wind.—Prevailing direction, SW.; total movement, 5,235 miles; average hourly velocity, 7 miles; maximum velocity (for five minutes), 26 miles per hour, from SW. on 25th.

Weather.—Number of clear days, 12; partly cloudy, 8; cloudy, 10; on which 0.01 inch or more of precipitation occurred, 6.

DECEMBER, 1905.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	21	4	12	0.02	Partly cloudy.	52	18.....	24	25	30	0.01	Partly cloudy.	59
2.....	24	12	18	T.	Cloudy	10	19.....	32	22	27	0.01	do	42
3.....	35	22	28	T.	Partly cloudy.	33	20.....	24	8	16	.01	do	40
4.....	36	15	26	.....	Clear	100	21.....	20	.....	10	.01	Clear	95
5.....	34	8	21	.....	do	89	22.....	14	-8	3	.....	do	77
6.....	35	12	24	.....	do	89	23.....	13	1	7	.....	Cloudy	15
7.....	32	21	26	T.	Cloudy	1	24.....	20	6	13	.....	Partly cloudy.	33
8.....	31	7	19	.02	Clear.	82	25.....	24	16	20	T.	do	42
9.....	25	5	15	.....	do	90	26.....	33	13	23	.06	do	51
10.....	27	9	18	.....	Partly cloudy.	22	27.....	27	12	20	.01	do	31
11.....	34	13	24	.....	do	33	28.....	16	4	10	.....	Clear	80
12.....	31	8	20	.....	Clear	100	29.....	21	6	14	.....	Partly cloudy.	52
13.....	35	8	22	.....	Cloudy	10	30.....	16	7	12	.03	Cloudy	.....
14.....	32	8	20	.....	Clear	100	31.....	21	7	14	.02	do	22
15.....	35	16	26	.....	Cloudy	18							
16.....	38	16	27	.....	Clear	86	Mean.	27.5	10.2	18.8	.....	
17.....	34	25	30	.....	Partly cloudy.	32							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.30; highest, 30.90 on 9th; lowest, 29.78 on 19th.

Temperature.—Highest, 38° on 16th; lowest, -8° on 22d; greatest daily range, 27° on 13th; least daily range, 8° on 25th; mean for this month in 1887, 21°; 1888, 22°; 1889, 25°; 1890, 28; 1891, 18°; 1892, 16°; 1893, 24°; 1894, 20°; 1895, 19°; 1896, 28°; 1897, 19°; 1898, 17°; 1899, 19°; 1900, 24°; 1901, 22°; 1902, 23°; a 1903, 23°; 1904, 23°; 1905, 19°. Mean of this month for 19 years, 22°; absolute maximum for this month for 19 years, 47°; absolute minimum for this month for 19 years, -25°; average daily deficiency of this month as compared with mean of 19 years, 2.8°; accumulated deficiency since January 1, 44°; average daily deficiency since January 1, 1.2°.

Precipitation.—Total this month, 0.19 inch; snowfall, 3.3 inches; greatest precipitation in 24 hours, 0.06 inch on 26th; snow on the ground at end of month, 4.1 inches. Total precipitation this month in 1887, 2.41; 1889, 8.89; 1890, 0.89; 1891, 2.77; 1892, 2.17; 1893, 1.91; 1894, 1.34; 1895, 1.29; 1896, 0.46; 1897, 0.80; 1898, 0.67; 1899, 1.89; 1900, 1.17; 1901, 2.53; 1902, 0.85; a 1903, 0.40; 1904, 1.19; 1905, 0.19; average of this month for 18 years, 1.77 inches; deficiency of this month as compared with average of 18 years, 1.58 inches; accumulated deficiency since January 1, 3.89 inches.

Wind.—Prevailing direction, S.; total movement, 5,283 miles; average hourly velocity, 7 miles; maximum velocity (for five minutes) 28 miles per hour, from SW. on 25th.

Weather.—Number of clear days, 11; partly cloudy, 13; cloudy, 7; on which 0.01 inch, or more, of precipitation occurred, 9.

Miscellaneous phenomena (dates of).—Halos: solar, 21st, 22d; lunar, 6th, 9th.

a Records prior to 1903 by the post surgeon, United States Army.

JANUARY, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	° F. 10	° F. 1	° F. 8	In. .02	Clear	Per ct. 85	18....	° F. 38	° F. 18	° F. 28	In. 0.06	Cloudy	Per ct. 81
2.....	20	1	10	0.02	Partly cloudy.	76	19....	38	15	26	.40	do	40
3.....	23	3	13	.05	Cloudy	70	20....	20	1	10	T.	Partly cloudy.	40
4.....	31	17	24	T.	Partly cloudy.	10	21....	13	5	4	T.	Cloudy	13
5.....	29	19	24	T.	Cloudy	3	22....	20	13	16	T.	do	20
6.....	31	23	27	.02	do	80	23....	32	20	26	.01	do	100
7.....	30	3	16	.03	Clear	83	24....	35	27	31	.....	do	100
8.....	31	1	15	.....	do	3	25....	41	21	31	.....	Clear	100
9.....	31	18	24	T.	Cloudy	49	26....	40	18	29	.....	do	100
10.....	28	11	20	T.	Partly cloudy.	.....	27....	38	13	26	.....	do	100
11.....	32	25	28	.08	Cloudy .....	.....	28....	40	14	27	.....	do	100
12.....	33	28	30	.10	do .....	.....	29....	33	19	26	.....	Cloudy	68
13.....	61	13	22	.14	Partly cloudy.	44	30....	44	29	36	.....	Partly cloudy.	50
14.....	24	7	16	T.	Cloudy	7	31....	44	21	32	.....	do .....	.....
15.....	25	4	14	.02	do	17	Mean.	30.8	13.8	22.3	.....	.....	.....
16.....	35	17	26	.52	do	40	.....	.....	.....	.....	.....	.....	.....
17.....	29	17	23	T.	Partly cloudy.	.....	.....	.....	.....	.....	.....	.....	.....

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.17; highest, 30.76 on 8th; lowest, 29.12 on 19th.

Temperature.—Highest, 44° on 30th; lowest, -5° on 21st; greatest daily range, 32° on 8th; least daily range, 5° on 12th. Mean for this month in 1887, 19°; 1888, 11°; 1889, 15°; 1890, 10°; 1891, 20°; 1892, 16°; 1893, 17°; 1894, 17°; 1895, 19°; 1896, 26°; 1897, 16°; 1898, 15°; 1899, 20°; 1900, 22°; 1901, 21°; 1902, 17°; 1903, 23°; 1904, 19°; 1905, 20°; 1906, 22°. Mean of this month for 20 years, 18°; absolute maximum for this month for 20 years, 49°; absolute minimum for this month for 20 years, -41°; average daily excess of this month as compared with mean of 20 years, 4.1°; accumulated excess since January 1, 127°; average daily excess since January 1, 4.1°.

Precipitation.—Total this month, 1.48 inches: snowfall, 18.8 inches. Greatest precipitation in 24 hours, 0.52 inch on 16th. Snow on the ground at end of month, 10 inches. Total precipitation this month in 1887, 7.70; 1888, 3.93; 1889, 1.05; 1890, 6.70; 1891, 0.48; 1892, 1.40; 1893, 1.82; 1894, 1.82; 1895, 4.76; 1896, 2.21; 1897, 1.12; 1898, 0.31; 1899, 4.21; 1900, 0.90; 1901, 2.26; 1902, 0.96; 1903, 0.60; 1904, 0.93; 1905, 0.25; 1906, 1.48; average of this month for 20 years, 2.24 inches; deficiency of this month as compared with average of 20 years, 0.76 inch; accumulated deficiency since January 1, 0.76 inch.

Wind.—Prevailing direction, S.; total movement, 6,839 miles; average hourly velocity, 9 miles; maximum velocity (for five minutes), 38 miles per hour, from NW. on 16th.

Weather.—Number of clear days, 8; partly cloudy, 8; cloudy, 15; on which 0.01 inch or more of precipitation occurred, 12.

FEBRUARY, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	° F. 41	° F. 16	° F. 28	.....	Partly cloudy.	Per ct. 78	16....	° F. 35	° F. 12	° F. 24	In. 0.01	Partly cloudy.	Per ct. 61
2.....	46	15	30	.....	Clear	100	17....	33	26	30	.01	Cloudy	13
3.....	37	4	20	T.	Partly cloudy.	59	18....	39	28	34	T.	do	19
4.....	26	- 6	10	.....	Clear	100	19....	34	22	28	.14	Partly cloudy.	78
5.....	27	- 2	12	.....	do	100	20....	34	22	28	.05	Cloudy	10
6.....	32	1	16	.....	do	100	21....	35	21	28	.20	do	4
7.....	35	3	19	.....	do	100	22....	31	18	24	.02	Partly cloudy.	50
8.....	31	5	18	.....	do	86	23....	30	16	23	T.	do	78
9.....	34	2	18	.....	Partly cloudy.	80	24....	31	16	24	.03	do	46
10.....	33	13	23	T.	do	41	25....	33	16	24	.09	do	38
11.....	33	21	27	.....	do	42	26....	31	16	24	T.	Cloudy	4
12.....	37	12	24	T.	do	54	27....	40	30	35	.12	do	6
13.....	21	8	14	0.01	do	44	28....	34	19	26	.80	do	1
14.....	35	18	26	T.	Cloudy	29	Mean.	33.7	13.9	23.8	.....	.....	.....
15.....	36	16	26	.36	do .....	.....	.....	.....	.....	.....	.....	.....	.....

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.14; highest, 30.64 on 2d; lowest, 29.41 on 28th.

Records prior to 1904 by the post surgeon, United States Army.

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Temperature.—Highest, 46° on 2d; lowest -6° on 4th; greatest daily range, 33° on 3d; least daily range, 7° on 17th. Mean for this month in 1887, 14°; 1888, 27°; 1889, 20°; 1890, 18°; 1891, 14°; 1892, 24°; 1893, 16°; 1894, 12°; 1895, 19°; 1896, 25°; 1897, 20°; 1898, 25°; 1899, 11°; 1900, -; 1901, 18°; 1902, 27°; 1903, 13°; ^a1904, 24°; 1905, 17°; 1906, 24°. Mean of this month for 19 years, 19°; absolute maximum for this month for 19 years, 50°; absolute minimum for this month for 19 years, -36°; average daily excess of this month as compared with mean of 19 years, 4.4°; accumulated excess since January 1, 250°; average daily excess since January 1, 4.2°

Precipitation.—Total this month, 1.84 inches; snowfall, 21.4 inches; greatest precipitation in 24 hours, 0.80 inch on 28th; snow on the ground at end of month, 23.7 inches; total precipitation this month in 1887, 4.65; 1888, 2.02; 1889, 1.93; 1890, 6.65; 1891, 2.79; 1892, 2.10; 1893, 0.79; 1894, 1.12; 1895, 0.34; 1896, 2.07; 1897, 0.80; 1898, 1.21; 1899, 3.40; 1900, 1.65; 1901, 0.72; 1902, 0.61; 1903, 0.25; ^a1904, 1.50; 1905, 0.60; 1906, 1.84; average of this month for 20 years, 1.85 inches; deficiency of this month as compared with average of 20 years, 0.01 inch; accumulated deficiency since January 1, 0.77 inch.

Wind.—Prevailing direction, S.; total movement, 5,195 miles; average hourly velocity, 8 miles; maximum velocity (for five minutes), 33 miles per hour, from NW., on 3d.

Weather.—Number of days clear, 6; partly cloudy, 13; cloudy, 9; on which 0.01 inch, or more, of precipitation occurred, 12.

MARCH, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	° F.	° F.	° F.	In.		Perct.		° F.	° F.	° F.	In.		Perct.
1.....	21	4	12	0.04	Partly cloudy.	63	18.....	11	8	2	0.01	Cloudy.....	50
2.....	28	8	10		Clear.....	100	19.....	27	8	10		Partly cloudy.	70
3.....	28	1	14		Partly cloudy.	60	20.....	32	5	18		do.....	70
4.....	38	22	30	.06	do.....	44	21.....	36	19	28		Cloudy.....	44
5.....	39	17	28		Clear.....	100	22.....	41	29	35	T.	do.....	26
6.....	43	19	31		do.....	83	23.....	45	26	36	.01	do.....	35
7.....	49	17	35		Partly cloudy.	78	24.....	44	32	38	.05	do.....	26
8.....	43	21	32		do.....	74	25.....	50	28	39		do.....	41
9.....	30	14	22	.12	Cloudy.....	14	26.....	48	25	36		Partly cloudy.	68
10.....	14	2	8	.13	do.....	28	27.....	46	22	34	.02	do.....	62
11.....	2	-11	4	.11	do.....	32	28.....	42	25	34	.02	Cloudy.....	29
12.....	-2	-11	6	.53	do.....	22	29.....	50	25	38		Clear.....	78
13.....	1	-15	7	.01	Partly cloudy.	71	30.....	59	21	40		do.....	80
14.....	-4	-14	9	.23	Cloudy.....	23	31.....	54	31	42	.01	Partly cloudy.	73
15.....	4	-19	8		Clear.....	87							
16.....	12	-24	6		do.....	100	Mean.	30.5	8.7	19.6			
17.....	14	-18	-2		do.....	100							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.14; highest, 30.66 on 7th; lowest, 29.53 on 31st.

Temperature.—Highest, 59° on 30th; lowest, -24° on 16th; greatest daily range, 38° on 30th; least daily range, 9° on 12th. Mean for this month in 1887, 36°; 1888, 23°; 1889, 36°; 1890, 26°; 1891, 22°; 1892, 28°; 1893, 24°; 1894, 27°; 1896, 25°; 1897, 20°; 1898, 21°; 1899, 23°; 1900, 34°; 1901, 27°; 1902, 25°; 1903, 29°; ^a1904, 25°; 1905, 32°; 1906, 20°. Mean of this month for 19 years, 26°; absolute maximum for this month for 20 years, 60°; absolute minimum for this month for 20 years, -24°; average daily excess of this month as compared with mean of 19 years, 6.9°; accumulated excess since January 1, 36°; average daily excess since January 1, 0.4°

Precipitation.—Total this month, 1.35 inches; snowfall, 13.2 inches; greatest precipitation in 24 hours, 0.53 inch on 12th; snow on the ground at end of month, 9.9 inches. Total precipitation this month in 1888, 3.12; 1889, 0.53; 1890, 4.92; 1891, 2.41; 1892, 3.05; 1893, 0.96; 1894, 2.30; 1895, 2.79; 1896, 2.62; 1897, 1.06; 1898, 1.40; 1899, 3.00; 1900, 3.13; 1901, 1.46; 1902, 2.46; 1903, 0.85; ^a1904, 2.98; 1905, 1.41; 1906, 1.35; average of this month for 19 years, 2.20 inches; deficiency of this month as compared with average of 19 years, 0.85 inch; accumulated deficiency since January 1, 1.62 inches.

Wind.—Prevailing direction, SW.; total movement, 4,559 miles; average hourly velocity, 6 miles; maximum velocity (for five minutes), 36 miles per hour, from NW., on 12th.

Weather.—Number of days clear, 8; partly cloudy, 11; cloudy, 12; on which 0.01 inch or more of precipitation occurred, 14.

Miscellaneous phenomena (dates of).—Halos: solar, 8th, 18th, 20th; lunar, 7th.

^a Records prior to 1901 by the post surgeon, United States Army.

APRIL, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	° F. 43	° F. 24	° F. 34	In. 0.12	Cloudy	Per ct. 20	17....	° F. 51	° F. 33.	° F. 42	In. 0.16	Cloudy	Per ct. 16
2.....	27	14	20	.....	do	20	18....	50	29	40	.....	Clear	93
3.....	28	4	16	.....	Clear	100	19....	58	26	42	.....	Partly cloudy.	85
4.....	48	6	27	T.	Partly cloudy.	78	20....	66	33	50	.....	Clear	100
5.....	53	23	38	.....	Clear	100	21....	68	34	51	.....	do	100
6.....	58	26	42	.....	do	100	22....	67	36	52	T.	Partly cloudy.	78
7.....	58	25	42	.....	Partly cloudy.	82	23....	61	39	50	.04	Cloudy	37
8.....	48	27	38	.....	do	84	24....	52	33	42	.06	Partly cloudy.	50
9.....	44	31	38	.17	Cloudy	20	25....	47	32	40	.05	Cloudy	31
10.....	50	29	40	.....	Partly cloudy.	64	26....	48	28	38	.....	Partly cloudy.	54
11.....	34	24	29	.63	Cloudy	39	27....	51	25	38	T.	do	65
12.....	36	21	28	T.	Partly cloudy.	66	28....	56	26	41	.....	Clear	86
13.....	45	12	28	.....	do	70	29....	44	32	38	T.	Partly cloudy.	42
14.....	53	26	40	.....	Clear	86	30....	48	23	36	.01	Clear	81
15.....	59	27	43	.....	do	100							
16.....	60	30	45	.....	Partly cloudy.	74	Mean.	50.4	25.9	38.2	.....	

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.04; highest, 30.50 on 3d; lowest, 29.45 on 23d.

Temperature.—Highest, 68° on 21st; lowest, 4° on 3d; greatest daily range, 42° on 4th; least daily range, 10° on 11th. Mean for this month in 1887, 39°; 1888, 43°; 1889, 43°; 1890, 39°; 1891, 41°; 1892, 32°; 1893, 31°; 1894, 38°; 1896, 34°; 1897, 38°; 1898, 40°; 1899, 36°; 1900, 42°; 1901, 36°; 1902, 37°; 1903, 37°; 1904, 39°; 1905, 37°; 1906, 38°. Mean of this month for 19 years, 38°; absolute maximum for this month for 19 years, 77°; absolute minimum for this month for 19 years, zero; average daily excess of this month, as compared with mean of 19 years, 0.3°; accumulated excess since January 1, 45°; average daily excess since January 1, 0.4°.

Precipitation.—Total this month, 1.24 inches; snowfall, 10.5 inches; greatest precipitation in 24 hours, 0.63 inch on 11th; snow on the ground at end of month, trace. Total precipitation this month in 1887, 1.40; 1889, 0.92; 1890, 1.39; 1891, 0.18; 1892, 0.92; 1893, 0.97; 1894, 1.87; 1895, 0.61; 1896, 1.29; 1897, 1.21; 1898, 0.95; 1899, 2.30; 1900, 1.93; 1901, 1.08; 1902, 2.14; 1903, 0.80; 1904, 0.96; 1905, 1.52; 1906, 1.24; average of this month for 19 years, 1.25 inches; deficiency of this month, as compared with average of 19 years, 0.01 inch; accumulated deficiency since January 1, 1.63 inches.

Wind.—Prevailing direction, NW.; total movement, 6,176 miles; average hourly velocity, 9 miles; maximum velocity (for 5 minutes), 36 miles per hour, from NW., on 1st.

Weather.—Number of days clear, 10; partly cloudy, 13; cloudy, 7; on which 0.01 inch or more of precipitation occurred, 8.

Miscellaneous phenomena (dates of).—Halos: solar, 10th, 22d.

MAY, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	° F. 59	° F. 21	° F. 40	In.	Clear	Per ct. 88	18....	° F. 64	° F. 37	° F. 50	In.	Partly cloudy.	Per ct. 72
2.....	60	36	48	.....	Partly cloudy.	39	19....	70	40	55	T.	do	61
3.....	63	41	52	.....	do	41	20....	68	38	53	0.11	do	44
4.....	44	26	35	0.14	Cloudy	33	21....	58	32	45	.10	Clear	85
5.....	42	18	30	.....	Clear	99	22....	56	33	44	.06	Partly cloudy.	42
6.....	56	22	39	.....	Partly cloudy.	61	23....	60	36	48	.09	do	50
7.....	59	29	44	.....	do	56	24....	50	39	44	.02	do	45
8.....	66	27	46	.....	Clear	100	25....	54	37	46	.11	Cloudy	35
9.....	72	36	54	.....	do	100	26....	52	36	44	.08	do	27
10.....	72	37	54	.....	do	90	27....	50	31	40	.01	do	36
11.....	70	41	56	.....	Partly cloudy.	80	28....	43	35	39	.72	do	5
12.....	69	42	56	.03	do	44	29....	47	33	40	.05	Partly cloudy.	61
13.....	50	39	44	.05	Cloudy	9	30....	45	33	39	.24	Cloudy	18
14.....	58	38	48	.11	Partly cloudy.	63	31....	51	33	42	.01	Partly cloudy.	36
15.....	45	32	38	.07	do	45							
16.....	40	26	33	.01	do	58	Mean.	56.3	33.2	44.8	.....	
17.....	51	26	38	T.	do	58							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.85; highest, 30.32 on 8th; lowest, 29.53 on 15th.

Records prior to 1904 by the post surgeon, United States Army.

Temperature.—Highest, 72° on 10th; lowest, 18°, on 5th; greatest daily range, 39° on 8th; least daily range, 8° on 28th. Mean for this month in 1887, 49°; 1888, 46°; 1889, 47°; 1890, 50°; 1891, 50°; 1892, 42°; 1893, 43°; 1894, 50°; 1895, 46°; 1896, 41°; 1897, 54°; 1898, 45°; 1899, 42°; 1900, 50°; 1901, 52°; 1902, 48°; 1903, 45°; 1904, 45°; 1905, 42°; 1906, 45°. Mean of this month for 20 years, 47°; absolute maximum for this month for 20 years, 89°; absolute minimum for this month for 20 years, 15°; average daily deficiency of this month, as compared with mean of 20 years, 1.8°; accumulated deficiency since January 1, 11°; average daily deficiency since January 1, 0.1°.

Precipitation.—Total this month, 2.01 inches; snowfall, 1.6 inches; greatest precipitation in 24 hours, 0.72 inch on 28th. Total precipitation this month in 1889, 1.40; 1890, 2.00; 1891, 2.12; 1892, 2.06; 1893, 1.01; 1894, 2.26; 1895, 1.68; 1896, 3.85; 1897, 1.55; 1898, 1.95; 1899, 2.52; 1900, 2.42; 1901, 2.72; 1902, 1.59; 1903, 0.65; 1904, 1.31; 1905, 2.46; 1906, 2.01; average of this month for 18 years, 1.98 inches; excess of this month as compared with average of 18 years, 0.03 inch; accumulated deficiency since January 1, 1.60 inches.

Wind.—Prevailing direction, SW.; total movement, 6,163 miles; average hourly velocity, 8 miles; maximum velocity (for five minutes), 36 miles per hour, from SW., on 20th.

Weather.—Number of days clear, 6; partly cloudy, 18; cloudy, 7; on which 0.01 inch or more of precipitation occurred, 18.

Miscellaneous phenomena (dates of).—Halos, solar, 6th; hail, 30th; fog, 4th, 26th, 28th; thunderstorms, 12th, 20th, 22d, 23d, 28th; frost, light, 7th, 21st, 27th, 29th, 30th; heavy, 8th; killing, 1st, 5th, 6th.

JUNE, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	° F.	° F.	° F.	In.		Perct.		° F.	° F.	° F.	In.		Perct.
1.....	59	33	46	.....	Partly cloudy.	58	17.....	54	34	44	0.01	Partly cloudy.	45
2.....	65	33	49	.....	Clear	95	18.....	58	35	46	T.	.....do.....	52
3.....	67	35	51	.05	Partly cloudy.	79	19.....	52	34	43	T.	.....do.....	65
4.....	60	45	52	.....	.....do.....	49	20.....	64	27	46	.....	Clear	100
5.....	57	38	48	.50	.....do.....	35	21.....	70	40	55	T.	Partly cloudy.	64
6.....	48	34	41	.01	.....do.....	31	22.....	50	34	42	.05	Cloudy	33
7.....	47	31	39	T.	.....do.....	50	23.....	52	33	42	.02	Partly cloudy.	62
8.....	58	30	44	.....	Clear	90	24.....	57	32	44	.08	.....do.....	37
9.....	71	37	54	.....	Partly cloudy.	72	25.....	66	39	52	.02	.....do.....	81
10.....	72	47	60	.....	.....do.....	69	26.....	74	36	55	T.	.....do.....	67
11.....	77	45	61	.....	.....do.....	76	27.....	68	41	54	.03	.....do.....	54
12.....	80	50	65	.....	Clear	100	28.....	50	40	45	.05	Cloudy	14
13.....	66	44	55	T.	Partly cloudy.	78	29.....	56	38	47	T.	Partly cloudy.	40
14.....	66	38	52	.....	Clear	99	30.....	70	43	56	.....	.....do.....	76
15.....	73	39	56	T.	Partly cloudy.	79							
16.....	56	39	48	.09	Cloudy	34	Mean.	62.1	37.5	49.8	.....	.....	.....

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.90; highest, 30.25 on 20th; lowest, 29.44 on 5th.

Temperature.—Highest, 80° on 12th; lowest, 27° on 20th; greatest daily range, 38° on 26th; least daily range, 10° on 28th. Mean for this month in 1887, 57°; 1888, 55°; 1889, 57°; 1890, 54°; 1891, 51°; 1892, 52°; 1893, 55°; 1894, 58°; 1895, 51°; 1896, 56°; 1897, 54°; 1898, 55°; 1899, 53°; 1900, 52°; 1901, 50°; 1902, 54°; 1903, 57°; 1904, 52°; 1905, 50°; 1906, 50°. Mean of this month for 20 years, 54°; absolute maximum for this month for 20 years, 92°; absolute minimum for this month for 20 years, 20°; average daily deficiency of this month, as compared with mean of 20 years, 3.8°; accumulated deficiency since January 1, 125°; average daily deficiency since January 1, 0.7°.

Precipitation.—Total this month, 0.91 inch; snowfall, 0.3 inch; greatest precipitation in 24 hours, 0.51 inch on 5th and 6th. Total precipitation this month in 1889, 0.66; 1890, 0.94; 1891, 3.05; 1892, 1.46; 1893, 0.38; 1894, 3.10; 1895, 2.71; 1896, 0.73; 1897, 2.34; 1898, 2.67; 1899, 1.90; 1900, 1.17; 1901, 1.43; 1902, 1.87; 1903, 0.90; 1904, 1.03; 1905, 3.05; 1906, 0.91; average of this month for 18 years, 1.68 inches; deficiency of this month, as compared with average of 18 years, 0.77 inch; accumulated deficiency since January 1, 2.37 inches.

Wind.—Prevailing direction, SW.; total movement, 6,148 miles; average hourly velocity, 8 miles; maximum velocity (for five minutes), 44 miles per hour, from SW., on 27th.

Weather.—Number of days, clear, 5; partly cloudy, 22; cloudy, 3; on which 0.01 inch, or more, of precipitation occurred, 11.

Miscellaneous phenomena (dates of).—Halos, solar, 9th; thunderstorms, 15th, 25th; frost, light, 1st, 2d, 3d, 7th, 8th, 23d, 24th; heavy, 20th.

^aRecords prior to 1904 by the post surgeon, United States Army.

JULY, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	69	43	56	.....	Partly cloudy.	77	18....	74	43	58	.....	Clear	99
2.....	70	39	54	.....	Clear	100	19....	77	45	61	.....	do	100
3.....	76	38	57	.....	do	100	20....	81	44	62	.....	do	100
4.....	78	39	58	.....	do	100	21....	85	48	66	T.	Partly cloudy.	58
5.....	80	45	62	.....	do	87	22....	84	49	66	T.	do	79
6.....	77	44	60	.....	do	83	23....	84	51	68	.....	Clear	83
7.....	79	43	61	0.01	Partly cloudy.	77	24....	83	55	69	0.04	do	84
8.....	82	47	64	.....	do	79	25....	82	44	63	.....	do	100
9.....	76	45	60	.....	do	69	26....	82	49	66	.07	do	89
10....	76	46	61	.01	do	62	27....	75	43	59	.....	do	100
11....	75	47	61	.....	Clear	90	28....	80	40	60	.....	do	96
12....	78	45	62	.04	Partly cloudy.	58	29....	82	50	66	.....	do	81
13....	70	45	58	.06	Cloudy	25	30....	78	46	62	.03	Partly cloudy.	76
14....	63	43	53	T.	Partly cloudy.	61	31....	71	43	57	.10	do	49
15....	75	37	56	.....	Clear	80	Mean.	77.8	44.6	61.0	.....	.....	.....
16....	78	39	58	T.	Partly cloudy.	75							
17....	75	48	62	.28	do	49							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.03; highest, 30.32 on 2d; lowest, 29.70 on 26th.

Temperature.—Highest, 85° on 21st; lowest, 37° on 15th; greatest daily range, 40° on 28th; least daily range, 20° on 14th. Mean for this month in 1887, 64°; 1888, 64°; 1889, 63°; 1890, 66°; 1891, 60°; 1892, 62°; 1893, —; 1894, 66°; 1895, 60°; 1896, 62°; 1897, 60°; 1898, 62°; 1899, 61°; 1900, 61°; 1901, 67°; 1902, 58°; 1903, 60°; 1904, 58°; 1905, 60°; 1906, 61°. Mean of this month for 19 years, 62°; absolute maximum for this month for 19 years, 96°; absolute minimum for this month for 19 years, 30°; average daily deficiency of this month as compared with mean of 19 years, 0.8°; accumulated deficiency since January 1, 150°; average daily deficiency since January 1, 0.7°.

Precipitation.—Total this month, 0.64 inch; greatest precipitation in 24 hours, 0.28 inch on 17th. Total precipitation this month in 1889, 0.56; 1890, 0.99; 1891, 3.15; 1892, 0.98; 1893, 0.99; 1894, 0.99; 1895, 0.57; 1896, 2.09; 1897, 1.11; 1898, 1.15; 1899, 1.42; 1900, 0.80; 1901, 0.92; 1902, 2.29; 1903, 0.55; 1904, 1.11; 1905, 1.38; 1906, 0.64; average of this month for 18 years, 1.20 inches. Deficiency of this month as compared with average of 18 years, 0.56 inch; accumulated deficiency since January 1, 2.93 inches.

Wind.—Prevailing direction, NW.; total movement, 4,761 miles; average hourly velocity, 6 miles; maximum velocity (for five minutes), 32 miles per hour, from NW., on 31st.

Weather.—Number of days clear, 17; partly cloudy, 13; cloudy, 1; on which 0.01 inch, or more, of precipitation occurred, 9.

Miscellaneous phenomena (dates of).—Hail, 31st; thunderstorms, 7th, 8th, 9th, 10th, 13th, 14th, 16th, 17th, 21st, 22d, 24th, 26th, 29th, 30th, 31st.

AUGUST, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
1.....	74	45	60	0.02	Clear	99	18....	75	53	64	0.09	Cloudy	32
2.....	79	43	61	.02	do	80	19....	72	51	62	.11	Partly cloudy.	50
3.....	65	44	54	.02	Cloudy	32	20....	75	52	64	.16	do	68
4.....	73	46	60	.....	Partly cloudy.	55	21....	69	48	58	.27	Cloudy	25
5.....	72	45	58	.09	do	44	22....	59	43	51	.06	do	14
6.....	63	45	54	.06	do	37	23....	67	40	54	.34	Partly cloudy.	34
7.....	76	41	58	.....	Clear	88	24....	58	35	46	.03	do	59
8.....	80	44	62	.....	do	90	25....	52	35	44	.05	Cloudy	21
9.....	81	47	64	T.	Partly cloudy.	79	26....	71	32	52	.....	Clear	89
10....	85	45	65	.....	Clear	78	27....	74	38	56	.....	do	81
11....	85	50	68	.....	Partly cloudy.	64	28....	74	47	60	.....	Partly cloudy.	70
12....	80	50	65	.01	do	85	29....	73	41	57	.....	Clear	100
13....	75	52	64	T.	Clear	82	30....	80	38	59	.....	do	100
14....	76	44	60	.....	do	100	31....	74	46	60	.14	Partly cloudy.	51
15....	82	46	64	.....	do	100	Mean.	73.8	44.8	59.3	.....	.....	.....
16....	87	48	68	.....	do	100							
17....	83	54	68	.....	Partly cloudy.	66							

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 29.94; highest, 30.41 on 26th; lowest, 29.67 on 16th.

YELLOWSTONE NATIONAL PARK.

Temperature.—Highest, 87° on 16th; lowest, 32° on 26th; greatest daily range, 42° on 30th; least daily range, 16° on 22d. Mean for this month in 1887, 61°; 1888, 61°; 1889, 64°; 1890, 61°; 1891, 62°; 1892, 61°; 1893, —; 1894, 63°; 1895, 62°; 1896, 60°; 1897, 62°; 1898, 63°; 1899, 57°; 1900, 61°; 1901, 63°; 1902, 59°; 1903, 61°; 1904, 60°; 1905, 62°; 1906, 59°. Mean of this month for 19 years, 61°; absolute maximum for this month for 20 years, 93°; absolute minimum for this month for 19 years, 30°; average daily deficiency of this month as compared with mean of 19 years, 2.1°; accumulated deficiency since January 1, 215°; average daily deficiency since January 1, 0.9°.

Precipitation.—Total this month, 1.47 inches; greatest precipitation in 24 hours, 0.35 inch on 20th and 21st. Total precipitation this month in 1889, 0.64; 1890, 1.77; 1891, 1.22; 1892, 0.64; 1893, 1.06; 1894, 1.75; 1895, 0.72; 1896, 0.37; 1897, 0.57; 1898, 2.05; 1899, 2.23; 1900, 0.29; 1901, 1.65; 1902, 0.61; 1903, 0.45; 1904, 1.11; 1905, 0.32; 1906, 1.47; average of this month for 18 years, 1.05 inches; excess of this month as compared with average of 18 years, 0.42 inch.

Wind.—Prevailing direction, SW.; total movement, 4,768 miles; average hourly velocity, 6 miles; maximum velocity (for five minutes), 33 miles per hour, from NW., on 18th.

Weather.—Number of days clear, 18; partly cloudy, 13; cloudy, 5; on which 0.01 inch, or more, of precipitation occurred, 15.

Miscellaneous phenomena (dates of).—Hail, 23d; thunderstorms, 2d, 3d, 5th, 9th, 11th, 17th, 18th, 19th, 20th, 23d, 24th, 31st; frost, light, 26th, 30th.

SEPTEMBER, 1906.

Date.	Temperature.			Precipitation.	Character of day.	Sunshine.	Date.	Temperature.			Precipitation.	Character of day.	Sunshine.
	Maximum.	Minimum.	Mean.					Maximum.	Minimum.	Mean.			
	° F.	° F.	° F.	In.		Perct.		° F.	° F.	° F.	In.		Perct.
1.....	70	45	58	.....	Partly cloudy.	67	17	63	28	46	.....	Clear	97
2.....	72	35	54	.....	Clear	99	18	71	35	53	.....	do	100
3.....	73	44	58	.....	do	100	19	74	34	54	.....	do	100
4.....	76	46	61	0.05	Partly cloudy.	73	20	75	36	56	.....	Partly cloudy.	70
5.....	77	44	60	.....	Clear	97	21	75	40	58	.....	do	77
6.....	77	46	62	.....	do	97	22	74	38	56	.....	Clear	83
7.....	74	50	62	.....	Partly cloudy.	61	23	75	39	57	.....	Partly cloudy.	70
8.....	75	46	60	.....	Clear	99	24	61	45	53	.....	Clear	77
9.....	72	46	59	.....	Partly cloudy.	67	25	64	36	50	.....	do	100
10.....	56	37	46	.05	Cloudy	31	26	72	27	50	.....	do	100
11.....	58	31	44	.07	Partly cloudy.	52	27	68	41	54	.....	do	100
12.....	54	32	43	.....	Cloudy	8	28	69	34	52	.....	do	100
13.....	54	41	48	.18	do	25	29	75	37	56	.....	do	100
14.....	44	34	39	.26	do	23	30	74	42	58	.....	Partly cloudy.	61
15.....	50	33	42	.01	do	23							
16.....	57	28	42	.....	Clear	100							
							Mean.	67.6	38.3	53.0			

Atmospheric pressure.—[Reduced to sea level; inches and hundredths.] Mean, 30.01; highest, 30.36 on 18th; lowest, 29.56 on 14th.

Temperature.—Highest, 77° on 6th; lowest, 27° on 26th; greatest daily range, 45° on 26th; least daily range 10° on 14th; mean for this month in 1887, 56°; 1888, 59°; 1889, 50°; 1890, 53°; 1891, 52°; 1892, 55°; 1893, —; 1894, 54°; 1895, 50°; 1896, 49°; 1897, 55°; 1898, 52°; 1899, 55°; 1900, 50°; 1901, 48°; 1902, 51°; 1903, 49°; 1904, 52°; 1905, 54°; 1906, 53°; mean of this month for 19 years, 52°; absolute maximum for this month for 20 years, 88°; absolute minimum for this month for 19 years, zero; average daily excess of this month as compared with mean of 19 years, 0.5°; accumulated deficiency since January 1, 200°; average daily deficiency since January 1, 0.7°.

Precipitation.—Total this month 0.62 inch; snowfall, 0.4 inch; greatest precipitation in 24 hours, 0.32 inch on 13th and 14th. Total precipitation this month in 1889, 0.59; 1890, 0.19; 1891, 1.74; 1892, 1.60; 1893, 1.44; 1894, 0.71; 1895, 0.43; 1896, 1.10; 1897, 0.31; 1898, 0.90; 1899, —; 1900, 0.87; 1901, 2.85; 1902, 0.90; 1903, 0.60; 1904, 0.73; 1905, 1.17; 1906, 0.62; average of this month for 18 years, 0.98 inch; deficiency of this month as compared with average of 18 years, 0.36 inch; accumulated deficiency since January 1, 2.87 inches.

Wind.—Prevailing direction, S.; total movement, 5,249 miles; average hourly velocity, 7 miles; maximum velocity (for five minutes), 32 miles per hour, from SW., on 7th.

Weather.—Number of days clear, 16; partly cloudy, 9; cloudy, 5; on which 0.01 inch, or more, of precipitation occurred, 6.

Miscellaneous phenomena (dates of).—Thunderstorm, 4th; frost, light, 2d and 12th; heavy, 11th; killing, 16th.

Very respectfully,

JNO. PITCHER,
Major, Sixth Cavalry, Acting Superintendent.

The SECRETARY OF THE INTERIOR.

a Records prior to 1901 by the post surgeon, United States Army.

ATTACHED MAP / DRAWING

SEE ORIGINAL



ANNUAL REPORT OF
THE SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE SECRETARY OF THE INTERIOR

1907



WASHINGTON : GOVERNMENT PRINTING OFFICE : 1907

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ANNUAL REPORT OF YELLOWSTONE

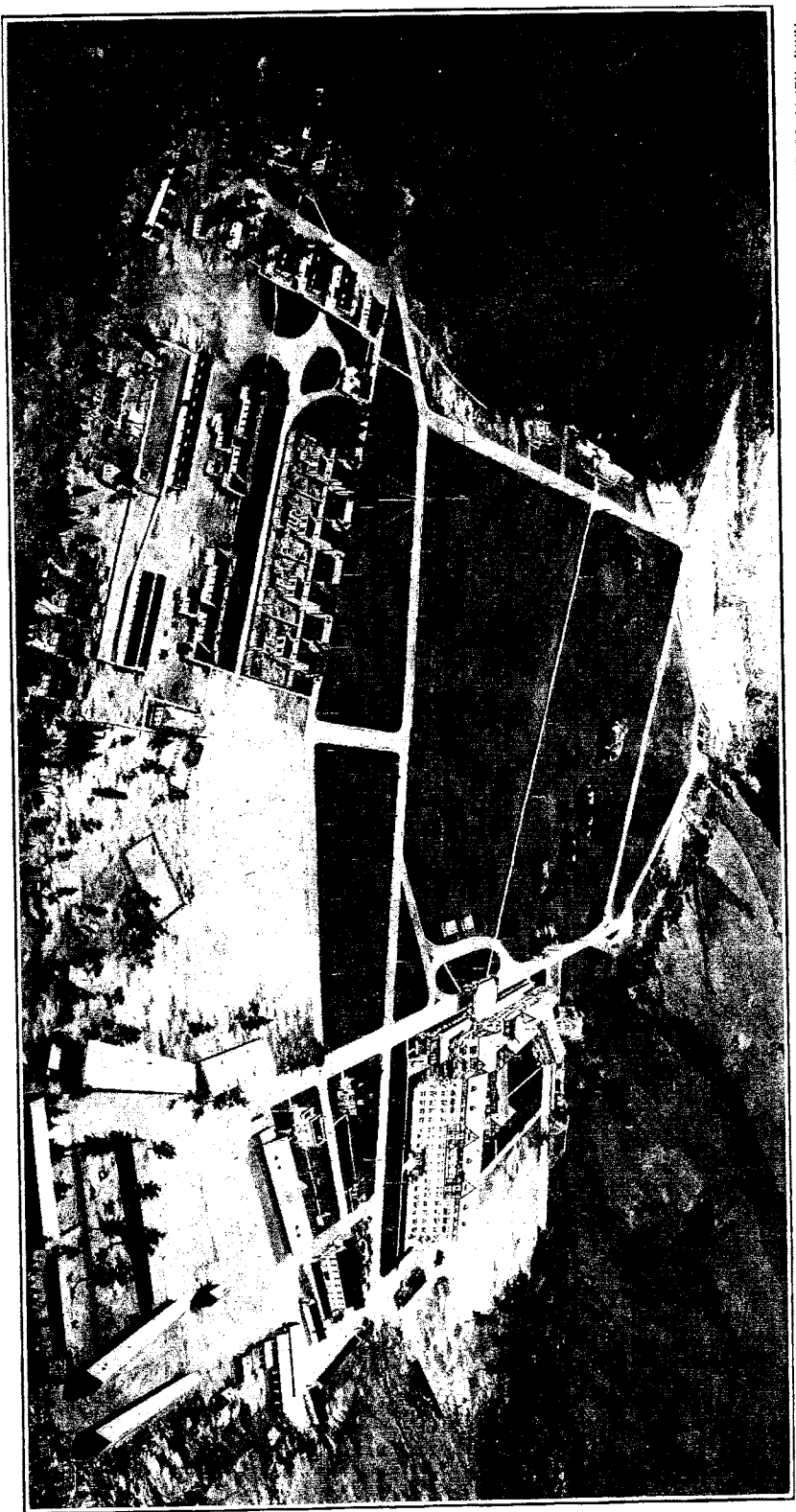
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PHOTOGRAPH OF A SKETCH OF GROUNDS AT MAMMOTH HOT SPRINGS.
 Fort Yellowstone is shown in the left foreground; Mammoth Springs Hotel, including proposed additions, is shown to the right of the center.



ANNUAL REPORT OF THE SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 15, 1907.

SIR: I have the honor to submit the following report of conditions in the park:

GENERAL CONDITIONS.

In June, 1907, before travel in the park commenced, a thorough inspection of hotels, barns, stables, coaches, surreys, horses, harness, etc., was made, and everything was found in excellent condition. All vehicles were in good repair and freshly painted, harness was oiled and polished, and everything presented a neat and attractive appearance, excepting here and there on the grounds surrounding the barns and stables throughout the park were found masses of manure, rubbish, waste material, tin cans, and dump from hotels that had been accumulating for years. Most of these unsightly conditions have been remedied and all will be completely remedied before the opening of next season.

The grounds around the permanent camp sites and temporary stables were not pleasing. There seemed to be much accumulation of rubbish, waste, tin cans, bottles, and cast-off clothing. Some remedial measures were applied before reoccupation for the season, and the conditions were gradually bettered during the season. I have received promise that all will be completely remedied before again occupied. The service rendered the public was excellent and fully enjoyed by a large number of tourists.

Other camping grounds used by licensees who conduct camping parties and by parties owning their own transportation, especially the freighters' camps, were littered with every kind of camp waste, rubbish, tin cans, bottles, pieces of grain sacks, worn-out clothing, and other litter. These offensive sights were remedied as soon as possible. Pits were dug for camp refuse and instructions posted, and daily patrols during the camping season prevented in a great measure a recurring of these offensive and unsightly conditions.

In the corrals of the Yellowstone Lake Boat Company, where buffalo, elk, and sheep were confined during the long previous winter, the conditions were found filthy, inhumane, and disgusting, and were made the subject of a special report to the Department. These corrals were cleaned as soon as possible, and the buffalo and elk were removed to corrals on Dot Island and kept there in confinement as an attraction to induce tourists to take the boat trip. Numerous complaints were made criticising the superintendent for permitting these native wild animals to be kept in captivity in the park. The president of the Lake Boat Company was advised verbally at commencement of season that the Department would no longer permit

wild animals to be kept in close captivity in the park after the close of the present season. On August 2 he was advised to same effect by letter. On August 7 he was directed to remove his buffalo and elk from the park at close of the visitors' season. He closed up his business and left the park on September 22, having removed these animals from Dot Island back to the same corrals in which they had been confined the previous winter. On September 23 he was requested by letter to inform this office if he intended to remove the buffalo and elk as required, and was advised that there was no desire to turn these animals loose and thereby cause him financial loss. Under date of September 26 he informed this office by letter that he declined to comply with the instructions to remove these animals. On October 15 the corral fences were taken down under my personal supervision, and these animals, 8 buffalo and 7 elk, were released from captivity.

Swan Lake and the surrounding valley drain into Glen Creek, which is the source of the water supply for Fort Yellowstone and Mammoth Hotel, and for sanitary reasons, I was obliged to prohibit camping or grazing in the Swan Lake Valley, to the inconvenience of many campers.

Sometimes rollicking, good-natured parties—men and women, boys and girls—pass through the park and leave the roadsides strewn with wrapping paper, paper boxes, beer bottles, candy boxes, cigarette boxes, newspapers, and other trash. While this can seldom be prevented, it must necessarily be remedied, and if a laborer is hired for one or two days for this purpose he objects to being compelled to wait a month for his pay to come in the form of a check from the Department. It would facilitate matters of police if a small contingent fund in cash were allowed to be kept on hand by the chief clerk in the park to pay for necessary jobs of this character, on the order of the superintendent.

ROADS.

REPAIRS.

As soon as the snow was off the road leading from the north entrance to Mammoth Hot Springs, 2 miles of road was surfaced. On May 1, a crew was put to work on the Cody road, leading through the National Forest to the entrance of Sylvan Pass, on the eastern boundary of the park. The crew commenced at Wapiti and completed the opening through Sylvan Pass to outlet of Yellowstone Lake, a total distance of 62 miles, early in July. This same crew, after having opened the road from Cody, spent the remainder of the summer repairing the road south of the park in the National Forest, running to Dubois, Wyo. The length of this road is approximately 90 miles. The work consisted principally in replacing several bridges and constructing new culverts.

On May 1, crews were established at Beaver Lake, Beryl Spring, Excelsior Geyser, Spring Creek, junction of Lake and Canyon roads, and on lake road 6 miles from Canyon; and a carpenter crew and small general repair crew were placed on the Tower Falls road. These crews were obliged to travel over the deep snows in the very early morning when the crust was frozen strong enough to bear the animals and wagons with the camping outfit, supplies, and tools. The travel was dangerous and men and animals suffered hardships.

The greatest difficulty encountered was between Upper Geyser Basin and Thumb of Yellowstone Lake, there being more snow than for many previous years. This route was made passable on June 12, and the first traffic coach crossed the Continental Divide on June 13. The pull in snow and slush was heavy.

The greatest difficulty in keeping roads in repair was in the canyon between the north entrance at Gardiner and the Mammoth Hot Springs. Two large slides containing upward of 3,000 cubic yards each occurred on this road. They were removed by means of washing the dirt through culverts. During the extreme high water in July several sections of the guard walls on this road were washed out, and great difficulty was encountered in preventing sections of this road from being entirely washed out. Heavy guard walls laid in cement are needed in the Gardiner Canyon at several points—also at the Gibbon Falls, Virginia Cascades, Tower Falls Cliff, and on the Spring Tower Falls road. These walls are now laid in dry stone.

The solid rock encasing the petrified tree near Yanceys was blasted out, leaving the tree 30 feet high and more than 20 feet in circumference. An iron fence with concrete base has been constructed around the tree and a road built connecting it with the main road. Another petrified tree near this one should be fenced, else it will be carried away piecemeal by tourists in a few years.

Sprinkling was begun July 1 and discontinued September 5. Approximately 100 miles of road was sprinkled on the circuit. About 20 miles can not be sprinkled without considerable expenditure of money to install piping.

The mileage of roads to be kept in repair is 111 outside the park and 306 within the park, making a total of 417.

SURVEYS.

In the fall of 1906 survey was made for a new road to connect the canyon with Tower Falls, in order to obviate the high climb through Dunraven Pass. This road goes to an elevation of only 300 feet above the Canyon Hotel, whereas the Dunraven Pass road reaches a point 1,100 feet higher than the hotel. The object of the road is to allow passengers to drive from the canyon to Mammoth Hot Springs in a day without additional expense.

Another survey was made for a road to connect the Gallatin with the circuit near the 7-mile post. A route was surveyed through Big-horn Pass and declared unfavorable. Another route was run up Specimen Creek from the Gallatin, but the survey was discontinued on account of rough country. A third survey was made from the Gallatin up Fan Creek and Stellaris Creek, thence through the pass north of Joseph Peak. This road is also deemed unfavorable, both as regards distance and elevation. The distance from Bozeman outside the park to Gardiner, thence by the main road in the park to the Golden Gate, is 69 miles. The distance between the same points up the Gallatin River via the proposed route is 95 miles.

By a glance at the map it will be seen there are at present four main highways entering the park: On the north, a road from Gardiner follows up the Gardiner Canyon to Mammoth Hot Springs and then runs through Golden Gate to interior of park; on the east, a road from Cody, up the North Fork Shoshone River, enters the park at Middle Creek, thence runs through Sylvan Pass to the interior at

Yellowstone Lake outlet; on the south, a road from Dubois, up Snake River, via Jackson Lake, enters the park at Lewis River, thence runs north to the interior at West Thumb of Lake Yellowstone; on the west, a road follows Madison River to the interior at the junction of Gibbon and Firehole rivers. There is a road from Cooke, at the northeast corner of park, down Soda Butte Creek and Lamar River, thence via Mammoth to Gardiner. This is the only outlet or inlet to Cooke by wheel transportation, and was originally the trail leading from Gardiner to Cooke traveled by prospectors and exploiters.

The proposed road to connect the Gallatin Valley with the circuit road near the Golden Gate does not meet with my approval.

IMPROVEMENTS.

Twenty rams for pumping water into tanks were installed during the year. Also 10 new tanks were constructed, into which water is conveyed by piping.

The bridge at Sulphur Creek was replaced by a 3-foot culvert and an earthen fill 180 feet long. Two other bridges, $2\frac{1}{2}$ miles from the canyon on Lake road, were replaced by tile and earth fill.

Three houses were built on the Upper Basin road for use of crews, particularly for the snow crews in opening the roads. Upward of 14 miles on this road must be broken through each year and deep snow the entire width of wagon has to be shoveled out. Stables for shelter of animals and forage were also built near these houses.

Permanent camps were made at Beaver Lake, Beryl Spring, Excelsior Geyser, Upper Basin, Thumb, near Lake Hotel, Trout Creek (between Lake and Canyon), and at Canyon. These camps consist of tent floors, side walls, and frame for canvas. Mangers and feed boxes were built for these camps.

Platforms for accommodation of tourists getting out of coaches were built at Norris, Mud Geyser, Upper Yellowstone Falls, Inspiration Point, and at the Great Falls and Kepplers Cascade; stairways were built in connection with the two latter. Many toilet houses were constructed throughout the park bordering on the main roads, and on summit of Mount Washburn, where also railings were put up for securing saddle horses of visitors. All stairways and platforms throughout the park were stained to harmonize with the surroundings.

About 600 new signs, made of enameled steel, were placed throughout the park on iron stakes set in cement. These signs were to replace the many signs made of wood which had previously been set up throughout the park.

All road and construction work was carried on under the direction of Lieut. E. D. Peek, U. S. Engineers, and was performed in a most satisfactory manner.

Under the direction of the commanding officer of the troops at Fort Yellowstone a new cabin and stable for the park guard at junction of Tower Falls road with Cooke road was constructed. The old cabin at Tower Falls station became uninhabitable and was too distant from the junction. It will be destroyed.

The Monida and Yellowstone Stage Company completed the construction of a coach house 48 by 128 feet, Montana dressed lumber and shingle roof; also a superintendent's cabin 16 by 40 feet, with an addition of 16 by 16 feet, peeled logs on stone foundation and shingled roof, with a false roof for warmth. The following buildings

are under construction, to be completed in November: Office building 16 by 32 feet; employees' mess house, 16 by 60 feet; club and lodging house, two stories, 24 by 72 feet, with bathrooms; harness and storehouse, 16 by 48 feet, with addition 16 by 24 feet; grain house, 16 by 60 feet; hay barn, 24 by 100 feet; horse stable, 24 by 240 feet; blacksmith shop, 24 by 48 feet; coach washhouse, 20 by 36 feet. All buildings will have cedar shingle roof and stone foundations, and roof and sides will be painted mineral red, with black trimmings. These buildings are clumped on bench, west bank of the Madison River $1\frac{1}{4}$ miles from the railway terminal at the west side entrance, $\frac{1}{2}$ mile north of the main road, and not in view.

TRANSPORTATION FACILITIES.

The Yellowstone National Park Transportation Company has in barns 4 six-horse tallyho Concord coaches of 33 seats capacity, 90 four-horse Concord coaches of 7 and 11 seats capacity, and 102 Glens Falls two-horse surreys of 3 and 5 seats capacity. It is prepared to receive and move from the terminus of the park branch of the Northern Pacific Railroad at northern entrance 150 passengers daily throughout the season, in addition to lay-overs.

The Monida and Yellowstone Stage Company has in barns 28 eleven-passenger Concord coaches, 6 eight-passenger Concord coaches, 8 five-passenger Glens Falls surreys, and 8 three-passenger Glens Falls surreys. It is prepared to receive and move from the terminus of the park branch of the Oregon Short Line Railroad, at western entrance, 75 passengers daily throughout the season, in addition to lay-overs.

The Wylie Permanent Camping Company has a large number of Concord and other vehicles, numbering over 50 in all, at Gardiner, and is prepared to receive and transport all parties who may desire to stop at its camps, from both north and west entrances.

The persons who annually apply for license to carry parties who desire to travel with movable camps are numerous, and can accommodate all who desire to travel in that manner.

Saddle horses may be had at Mammoth, Old Faithful, Lake, and Canyon.

TRAVEL.

The aggregate number of persons carried through the park over the regular route during the season of 1907 was as follows:

Persons carried through the park during the season of 1907.

Yellowstone National Park Transportation Company, entering via northern entrance.....	6,282
Monida and Yellowstone Stage Company, entering via western entrance	2,270
Total, regular companies.....	8,552
Wylie Permanent Camping Company, including persons accommodated at its permanent camps.....	2,146
Other licenses of personally conducted camping parties.....	1,402
Total number camping, traveling with licensed transportation....	3,548
Total making trip with private transportation as "camping parties"....	4,314
Grand total of visitors making tour of park, season 1907.....	16,414

The Yellowstone Park Association accommodated 9,389 tourists at its hotels during the season. The discrepancy in the numbers stopping at the hotels and the numbers carried by both transportation companies (all of whom stopped at the hotels) is accounted for in part by army officers and their families who visited Fort Yellowstone and were carried around the park in United States quarter-master transportation, and in part by visitors making only a partial trip in the park and spending a week or two at different hotels.

During the season 5,275 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 2,303 entered the park with the Yellowstone National Park Transportation Company, 516 with the Monida and Yellowstone Stage Company, 2,140 with the Wylie Permanent Camping Company, and the balance, 316 people, were campers.

In compliance with an order from the Department, the Wylie Permanent Camping Company established a tent station near the western entrance of the park at the beginning of the tourist season, for the accommodation of any tourists who might enter the park from that direction and desire to be accommodated at their camps. There has been no demand for accommodations at this camp by tourists entering from the western entrance, and none were received from that side of the park during the season.

Travel by the different roads leading into the park was as follows:

Travel by the different entrances.

By the main gate entrance on the north, Gardiner station-----	11, 292
By the Cooke road, northeast corner, Soda Butte station-----	8
By the Government road from Cody on the east, Sylvan Pass station-----	545
By the road leading from Jackson Hole on the south, Snake River station-----	419
By the Madison River road on the west, Riverside station-----	4, 150
Total-----	16, 414

"With reference to the western entrance, Mr. W. H. Bancroft, general manager Oregon Short Line Railroad, has kindly furnished me the following information:

Yellowstone Park Railroad was incorporated September 12, 1905, for the construction of a line of railroad from St. Anthony, Idaho, northerly to the Madison River entrance of the Yellowstone National Park, a distance of about 70 miles. Construction work commenced in October, 1905, and line opened for traffic between St. Anthony and Marysville, 16.4 miles, June 15, 1906. During 1906 and 1907 track was laid to mile No. 56, and we expect to complete the line by the middle of November, this year.

This will undoubtedly increase the tourist travel in the park in 1908, especially by the western entrance." The terminal station will be on the park boundary, and many people are already asking for leases on the national forest bordering on the park boundary. It therefore becomes necessary to construct about 5 miles of fence on that boundary, from the Madison River south to the mountainous bluffs, in order to prevent encroachment on the park grounds similar to that now at Gardiner, where the front street and portions of a row of buildings (stores and residences) are on park grounds, having been placed there before the present fence was constructed. The cost of erecting $4\frac{1}{2}$ miles of No. 8 Montana anchor fencing at northern entrance in 1903 was \$432.74 per mile, or \$1,947.33. The 5 miles of

necessary fence (material and construction) would cost \$2,163.70. This does not include cost of gate and gateway which should be an ornamental structure of iron. Special estimate for this work has been submitted.

HOTELS.

The hotels, all under one management, superintended by Mr. T. E. Farrow, were exceptionally well provided and well kept. The food was excellent, well cooked, and well served.

In order to avoid congestion at hotels, liable to be caused by large parties entering by the park branch of the Oregon Short Line Railroad from the west, on the Monida and Yellowstone stage coaches, and large parties entering by the park branch of Northern Pacific Railway from the north on Yellowstone Park Transportation Company's coaches, the route and meals and lodgings taken by any party are marked on a special chart by the hotel company and the railroad passenger agents. A set of these charts (for June, July, August, and September) is kept in office of the general passenger agent of the Northern Pacific Railway at St. Paul, and another set is kept in office of the general passenger agent of the Oregon Short Line Railroad in Salt Lake City. Large parties always plan in advance for accommodations over railroads and in the park. When a party books for a date to arrive at north entrance, the Northern Pacific agent charts it and wires hotel company, hotel company charts it and wires Oregon Short Line agent who charts it. And vice versa, when a party books for a date to arrive at western entrance. It is understood that the railroads will not book two large parties for same day.

FIRES.

We are indebted to the frequent rains for our good fortune in having no disastrous fires, and also to the constant daily patrols. The old road slashings and all dead timber should be removed from either side of the roads for a distance of 150 feet; \$30,000 has been asked for this purpose in my annual estimate for 1909.

The following circular on this subject has been published:

Hereafter within the boundaries of this park, whenever a tree—dead or alive—is felled for telegraph or telephone construction, trailway, roadway, or any right of way, for fuel, for building, bridging, or for any purpose whatever, the brush and tops must be lopped and piled in a cleared space, and—if conditions are favorable for burning without danger of the fire spreading—will be burned.

There have been few fires in the park this season, and all with one exception were discovered and extinguished by scouts, patrols, or workmen in the road crews before they became dangerous. One on Madison River, a few miles below its formation by the Gibbon and Firehole, caused considerable anxiety for two days and one night before complete control was accomplished. Lieutenant Andrews with guards gathered by telephone from Riverside, Norris, and the Great Geyser basins worked unceasingly and with determined energy and good judgment for twenty-seven continuous hours in gaining control. This fire was evidently caused by the carelessness of some one in dropping a lighted match, cigar or cigarette stub into the fire trap made by the slashing and clearing the timber for the roadway.

The area covered by this fire was about 12 acres. Others were caused by smoldering bits of wood left by campers who had, as they thought, extinguished their fires. Others were left by tramps and hobos, without making any attempt to extinguish them.

FISH.

The following plants of brook trout (*Salvelinus fontinalis*) were made during the season: May 30, Indian Creek, 34,000; May 31, Willow Creek, 35,000; June 1, Glen Creek, 30,000.

Mr. D. C. Booth, superintendent of hatchery, Spearfish, S. Dak., opened the fish hatchery near the West Thumb on Yellowstone Lake on June 5, and soon after began the active work of collecting and hatching eggs of the black-spotted trout. The operations were continued until July 30. During this period—say fifty days—2,660,000 (*Salmo clarkii*) eggs were collected. As the eggs became developed sufficiently for shipping, the following consignments were made:

July 21, 1907. Superintendent fishing station, Bozeman, Mont-----	504,000
July 26, 1907. State Fish Commission, Mount Pleasant, Pa-----	126,000
July 26, 1907. Wyoming Fish Commission, Sheridan, Wyo-----	63,000
July 26, 1907. Eaton Brothers, Sheridan, Wyo-----	63,000
July 26, 1907. Spearfish Station, S. Dak-----	894,000
In tributary streams Yellowstone Lake, during season (black-spotted fry)-----	400,000
Total-----	2,050,000

The water in Yellowstone Lake was higher than at any period since the inception of fish culture in 1900, and rendered the collection of trout very difficult. Many fish have been taken by tourists and other visitors during the season, and the waters of Yellowstone River at the lake outlet seem to have an inexhaustible supply.

Glen Creek, from its source to its mouth, was daily whipped by fishermen until it became necessary to prohibit fishing in its waters during the remainder of the season, as the large majority caught after August 1 were under size and were thrown back more or less injured.

Sportsman Lake, in northwest corner of park, shows evidence that fish have been taken otherwise than by hook and line, and fishing has been prohibited in its waters for the present.

A shipment of 15,000 rainbow trout to be planted in a tributary of Yellowstone Lake, and also of land-locked salmon to be planted in Shoshone Lake, are promised for the autumn.

ANIMALS AND BIRDS.

Only such species of animals and birds as were found in the park when originally laid out and set aside exist here to-day. With intelligent management and comparatively little expense a greater variety of birds and animals could be successfully added and propagated within the park, and under the protection of a specially trained body of scouts such animals as buffalo, that have been exterminated, and mountain sheep and antelope, that are rapidly being exterminated in the United States outside the park, will undoubtedly increase in the park. Under wise protective game laws, justly and strictly administered in the neighboring States, the overflow from

the park herds will in due time restore some of the progeny to the former near-by haunts of their kind.

Unfortunately the law permits the killing of one antelope in Montana by any licensed hunter. A few of the park antelope have wandered out during the past two weeks through the streets of Gardiner, where even the dogs respect and do not chase them, and have been slaughtered by hunters in Montana. The word "slaughtered" is used advisedly, for these innocent and beautiful creatures are tame as domestic sheep. If this law remains in force, the Montana antelope will be exterminated in a few years, and the work of protecting those in the park will become more and more difficult. In my report as acting superintendent for 1897 it was estimated that a band of 500 antelope wintered in the valley of the Gardiner and on the slopes of Mount Everts. In the annual report of the acting superintendent for 1905 it is stated that about 1,150 antelope were seen and counted by scouts and by the guards at Gardiner Station. In report of the same acting superintendent for 1906 the number is estimated at about 1,500. From all information gathered I can not now place the estimate much above that for 1906—although in the scattered herds seen during three trips through the summer habitats of the antelope there seemed to be a fair number of fawns. Four full-grown antelope have been killed by coyotes on the Gardiner and Yellowstone flats since October 1, and it is reported that many fawns were destroyed by coyotes during the season. A remnant, eight in all, of a former large herd on the western boundary line in the Madison Valley were reported on that line during the summer. Other small bands are reported in Pelican Valley, Hayden Valley, and on meadows bordering the Yellowstone between the Lake and Upper Falls. With these and the year's crop of fawns there may be approximately 2,000 antelope in the park. There is a good supply of hay on the Gardiner flat for feeding the antelope, sheep, deer, and elk during the deep snows of the coming winter. Practically all the antelope in the park herd on the Gardiner flat and the surrounding draws and slopes.

The young antelope captured in June, intended for the zoological garden in London, were raised on the bottle and are now being fed on rolled oats. They will be ready for shipment about the middle or last of December. A pair of elk, male and female, captured in June, have also been successfully raised on the bottle and rolled oats. They will be shipped in December for the park in Vancouver, British Columbia.

"The number of elk in the park is estimated by persons of some experience at 40,000. From personal observation and information received from reliable scouts, also the daily reports of patrols and guards, 25,000 seems to be a safe estimate.

Mountain sheep, whitetail and blacktail deer are increasing in numbers and growing less wild. Mr. McBride, the chief (and the oldest) scout, gives the following estimate on numbers of these animals in the park: Mountain sheep, 200; whitetail deer, 100; blacktail deer, 1,000.

The 29 buffalo in the fenced pasture near Mammoth produced only 5 calves. One old cow in this herd died in June. The calves are hardy. This herd, with the exception of the two original old bulls, was safely conducted to the Lamar Valley on October 12 and

13, where there is superior grazing, and where they will be herded during the daytime in fair weather and secured in the 600-acre pasture field during the nighttime and in foul weather. The grazing in the Mammoth pasture has not been excellent, and it has been necessary to feed hay to this herd all summer. The 28 buffalo taken to the Lamar Valley in May last have not been fed hay and are in better condition than the Mammoth herd. The Lamar herd produced no calves. The united herd numbers 59 (25 males and 34 females), not including the 2 old bulls which have been advertised for sale. Of the original wild buffalo in the park signs of 6 are reported on the Madison Plateau, southwest corner of park; 4 were reported seen in Hayden Valley, their old habitat, in August, and signs of 15 are reported on Mirror Plateau and Specimen Ridge, 10 miles south of Soda Butte. Total number estimated to be 25.

Moose seem to have increased. The greatest number appear to be in the marshes and willows of the Upper Yellowstone, in the southeast corner of park, others are in the southwest corner on Bechler River, and a few in Gallatin Basin, in the northwest corner of park.

There are many bear in the park. It was necessary to kill 1 black and 2 grizzlies that became very dangerous this season. The black and 1 grizzly were burned after being killed; 1 grizzly was skinned. The skin and skull will be sent to the National Museum when cured sufficiently for shipment.

The mountain lions have been almost exterminated. The tracks of only one in the snow was reported last winter, and again during the summer in the same region. The records show that 62 of these animals were destroyed during the winters 1903-4, 1904-5, and 1905-6. None were destroyed during the winter 1906-7.

Coyotes are numerous and very destructive to the antelope, young and old. The records show that 99 have been destroyed during the past year by the scouts and station guards. The majority of this number were trapped, some were poisoned, and others shot.

Foxes, badgers, marmots, the Fremont tree squirrels, and three varieties of chipmunks are plentiful. Beaver are abundant throughout the park. Martin, mink, otter, and muskrats are plentiful.

Of rabbits we have the common hare, jack rabbit, Rocky Mountain hare (snowshoe rabbit), and chief hare (pika). The two latter are plentiful.

Eighteen beaver were taken without injury and shipped to Old Forge for the forest, fish, and game commission of New York.

Large numbers of the Canada geese have reared their young in the park this season and showed little fear of molestation by visitors. Also ducks of many varieties, not including canvasbacks. Pelicans and gulls occupy the entire surface of one small island in Yellowstone Lake as their nursery. More than 70 species of birds come to the park to rear their young, but many of the song birds and others that generally nest near the human habitations are annually destroyed by the house cats. For this reason cats as well as dogs will not hereafter be permitted in the park.

I am much indebted to Dr. T. S. Palmer, of the Biological Survey, in charge of game preservation, Agricultural Department, who spent some days in the park during this season and on my request kindly prepared the following:

NOTES ON THE SUMMER BIRDS OF THE YELLOWSTONE NATIONAL PARK.

By T. S. PALMER.

Visitors to the Yellowstone National Park are apt to gain the impression that birds are few both in number of species and individuals. Their attention is only occasionally directed to the birds along the route and is absorbed by the geysers, hot springs, and other objects of interest which constantly excite their wonder and admiration. Moreover, tourists who take the regular trip via the Mammoth Hot Springs, Norris Basin, Fountain Hotel, Upper Geyser Basin, Yellowstone Lake, and the Canyon, stopping each night at one of the hotels of the Yellowstone Park Association, or who follow the same general route under the guidance of the Wylie Permanent Camping Company, find the programme for each day already planned and the time too short to see even the chief points of interest. Five or six days or two weeks are entirely inadequate for gaining a general acquaintance with the fauna of a region comprising more than 3,000 square miles, greater in area than the States of Delaware and Rhode Island, and approximately one-tenth the size of the State of Maine. The brief stops at the hotels or camps and the long rides through the extensive forests on the plateau of the park, where conditions are not favorable for variety of bird life, also afford insufficient opportunities for making many observations.

The more conspicuous species ordinarily seen by the tourist are included to a certain extent in a list of the names of birds which have been used to designate certain points of geographic interest. Such names are: Crow Creek, Duck Creek and Lake, Eagle Peak, Falcon Creek, Goose Lake, Grebe Lake, Grouse Creek, Jay Creek, Loon Lake, Mallard Lake, Magpie Creek, Owl Creek, Osprey Falls, Ouzel Falls, Pelican Cone, Creek, and Valley, Raven Creek, and Tern Lake. A little search, however, will bring to light a number of other less conspicuous but not less interesting birds, and fifty or more species can readily be found along the regular tourist route.

Unusually favorable opportunities are afforded for observing certain phases of bird life. Especially is this true of the raptorial birds, such as the eagles, hawks, and owls, represented by 9 or 10 species, which, under the rigid protection accorded them, may be seen in greater numbers and at closer range than in most parts of the country. Unrivalled opportunities are afforded for studying the nesting and feeding habits of the osprey or fish hawk in the canyons of the Gardiner and Yellowstone rivers. Marsh hawks, sparrow hawks, and the other species may also be observed at numerous points along the route. The destruction of the smaller birds which find shelter in the Stygian and other caves on the "Formation" back of Mammoth Hot Springs furnishes a means of noting in a general way the progress of the migration, and a visit to these caves will usually be rewarded by finding one or more species which have sought shelter in the crevices of the rock during cold nights and have been overcome by the gases. Dr. Edgar A. Mearns, U. S. Army, who was stationed at Fort Yellowstone in 1902, has published an interesting article under the title "Feathers beside the Styx"^a in which he enumerates

^a Condor, Vol. V, pp. 36-38, Mar., 1903.

the species which he found in these caves. Following is a list of 16 species which he found dead in the Stygian caves from April to December, 1902:

Blackbilled magpie.
Clarke nutcracker.
Cassin purple finch.
Pine siskin.
Pink-sided junco.
Green-tailed towhee.
Louisiana tanager.
Western warbling vireo.

Audubon warbler.
Macgillivray warbler.
Rocky Mountain creeper.
Rocky Mountain nuthatch.
Red-breasted nuthatch.
Mountain chickadee.
Townsend solitaire.
Western robin.

The number of birds occasionally found in these caves, especially during migration, is surprising. On August 1, 1902, Doctor Mearns found 11 birds in the Stygian Cave, including 2 pine siskins, 4 pink-sided juncos, 2 warbling vireos, 2 Louisiana tanagers, and 1 mountain chickadee. On October 15, 1902, he reported 58 birds found in twenty caves. That these figures are not exceptional is shown by the fact that during our visit on September 12, 1907, 11 birds were found in the Stygian Cave and 21 in an adjoining cave. Those in the Stygian Cave comprised 1 flycatcher, 2 juncos, 1 sparrow, 2 pine siskins, 1 tanager, 1 Wilson warbler, 2 red-breasted nuthatches, and 1 thrush. The species found in the other cave comprised 1 Clarke nutcracker, 1 sparrow, 14 juncos, 2 cassin purple finches, 1 red-breasted nuthatch, 1 thrush, and 1 undertermined species. Doctor Mearns states:

Although unable to estimate the number of birds that perished in the caves adjacent to the Mammoth Hot Springs during the past season (1902), I am of the opinion that the number reached into the hundreds, if not thousands. Birds were found dead in about thirty different caves and hollows about the "Formation" between Snow Pass and the Mammoth Hot Springs hotel, near which latter the lowest bird cave was discovered.

This unnecessary destruction of bird life can readily be avoided, as suggested by Doctor Mearns, by covering the entrances of the caves with wire netting and thus preventing the birds from entering only to meet with sudden death. Another source of bird destruction, although not great in the aggregate, is unfortunate from the fact that it occurs about the hotels and permanent camps where it is especially desirable to increase the number of birds as much as possible. This destruction is caused by the cats which are kept at nearly every hotel, permanent camp, and soldier station, and which are continually preying on the small birds in the vicinity. The number of birds thus destroyed can not of course be accurately estimated, but a little observation will suffice to show that it is by no means inconsiderable. Prohibiting the keeping of cats in the park will undoubtedly increase the abundance of bird life at points most frequented by tourists. It is also possible to increase the numbers of a few species, such as bluebirds and wrens, by putting up suitable nesting boxes about the hotels and camps, and in some places where fresh water is scarce, to attract other species by providing shallow pans of water where the birds can bathe or drink.

The following list is not in any sense a catalogue of the birds of the park. It contains only a small proportion of the species which occur in this region, but it includes about seventy of the more conspicuous ones and most of those that are apt to be found along the regular tourist route in August and September. The notes on which it is

based were made during a three weeks' visit, but with no thought at the time of preparing them for publication. Other duties demanded most of my attention and consequently I made no special effort to extend the list or to search for certain species which are probably common but which were not observed immediately along the route. The regulations prohibiting shooting in the park prevented the collection of specimens, and under these circumstances it was impossible to identify some of the species. Such species are marked with an interrogation point.

My visit comprised in all twenty-one days, August 7 to 21, and September 9 to 14, 1907. In August I made the regular five-day tour of the park and, on returning to Mammoth Hot Springs, I was invited by the superintendent, Gen. S. B. M. Young, to accompany him on a trip to Soda Butte. Through his courtesy an opportunity was thus afforded of visiting, under very favorable circumstances, the Lamar Valley, the lower end of the Yellowstone Canyon, and the region about Camp Roosevelt—all in the northeastern part of the park. The rest of the time, including the week in September, was spent at Mammoth Hot Springs and Fort Yellowstone. In August some species were already preparing to migrate, and in September many of those which were most conspicuous about Fort Yellowstone during my first visit had left for the south. Most of the notes were based on my own observations, but I am indebted for information regarding several species to Maj. Wirt Robinson, of West Point, who spent a month in the park earlier in the season, and whom I had the pleasure of meeting a day or two before my departure in August. I have also included notes on the species found in the caves by Dr. Edgar A. Mearns, U. S. Army, who was stationed at Fort Yellowstone for several months in 1902.

Pied-billed grebe (Podilymbus podiceps).—Apparently rather common. One was seen along the Yellowstone River a few miles below the lake on August 14, and several small grebes were noticed in the marshes at various points along the road but too far away to be identified with certainty. It is probable that the horned grebe (*Colymbus auritus*) and the eared grebe (*Colymbus nigricollis californicus*) occur at certain seasons of the year.

Ring-billed gull (Larus delawarensis).—Common about Yellowstone Lake and the outlet of the Yellowstone River. At the Lake Hotel the birds come in to feed on the garbage pile at the same place which forms such an attraction for the bears.

Black tern (Hydrochelidon nigra surinamensis).—I did not happen to see this species and am indebted to General Young for information regarding its presence. It is probably common about Yellowstone Lake and some of the streams.

White pelican (Pelecanus erythrorhynchos).—The names Pelican Valley, Pelican Cone, Pelican Creek, and Pelican Roost attest the presence of pelicans about Yellowstone Lake. On August 13, while making the trip on the boat from Thumb Station to the Lake Hotel, we observed a small flock of white pelicans on a low point near the south shore at the entrance of the west arm of the lake. The birds seemed to have young with them and were in company with a few gulls. On the same evening and on the following day a few pelicans were seen singly or in pairs on the banks of the Yellowstone River

from the outlet to the mouth of Alum Creek. Nowhere were any large flocks seen, nor was there any evidence of the birds breeding in large colonies. In view of the abundance of fish in the lake, furnishing an ample food supply, there is no apparent reason why these pelicans should not be more abundant on the lake, where their presence adds much to the attractiveness of the bird life of this part of the park.

Mallard (Anas boschas).—Probably a common species. It was seen at several points along the route and doubtless breeds in some of the marshes and on the low ground in some of the valleys.

Blue-winged teal (Querquedula discors).—Six or seven blue-winged teal, evidently migrants, were seen at Soda Butte on August 16. The species is evidently common and may breed in suitable places.

Wood duck (Aix sponsa).—I did not meet with this species, but General Young assured me that it was by no means rare and that it was found especially along the Madison River.

Canada goose (Branta canadensis).—A common summer resident, breeding in suitable places. On the Yellowstone River a short distance below the outlet of the lake an old goose and nine goslings were noticed on August 14. Canada geese were noticed at several other points and quite a number were seen in the Lamar Valley on August 17.

Great blue heron (Ardea herodias).—Probably common. General Young states that he has observed it at Twin Lakes or along the Madison River.

Wilson snipe (Gallinago delicata).—Maj. Wirt Robinson, U. S. Army, informed me that he had found this snipe in Swan Lake Valley early in August. I did not meet with it myself.

? *Least sandpiper (Tringa minutilla)*.—A number of diminutive sandpipers, evidently belonging to this species, were seen at Soda Butte on August 17.

? *Solitary sandpiper (Helodromas solitarius)*.—In the Upper Geyser Basin a family of four birds, two old and two young, were found on August 12. The young birds were still in the down and could run with surprising rapidity.

Spotted sandpiper (Actitis macularia).—Seen along the Lamar River. Probably generally distributed and a common breeder along the streams in the park.

Killdeer (Egialitis vocifera).—Common in some places. Noticed at Soda Butte August 16 and at Fort Yellowstone three days later.

Dusky grouse (Dendragapus obscurus).—Apparently common, at least in some parts of the park. While returning from Soda Butte with General Young on August 17 the ambulance started four or five young birds close to the roadside in the lower end of Lamar Valley. On the following day I flushed a hen with a young bird on the hillside a few hundred yards behind the Mammoth Hot Springs Hotel, and was able to approach within 30 or 40 feet of them, but in neither case did I see the color of the tail distinctly enough to determine with certainty whether the birds were dusky grouse or Richardson grouse (*Dendragapus obscurus richardsoni*).

Mourning dove (Zenaidura macroura).—Doves are by no means uncommon and are likely to be met almost anywhere along the route. They are usually found singly or in twos or threes.

Marsh hawk (Circus hudsonius).—One of the commonest hawks in the park. In the marshy sections of the valley or about the pools or smaller lakes it may be seen gracefully beating its way over the sedges and tules in search of food. It was especially common near Beaver Lake and in some parts of the Lamar Valley.

Western red-tail (Buteo borealis calurus).—Abundant especially in the Lamar Valley, where a number were seen on August 16 and 17.

Swainson hawk (Buteo borealis calurus).—Like the preceding species, the Swainson hawk is common and generally distributed and is found in much the same places. In the more open sections of the park, such as the Lamar Valley, it is likely to be found in greater numbers than elsewhere.

Golden eagle (Aquila chrysaetos).—I did not see the golden eagle in the course of our trip about the park. Both golden and bald eagles are said to be permanent residents and not uncommon.

Bald eagle (Haliaeetus leucocephalus).—The only specimen seen was a young bird caught in the park in a trap set for coyotes, and kept in captivity at the buffalo corral near Mammoth Hot Springs until its injuries were healed, when it was set at liberty. The birds commonly pointed out to tourists as bald eagles are in reality fish-hawks, which are very numerous at several points along the route.

? *Duck hawk (Falco peregrinus anatum)*.—On August 12 two hawks, supposed to be duck hawks, were seen flying high above the road in Upper Geyser Basin about midway between Old Faithful Inn and Biscuit Basin.

Pigeon hawk (Falco columbarius).—In Tower Falls Canyon and in the adjacent portion of the lower canyon of the Yellowstone several hawks were seen on the afternoon of August 17. These birds evidently belonged to this species, but were too far away to be identified with certainty. The pigeon hawk is probably not rare in this region and may be looked for in almost any part of the park.

Desert sparrow hawk (Falco sparverius deserticolus).—The little sparrow hawk is one of the commonest and most generally distributed of the raptorial birds and may be seen almost anywhere in the park darting gracefully from a telegraph pole or winging its way along the road in its search for food.

Fishhawk (Pandion haliaetus carolinensis).—As the road begins to enter the canyon of the Gardiner River, a short distance from the gateway of the park, the visitor catches his first glimpse of a fishhawk's nest, perched on a pinnacle high above the stage road. This nest is frequently photographed and commonly known as the "Eagle's nest." Careful observation of the old birds soon shows, however, that the occupants of the nest are fishhawks instead of bald eagles. On August 7 the nest was occupied, but on September 14, when I left the park, neither old nor young birds could be seen near it.

The abundance of fish in the Gardiner and Yellowstone rivers makes the park a paradise for fishhawks and the pinnacles in some of the canyons form ideal nesting sites for the birds. In the Grand Canyon of the Yellowstone, only a short distance below the falls, four nests, each occupied by one or two young birds, were observed on August 14. A stiff breeze was blowing down the canyon at the time and it was interesting to see each of the young birds facing the wind, but sitting on the rim of the nest opposite the breeze, and thus enjoying some protection even in their exposed positions. The old

birds soaring above the canyon or darting suddenly into its depths to snatch a fish from the water formed a picture not soon to be forgotten.

Western horned owl (*Bubo virginianus pallescens*).—Probably a common resident, but seen on only one occasion, on August 13, near the bridge over the Yellowstone River a short distance below the outlet of Yellowstone Lake.

Belted kingfisher (*Ceryle alcyon*).—Common and generally distributed. Like the fishhawk, the kingfisher finds an ideal home along the rivers, where the fish are abundant.

Rocky Mountain hairy woodpecker (*Dryobates villosus monticola*).—Probably a common species, but the few glimpses I had of woodpeckers were insufficient to determine the birds with any certainty.

Red shafted flicker (*Colaptes cafer collaris*).—A common bird about Fort Yellowstone and at various points about the park.

Western night hawk (*Chordeiles virginianus henryi*).—Among the conspicuous birds of the park the night hawk should be given a prominent place. As it flies overhead in the late afternoon and evening it is not only easily seen, but it constantly calls attention to its presence by its loud and characteristic note.

White throated swift (*Aeronautes melanoleucus*).—A few were noticed in the canyon of the lower Gardiner River on August 7. Swifts doubtless breed in the canyon of the Yellowstone, where the cliffs afford ideal nesting sites.

? *Calliope hummingbird* (*Stellula calliope*).—One or two humming birds were seen in the course of our trip around the park in August, but they were either females or immature birds, so that it was impracticable to identify them satisfactorily.

Kingbird (*Tyrannus tyrannus*).—Common about Fort Yellowstone and in the lower parts of the park near Gardiner.

Olive-sided flycatcher (*Nuttallornis borealis*).—Not uncommon, especially at higher elevations along the roads through the forests.

Flycatcher (*Empidonax* sp?).—On September 12 the remains of an *Empidonax* were found in the Stygian Cave, but the specimen was not in condition to be readily identified.

Horned lark (*Otocoris alpestris subsp?*).—In the open stretches in Hayden Valley horned larks were common on August 14, and they were also seen a few days later in the Lamar Valley. In the absence of specimens, however, it is practically impossible to ascertain which subspecies is represented in the park.

Black-billed magpie (*Pica pica hudsonia*).—One seen September 12 among the pines near the Stygian Cave on the "Formation" back of the Mammoth Hot Springs. Remains of the magpie were found in the caves by Doctor Mearns in 1902.

Black-headed jay (*Cyanocitta stelleri annectens*).—I did not happen to see this jay myself, but it is described by General Young and others as being a common bird in the park.

Camp robber or Rocky Mountain jay (*Perisoreus canadensis capitalis*).—One of the most conspicuous and interesting birds about the camps and stations in the park. Its inquisitiveness in search of food has earned for it the opprobrious epithet of "Camp robber," but it is deserving of a better name. Major Chittenden in his book on

The Yellowstone National Park suggests that "Camp scavenger" would more correctly describe its useful qualities. In spite of the petty depredations in which it sometimes indulges, it is worthy of the protection which it enjoys, for its tameness and its handsome plumage render it a constant object of interest to visitors.

Raven (*Corvus corax sinuatus*).—Common and in some places unusually tame. Two were seen at close range on Dot Island in Yellowstone Lake on August 13. They were attracted by the feeding of some elk kept in captivity on the island and, perched on the trees near the corral, paid little attention to the crowd of tourists.

American crow (*Corvus americanus*). Probably a common species. Several were seen near Gardiner on August 21.

Clarke nutcracker (*Nucifraga columbiana*).—Like the camp robber, the nutcracker is one of the most attractive birds, and on account of its somewhat similar colors is frequently mistaken for the former species. It may be seen almost anywhere along the tourist route, and its characteristic note, peculiar flapping flight, and gay plumage, relieved by black wings and conspicuous white secondaries and outer tail feathers, render it unmistakable after its distinguishing marks have once been noted.

Western meadowlark (*Sturnella magna neglecta*).—Probably common in the more open parts of the park, but the great stretches of forest along much of the tourist route prevent its being observed except at favorable points.

Brewer blackbird (*Euphagus cyanocephalus*).—Abundant almost everywhere about the hotels, in the grassy meadows, and near water in the open valleys. It is especially common on the lawns at Mammoth Hot Springs. In September, after many of the other birds had gone, it still lingered and was then collecting in large flocks before migrating.

Cassin purple finch (*Carpodacus cassinii*).—Abundant, especially near the Mammoth Hot Springs Hotel, where numbers of young and old birds were seen in August.

Pale goldfinch (*Astragalinus tristis pallidus*).—Probably common, although only a few were seen.

Pine siskin (*Spinus pinus*).—Common. In the Upper Geyser Basin the birds were seen August 11 feeding on seeds of thistles.

Western vesper sparrow (*Pooecetes gramineus confinis*).—A few seen on August 11 along the road between Gibbon Falls and the Gibbon lunch station.

Gambel sparrow (*Zonotrichia leucophrys gambelli*).—One of the most abundant and generally distributed birds in the park, common about all the hotels and camps and easily recognized by the conspicuous white stripes on the head.

Western chipping sparrow (*Spizella socialis arizonæ*).—Noticed especially in the vicinity of Camp Roosevelt on August 17, but probably common in many other places in the park.

Pink-sided junco (*Junco mearnsi*).—Breeds abundantly at the higher levels along the tourist route and is common nearly everywhere in the pine forests. It seems to be the species most frequently found dead in the Stygian Caves near Mammoth Hot Springs. Doctor Mearns records finding four in these caves on August 1, 1902: on September 12, 1907, we found the bodies of two in one cave and fourteen in another.

Green-tailed towhee (Oreospiza chlorura).—Not observed by me, but recorded by Doctor Mearns as one of the birds found dead in the caves. It is doubtless common in suitable places in the park.

Lazuli bunting (Cyanospiza amana).—I am indebted to Maj. Wirt Robinson for the note of this species. The birds had left before the time of my visit, but Major Robinson found them abundant in July about the grounds of the hotel at Mammoth Hot Springs.

Western tanager (Piranga ludoviciana).—One of the most brightly colored birds found in this region. A glimpse of a male tanager in its gay mantle of yellow and black, perched on a limb or darting among the trees, is a sight not soon to be forgotten. Two or three of these birds were seen in the Lamar Canyon on August 17, and several were seen at other points along the route around the park.

Cliff swallow (Petrochelidon lunifrons).—Abundant at some points. A large colony was found breeding under the shelter of the projecting ledges of rock of the old geyser cone at Soda Butte on August 16, the young being still in the nest, but nearly fledged. A nest found on the "Formation" at Mammoth Hot Springs on August 8 was remarkable from the fact that it was placed in a vertical crevice in a rock without the usual retort-shaped outer covering of mud and apparently without the use of any mud in its construction.

White-bellied swallow (Iridoprocne bicolor).—Common and generally distributed.

Northern violet-green swallow (Tachycineta thalassina lepida).—Apparently less common than the preceding species with which it was found associated in the Yellowstone Canyon on August 14. It was probably observed also at other points, but unless the color of the back can be seen in the right light it is not always easy to distinguish the violet-green from the white-bellied swallows when the birds are flying high overhead or far out over the depths of a canyon.

Western warbling vireo (Vireo gilvus swainsoni).—Evidently common at Mammoth Hot Springs, where it was found in the woods back of the "Formation" on August 20 in company with nuthatches, chickadees, and several other small birds. This was one of the birds found by Doctor Mearns in the caves.

Yellow warbler (Dendroica aestiva).—Probably common and generally distributed. Noticed in the Lamar Valley and along the Gardiner River.

Audubon warbler (Dendroica auduboni).—One or two seen in the Upper Geyser Basin on August 12. Doubtless a common species, at least at certain seasons.

Macgillivray warbler (Geothlypis tolmiei).—Recorded by Doctor Mearns among the birds found in the Stygian caves, but I did not happen to see it or at least to identify it satisfactorily among the warblers seen at several points.

Pileolated warbler (Wilsonia pusilla pileolata).—A beautiful specimen of this warbler, apparently dead but a few hours, was found in the Stygian Cave on the morning of September 12. This bird was evidently a migrant which had sought shelter from the frosty air during the preceding night.

Water ouzel (Cinclus mexicanus).—In the clear streams and foaming cascades of the park the ouzel finds an ideal home and is probably

a common resident. It was noticed several times along the Gardiner on the road from Mammoth Hot Springs to the town of Gardiner.

Rock wren (Salpinctes obsoletus).—Probably common in some sections, especially in the northeastern corner of the park. It was noticed only on August 16 on the open hillsides of the Lamar Valley, adjoining the buffalo pasture near the mouth of Rose Creek.

Western house wren (Troglodytes adon aztecus).—Found at Mammoth Hot Springs and at the Wylie Camp in Swan Lake Valley. Probably common at a number of other points.

Rocky Mountain creeper (Certhia familiaris montana).—Probably a common species, although we did not happen to see it. Doctor Mearns mentions it among the birds found in the Stygian caves.

Rocky Mountain nuthatch (Sitta carolinensis nelsoni).—Probably common, especially in the vicinity of the Mammoth Hot Springs.

Red-breasted nuthatch (Sitta canadensis).—On September 12 we found the remains of three red-breasted nuthatches in the Stygian Caves. The bird is common in this vicinity and is doubtless generally distributed throughout the park.

Mountain chickadee (Parus gambeli).—Abundant and readily recognized almost anywhere, as it comes familiarly about the camps and utters its characteristic note.

? *Western golden-crowned kinglet (Regulus satrapa olivaceus)*.—Probably both the western golden-crowned kinglet and the ruby-crowned kinglet (*R. calendula*) are common in the park, but the birds seen near Mammoth Hot Springs on August 20 were immature and the color of the crown patch was indistinguishable.

Townsend solitaire (Myadestes townsendii).—One of the sweetest songsters in the park. It is probably common in many places, but we saw it only on August 7 along the Gardiner River.

Thrush (Hyllocichla sp. ?).—Remains of two thrushes were found in the Stygian caves on September 12, but decay had progressed too far to make it possible to identify the species with certainty.

Western robin (Merula migratoria propinqua).—Abundant and generally distributed. We found it especially common on August 13 near the Lake Hotel, where it seemed to have bred in large numbers.

Mountain bluebird (Sialia arctica).—One of the most attractive and conspicuous birds. It occurs commonly about the hotels and camps, where its beautiful azure plumage can not fail to attract the attention of those who are in any way interested in bird life. Doubtless the number of bluebirds immediately about the hotels might be materially increased by putting up nesting boxes so that the birds would be encouraged to breed in greater proximity to the buildings than at present.

POACHING.

Evidence of poaching in former unfrequented portions of the park difficult of access have been found, particularly in the northwest corner, where within the last fortnight a trapper's cabin, supplied with provisions, cooking utensils, and bedding, was found. The contents were burned and the cabin destroyed. Two snowshoe cabins were found broken open and utensils carried off.

In addition to the trails shown on the map crossing the boundary lines of the park there are numerous other trails—all originally made by hunters, trappers, and prospectors. There are now four main

entrance roads leading into the park—north, east, south, and west—which seem to be sufficient for all purposes concerning the park and for accommodation of visitors. Applications have come to this office from far and near for permission to enter the park on these various trails with arms, in order to pass through the park for the purpose of hunting outside of the park. All such applications for permits to carry guns unsealed through any portion of the park have been refused, but permission to carry sealed guns has been granted to persons who enter the park at one of the regular stations where their guns may be sealed, and make exit at one of the regular stations (their route through the park being particularly specified) where their guns may be unsealed and condition reported upon. Permits to carry game or game trophies through the park have been refused. There has been much adverse criticism by hunters and guides on these rulings, but the best interests of the park demand that it shall no longer continue a thoroughfare for sportsmen, hunters, and game-slaughterers.

TRIALS BEFORE UNITED STATES COMMISSIONER.

Two poachers were convicted and sentenced to three months confinement and costs, which latter amounted to about \$1,000. One woman plead guilty through the telephone to writing her name on the hot water formation and was fined \$10.50, including costs. A driver for the Yellowstone Park Transportation Company charged with violation of paragraph 4, Rules and Regulations, was convicted and fined \$35.90, including costs.

Three United States soldiers, members of the park guard on stations, were brought before the commissisoner. One sergeant in charge of a station plead guilty for violation of paragraph 5, Rules and Regulations, and was fined \$100 and costs. The case of one for disorderly conduct was dismissed for lack of evidence. Sergeant in charge of a station charged with violation of paragraph 2, Rules and Regulations, was acquitted on the grounds that he had only conformed to the custom of previous years and that he had been duly authorized by his commanding officer to graze his horses.

GAME PROTECTION.

It seems a difficult problem to protect the game with the few scouts allowed to be employed. The two additional scouts authorized for temporary service make a material difference, but as it is, one or two soldiers are detailed to go with each scout into the regions difficult of access, and this severe and dangerous work in the very cold weather is an imposition on men with such meager pay, yet when these men take interest and do good work they certainly should receive some extra compensation. During the seven months of winter when this duty compels them to undergo such severe hardships, \$13 per month with food and clothing is meagre wages "now-a-days."

RECOMMENDATIONS.

Under the present plan of governing and protecting the park by a detail of troops from the Army—the commander of said troops performing the duties of superintendent of the park up to the present season—there have always been two interests to subserve. These

interests still obtain under the present plan of a superintendent not in command of the troops.

These two interests are the interests of the park and the interests of the military service (discipline, training, etc.). Such details are injurious to the Army in that regimental and squadron organizations are not only disturbed, but the troop organization is largely demoralized by subdividing the men into small parties far separated for indefinite periods of time without the personal supervision of an officer.

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

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

Civil guards, on the contrary, would be selected by examination with reference to their special fitness, their interest in the work, and

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

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

In organizing a civil guard it might be necessary to select men of good repute on trial, subject to examination during the first year—but every member taken on should in due time be examined. All vacancies occurring after complete organization should be filled by men between the ages of 21 and 45 who upon examination are found best qualified for the work. The penalty for inefficiency, incivility, dishonesty, habitual and inordinate use of intoxicants, neglect of duty, gross immorality or disorderly behavior, and such like disabilities or inabilities, should be dismissal.

Two years' experience in governing the park with troops and comparing the results of enforcing due observance of all rules, regulations, and instructions through the troops, and through the few scouts that in reality are civil guards, leaves no doubt in my mind about the superiority of a trained and well-governed civil guard for this particular and difficult duty. While I found some excellent, intelligent, and conscientious noncommissioned officers and privates who have taken interest in carrying out their instructions in park duties, the majority are indifferent and appear to resent being required to subserve both the military interest and the interest of the park, on their small pay. During the long and severe winters the duty is not only difficult but dangerous, and much hardship must be endured in its performance.

The protection of the park and protection of the game should be under one head. The War Department should have entire control, or the troops withdrawn and a civil guard substituted, and the entire control and responsibility vested with the Interior Department.

Very respectfully,

S. B. M. YOUNG,
Superintendent.

The SECRETARY OF THE INTERIOR.

ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT OF
THE SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR

1908



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REPORT OF THE SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 15, 1908.

SIR: I have the honor to submit annual report of conditions in the park from October 15, 1907, to the present date.

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

In the act making appropriations for the sundry civil expenses of the Government, approved May 27, 1908, an appropriation of \$2,500 was made for completing the survey of and properly marking that portion of the boundary of the Yellowstone National Park remaining unmonumented, covering an estimated distance of 57 miles. A contract has been let, under the supervision of the Commissioner of the General Land Office, and in all likelihood the field work will be completed this season.

TRAVEL.

"The branch line of the Oregon Short Line Railroad from Idaho Falls to the western boundary line of the park was completed and ready for passenger traffic at the opening of the tourist season of 1908, and the records show an increase of visitors to the park through the western entrance of about 3,000 over 1907. Of this increase 1,435 traveled by the Monida and Yellowstone coaches, 1,282 by the Wylie Permanent Camping Company coaches, and the remainder by licensed personally conducted camping outfits."

The aggregate number of persons taking the park trip over the regular route during the season of 1908 was as follows:

Travel in park during season of 1908.

Yellowstone National Park Transportation Company, entering via northern entrance	5, 108
Monida and Yellowstone Stage Company, entering via western entrance ..	3, 705
Others at hotels, traveling with private or government transportation, bicyclers, foot travelers, etc.....	368
Total with regular companies.....	9, 181
Wylie Permanent Camping Company:	
Entering park via northern entrance.....	2, 164
Entering park via western entrance.....	1, 282
Other licensees of personally conducted camping parties.....	3, 446
Total number camping, traveling with licensed transportation.....	1, 544
Total number camping, traveling with licensed transportation.....	4, 990
Making trip with private transportation as "camping parties".....	4, 577
Total number of visitors making tour of park season of 1908.....	18, 748

Short trips:	
With regular companies, stopping at hotels-----	488
With Wylie Permanent Camping Company-----	57
With E. L. Robertson, special licensee for short trips-----	249
Total, short trips-----	794
Grand total of all visitors to the park, season of 1908-----	19,542

During the season 4,506 tourists took the trip across Yellowstone Lake with the T. E. Hofer Boat Company. Of this number about 40 per cent were traveling with the Yellowstone National Park Transportation Company, about 35 per cent with the Monida and Yellowstone Stage Company, about 15 per cent with the Wylie Permanent Camping Company, and the balance, about 10 per cent, came from licensed and private camping parties. Owing to inclement weather this company was delayed in getting a sufficient number of boats on the lake to accommodate all travelers, and during the first half of the tourist season was obliged to refuse many who desired to make the trip from Thumb to Lake Hotel by water.

Travel by the different entrances.

By the main gate on the north, Gardiner Station-----	10,973
By the Cooke road, northeast corner, Soda Butte Station-----	11
By the government road from Cody on the east, Sylvan Pass Station-----	762
By the road leading from Jackson Hole on the south, Snake River Station-----	624
By the Madison River road on the west, Riverside Station-----	7,172
Total-----	19,542

ROADS, CULVERTS, AND BRIDGES.

The following notes are furnished by Capt. E. D. Peek, U. S. Engineers, as to the work performed under his supervision:

The first crew began work on April 20, 1908, in the Gardiner Canyon, removing slide dirt, and making necessary fills and grading. The second crew also began on above date to repair the sprinkler tanks to get them in readiness for the beginning of the season. A third party began work on April 15, cleaning up the grounds and irrigating the plaza in the vicinity of Mammoth Hot Springs. No work could be carried on farther into the Park on account of the snow.

The work of opening the roads in the park was begun on May 20 when the first crews were sent out. The deepest snow, as always, exists between the Upper Basin and the Thumb. Two crews began work on this piece of road, one coming via the Upper Basin and the other via the Thumb. The three cabins on the Divide had been put in good condition last fall and supplied with fuel, so that the men were provided for and were not required to sleep in the snow. The sheds or stables at the above points were also supplied with hay, so the stock suffered no hardship.

The roads were all opened for tourist travel three days before the opening of the season on June 10. The difficulty of former years in the snow sections has been greatly overcome by marking all ditches and culverts with poles. As soon as these are shoveled out the water leaves very quickly and allows the roads to dry up.

The roads of the entire park were graded with a machine as soon as the weather permitted, which was in the latter part of June.

During the summer the following portions of road were graveled and resurfaced: From Gardiner to the 2-mile post; across Swan Lake flat to Golden Gate and beyond to Silver Gate; on the Norris road from 10 $\frac{1}{4}$ to 12 $\frac{1}{2}$ miles; on the Fountain-Upper Basin road from 6 $\frac{1}{2}$ to 7 $\frac{1}{2}$ miles; on the Thumb Lake road from the 13-mile post to the Lake Hotel; on the Lake-Canyon road from the Lake Hotel to the 2-mile post. Upward of 25 miles of road in different parts of the park was reditched, regraded, and crowned.

Minor repairs were made on the Cody road and considerable work done upon that portion lying in the reserve beyond the park. The greater portion of the work consisted in repairing revetments and the Elk Fork bridge.

Considerable work was done on the west road leading to the Oregon Short Line Railway. The portion of road from the 5 to the 7 mile post was relocated and changed from the rolling hills to a grade along the river bank. This was a very marked improvement, on account of obviating the hills and the dust, which was excessive in the sands on the hills.

From the Madison junction to the lunch station on the Gibbon River the road was widened in 14 places to allow teams to pass easily.

Sprinkling was begun July 1, and practically continued until September 10, though on a portion of the system it continued until September 20.

The mileage of roads within the park is 306, and the portion lying in the forest reserve is 111, making a total of 417 miles.

The bridge across Willow Creek was replaced by a 6-foot culvert and a fill; bridges over Obsidian Creek and Apollinaris Creek were also replaced by 4-foot culverts and fills. These fills were only some 30 feet long.

The bridge over Otter Creek, 150 feet long, and one over Alum Creek, 120 feet long, were replaced by culverts and fills, and also bridges at 1 $\frac{1}{2}$ miles beyond the Fountain and 1 $\frac{1}{2}$ miles beyond the Upper Basin.

In addition to the above, over 50 new culverts were placed. Forty-six were made of corrugated iron and the balance of vitrified tile.

The three bridges on the Gardiner-Mammoth Hot Springs road were redecked, as was also the bridge crossing the Madison River on the western road.

FISH.

Four thousand rainbow trout were received from the hatchery at Spearfish, S. Dak., on October 14, 1907, of which number 200 were planted in Lava Creek, about 5 miles east of Mammoth, and the balance, 3,800, in Arnica Creek and other small streams tributary to Yellowstone Lake.

On May 27 and 28, 10 cans of rainbow trout were received from the same station and planted in the upper Gibbon River, between Norris and Canyon, and on the same date 55 cans of brook trout were received, 12 of which were placed in Glen Creek, and the balance in Willow Creek and tributaries.

Ten cans of rainbow trout were received from the Spearfish hatchery on September 5 and planted in Grebe Lake, and on the

same date 10 cans of landlocked salmon (shipped from the hatchery at Bozeman, Mont.) were received and planted in Duck Lake and tributaries of Yellowstone Lake.

Report from the superintendent of hatcheries in the park, Mr. D. C. Booth, has not yet been received.

WILD ANIMALS.

Antelope.—Judging from the number of young seen, and from reports of scouts and patrols, the increase in antelope appears to be normal. The alfalfa field near Gardiner yielded two good crops. The yield in tonnage is greater than last year and is believed to be sufficient to carry the herds of antelope and deer through the winter. Two or three dozen of the male antelope summered in and near the alfalfa field and were an attractive sight to visitors entering from Gardiner.

The three antelope—1 male and 2 females—raised on the bottle for the London Zoological Gardens were shipped December 30, last, in care of Dr. W. T. Hornaday, director Zoological Gardens of New York, who kindly received and had them properly cared for until a caretaker arrived from London. They were reported as having arrived at their destination in good condition.

It is estimated that 3 per cent of the herd were killed by coyotes during the past winter and spring. Evidence was found of one killed by poachers close to the wire fence on the north line, within 2 miles west from Gardiner. A small band drifted out of the park near Gardiner and four of them were reported killed. The remainder were driven back into the park. A wire fence along the north line extending from the Yellowstone and Gardiner junction about 4 miles westward to a mountain bluff was constructed some years since to prevent the antelope from drifting out of the park and down the Yellowstone Valley. The preservation of the herd is due to this fence and to feeding alfalfa during the winter. The natural instinct of the animal carries it down the valleys to escape the cold storms of winter in the higher altitudes. Sometimes their curiosity leads a few to crawl out under the bottom wire which is 12 inches from the ground. The number of antelope in the park is approximately 2,000. The great majority of these now winter annually in the alfalfa meadow and foothills bordering the Gardiner River, near its confluence with the Yellowstone River, where they are fed alfalfa during the season of deep snows, within plain and near view of the people of Gardiner, where all the good citizens manifest a kindly disposition and concern for their preservation and protection. A number of people visit the town of Gardiner, at the northern entrance to the park, during the winter months to see the antelope. Many drive up the Gardiner Canyon and to Mammoth Hot Springs to see the mountain sheep and deer.

Although fine specimens of our native wild animals may be seen in confinement in many city parks throughout our country, the sight is not nearly so interesting and instructive as to see these beautiful wild animals in their natural habitat, where they have practically become tame and fearless as the flocks and herds of domestic animals, no doubt because of an instinctive conviction that in this particular nook of the mountains man is their friend and not their enemy.



WILD ELK ON THE ALFALFA FIELD, IN THE NORTHERN PORTION OF THE YELLOWSTONE NATIONAL PARK, NEAR THE TOWN OF GARDINER, MONT.

There is a value in mental uplifting in this sight of the wild animals in their natural home, practically fearless of man, as well as in the natural scenic beauties of this wonderland.

Buffalo.—Wild herd: Reports from scouts and patrols state that signs of two buffalo calves were seen on Mirror Plateau and one cow and calf were seen in Pelican Valley during the season. Scout Wilson reported that he saw 10 buffalo at the mouth of Mist Creek on Lamar River on April 13. On September 7 Scout McBride saw fresh tracks of 2 buffalo on Boundary Creek, near the western boundary, and on September 16 he saw 20 buffalo near the mush pots southwest of Pelican Cone in the valley of Pelican Creek. From these reports it is evident that the remnant of the original wild herd is gradually increasing in numbers.

Fenced herd: The two fierce old bulls which were not removed to Lamar Valley with the herd in the spring of 1907 were sold under authority of the department and the proceeds of sale forwarded December 17, 1907. The herd now in the fenced pastures in Lamar Valley shows a most gratifying improvement in condition and productiveness. The calves reared this year numbered 14, as against 5 last year in the Mammoth pasture field. The herd now totals 74, all in fine condition save one very old cow. Three miles of strong Montana anchor wire fence have been built around the new pasture and hay meadow during the year. About 100 tons of hay have been put up for winter use and the herd transferred to the new pasture of luxuriant native grass. While considerable work has been accomplished during the year in construction of main ditches, head gates, and laterals for irrigation of the hay meadow, it is quite necessary to do much more work in that line in order to insure a heavier crop of hay and a greater area of hay land for the future. By reason of the deep snows and long winters the herd must be fed hay for about five months. Allowing 25 pounds for each grown animal per day, it will require fully 100 tons for the 55 grown animals, not including the 5 yearling and the 14 calves. It is my intention, with the approval of the department, to grub and clear of willows about 20 additional acres of the meadow land inclosed, break it up, and seed it with timothy and red clover, which grow well in this altitude, in order to provide sufficient hay for the increased herd. This should be done each succeeding year for four years, in order to secure sufficient winter supply of hay for a constantly increasing herd. In order to carry out this plan an increase in the appropriation for maintenance will be necessary. In 1904 \$2,500 was appropriated for the maintenance of the buffalo, which at that time numbered 28 head. The same amount has been appropriated each year since, although the herd has gradually increased till it now numbers 74 head.

The increase in males has been so much greater in proportion than females, and greater than is necessary for successful breeding, that I propose on June 1 of next year to transfer a number of bulls (10 or 12) to the field near Mammoth Hot Springs as a show herd for the benefit of the public during the tourist season. The increase by sex this year is 9 females and 5 males; 1 male calf died from injury. The herd, old and young, consists of 4 females and 31 males.

Bear.—The black bear appear to have increased, and although the grizzlies have shown a goodly number of cubs this season Mr. W. H.

Wright, a photographer and writer who spent two months in the park this summer studying the habits of the grizzlies, informs me that they are not so plentiful as they were several years since during his former visit to the park. Several complaints have been made of bears robbing camping parties of their commissaries and breaking into the kitchens of the guard stations and road crews, doing damage and destroying considerable stores. During my absence from the park in June one large black bear, reported dangerous around cottages at Mammoth Hot Springs, was shot by the order of Major Allen, commanding officer of the troops and at the time acting superintendent of the park. On September 5 the carcass of a large cinnamon bear was found in Prismatic Lake. It was so thoroughly cooked that it was impossible to determine the cause of death.

At the request of Dr. Frank Baker, in charge of the National Zoological Garden, Washington, D. C., one grizzly, aged between 3 and 4 years and weighing 500 pounds, was trapped and shipped to Washington July 23, and although the express car in which he was carried was derailed and overturned, Doctor Baker reported his arrival in good condition. A fine young mother black bear and two cubs were also trapped and shipped on September 30 to the same place. These also arrived in good condition. The skin and skull of one grizzly were sent December 19 to the National Museum, Smithsonian Institution, as noted they would be in my annual report for 1907, and receipt has been acknowledged.

The bear is the most familiar habitant of the park. During the tourist season these animals may be seen at almost any time, singly or in groups, prowling contentedly through the woods or about the garbage refuse of the hotels and permanent camps.

Beaver and marmot.—Beaver and marmot are abundant.

Coyotes.—It is a difficult matter to keep the coyotes down. Since my last annual report (which showed 99 coyotes killed in that year) 97 more have been killed. The growing scarcity of antelope, deer, and sheep in the States bordering on the park and the increase of these animals in the park causes the coyotes to gather here for their meat. One lynx was killed during the year. Also one red fox was shot by Scout Graham in the nighttime in mistake for a coyote.

Deer.—The deer (black-tailed) show a normal increase. During the deep snows and severe storms 300 to 400 mule (black-tailed) deer are fed hay on the plaza in front of Mammoth Hotel and Fort Yellowstone. Many of them feed close to the dwellings; some become quite gentle and take food from the hand. A band of about 100 feed with the mountain sheep in the Gardiner Canyon and on the slopes of Mount Evarts.

The white-tailed deer keep apart from their bigger brothers and sisters, yet they feed in close proximity to the barracks and stables of Fort Yellowstone during the severe winter weather. The increase in the deer family is quite perceptible when they range close to the houses and buildings at Mammoth during the winter.

Elk.—Information from all available sources seems to justify a conservative estimate of between 25,000 and 30,000 elk in the park. Mr. Wells, in charge of the buffalo farm, an experienced hunter and a man of good judgment, estimates the number to be between 40,000 and 50,000. The winter storms and deep snows cause large bands

to drift out of the park down the valleys of the Snake, Madison, Gallatin, and Yellowstone rivers, where many are properly taken by the licensed hunters, who are each entitled to kill one under the laws of the surrounding States—Montana, Wyoming, and Idaho. The meat hunter, however, often risks a violation of the law to provide meat for his family and some for sale; while the head, scalp, and tooth hunter ruthlessly kills and leaves the carcasses to rot.

On October 29 the remains of a dead elk were found about 3 miles west from the town of Gardiner, 2 yards inside the park line. It had been shot and the head taken.

There is no provision for feeding the elk in winter. They seem to do fairly well in the ordinary winter, but when the snow falls to an unusual depth—say one winter in four—many perish. The two elk calves (male and female) raised on the bottle last season were shipped to the park commission, Vancouver, B. C., December 16, and their arrival in fine condition was reported.

Moose.—The moose are gradually increasing on the marshes of the Upper Yellowstone River in the southeast and the Bechler River marshy areas in the southwest. On June 26 a bull moose was seen 3 miles south of Upper Basin Station, 50 yards from the road, and one was sighted on Blacktail in September. These animals are seen frequently by patrols from Snake River Station. Moose signs are reported in several other sections of the park.

Mountain lions.—Mountain lions are scarce. One was killed during the year. It was no longer necessary to keep the pack of hounds purchased in 1893 for the extermination of mountain lions, and under authority from the department the pack was sold, after advertisement, to the highest bidder.

BIRDS.

My annual report for 1907 contained some notes by Dr. T. S. Palmer on the summer birds of the park. The following species were seen on ponds in Lamar Valley on August 28, 1908. The eared grebe, black-necked stilt, wandering tattler, and yellow-headed blackbird. Dr. Alexander Lambert reports also that he heard the "squack" of the black and white night heron at Yellowstone Lake.

FOREST FIRES.

There was no damage by forest fires in the park during the year. One fire caused by lightning during a storm near Soda Butte Station was extinguished by rainfall before causing any damage.

POACHING.

The civilian scouts, with one exception, rendered effective service in preventing poaching and arresting poachers. The one exception was discharged for inefficiency. He had formerly been a soldier, and his discharge showed character excellent.

Poachers and other violators of the law were arrested in every quarter of the park, and several arrests were made outside the park in Wyoming and Montana on information and evidence furnished by park scouts, and the parties were convicted. It is evident, however, that many poachers escaped arrest. There are not sufficient scouts for thorough protection against poachers.

Cases tried before United States Commissioner John W. Meldrum in Yellowstone National Park during the period between October 15, 1907, and October 14, 1908.

- 1907.
- Oct. 18. United States *v.* Jacob Garnick. Charge, hunting wild animals in Yellowstone National Park. Defendant fined \$50 and costs and forfeited two guns and five traps.
- Oct. 21. United States *v.* John Winegar and Charles Mackert. Charge, having firearms in Yellowstone National Park without the permission of the superintendent thereof. Defendant Mackert fined \$50 and one-half of the costs. Defendant Winegar—this being his second offense—fined \$100 and one-half of the costs.
- Oct. 31. United States *v.* Samuel E. Nelson, a noncommissioned officer in charge of guard station Tower Falls. Charge, killing birds in Yellowstone National Park. Defendant fined \$50 and costs.
- Nov. 9. United States *v.* G. V. Allen, private soldier. Charge, carving name on tree in Yellowstone National Park. Defendant fined \$5 and costs.
- Dec. 3. United States *v.* Fred Chase, Gus Holtz, and Harry Workman. Charge, killing elk in Yellowstone National Park. Defendants fined \$100 each and costs.
- Nov. 21. United States *v.* Joseph Strukly. Charge, hunting wild animals in Yellowstone National Park. Defendant fined \$50 and costs with forfeiture of gun.
- Dec. 4. United States *v.* George Broadbent. Charge, killing elk in Yellowstone National Park. Defendant fined \$100 and costs.
- 1908.
- Jan. 28. United States *v.* G. J. Gibson. Charge, hunting wild animals in Yellowstone National Park. Defendant committed to guardhouse for a period of fifty days, and ordered to pay costs and forfeit gun, traps, and snowshoes.
- Apr. 20. United States *v.* Joseph Duret. Charge, cutting growing timber in Yellowstone National Park. Defendant ordered to pay costs.
- June 23. United States *v.* John K. Jones. Charge, killing a woodchuck in Yellowstone National Park. Defendant fined \$10 and costs.
- July 11. United States *v.* Frank Moore. Charge, carrying firearms in Yellowstone National Park without the permission of the superintendent thereof. Defendant fined \$25 and costs.
- Aug. 31. United States *v.* Bruno Hoepfner. Charge, disorderly conduct and bad behavior within the limits of Yellowstone National Park. Defendant fined \$50 and costs.
- Sept. 14. United States *v.* Grant Hopkins and W. O. Dockstader. Charge, larceny, in violation of section 5356 of the Revised Statutes of the United States. Defendant Hopkins held to United States district court. Defendant Dockstader discharged.

THE HOLD-UP OF AUGUST 24, 1908.

The unfortunate event, the hold-up of seventeen coaches, surreys and spring wagons on August 24, and the robbery by one man of many of the passengers therein at a point on the main road between Old Faithful Inn and the Thumb of Lake Yellowstone, and about 4 1/2 miles distant from the former, took place about 9 a. m. on August 24.

In accordance with the established time schedule, the first coach of Yellowstone Park Transportation Company loads at Old Faithful Inn at 7.30 o'clock in the morning; after all coaches of that company have been loaded, the Monida and Yellowstone Company coaches are loaded at same point and follow after. These are followed in turn by the coaches of the Wylie Permanent Camping Company—all on the road eastward toward the Thumb.

This was the order of travel on morning of August 24. As a precaution against dust and against accident on grades, drivers are instructed to maintain a distance of approximately 100 yards between

coaches. On the morning in question eight vehicles were not molested by the robber. It appears that the trooper on patrol passed the point where the robbery took place ahead of the first coaches. The interval between the eighth and ninth coaches in order of travel was rather extended, with an angle of the road intervening in a narrow defile, thickly wooded on either side. The ninth vehicle was stopped by the robber with repeating rifle at a "ready;" and in vulgar, blasphemous language he ordered a young man down from the box seat and made him carry a sack alongside the coach—into which passengers were commanded to deposit their money and jewelry. This was repeated with each of the sixteen vehicles following. No one received physical injury excepting one passenger, whose actions did not suit the robber and who was disciplined by a stroke on the head with the gun, which was discharged at the same time. The injury was not reported serious. Four of the looted coaches belonged to the Yellowstone Park Transportation Company, five to the Monida and Yellowstone Stage Company, and eight to the Wylie Permanent Camping Company. As near as can be learned by the separate memoranda handed in by the passengers the losses sustained by them in the robbery aggregated \$1,363.95 cash and \$730.25 in watches and jewelry. Upon being liberated the first coach of those robbed drove rapidly to the camp of the road sprinkling crew, located about 2 miles east of the hold-up point, where notice was given and a messenger dispatched to Old Faithful Inn—distant 6 miles—with news of the robbery.

The agent of the Yellowstone Park Transportation Company at the inn telegraphed the news to all stations in the park and notified the detail of soldiers stationed at Upper Geyser Basin, within a few hundred yards of the inn. He also states that he notified the officer in command of a troop of cavalry camped in the Lower Basin, about 4 miles distant by the old road. Telegraphic notice was received at Mammoth Hot Springs Hotel and immediately transmitted to my office by telephone. The message was repeated to Major Allen, who was up in the park, and he was requested to give the matter his personal attention. All guard stations were warned and instructed and two scouts present at Mammoth were dispatched to the scene. They made the ride (49 miles) in four hours. Major Allen, who was in the park with General Edgerly, came into Mammoth the same evening, and on the following morning reported that he had given the necessary orders to his troops by telephone and telegraph from Norris. The robber was on foot, and disposed of a few pocketbooks and purses near the scene of the robbery, where they were found in a clump of bushes. One of these contained valuable papers and all were returned to their respective owners.

The trail could only be followed a short distance. The robber had apparently taken off his shoes and passed into a densely wooded region. All United States marshals, sheriffs, and peace officers in surrounding States, counties, and towns were duly notified and given description of the robber, as nearly as could be ascertained from tourists and drivers in the hold-up.

All passengers in their excitement blamed the soldiers. The character of the country is such that the entire Army of the United States could not prevent an evil-disposed man from entering the park with a gun.

On the date of the hold-up one troop was on practice march in the park and was camped within 10 or 12 miles from Old Faithful Inn. One troop has been camped in Lower Geyser Basin all the season and one troop has been camped on Yellowstone River within a mile of Lake Hotel all the season.

So far it has been impossible to locate an escaped criminal who was convicted of poaching in the park and escaped from confinement in the military prison at Fort Yellowstone in October last. There seems to be a well-grounded suspicion that he is the perpetrator of this daring highway robbery. It is a slow and difficult task to conduct a systematic search for this criminal, without funds for expenses, by correspondence alone. The detectives in adjacent States, with whom I have corresponded since the robbery, work for a per diem and expenses and not for rewards offered, and although they have been informed that this office has no money for that purpose, they have never hesitated to give any information in their possession in regard to this particular matter.

ESTIMATES.

The following estimates of appropriations required for the ensuing fiscal year have been submitted: For administration and protection, including salaries aggregating \$7,880, for chief clerk, chief scout, 5 scouts, and 1 teamster and messenger, \$9,530; maintenance of buffalo, including salaries amounting to \$1,920, for buffalo keeper and assistant buffalo keeper, \$3,547; total, \$13,077.

RECOMMENDATIONS.

In view of a settlement growing at the terminus of the railroad on western boundary line, it is recommended that an appropriation be asked to construct a wire fence of 5 miles on the boundary line, extending from the Madison River south, with a gateway on road entering from the railway station. This fence would prevent encroachment on the park grounds, keep out loose stock, and save the destruction of park game by settlers close to the line at this point. The area along this line is in part thinly wooded and in part devoid of trees. Estimate for this fence was forwarded to the department October 11, 1907.

I beg to renew the recommendation made in my last annual report to place the government and protection of the park under a selected and well-organized civil guard.

Very respectfully,

S. B. M. YOUNG,
Superintendent.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

REGULATIONS OF JULY 2, 1908.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner hereof was not a party to such violation. "Firearms will only be permitted in the park on written permission from the superintendent hereof. On arrival at the first station of the park guard, parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park."

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park, excepting for the use of the wild game, and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards, or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than one thousand dollars, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

INSTRUCTIONS OF JULY 2, 1908.

(1) The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

(2) *Fires*.—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down. Care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

(3) *Camps*.—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any

other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

(4) *Bicycles*.—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear, the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

(5) *Fishing*.—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than twenty fish in one day.

(6) *Dogs*.—Dogs and cats are not permitted in the park.

(7) *Grazing animals*.—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

(8) *Hotels*.—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, twenty-four hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

(9) *Boat trip on Yellowstone Lake*.—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(10) *Driving on roads of park*.—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose, excepting for lunch or camp, all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers

will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

(11) *Miscellaneous.*—Automobiles are not permitted in the park. Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing before the complainant leaves the park.

(12) The penalty for disregard of these instructions is summary ejection from the park.

Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park, also at the office of the superintendent.

REGULATIONS OF OCTOBER 11, 1900, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Yellowstone National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of any animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of

notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Yellowstone National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT OF
THE ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE
SECRETARY OF THE INTERIOR

1909

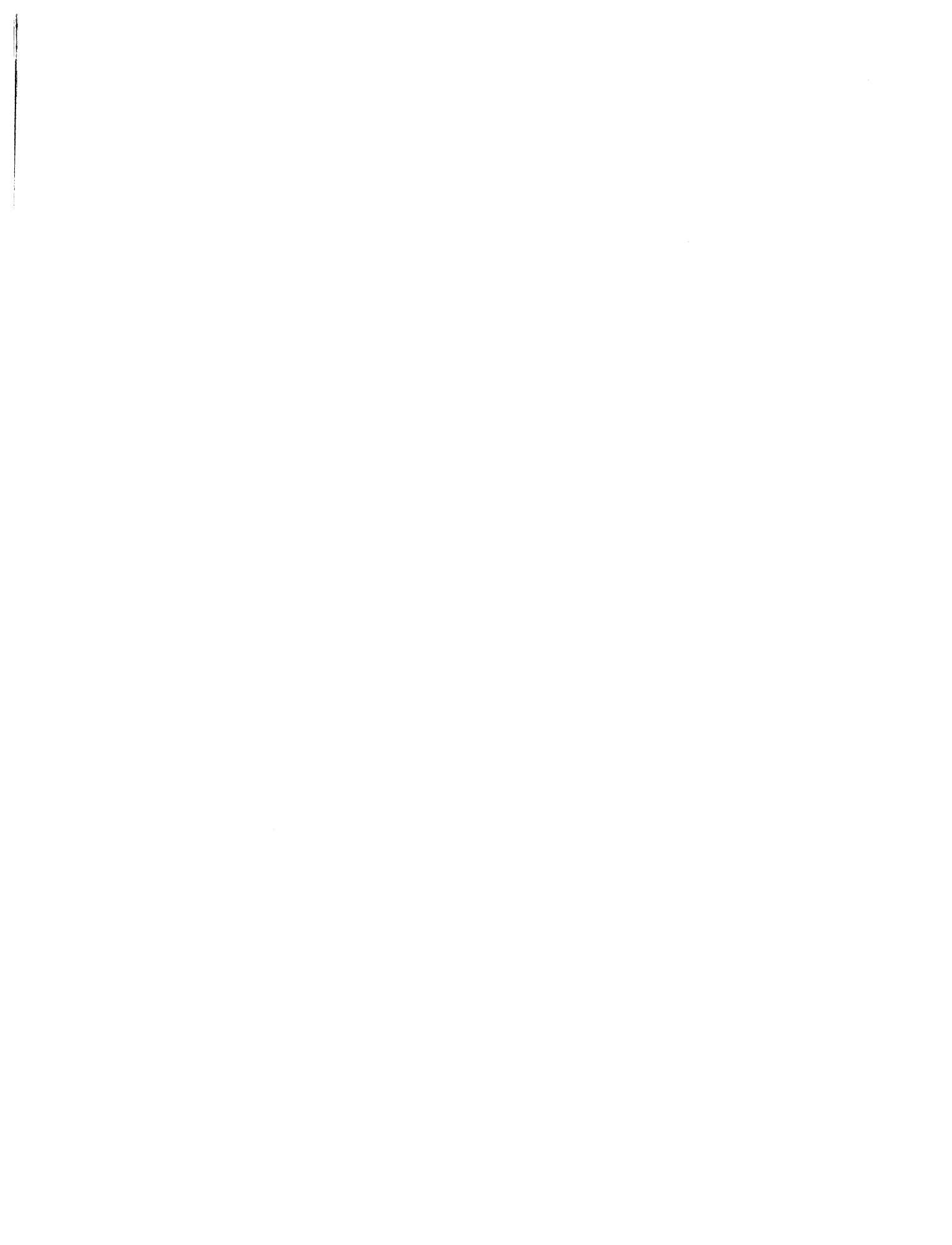


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REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 15, 1909.

SIR: I have the honor to submit annual report of the conditions in the park from October 15, 1908, to the present date.

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

TRAVEL.

The season of 1909 opened on June 5, about ten days earlier than usual. The early opening necessitated the expenditure of a large sum of money for shoveling snow. This expenditure was a total loss to the Government, as no permanent repairs were effected by it. As a matter of fact it was a detriment, as cutting a passageway through the snow banks for several miles made the roadway a gutter for the melting snow on the sides, and the roadbed was thereby seriously damaged. It is not believed advisable to attempt, in future, the opening up of the roads in advance of the probable melting of the snows.

The aggregate number of persons taking the park trip during the season of 1909 was as follows:

Travel in park during season of 1909.

Yellowstone National Park Transportation Company, entering via northern entrance.....	9,689
Monida and Yellowstone Stage Company, entering via western entrance.....	5,905
Others at hotels, traveling with private or government transportation, bicyclers, foot travelers, etc.....	1,362
Total with regular companies.....	16,956
Wylie Permanent Camping Company:	
Entering park via northern entrance.....	5,024
Entering park via western entrance.....	2,693
Other licensees of personally conducted camping parties.....	7,717
	3,783
Total number camping, traveling with licensed transportation.....	11,500
Making trip with private transportation as "camping parties".....	3,307
Total number making tour of park.....	31,763
Making short trips with special licensees.....	782
Grand total of all visitors to the park, season of 1909.....	32,545

During the season 7,959 tourists took the trip across Yellowstone Lake with the T. E. Hofer Boat Company. Of this number 3,636 were traveling with the Yellowstone National Park Transportation Company, 1,300 with the Monida and Yellowstone Stage Company,

1,941 with the Wylie Permanent Camping Company, and the balance, 1,082, were traveling with licensed and private camping parties.

Travel by the different entrances.

By the main gate on the north, Gardiner Station.....	20, 956
By the Madison River road on the west, Yellowstone Station.....	10, 380
By the road leading from Jackson Hole on the south, Snake River Station..	400
By the government road from Cody on the east, Sylvan Pass Station....	805
By the Cooke road, northeast corner, Soda Butte Station.....	4
Total.....	32, 545

MEANS OF TRANSPORTATION.

The Yellowstone National Park Transportation Company owns 6 six-horse Concord coaches (used from Gardiner to Mammoth Hot Springs only), 87 four-horse Concord coaches, 43 surreys, 14 formation wagons, and 46 spring wagons, for use in transporting tourists through the reservation, in addition to necessary baggage, express, and freight wagons, carts, buggies, etc. These require the use of 675 horses in the park.

The Monida and Yellowstone Stage Company owns 103 passenger vehicles, consisting of 51 four-horse Concord coaches, 32 surreys, and 20 spring wagons, for use of tourists. This company had 319 horses in the park, but was obliged to hire additional teams to handle the travel from the west side.

The Wylie Permanent Camping Company owns 94 vehicles, of which 27 are Concord coaches, 63 mountain spring wagons, and 4 surreys. This company had 378 horses in the park.

In addition to the above, licenses were issued covering 181 wagons and 196 saddle and pack animals, for use in connection with tourist travel in the park.

ROADS.

The following notes are furnished by Capt. Wildurr Willing, United States Corps of Engineers, as to the work performed under his supervision:

Work in connection with the maintenance and repair of the improvements of the Yellowstone National Park for the season of 1909 was begun on March 11, by a small crew in the Gardiner Canyon, making repairs to the road and the retaining wall at the bend about $1\frac{1}{2}$ miles from Gardiner.

The work of opening the roads was begun on May 1, when two snow crews, aggregating 65 men and 11 teams, were started from Mammoth Hot Springs. These crews were sent out twenty days earlier than in 1908, on account of the earlier opening of the tourist season and the great amount of snow on the ground. Snow was encountered practically all the way from Mammoth Hot Springs, and the road across the Continental Divide was not open for traffic until June 15. Clearing the snow itself was very costly, and the damage to the roads from the melting snow, running down the passages opened in the same, was considerable.

A crew was sent out on the Cooke City road on June 8 and has worked on this road from the park boundary to Mammoth Hot

Springs throughout the season, repairing washouts, removing slides, and replacing small bridges and culverts.

On June 14 a small party left Cody, Wyo., to repair and open up the east road to traffic. Only such work was done in the adjoining forest reserve as would insure the passing of vehicles. The road within the park was gone over pretty thoroughly, though the melting snow did some damage around Sylvan Pass after the crew had passed beyond it.

The south road was repaired as far as the Buffalo Fork of Snake River, with the exception of a bridge over Pacific Creek, which it was not thought advisable to reconstruct. A bridge over the Buffalo River was repaired.

The west road, including the two branches, was pretty thoroughly repaired during August and September, principally with the grader, as this is an earth road.

A party was sent over the Mount Washburn road as far as Tower Falls early in July to open it to traffic. Some snow was encountered on Mount Washburn, but the greater part of the work consisted in removing earth and rock slides from the road.

Bad washouts occurred on the Gardiner road during the very high water in the Gardiner River in June, necessitating the employment of a large force of men for a considerable period, to save the road to traffic. Washouts also occurred along Gibbon River and Spring Creek during this month. Many small bridges and culverts throughout the park washed out during the high water, among them being those at Willow Creek, Alum Creek, and Otter Creek.

During early July high water in Yellowstone Lake, with strong inshore winds, caused bad washouts on the Lake-Thumb road in the vicinity of the Lake Hotel and the Thumb Station. Substantial retaining walls were constructed to hold the road in these places, and the road was raised about 2 feet.

Early in the season repairs were made to the Mammoth Hot Springs-Gardiner road. Minor repairs were also made to the old road between the above points, and to the Bunsen Peak road.

The sprinkling system was inaugurated during the latter part of June, and was maintained over the greater portion of the main belt line until early in September.

Throughout the season repairs were made to the main belt line by small parties. The Lake-Thumb road, however, received little attention owing to the work rendered necessary by washouts along the lake.

A number of small bridges throughout the park were repaired, and new decking laid on some of the larger ones. Nearly all of the steel bridges were painted.

Near the end of the tourist season practically the entire belt line was gone over with graders and drags, and the roads were in very good condition at the close of the season.

There are extensive portions of the road, varying from 4 to 7 miles in length, which are not sprinkled. The difficulty with which water could be brought to these points and the cost of the pipe necessary, have been offered as reasons for the nonsprinkling. I believe that it would be advisable to expend the money necessary to properly equip the route with tanks and wagons, as the comfort of the traveling public is greatly increased by traveling over roads upon which there

is no dust. In fact, no other feature of the travel is so often remarked upon as the comfort arising from sprinkling. In addition to the comfort to the tourists there is also a saving to the roadbed by the use of water, as the maintenance of the road is greatly simplified if it is continually sprinkled.

The road leading from the west has been watered but little in times past, but as now about 40 per cent of the first-class travel enters from that side, the time has come when this road should be as well sprinkled as those in the other portions of the park. If a special appropriation could be obtained for the installation of a plant, the regular appropriation would be sufficient in future to operate it. The cost of installing this additional plant would be about \$15,000, or \$750 per mile.

Attention is invited to the desirability of the transportation companies utilizing the road over Mount Washburn, which was constructed at an expense of over \$100,000. The objects of building this road were two: First, to give tourists an opportunity of enjoying one of the finest views in the United States; and second, to avoid repeating a portion of the route in making a tour of the park. The route from the Grand Canyon to the Mammoth Hot Springs via Mount Washburn and Tower Falls is about 10 miles longer than the route via Norris, and is of course somewhat harder on stock. Moreover, there is no lunch station at Tower Falls. It is impracticable to use this route before July 15, and usually it can not be used after September 15. Of course if it were to be a part of the regular route it would be necessary to establish a lunch station at Tower Falls, which would materially increase the expense to the Yellowstone Park Association, and would be an entirely extra expense, as the crew there would be employed but a very short time and on certain days might not be employed at all. For the reasons mentioned it would be impracticable to make it a part of the regular tour, but it would be easy to arrange for people to have their lunches carried with them from the Canyon Hotel and to stop for luncheon by the wayside, in all cases where the tourists desired to do so, the company being authorized to make an additional charge of \$2.50 to pay for the extra work upon the stock. At present it is impossible for a tourist to go by the Mount Washburn route without paying for an additional day, though the length of time in making the trip is but a few hours in excess of that by the regular route.

FISH.

During the summer 50,000 eastern brook trout were received from the hatchery at Spearfish, S. Dak., of which 10,000 were planted in Glen Creek and 40,000 in Willow Creek; 5,000 land-locked salmon were also shipped in by the Fish Commission and planted in Yellowstone Lake; 400,000 black-spotted trout were planted by the United States Fish Commission in Cub Creek, on the eastern shore of Yellowstone Lake. These, however, were not shipped in, but were taken from the supply collected by the commission at the hatchery maintained in the park, which is a branch of, and maintained from, the regular hatchery at Spearfish, S. Dak. This subhatchery is the greatest field collecting station for the Rocky Mountain, or black-spotted, trout in the country. Mr. D. C. Booth, the superintendent, states that during the period it has been operated, covering nine years, over

33,000,000 eggs of the black-spotted species have been collected from Yellowstone Lake, and after being held until they reached a sufficient stage of development most of them were shipped to various parts of the country to be planted, some of them going to foreign lands. Over 12,000,000 of this number were collected during the past two years.

Mr. Booth also writes as follows:

It is to be regretted that so much sensational talk is each year given out to tourists and others by misinformed people with reference to the prevalence of parasites on the trout of Yellowstone Lake. It has been the experience of the writer, covering a period of nine years, and during that time handling several hundred thousand trout caught from Yellowstone Lake, that comparatively few are even affected, much less diseased, and from the fact that the eggs are carried long distances, thousands of miles in some instances, and arrive in better condition and produce healthier fry and fingerling trout, is positive proof that their parents are not the diseased specimens some people represent them as being.

At my request the Bureau of Fisheries recently had six special pack cans made and shipped to the park. These cans are intended for use in planting fish in streams that can not be reached by wagon—the cans to be carried on pack animals for long distances.

WILD ANIMALS.

ANTELOPE.

The herd of antelope which is fed at the alfalfa field during the winter and scatters throughout the mountains in the summer is evidently increasing. The preservation of this herd is due to the fence along the northern boundary and to the feeding of alfalfa during the winter. The natural instinct of the animal carries it down the valleys to escape the cold storms of the winter, and it was found that they would crawl beneath the fence where even small holes could be found. As soon as they succeeded in getting outside the fence they became the prey of all the ranchers and miners along the river. It therefore became necessary during the past winter to supplement the fence by wire netting, closing up all holes along gullies, in order to insure there being no possible hole through which they could crawl.

On March 19 a pair of antelope were shipped to the National Zoological Park at Washington, D. C., but unfortunately both died after reaching Washington. About 40 antelope died in the vicinity of the alfalfa field, where they spent most of the winter. An attempt was made to ascertain the cause of death, and from autopsies made it is believed that it was due to pneumonia.

DEER.

Both the black-tailed or mule deer and the white-tailed or Virginia deer are found in the park. About 500 of the former and 60 of the latter were fed alfalfa during the past winter; 250 black-tailed deer were seen daily on the parade at Fort Yellowstone, where they were fed. The others were to be seen between Gardiner and the fort, along the road leading between these two points, where hay was scattered three times a week. It was noted that nearly every female was accompanied by two fawns; in few instances was there but a single fawn. There was a considerable loss of life in March, due to

what was believed to be pneumonia, but even with this loss there was a large net increase over the number present during previous years.

On March 15 two fine female mule deer were shipped to the National Zoological Park at Washington, D. C., where they are reported doing well. Soon after their arrival in Washington they each had two fawns, two of which were reported as strong and healthy and doing well; the other two were weakly and soon died.

ELK.

A conservative estimate would place the number of elk in the park at between 30,000 and 40,000. Undoubtedly some little poaching is done on the borders of the park during the winter, but it is believed that this poaching is but limited in extent, and it is hoped to prevent it in future.

MOOSE.

Moose were seen on the Bechler River, in the southwestern portion of the park, and some were also seen in the southeastern portion. Whether they are increasing in number is not known, as no estimate has ever been formed of the number in the park at any given period.

BUFFALO.

WILD HERD.

A herd of 11 wild buffalo was seen on Cache Creek May 19, at which time a bull calf was caught and is being reared by a domestic cow at the buffalo corral. Another small herd of 9 was seen near Pelican Creek in April. Signs were also seen in the southwestern part of the park in July of this year.

FENCED HERD.

One old cow had to be killed in October, 1908, on account of old age and sickness, after the annual report of my predecessor had been forwarded. Her head was turned over to the National Zoological Park at Washington, D. C., as a specimen. One additional calf (female) was born in October of last year, also after the annual report had been made. Two old bulls have been killed during the past year—one because he became vicious and gored the keeper's horse to death; the other because he had become so lame as to be unable to walk. In the latter case, the lameness was due to the buffalo's having twisted some loose wire about his leg so tightly as to stop the circulation. The wire was so firmly embedded in the hair as to be invisible, and it was with great difficulty that the animal was separated from the herd in order to ascertain the trouble. An attempt was made to remove the wire, but the animal was so powerful that it was impossible to hold him, and it was ascertained that he would undoubtedly lose his foot, hence it was deemed wiser to kill him. In both cases the skeleton and skin were sent to the Smithsonian Institution to serve for mounted specimens.

The increase in the number of calves was gratifying, there being 22 calves this year, in addition to the one caught from the wild herd. The herd now numbers 95 animals.

Fourteen bulls were removed from the Lamar Valley to the pasture at Mammoth Hot Springs. This was done for two reasons: First, to remove the bulls from the herd in which the calves were present, as the bulls were continually fighting and endangering the lives of the calves; second, in order that the visiting tourists might be able to view them. Probably 10,000 tourists drove to the buffalo corral this summer in order to see these buffalo, it being the main feature of the stop at Mammoth Springs.

With the herd increasing as rapidly as it is, a greater area will be necessary to be used as a hay meadow next year. About 150 tons of hay have been put up this year, and this amount will have to be increased in future. Two thousand five hundred dollars has been appropriated for the maintenance of the buffalo in the past. This sum is now too small, as the herd has more than quadrupled in number. It is urgently requested that this appropriation be increased to \$4,000.

It is my intention to turn out one or two of the old bulls to join the wild herd if it again comes near the present corral. Last spring it approached within 3 miles. It is believed that these bulls will induce the herd to remain near the corrals, and if they are then fed they will become less wild, and may eventually be incorporated with the present herd.

BEAR.

Although bear are protected absolutely in the park, it seems rather remarkable that they are not increasing in numbers to any great extent. Though every year a large number of cubs are seen at each of the stations, the total number seen each year remains about the same. Whether or not after the hotel season closes they wander outside the limits of the park and become a ready prey of the visitors at the hunting lodges which surround the park is not known. It certainly seems highly probable.

COYOTES.

Quite a number of coyotes were killed last year—about 60 in all, but still they seem to increase. It is doubtful, however, if they kill much game, as the deer seem to be able to protect themselves. On several occasions last winter I saw deer chasing coyotes instead of being chased by them.

MOUNTAIN SHEEP.

About 70 mountain sheep were fed during the past winter. There seem to be but few lambs in the flock. These sheep are as tame as domesticated sheep, and in the spring, while going back and forth to the target range across the hills, bands of from 5 to 10 could be passed within 20 feet without their running away.

TRIALS OF OFFENDERS.

The following cases were tried before the United States Commissioner in the park since October 14, 1908:

1908.

- Oct. 22. United States *v.* Joseph Strukly. Charge, hunting wild animals in Yellowstone National Park. Defendant acquitted.
- Oct. 23. United States *v.* Joseph Strukly. Charge, violation of paragraph 11 of the Rules and Regulations promulgated by the Secretary of the Interior for the management and care of Yellowstone National Park. Defendant committed to twenty days' imprisonment and ordered to pay costs.
- Oct. 30. United States *v.* Mike Brezvonik and John Petek. Charge, killing wild animals in Yellowstone National Park. Defendants fined \$100 each and costs, with forfeiture of guns.
- Nov. 12. United States *v.* Samuel T. Eagle. Charge, violation of paragraph 11 of the Rules and Regulations promulgated by the Secretary of the Interior with reference to the management and care of Yellowstone National Park. Defendant fined \$50 and costs.
- Nov. 14. United States *v.* Ham Peterson. Charge, same as in last case. Defendant fined \$50 and costs.
- Nov. 19. United States *v.* Hugh C. Donley. Charge, hunting wild animals in Yellowstone National Park. Defendant fined \$50 and costs.
- Nov. 21. United States *v.* Thomas M. Flynn. Charge, carrying firearms in Yellowstone National Park without the permission of the superintendent thereof. Defendant fined \$25, including costs.

1909.

- Apr. 21. United States *v.* John Graham and John Howell. Charge, violation of paragraph 6 of the Rules and Regulations promulgated by the Secretary of the Interior with reference to the management and care of Yellowstone National Park. Defendants ordered to pay costs of prosecution.

FOREST FIRES.

There have been no forest fires during the year.

TRAILS.

But few trails have been built through the park which could be used by scouts and others in making patrols, or by persons on pleasure bent. These trails have of recent years become practically impassable, due to fallen timber, washed out culverts, etc. They should be put in proper condition, and an effort will be made the coming year to do so.

INCREASED GARRISON.

On May 13, 1908, the garrison was increased to four troops of 100 men each. On the relief of the four troops of the Eighth Cavalry, but three troops of the Fifth Cavalry were sent to replace them. It was believed that this number would be sufficient to efficiently perform all the duties required of the troops in the park. The work, however, in the summer is very arduous, and it has developed that three troops do not furnish sufficient men to perform all the duties required. It is therefore earnestly recommended that the garrison be increased to four troops, or a full squadron.

A full pack train should also be furnished this post, in order that patrolling through the mountains can be properly performed, as it is

in the mountains that the poaching is done, and there should at all times be two or three patrols moving about the park, away from the beaten tracks.

ESTIMATES.

The following estimates of funds required for the ensuing year have been submitted: For administration and protection, including \$6,820 for salaries of chief clerk, 5 scouts, and a teamster, \$8,670; maintenance of buffalo, including \$1,920 for buffalo keeper and assistant, \$4,000; total, \$12,670.

RECOMMENDATIONS.

The recommendation of my predecessor that an appropriation be granted for the construction of a wire fence 5 miles in length on the western boundary line of the park, extending from the Madison River south, with a gateway entering from the railway station at Yellowstone, is renewed. The outpost station on the west side is 4 miles inside of the western boundary, and people enter and do shooting in the strip between the western boundary and the soldier station, pretending that they did not know that the boundary began west of the station.

Very respectfully,

H. C. BENSON,
Major, Fifth Cavalry, Acting Superintendent.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

REGULATIONS OF JULY 2, 1908.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the

Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park, excepting for the use of the wild game, and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards, or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than one thousand dollars, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

INSTRUCTIONS OF JULY 2, 1908.

(1) The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

(2) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down. Care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

(3) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

(4) *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear, the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

(5) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than twenty fish in one day.

(6) *Dogs.*—Dogs and cats are not permitted in the park.

(7) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

(8) *Hotels.*—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, twenty-four hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

(9) *Boat trip on Yellowstone Lake.*—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(10) *Driving on roads of park.*—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose, excepting for lunch or camp, all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

(11) *Miscellaneous.*—Automobiles are not permitted in the park.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing before the complainant leaves the park.

(12) The penalty for disregard of these instructions is summary ejection from the park.

Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park, also at the office of the superintendent.

REGULATIONS OF OCTOBER 11, 1900, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Yellowstone National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of any animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of

such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Yellowstone National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.



ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT OF
THE ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR

1910



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REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., September 30, 1910.

SIR: I have the honor to submit annual report of the conditions in the park since October 15, 1909, to the present date.

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

TRAVEL.

The season of 1910 opened on June 15, at which time the snow had entirely disappeared, and the roads were in excellent condition.

The aggregate number of persons taking the park trip during the season of 1910 was as follows:

Travel in park during season of 1910.

Yellowstone Park Transportation Company, entering via northern entrance	5, 049
Monida and Yellowstone Stage Company, entering via western entrance...	3, 311
Others at hotels, traveling with private or government transportation, bicyclers, foot travelers, etc.....	21
<hr/>	
Total making park trip with regular companies.....	8, 381
Wylie Permanent Camping Company:	
Entering park via northern entrance	2, 337
Entering park via western entrance	2, 003
<hr/>	
Total with Wylie Company.....	4, 340
Other licensees of personally conducted camping parties.....	2, 080
<hr/>	
Total number camping, traveling with licensed transportation	6, 420
Making park trip with private transportation as "camping parties".....	3, 219
<hr/>	
Total number making tour of park	18, 020
Total number making short trips with various methods of transportation..	1, 555
<hr/>	
Grand total of all visitors to the park, season of 1910.....	19, 575

During the season 5,796 tourists took the trip across Yellowstone Lake with the T. E. Hofer Boat Company. Of this number 2,635 were traveling with the Yellowstone Park Transportation Company, 1,193 with the Monida and Yellowstone Stage Company, 1,616 with the Wylie Permanent Camping Company, and the balance, 352, were traveling with licensed and private camping parties.

Travel by the different entrances.

By the main gate on the north, Gardiner Station-----	10, 988
By the Madison River road on the west, Yellowstone Station-----	7, 403
By the road leading from Jackson Hole on the south, Snake River Station -----	415
By the government road from Cody on the east, Sylvan Pass Station----	767
By the Cooke road, northeast corner, Soda Butte Station-----	2
Total-----	19, 575

MEANS OF TRANSPORTATION.

The Yellowstone Park Transportation Company owns 6 six-horse Concord coaches (used from Gardiner to Mammoth Hot Springs only), 87 four-horse Concord coaches, 43 surreys, 14 formation wagons, and 46 spring wagons for use in transporting tourists through the reservation, in addition to necessary baggage, express, and freight wagons, carts, buggies, etc. These require the use of 675 horses in the park.

The Monida and Yellowstone Stage Company owns 129 passenger vehicles, consisting of 56 four-horse Concord coaches and 73 surreys, for use of tourists in the park. This company had 325 horses in the park.

The Wylie Permanent Camping Company used 103 vehicles—mountain spring wagons and surreys—in transporting tourists through the park, requiring the use of 364 horses.

In addition to the above, movable camp licenses were issued covering 146 wagons and 172 saddle and pack animals, for use in connection with tourist travel in the park.

ROADS.

The following, from notes furnished by Capt. Wildurr Willing, United States Corps of Engineers, shows the work performed under his supervision:

During January and February a small amount of work was done on the Mammoth Hot Springs-Gardiner road, removing slides of earth and rock.

On March 4 a crew of 9 men with 2 teams was organized to repair washouts and remove slides on the above-mentioned road, and to surface with gravel the worst places on the road. This work was continued until the latter part of June and included surfacing the roads around Mammoth Hot Springs. These roads were in excellent condition throughout the tourist season, but at present are beginning to show the effects of the heavy freighting for the new Canyon Hotel.

On May 9 a small party was sent out to put the road from Mammoth Hot Springs to the Continental Divide, via Norris, Canyon, Lake Outlet, and Thumb, in condition for the opening of the season. The work consisted in removing large rock slides at the Virginia Cascades, cleaning the road and ditches of earth and rock slides, draining off the snow water, filling in washouts, and running the road grader over the road. Owing to the mild season this small party was able to put the road in excellent condition for the opening of the season. No delay was experienced by travel in getting over the Continental Divide on account of snow.

A small party was sent out on May 26 to open up the road from Norris to the Divide via the Fountain and Upper Basin. This work included also the west road, and was similar to that done by the above-mentioned crew.

Sprinkling around Mammoth Hot Springs was begun on June 18. The engineer department funds being exhausted, the entire system throughout the park, with the above exception, was started with Interior Department funds, and so carried until June 26, when the funds for the improvement of the park became available. In all 20 sprinklers were operated, covering 95 miles of roads. On August 25 a hard freeze occurred, breaking a number of pipes and valves, and it was decided to lay off all sprinklers except those from Gardiner to Norris. On September 6 the Mammoth Hot Springs-Norris sprinklers were discontinued.

The unsightly break in the concrete railing of the Golden Gate viaduct was repaired in June.

A small amount of repair work was done on the roads throughout the park during the season. The old road from the Canyon Hotel to the intersection with the present Canyon-Norris road was put in shape for freighting to save the main road.

A trail was constructed from Snow Pass to near the west boundary in the Gallatin Valley, and minor repairs made to the Lamar River trail.

A large crew of men have worked since July 24 in making repairs to the east road in the national forest. Up to September 3 this party had covered about 14 of the 30 miles of road, the work being well done. Numerous small bridges and culverts were built and others repaired. A large amount of rock and earth work was necessary to put the road in its present good condition.

Two parties have been at work on the south road in the national forest during the season. One has constructed a bridge over Pacific Creek and made repairs to the Buffalo Fork bridge. This party has also constructed and repaired a number of small bridges and culverts, and made general repairs to the road surface in the vicinity of Pacific Creek.

The second party has worked in the vicinity of Brooks Lake and Upper Wind River, constructing and repairing bridges and culverts and making repairs to the road surface, widening, grading, and clearing the road of rocks, etc.

On July 19 a contract was entered into with the Minneapolis Steel and Machinery Company for furnishing and erecting four steel highway bridges. The following old and dangerous wooden bridges will be replaced: Madison River bridge, by two 80-foot steel spans; Gibbon River bridge (5 miles from Norris), by two 50-foot steel spans; Heron Creek bridge, by an 80-foot steel arch; Obsidian Creek bridge, by a 36-foot plate girder. This work is under way, and all bridges should be completed before the roads are closed for the winter.

Numerous minor repairs have been made to old bridges and culverts throughout the park during the summer.

Material is on the ground to construct a concrete wall at the dangerous bend in Gardiner River in the canyon between Mammoth

Hot Springs and Gardiner, and it is hoped this wall can be completed this season.

The lawns at Mammoth Hot Springs were maintained throughout the summer.

FISH.

The fish hatchery located on Yellowstone Lake near the Thumb was operated as usual, under charge of Mr. D. C. Booth, superintendent of the United States hatchery at Spearfish, S. Dak. Mr. Booth reports that the total collection of eggs of the black-spotted trout at this subhatchery during the past summer amounted to 6,500,000. As the Yellowstone Lake Basin is already well stocked, but 75,000 fry were planted there, the balance of the eggs after sufficiently well eyed being packed in special refrigerator cases and forwarded by express and special messenger to various places throughout the United States, where they were planted in public waters that were without trout or in need of restocking.

The hatchery at Spearfish furnished the following for the park: 50,600 eastern brook trout, of which 21,600 were planted in Glen Creek, 24,000 in Willow Creek, and 5,000 in Lava Creek, several miles above the falls; 30,000 rainbow trout, which were planted in Tower Creek.

Mr. H. D. Dean, superintendent of the federal hatchery at Bozeman, Mont., was allowed to make an experimental collection of black-spotted eggs from Lake Trout, near Soda Butte. He reports that the eggs secured were of fine quality, and states that with proper preparation and by holding the eggs at the lake until they were eyed he believes from 500,000 to 1,000,000 eggs of very fine quality could be gathered at that point yearly.

WILD ANIMALS.

Although the past winter was a severe one, all game seemed to have wintered well. Quite a number of deaths were reported among the elk calves, due to the severe weather, but otherwise the deaths were about as usual. The disease among the deer which was noted in my last annual report did not reappear last spring.

ANTELOPE.

The herd of antelope, which is wintered on the hay cut from the alfalfa field near Gardiner and scatters throughout the mountains in summer, is evidently increasing. As the natural instinct of this animal carries it down the valleys to escape the cold storms of winter the preservation of this herd is doubtless due to the fence along the north line of the park and to the feeding of the alfalfa during the severe months of winter. The past winter being colder than usual, the antelope were continually striving to get into the lower country. For some reason unknown, due diligence was not taken to prevent their getting out or to drive them back when they did get out. The superintendent was absent in San Francisco during the winter months, and on his return it was found that there were but 20 to 25 antelope remaining in the park. Means were at once taken to secure the return of the herd by raising the fence for about a mile,

scattering alfalfa along this fence for a distance of a half mile or more on the outside, then a detail of soldiers and rangers was sent to make a drive covering some 7 miles in width. In this way some 600 or 700 were returned.

DEER.

Both the black-tailed, or mule deer, and the white-tailed, or Virginia deer, are found in the park. About 800 of the black-tailed and 100 of the white-tailed were fed alfalfa during the past winter; 400 black-tailed deer were seen daily near Fort Yellowstone, where they were fed. The others were to be seen between Gardiner and the post along the road, where hay was scattered three times a week. It was noted that nearly every female was accompanied by two fawns; in few instances was there but a single fawn.

ELK.

"The estimated number of elk in the park is from 30,000 to 40,000. Many of these elk wander out of the park into the adjoining States, and a few of them are there killed during the hunting season." An occasional one may also be killed inside the border of the park, but such poaching is very limited.

MOOSE.

Moose are seen frequently in the southeastern and also the southwestern parts of the park, and are believed to be increasing in number.

BUFFALO.

WILD HERD.

A herd of 29 wild buffalo was seen in Pelican Valley on February 23, and a small herd of 5 was seen on Cache Creek on February 3. One old bull died during the winter in the vicinity of Yellowstone Lake, and its skeleton and hide were sent to the National Museum at Washington, D. C., as specimens.

FENCED HERD.

The herd of tame buffalo under fence in the park continues to thrive and the increase is satisfactory. The herd now numbers 121 head, of which 28 are this year's calves. One calf was born late last fall, after my annual report had been submitted, but was killed by an old bull when but a few weeks old. A 4-year-old bull that was crippled and generally in bad condition died about November 20. The head of the bull and the robe, head, and skeleton of the calf were shipped to the National Museum at Washington, D. C., as specimens. A yearling calf died September 1, 1910, from the effects of having been gored by one of the old bulls, and the head and skeleton have been saved for shipment later to the National Museum.

Sixteen bulls were removed from the Lamar Valley herd to the pasture at Mammoth Hot Springs, where they were kept during the summer in order that visiting tourists could see them.

Probably 6,000 tourists viewed this herd during the summer, it being one of the main features of the stop at Mammoth Hot Springs.

Another good purpose is served in bringing this herd of bulls to Mammoth during the summer. There are altogether too many bulls in the herd, as they are continually fighting among themselves and endangering the lives of the young calves, and their removal eliminates a portion of this danger. It is believed that it would be better if a number of these old bulls could be disposed of entirely, some of the finest ones being retained each year for breeding purposes.

With the rapid increase of the herd, it is necessary to provide additional meadow land for raising hay for them each summer. The hay crop was very short the past season, and it was necessary to go 4 miles away from the corrals to secure enough for the winter. Including about 35 tons left over from last year, there are about 150 tons on hand, and it is believed that unless the winter is unusually severe this will carry them through until spring if carefully fed. Three thousand dollars was appropriated for the maintenance of the buffalo for the current fiscal year. This sum is now too small for the size of the herd, and it is urgently requested that it be increased next year to \$4,000.

During the past summer the entire herd at Rose Creek has been turned loose outside of the inclosure daily for the purpose of grazing. At first they were let out for about two hours, twice daily, and then driven into the inclosure, but this was gradually increased as they became tamer and more used to being handled, until now they are kept out all day. In this way they are enabled to get practically all the feed they need outside of the pasture, which soon becomes short during the dry part of the summer, and at the same time they become accustomed to being handled, and are becoming quite tame and tractable.

BEAR.

Many complaints were received during the summer of damages in various camps by bear. They frequently become so tame that they do not hesitate to destroy tents or go through windows into houses to secure food, and sometimes refuse to be driven away. One man working in a road-sprinkling camp near Excelsior Geyser was quite severely bitten and scratched by a bear that he tried to drive away from the supply tent during the night. He was confined to the hospital for twelve days as a result of his injuries, and his companion, who ran to his assistance, also received some slight scratches. It was thought that it would become necessary to kill some of these vicious bear, and many requests to do so were received from parties who suffered from their depredations, but this was not resorted to. One, however, a 5-year-old female grizzly, was captured at Virginia Meadows in a steel cage trap and shipped by express to the National Zoological Park at Washington, D. C. An attempt was made to catch her two cubs, but they left the night that their mother was caught, and did not return. They are good-sized cubs, however, and will no doubt succeed in taking care of themselves.

COYOTES.

Coyotes are still plentiful. They are killed by scouts and certain authorized soldiers, when possible. About 40 were shot and trapped during the past year.

MOUNTAIN SHEEP.

About 150 mountain sheep were seen during the winter, on Buffalo Plateau, near Tower Falls, and in the vicinity of Mount Everts. About 60 that wintered on Mount Everts were fed alfalfa during the winter, at the feeding pens in Gardiner Canyon.

TRIALS OF OFFENDERS.

The following cases have been tried before the United States commissioner in the park since October 15, 1909:

1909.

- Oct. 16. United States *v.* J. C. Nicolson. Charge, killing wild animals in Yellowstone National Park. Case pending.
- Oct. 21. United States *v.* L. H. Smith and A. C. Duffey. Charge, hunting wild animals in Yellowstone National Park. Defendant Smith fined \$50 and costs, with forfeiture of gun. Defendant Duffey not apprehended.
- Nov. 8. United States *v.* Joseph Juff and Stil Huling. Charge, killing elk in Yellowstone National Park. Defendants discharged by United States commissioner at Bozeman, Mont.

1910.

- Apr. 7. United States *v.* Charles F. Smith. Charge, larceny. Defendant held to United States district court.
- Sept. 1. United States *v.* H. F. Welfare. Charge, giving intoxicating liquor to soldier on duty in Yellowstone Park. Defendant fined \$25 and costs; committed to jail in default of payment of same.
- Sept. 3. United States *v.* C. C. Rucker. Charge, shooting squirrels in Yellowstone National Park. Defendant fined \$25 and costs.

FOREST FIRES.

Owing to the lack of rain throughout the entire western country, the mountains have dried up as never before, rendering the danger from fire serious. The pine needles and grass along the roadsides and near the camps were readily set on fire from cigar and cigarette stumps, or even a match carelessly thrown away. In addition, the ground was so dry that camp fires that were supposedly extinguished by water continued to burn under the ground, and would break out a foot or so from the outer edges as they had existed at the time they were left. Fires were readily started by lightning, for, though we had practically no rain, there were frequent violent electric storms. Had it not been for a careful and thorough patrol by soldiers twice daily of all roads and camp sites the park would have been practically destroyed.

There have been 10 small fires discovered and extinguished by these patrols and soldiers on station in the park during the summer, 4 of them having gained considerable headway and requiring the combined efforts of several men for several hours to extinguish them.

In addition to these fires extinguished by the patrols, there have been three large fires, started farther back in the mountains by lightning. One of these occurred on Mount Holmes, one along Juniper Creek on Marys Mountain, and one south of the Yellowstone Lake. The fire on Marys Mountain threatened to be very serious. It was discovered and reported on August 4. Three troops were sent to fight this fire, and they remained on duty until August 10.

The fire south of the lake broke out on August 11. One troop was withdrawn from Marys Mountain, where it had been left after the

others had been withdrawn, and was sent via the Thumb to the location of the fire. A second troop was sent from the post via the Lake Station, and by boat to the South Arm of the lake. These troops did excellent work and deserve the highest commendation for the energy displayed in fighting this fire, which at times was exceedingly fierce. At one time the entire camp was in danger, as the fire traveled very rapidly and troops were cut off by the lake. By working hard during the three weeks that they were on duty, the fire was confined to the limits bounded practically by Solution Creek, thence to the head of Beaver Creek, thence southeast to Channel Mountain, thence north-east to the South Arm of the lake.

Four people were ejected from the park for starting fires through carelessness in extinguishing their camp fires. Now that the act of June 25, 1910, amending the act of March 4, 1909, has been promulgated authorizing the fine and imprisonment of those guilty of this offense it will possibly cause greater care on the part of campers than heretofore.

Very respectfully,

H. C. BENSON,
Major, Fifth Cavalry, Superintendent.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

REGULATIONS OF JULY 2, 1908.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the

Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park, excepting for the use of the wild game, and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards, or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes." of not more than one thousand dollars, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

INSTRUCTIONS OF JULY 2, 1908.

(1) The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

(2) *Fires*.—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down. Care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

(3) *Camps*.—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

(4) *Bicycles*.—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear, the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

(5) *Fishing*.—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than twenty fish in one day.

(6) *Dogs*.—Dogs and cats are not permitted in the park.

(7) *Grazing animals*.—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

(8) *Hotels*.—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, twenty-four hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

(9) *Boat trip on Yellowstone Lake*.—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(10) *Driving on roads of parks*.—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose, excepting for lunch or camp, all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

(11) *Miscellaneous.*—Automobiles are not permitted in the park.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing before the complainant leaves the park.

(12) The penalty for disregard of these instructions is summary ejection from the park.

Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park, also at the office of the superintendent.

REGULATIONS OF OCTOBER 11, 1900, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Yellowstone National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of any animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of

such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses, incident to the taking up, impounding, and selling thereof shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Yellowstone National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

PENALTY FOR INJURING TREES AND FOR NOT EXTINGUISHING FIRES.

[Excerpt from an act entitled "An act to provide for determining the heirs of deceased Indians, for the disposition and sale of allotments of deceased Indians, for the leasing of allotments, and for other purposes," approved, June 25, 1910 (36 Stat., 857), providing punishment for depredations and for not extinguishing fires on public lands, etc.]

SEC. 6. That section fifty of the act entitled "An act to codify, revise, and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine (Thirty-fifth United States Statutes at Large, page one thousand and ninety-eight), is hereby amended so as to read:

SEC. 50. Whoever shall unlawfully cut, or aid in unlawfully cutting, or shall wantonly injure or destroy, or procure to be wantonly injured or destroyed, any tree, growing, standing, or being upon any land of the United States which, in pursuance of law, has been reserved or purchased by the United States for any public use, or upon any Indian reservation or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall be fined not more than five hundred dollars, or imprisoned not more than one year, or both.

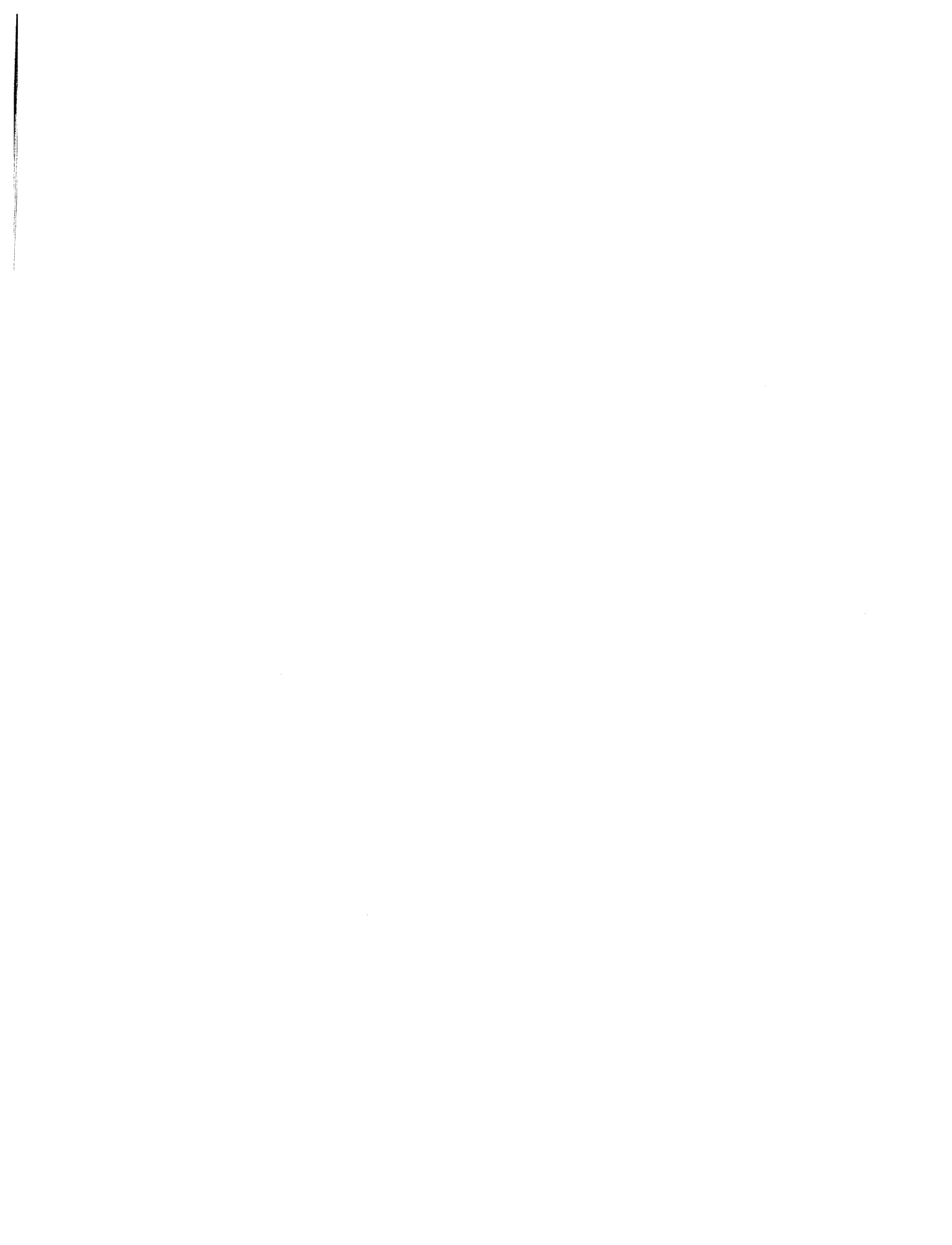
That section fifty-three of said act is hereby amended so as to read:

SEC. 53. Whoever shall build a fire in or near any forest, timber, or other inflammable material upon the public domain, or upon any Indian reservation, or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or upon any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall, before leaving said fire, totally extinguish the same; and whoever shall fail to do so shall be fined not more than one thousand dollars, or imprisoned not more than one year, or both.



ATTACHED MAP / DRAWING

SEE ORIGINAL



REPORT OF
THE ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE
SECRETARY OF THE INTERIOR

1911



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..... At end.
3

REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 14, 1911.

SIR: I have the honor to submit annual report of the condition of affairs in and the management of the Yellowstone National Park, since October 1, 1910, to the present date.

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

I arrived at Fort Yellowstone on September 26, 1910, with four troops and the machine-gun platoon comprising the Second Squadron, First Cavalry, and assumed the duties of acting superintendent of the park on September 30, relieving Maj. H. C. Benson, Fifth Cavalry, by whom I was advised in a general way as to the duties connected with the administration and protection of the park.

TRAVEL.

The act of Congress appropriating funds for maintenance and repair of roads and bridges in the park specially prohibited the use of such funds for removing the snow from the roads for the purpose of opening them in advance of the time when they would be cleared by seasonal changes. The spring was late in opening up, and as a result, the tourists that came into the park on the first day of the season could not be sent over the continental divide from Upper Meyer Basin to Thumb, but had to be turned back to Norris and thence to the lake via the canyon and back over the same route, resulting in much disappointment and bitter complaint from some of them.

The road over Mount Washburn and through Dunraven Pass, which the department has contemplated making a part of the regular tour of the park, was not open for travel until July 22, and would not have been open until several days later had I not sent detachments of soldiers from Tower Falls Station to clear out the bowlders, slides, and fallen trees for a distance of 5 miles from Tower Falls, connecting with the crew of men employed under the Engineer Department working from the canyon side.

The aggregate number of persons making park trips during the season of 1911 was as follows:

Travel during the season of 1911.

Yellowstone National Park Transportation Co., entering via northern entrance.	5,590
Monida & Yellowstone Stage Co., entering via western entrance.....	5,659
Others at hotels, traveling with private or Government transportation, foot travelers, bicyclers, etc.....	499
<hr/>	
Total traveling with regular companies.....	11,748
Wylie Permanent Camping Co.:	
Entering via northern entrance.....	2,389
Entering via western entrance.....	2,614
<hr/>	
Other licensees of personally conducted camping parties.....	5,003
	2,702
<hr/>	
Total number camping, traveling with licensed transportation.....	7,705
Making park trips traveling with private transportation as "camping parties".	3,358
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Total number making park trips.....	22,811
Number making short trips with special licensees.....	243
<hr/>	
Grand total of travel season of 1911.....	23,054

Three thousand and forty-eight people took the boat trip across Yellowstone Lake, of which 1,690 were traveling with the Yellowstone Park Transportation Co., 679 with the Monida & Yellowstone Stage Co., 281 with the Wylie Permanent Camping Co., and the balance were with other licensees, private camping parties, employees at hotels and camps, and miscellaneous.

Travel by the different entrances.

From the north, via Gardiner, Mont.....	10,530
From the west, via Yellowstone, Mont.....	10,470
From the south, via Jackson Hole.....	490
From the east, via Cody, Wyo.....	1,524
From the northeast, via the mining camp at Cooke, Mont. (Soda Butte entrance).....	40
<hr/>	
Total.....	23,054

Travel via the western entrance has gradually increased from 1,777 during the season of 1899, to 10,470 in 1911. Travel from the eastern, or Cody entrance has also materially increased—from 310 in 1903, when the road was first opened, to 1,524 in 1911—but as this route passes over a high divide and the road can seldom be opened until in July, the season must necessarily be shorter than from the north and west entrances.

In addition to the Concord coaches, surreys, and other vehicles in use by the contract transportation companies, the Wylie Permanent Camping Co. had in use 98 passenger vehicles, and special season licenses were issued for movable camping parties aggregating 161 wagons and 227 saddle and pack animals, and for 7 wagons for special livery work. A list of concessionaires holding contracts for privileges in the Yellowstone Park, with rentals exacted therefor during the season of 1911, and usage tax paid during 1910 and 1911, is hereto appended.

ROADS.

The following notes on the work done on roads and bridges were furnished by Capt. C. H. Knight, Corps of Engineers, United States Army, who is in charge of improvement work in the park:

Worn-out wooden bridges were replaced by steel ones as follows: Obsidian Creek Bridge, 36-foot plate girder; Gibbon River Bridge (5 miles south of Norris), two 50-foot steel spans; Madison River Bridge, two 80-foot steel spans; Heron Creek Bridge, 80-foot steel arch; Gibbon River Bridge (9 miles south of Norris), 65-foot steel span; Excelsior Geyser Bridge, two 50-foot steel spans; Riverside Geyser Bridge, 65-foot steel arch.

The four bridges between Mammoth Hot Springs and Gardiner were redecked.

A crew consisting of 5 men with 1 team worked during the months of February and March removing slides of earth and rock from the road in the Gardiner Canyon.

Two crews consisting of 2 overseers, 27 laborers, 10 teamsters with 11 teams worked during the months of April and May, grading and graveling the road between Gardiner and Golden Gate, smoothing up the road at Mammoth Hot Springs and the road between Mammoth Hot Springs and Tower Falls. One hundred and seventy-five feet of concrete retaining wall was put in along the Gardiner River about $3\frac{1}{2}$ miles from Mammoth Hot Springs.

The road between Golden Gate and Norris was graded and 16 miles thereof regraded. From Norris to the Grand Canyon the road was graded, a number of culverts and one bridge repaired, and numerous washouts refilled. About 1,800 feet of new road, to connect the old road with the new Canyon Hotel and with the Mount Washburn Road, was constructed. Between the Thumb lunch station and the upper basin, a number of washouts were repaired and one 25-foot log bridge constructed. This portion of the road was partly graded and graveled. The road between the Grand Canyon and Lake Hotel was graded and partly regraded. From Yellowstone Station to Wylie lunch station, the road was graded, partly regraded, and several hundred feet of the narrow road widened. From Norris to the upper basin, the road was graded and repaired. The road from the Thumb Station to the Lake Hotel and from the Lake Hotel to the east boundary was repaired, including the construction of a number of small timber bridges.

Twenty sprinkler wagons were repaired and distributed to the various camps in the park, and sprinkling was begun on 95 miles of road. A party of 7 men with 2 teams worked until August 6, repairing water tanks and changing a number of "pumping" stations to "overshot" stations.

A crew consisting of 1 overseer, 11 laborers, and 3 teams worked during the months of June and July on the east (Cody) road in the Shoshone National Forest, clearing the road of slides and fallen trees, and repairing washouts, bridges, and culverts.

In July, work was begun on the road from the Canyon Hotel to the top of Mount Washburn and through Dunraven Pass, which included the construction of two timber bridges and two culverts.

A crew consisting of 1 overseer, 10 laborers, and 4 teams worked from July 10 to August 26 on the south road in the Teton and Bonneville National Forests.

Sprinkling the roads was discontinued the evening of August 6, except at Mammoth Hot Springs, on account of lack of funds.

The lawns at Mammoth Hot Springs were maintained throughout the season.

A number of old bridges were redecked and repaired, and a number of new culverts were put in.

At the end of August practically all improvement work, excepting the steel bridge work, was suspended on account of the appropriation being exhausted.

The attention of the department was called to the exhausting of the appropriation for park improvements as a result of which sprinkling of the roads was stopped, and request was made for an allotment of \$5,500 for labor and teams to sprinkle the roads during August and September. The department at once submitted the question for the consideration of the Comptroller of the Treasury, who, for the reasons set forth in an opinion dated August 12, 1911 (copy of which is hereto appended), held that the revenues of the park could not be lawfully used for sprinkling the roads in the reservation.

In May of 1910 permission was granted by the department to the county commissioners of Gallatin County, Mont., to survey and construct a wagon road along the northwestern border of the Yellowstone National Park and through a portion of that reservation to afford more convenient intercourse with the southern portion of Gallatin County, and to permit the residents thereof to conveniently reach the county seat for the transaction of business, upon the condition that the county would bear the entire expense of the construction of the road and that after completion it should be regarded as a public road and the use thereof accorded to all persons strictly observing the rules and regulations for the government of the park. This road was completed and ready for travel during the year, and lessened the distance from Bozeman to Yellowstone very materially. The road by the new route is 75 miles, as against about 150 miles for the old route through Madison County. The length of the road is 31.1 miles, and the cost thereof is reported as being over \$9,700.

FISH.

The subhatchery located on the shore of Yellowstone Lake near Thumb and maintained by the Department of Commerce and Labor was run this season from the main hatchery at Bozeman, Mont., instead of from Spearfish, S. Dak., as heretofore. Mr. H. D. Dean, the superintendent in charge, furnished me with the following memorandum of the operations of this subhatchery for the season of 1911:

The work of collecting the eggs of the black-spotted trout was unusually successful—so much so that it was necessary to suspend operations of collecting eggs for lack of room to care for them, although every bit of material available was worked up into troughs, trays, etc.; 4,000 trout were taken in one haul with a 50-foot seine in Clear Creek, and in other instances as many as 2,500 were secured at a haul. A total of 20,682,000 eggs were collected at this subhatchery, and in addition, one of the men was sent to Trout Lake near Soda Butte for two weeks, where he succeeded in collecting about 845,000 eggs, which were immediately shipped to the Bozeman hatchery to be taken care of. In all, 16,866,000 black-spotted eggs were sent out of

the park, of which 5,345,000 were shipped green and the balance were eyed at the hatchery before shipment.

The balance of the eggs taken in the park were eyed and then planted in the small streams flowing into Yellowstone Lake.

Ten thousand fingerling brook trout (*fontinalis*) were received from the Bozeman hatchery on August 29 and planted in Glen Creek, and 100,000 black-spotted fry (*salmo mykiss*) were received from the same source on August 29 and planted in Lava Creek, a branch of the Gardiner River. Both of these streams are near the road and convenient for fishing, and therefore require frequent restocking.

WILD ANIMALS.

ANTELOPE.

The experiment of capturing antelope in the park and transferring them by express to the national bison preserve in Montana and to the Wichita game preserve in Oklahoma, for which funds were supplied by the Boone and Crockett Club, was quite successful. Twelve (4 bucks and 8 does) were captured and sent to the Montana preserve, and 11 (4 bucks and 7 does), to the Wichita preserve. But 3 were lost in making the capture and 3 injured themselves en route to such an extent that they did not live long after arrival at their destination. It was found that the does were quieter and easier to handle than the bucks. The capture was made near the stacks of hay along the north line near Gardiner, during December and the early part of January, and naturally disturbed the herd more or less, and for some time afterwards it took considerable effort to get them back to their winter range and used to eating hay. In February 450 were counted after they had quieted down and recovered from the fright incident to the capture of those shipped away. As yet this fall but few have come down from the mountains, and it is therefore impossible to tell much about their condition until later. An unusually large number of elk that wintered along the north line interfered seriously with feeding the antelope, deer, and mountain sheep, the hay not being sufficient in quantity to feed the large herds of elk, which also constantly broke down the fence along the north line, rendering it difficult to keep the antelope inside the park. On 11 different occasions during December, January, and February it was necessary to send detachments of troopers of from 10 to 30 men each to assist the scouts in herding them back into the park. This fence is not in very good condition, and it is contemplated repairing it for this winter at as little expense as possible, and have it replaced by a higher and stronger fence, or by rebuilding and adding to the present one when sufficient funds are available for the purpose.

The alfalfa on the field near Gardiner, which has produced hay for the antelope, mountain sheep, and deer, was run out by foxtail, weeds, etc., and was plowed up last spring with a view to restocking to alfalfa. It requires at least two years' plowing and cultivating to put the land in proper shape for reseeding, and as an experiment the sod ground was sowed to spring wheat, which was cut and stacked for use as hay. The season chanced to be a very favorable one, and the results have therefore been quite satisfactory, about 80 tons of wheat hay having been cut and put in stack for the game for the winter.

DEER.

Practically all of the deer that remain in the park during the winter are found within a few miles of Fort Yellowstone, where they are fed hay, and both white-tailed and black-tailed deer become very tame, many of them eating from the hand. About 1,000 black-tailed deer were counted last winter, and while many of them died (probably at least 100 in this vicinity) the loss was not considered excessive in view of the fact that the winter seemed to be a particularly hard one on the game. The white-tailed deer, of which there has never been above 100, wintered well and seem to be holding their own and probably increasing slowly.

ELK.

Elk in certain portions of the park are very numerous, and are numbered by thousands both in winter and summer. Last winter the deep snows drove them down in large herds from the latter part of November on, and many of them drifted into Montana, where they did much damage to haystacks, fields, and fences on the ranches near the park. Another result was to make good hunting in Montana along the park line during the closing days of the open season. At the last session the Montana State Legislature set aside a strip several miles in width and extending along the park line from where it crosses the Yellowstone River, west to the northwest corner, thence south along the west line for about 7 miles, as a game preserve, and this will be of great assistance in protecting the game in the park.

MOOSE.

Moose are frequently seen in the southeast, southwest, and northwest portions of the park, but usually in wild and unfrequented spots and never near human habitation.

BUFFALO.**WILD HERD.**

The wild herd has been seen several times, usually in the Pelican Creek Valley. The largest number seen at any one time was 27. A patrol reported having seen 8 along the road, about 7 miles west of Thumb Station, on August 12.

FENCED HERD.

This herd is thriving and now consists of 147 head. On the date of last report there were 121 head—61 males and 60 females. In October, 1910, one 4-year-old bull was sold to B. A. Grant, of Long Beach, Cal., for \$500, delivered on board the cars at Gardiner, Mont. Mr. Grant took him to his home for exhibition purposes. On August 22, 1911, one of last year's male calves was gored so severely by one of the old bulls that it had to be killed. During the spring and summer 29 calves were born, and on September 28 one of these, a female, was found with a broken leg and had to be killed. The heads, skeletons, and robes of those that had to be killed, together with those of the yearling calf that died September 1, 1910 (see annual report 1910), were shipped to the National Museum, Washington, D. C., for use as mounted specimens.

Fifteen bulls were brought in from the Lamar Valley to Mammoth Hot Springs, where they were kept under fence for exhibition during the tourist season, and were, as usual, one of the favorite sights for the tourists.

About 200 tons of hay have been cut and stacked for use of this herd during the winter. During the summer and late into the fall these buffalo are herded in the open during the day and returned to the pasture for the night.

The 40 acres of meadow land that was plowed up in the spring of 1909 and stocked with timothy produced about 80 tons of excellent hay this season, which is at least double the amount it would have produced as wild land. An irrigation system to cover this and several hundred acres adjoining was constructed last spring, and additional meadow land will be taken up as rapidly as funds permit, in order to secure plenty of hay for the increasing herd.

BEAR.

The bears seem to be increasing—at least they have been very plentiful during the past summer around the hotels and camps. They are very tame. During the summer two grizzlies and three black bears, becoming dangerous to life and property, were killed. In one or two instances men who have become too bold with bear have been attacked and severely injured, usually by a mother bear that thought she was defending her cubs, but investigation of cases of this kind usually result in a conclusion that the bear is not entirely to blame.

During the summer there have been captured and shipped alive to public parks, under authority of the department, the following bears: A mother grizzly with a pair of cubs, and a male grizzly to the Zoological Society of Philadelphia; a pair of grizzlies (male and female) to Riverdale Zoological Gardens, Toronto, Canada; a mother grizzly with a pair of cubs and a male grizzly to Swope Park Zoological Gardens, at Kansas City, Mo.; and a pair of black bears (male and female) to the city park at West Bend, Iowa. All of these shipments were received without accident and were reported in each case as very satisfactory. The expenses of capturing and shipping were borne by the parks to which the animals were sent.

COYOTES.

Coyotes are plentiful, and doubtless do much damage to other game. One hundred and twenty-nine have been killed by scouts, noncommissioned officers in charge of stations, and others who were specially authorized to kill them.

MOUNTAIN SHEEP.

The small flock of mountain sheep that winters on the slopes of Mount Everts and in Gardiner Canyon seems to be thriving. Hay is fed to these animals in winter, when they become very tame and are seen at close quarters. As yet they have not come down for the winter, but several small bands have been seen in the mountains, accompanied by a number of lambs, which indicates a fair increase.

In addition to the animals mentioned above, mountain lions, lynx, otter, foxes, badgers, beaver, martin, mink, muskrat, and different varieties of rabbits, squirrels, and chipmunks are found. Beavers

are particularly plentiful and are found in nearly every stream in the park.

More than 70 species of birds, including pelicans, ducks, geese, swan, and other waterfowl inhabit the park during the summer, and some of them, including some of the waterfowl, remain during the winter. Eight young pelicans that were captured at Pelican Roost in Yellowstone Lake and held and fed during the summer were shipped by express to the National Zoological Park at Washington, D. C., on September 27, where they arrived in good condition on October 1.

PROTECTION OF GAME.

Many of the former favorite hunting grounds adjoining the park in the States of Montana and Wyoming have been included in strips set aside by these States as game preserves. This fact, together with the hearty cooperation of the officers of the game and fish commissions of the adjoining States, has been of great importance and assistance in protecting the game of the park from the depredations of poachers.

TRAILS.

Late last fall 25 miles of new trails or fire lanes were built in the southeast corner of the park, and during the present summer similar passageways were built from Snake River Station, on the south line, west to near the southwest corner, thence north along the west boundary line and northeast via Summit Lake to Upper Basin. These, together with such trails as have been opened up by troops, enable scouts and patrols to get about much easier and quicker and are of great importance in the protection of game and of forests from fire.

FOREST FIRES.

Owing to the constant vigilance of patrols and strict enforcement of the regulations relative to camp fires, there has been no forest fire of any importance during the summer. In several instances camp fires were left burning, but these were extinguished by the patrols themselves, or the guilty parties were marched back to put them out.

TELEPHONE LINES.

The War Department has extended its system of telephone lines from Snake River Station west to the new Bechler Station in the southwest corner, about 30 miles. Also from headquarters to the new Gallatin Station in the northwest corner of the park, about 31 miles.

The new Canyon Hotel has been completed during the year and is all that could be desired in a hotel in the park.

A convention of park superintendents and others interested in the national parks was held in the park from September 10 to 13 to discuss park problems and to arrive at such uniform methods of management as are applicable to the different national parks. Those in attendance were unanimously in favor of a bureau of national parks.

Very respectfully,

L. M. BRETT,
Lieutenant Colonel, First Cavalry,
Acting Superintendent.

The SECRETARY OF THE INTERIOR.

APPENDIX.

RULES AND REGULATIONS.

Regulations of May 27, 1911.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscriptions or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel, or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding, or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the

Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park excepting for the use of the wild game, and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or bar room will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards, or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

Instructions of June 6, 1911.

1. The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

2. *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down.

Especial care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

3. *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided all refuse must be hidden where it will not be offensive to the eye.

4. *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

5. *Fishing.*—All fish less than 8 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than 20 fish in one day.

6. *Dogs.*—Dogs are not permitted in the park.

7. *Grazing animals.*—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

8. *Formations.*—No person will be allowed on any formations after sunset without a guide.

9. *Hotels.*—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, 24 hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

10. *Driving on roads of park.*—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles in passing each other must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway. No stops on the road for luncheon or for camp purposes will be permitted.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and

vehicles carrying passengers are met, or such vehicles overtake pack trains, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men, on meeting a passenger team on a grade, will halt on the outer side until the team passes. When approaching a passenger team from the rear, warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

11. *Liquors*.—All beer, wine, liquors, whisky, etc., brought into the Yellowstone National Park via Gardiner to be carried over the roads through the reservation to Cooke City, must be in sealed containers or packages, which must not be broken in transit.

12. *Miscellaneous*.—Automobiles are not permitted in the park.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

13. *Penalty*.—The penalty for disregard of these instructions is summary ejection from the park.

Notices.

(a) *Boat trip on Yellowstone Lake*.—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(b) *Side trips in park*.—Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park; also at the office of the superintendent.

(c) All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing.

CONCESSIONS.

Concessionaires holding contracts for privileges in the Yellowstone Park, with rentals exacted therefor during the season of 1911, together with usage tax paid during the seasons of 1910 and 1911.

	Present annual rental.
Yellowstone Park Hotel Co.:	
Operation of hotels in the park under leases dated June 13, 1907, running for 20 years from March 20, 1905, covering sites aggregating 20 acres; rental \$300 per annum first 5 years, \$20 per acre per annum (\$400) thereafter. Lease dated November 5, 1907, for 18 years from March 20, 1907, covering sites aggregating 9½ acres, rental \$15 per acre per annum to March 20, 1910, and \$20 per acre per annum thereafter. Leases expire March 20, 1925.	
Total acreage of sites occupied, 29½ acres, at \$20.....	\$585.00
Hotels and lunch stations with accommodations for guests at each as follows:	
Mammoth Hot Springs Hotel.....	350
Cottage Hotel.....	80
Norris Station.....	25
Fountain Hotel.....	350
Old Faithful Inn.....	400
Thumb Station, lunch only.	
Lake Hotel.....	450
Canyon Hotel.....	350
Yellowstone Park Transportation Co.:	
Operation of transportation and stage lines in the park. Leases as follows:	
June 13, 1907, granting transportation privilege, 20 years, from March 31, 1905.	
October 18, 1907, for 18 years, from March 31, 1907, of sites aggregating 20.95 acres in connection with privileges. Rental \$40 per acre per annum (\$838).	
May 22, 1908, for 18 years, from March 31, 1907, covering 0.11 acre at Mammoth Hot Springs (addition to 9.78 acres under lease October 18, 1907, thereat), at \$40 per acre per annum (\$4.40).	
December 31, 1908, 16 years, from March 31, 1909, for 7.1 acres at Grand Canyon, at \$40 per acre per annum (\$284). Leases expire March 31, 1925.	
Total acreage, 28.16 acres, at \$40 per acre.....	1, 126. 40
Monida & Yellowstone Stage Co.:	
Operation of transportation and stage lines in the park. Lease dated March 31, 1906, running for 10 years, covering sites aggregating 11 acres. Rental \$25 per acre. April 27, 1910, rate increased to \$40 per acre per annum. Lease expires March 31, 1916.....	440.00
Wylie Permanent Camping Co.:	
Privilege of transporting passengers through the park and maintaining permanent camps in connection therewith. Lease dated May 4, 1906, running 10 years from March 31, 1906. Rental, \$10 per wagon (no less than 50 wagons to be used). Season of 1911, 98 wagons used, at \$10 each. Lease expires March 31, 1916.....	980.00
T. E. Hofer Boat Co.:	
Privilege of operating system of pleasure and fishing boats on Yellowstone Lake, renting and selling fishing tackle, etc.:	
Lease November 12, 1907, for 10 years, covering boat privilege. Rental, \$100 per annum.	
Lease January 30, 1909, for 9 years from November 12, 1908, covering 2-acre site on shore of lake, at \$40 per acre per annum; use of docks and ways, \$270 per annum; privilege of operating store for selling grain, hay, and other supplies, \$50 per annum. Leases expire November 12, 1917.	
Total charge per annum under above leases.....	500.00

	Present annual rental.
Henderson & Lyall:	
Privilege for store, dwelling, and post office. Lease dated August 7, 1905. Yearly rental, \$100 per annum (lease runs for period of 10 years). Lease expires August 7, 1915.	\$100. 00
Pryor & Pryor:	
Privilege for dwelling and store, including soda fountain, selling beverages, etc. Lease dated August 26, 1908; runs for period of 8 years from April 3, 1908; expires April 3, 1916. Yearly rental per annum, \$50. Rental is readjustable. Lease covers plat 13,800 square feet, occupied by dwelling and store.	50. 00
Henry E. Klamer:	
Lease of plat of ground (2 acres) at Upper Geyser Basin for dwelling and general store, dated January 31, 1908, for period of 10 years from June 1, 1907. Rental, \$100 per annum. Privilege reserved in lease to readjust rental at any time or charging for store privilege.	100. 00
F. Jay Haynes:	
Lease dated June 1, 1904, for 1 acre of ground at Upper Geyser Basin, for period of 10 years from March 31, 1904, for photographic privilege. Yearly rental, \$39 per annum. Lease dated June 1, 1904, for sixty-four one-hundredths of an acre at Mammoth Hot Springs; runs for period of 10 years from March 31, 1904; photographic privilege. Yearly rental, \$30. Leases expire March 31, 1914.	60. 00
Total of rentals under leases.	3, 941. 40

COMPTROLLER'S DECISION RE USE OF REVENUES FOR ROAD
SPRINKLING.

TREASURY DEPARTMENT,
OFFICE OF THE COMPTROLLER OF THE TREASURY,
Washington, August 12, 1911.

SIR: I am in receipt of your letter of August 7, 1911, as follows:

On August 3, 1911, Maj. L. M. Brett, acting superintendent of the Yellowstone National Park, wired the department as follows:

"Engineer officer reports appropriation maintenance and repair improvements exhausted except sufficient to care for property and run office. Requires \$5,500 for labor and teams to sprinkle roads remainder August. Recommend this amount be allotted from park revenues."

The department replied on August 4, saying:

"Replying your telegram 3d, park revenues can not be used sprinkling system while any part appropriation park improvement under control War Department is actually unexpended. Similar request decided adversely August 22, 1910. See also opinion Comptroller, September 16, 1910, copy in your office."

The department is now in receipt of a telegram from the acting superintendent, in which he says:

"The engineer's office has ordered in all road and sprinkling crews. Funds for same exhausted. All work discontinued except on bridges contracted for. Unsatisfactory condition with still six weeks tourist season."

You are requested to advise this department, at as early a date as practicable, whether, in your judgment, this department has authority to authorize the acting superintendent to use so much of the revenues derived from the park as may be necessary to sprinkle the roads during the remainder of the present season. * * *

The fund in question consists of revenues derived from the management of the park under section 2475 of the Revised Statutes of the United States and acts of Congress amendatory thereof, and is to be expended under the direction of the Secretary of the Interior.

The act of March 4, 1911 (36 Stat., 1363) making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1912, provides (p. 1402):

Yellowstone National Park: For maintenance and repair of improvements, * * * seventy thousand dollars, to be expended by and under the direction of the Secretary of War * * *.

The same act, under the heading "Miscellaneous objects, Department of the Interior," provides (p. 1420):

Yellowstone National Park: For the administration and protection of the Yellowstone National Park, five thousand five hundred dollars.

It has been held that the revenues derived from the management of the park and the appropriation for "administration and protection" are available for the same purpose and are to be used in common. (8 Comp. Dec., 556; 7 id., 161.)

It thus appears that there are two funds available for use in connection with the Yellowstone National Park, viz, one for maintenance and repair of improvements, to be expended under the direction of the Secretary of War, and one for administration and protection (composed of the small annual appropriation, supra, and the revenues of the park), to be expended under the direction of the Secretary of the Interior.

While either of these funds might in the absence of the other be used for the purpose of sprinkling the roads, I think it is beyond question that the appropriation under the control of the Secretary of War more specifically provides for that object, these roads being "improvements" and sprinkling them a "repair" or "maintenance." It also appears that said appropriation has heretofore been used for that object without question.

It is a well-established rule in the construction of appropriation acts that where a particular appropriation makes more specific provision for a particular object than is made by another appropriation, it is exclusively applicable thereto, although if such more specific provision had not been made the other appropriation would have been applicable. This rule also applies where the appropriation making the more specific provision is insufficient or exhausted. (1 Comp. Dec., 492; 3 id., 70, 353; 10 id., 655; 43 MS. Comp. Dec., 597, 599, Nov. 9, 1907.)

I have therefore to advise you that the revenues derived from the park can not lawfully be used for the purpose mentioned in your letter.

Respectfully,

L. P. MITCHELL,
Assistant Comptroller.

The SECRETARY OF THE INTERIOR.



ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT OF
THE ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR

1912





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REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 1, 1912.

SIR: I have the honor to submit annual report of the condition of affairs in and the management of the Yellowstone National Park from October 15, 1911, to the present date.

GENERAL STATEMENT.

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

The military force available for duty in the park consists of one squadron of cavalry and a machine-gun platoon containing the normal quota of officers and an enlisted strength increased by 75 men. The headquarters is located at Fort Yellowstone, but the command also garrisons 15 soldier stations scattered throughout the park, requiring 200 men during the tourist season and from 75 to 100 during the remainder of the year.

A telephone system connects the soldier stations and the post.

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

During the past season two officers of the command, who were selected as specially fitted for the work, were kept constantly in the park, going from one station to another and having general supervision over the work of the enlisted men in their respective districts. In addition, frequent inspections were made by myself, troop commanders, and other officers. The medical officers stationed at Fort Yellowstone made frequent sanitary inspections of hotels, camps, etc., throughout the park, and one of them was stationed at the lake outlet during the greater part of the summer, to look after the health of the men on station and others in the upper park. The results have been most excellent; the strenuous duties required of the enlisted men serving on station, including the hard work of opening the roads for the tourist season, repairing bridges and culverts, and keeping them in a passable condition until late in the summer, when the Engineer Department could secure necessary funds, have been cheerfully and conscientiously performed.

The regular appropriations by Congress for the construction and maintenance of roads, bridges, etc., in the reservation are expended by the War Department under the direction of the Chief of Engineers. The lack of funds prevented any work under that department until after July 1, and then the amounts allotted were so small that little material good was accomplished during the tourist season, and the condition of the roads was bad. There was no sprinkling of roads beyond Mammoth Hot Springs.

TRAVEL.

During the winter and spring large detachments of troops were used to keep the road open between the Mammoth Hot Springs and Gardiner, Mont., at the northern entrance. A large earth slide in Gardiner Canyon required frequent cleaning out to keep the road passable, and even then it was at times dangerous for teams to pass and always very uncertain as to when it might be completely blocked. As no funds were available to fix it before the opening of the tourist season, in order to make sure of some way of getting travel in from Gardiner, the department allotted \$500 from park revenues for repairing the old trail back of Mammoth Hotel leading to Gardiner, and this was expended in widening the trail and repairing bridges. The trail was put in such condition that wagons could get over it in case of necessity, and it was so used on many occasions during the summer.

The repairing of this trail was essential for use of saddle and pack animals coming in from Gardiner, as the regulations prohibit them from traveling over the main road during the tourist season.

While not in the best condition, the roads on the main belt line in the park, and the approaches from the two main entrances at Gardiner on the north and Yellowstone on the west were open for travel at the beginning of the season, June 15. The road from Cody on the east, which passes over a high divide, was not open until June 26, and that over the top of Mount Washburn and through Dunraven Pass on July 10.

The aggregate number of persons making park trips during the season of 1912 was as follows:

Travel during the season of 1912.

Yellowstone Park Transportation Co., entering via northern entrance.....	5,392
Monida & Yellowstone Stage Co., entering via western entrance.....	5,144
Holm Transportation Co., entering via eastern entrance.....	209
Others at hotels, traveling with private or Government transportation, bicy- clists, foot travelers, etc.....	475
Wylie Permanent Camping Co.:	
Entering via northern entrance.....	2,582
Entering via western entrance.....	3,351
Entering via eastern entrance.....	69
With other licensees of personally conducted camping parties.....	6,002
Making park trips with private transportation as "camping parties".....	2,232
	3,285
Total number making park trips.....	22,739
Number making short trips with special licensees.....	231
Grand total of travel season of 1912.....	22,970

The Yellowstone Park Boat Co. reports that 3,305 people took the boat trip across Yellowstone Lake during the season, of which 25 were government officials on duty and carried free. This company failed to keep their records in such shape that they could state how many of those taking the lake trip were traveling by the various methods of transportation through the park, but give the total only.

Travel by the different entrances.

From the north, via Gardiner, Mont.....	10,783
From the west, via Yellowstone, Mont.....	10,184
From the south, via Jackson Hole.....	573
From the east, via Cody, Wyo.....	1,430
Total.....	22,970

The Wylie Permanent Camping Co. was authorized to maintain an additional lunch station camp near Sylvan Lake, for the accommodation of such of their patrons as desired to enter the park via the eastern or Cody route, and report that 69 of their tourists came in that way during the season. After the experience of one season the company has decided that this camp should be located near the border of the park at the eastern entrance, and has made request for authority to change it before the opening of another season.

The Wylie Permanent Camping Co. had 104 vehicles of various sorts in use during the season. Special licenses were issued for conducting movable camping parties, covering the use of 141 wagons and 302 saddle and pack animals and for 6 wagons for special livery work.

The Holm Transportation Co. of Cody, Wyo., was granted a concession to conduct a regular transportation business in the park, entering from the Cody or eastern side, and reports having taken 209 tourists on regular trips through the park during the season.

In order that tourists so desiring might have an opportunity to return to Mammoth from the Grand Canyon via Mount Washburn, the concession of the Monida & Yellowstone Stage Co. was extended to include this trip, and this company was authorized to make an extra charge of \$7.50 for the service. A site was granted for building near Tower Falls, a stable for relays of horses and a log bungalow where tourists taking the trip could enjoy the luncheon brought along from the Canyon Hotel. Eighteen tourists made this trip during the season.

ROADS.

In compliance with Senate resolution No. 275, April 2, 1912, an estimate was prepared and submitted to Congress, through the War Department, of the cost of new roads or changes in the present roads in the Yellowstone National Park in order to permit of the use of automobiles and motor cycles therein without interfering with the present mode of travel in vehicles drawn by horses or other animals. A copy of this estimate, as submitted, together with all correspondence in connection therewith, may be found in Senate Document No. 871, Sixty-second Congress, second session. In this estimate, it was recommended, by Capt. C. H. Knight, Corps of Engineers, who is locally in charge of road work in the park, that in

case automobiles and motor cycles are to be granted the use of park roads that the present roads be reconstructed at an estimated cost of approximately \$2,265,000, in order to provide a single system of roads for automobiles, motor cycles, and vehicles drawn by horses and other animals. As a result, the sum of \$77,000 was included in the sundry civil bill, approved August 24, 1912, for widening and improving surface of roads, and for building bridges and culverts, from the belt-line road to the western border; from the Thumb Station to the southern border; and from the Lake Hotel Station to the eastern border, all within Yellowstone National Park, to make such roads suitable and safe for animal-drawn and motor-propelled vehicles. It is understood that this work of widening and improving, which will be commenced under the small appropriation referred to above, is to be extended over several seasons, thus giving the present stage and transportation lines operating in the park an opportunity to prepare for the advent of automobiles.

This work, as well as the regular repairs and improvements to the roads in general throughout the park for which \$100,000 was appropriated by the same act, is in charge of Capt. C. H. Knight, United States Engineer Corps, who has furnished the following notes on the work under his department since the date of my last report:

Owing to the appropriation being exhausted, practically all improvement work was suspended early in September, 1911.

On July 3, work of removing slides of earth from the road between Gardiner and Mammoth Hot Springs was resumed; a crew of 20 laborers, 10 teams, and 1 foreman continued the work until August 5, when the crew was sent to the divide to repair the roads and bridges between the Upper Basin and Thumb Station.

On August 9 a crew of 12 men and 2 teams began work of improving the sprinkler operations in the park.

A crew of 41 men is working with 10 teams on the east road between the belt line of the main circuit and the east boundary, widening the road, putting in new culverts and repairing culverts.

A crew of 37 men and 10 teams is working on the west road between the belt line of the main circuit and the west boundary.

A crew consisting of 3 carpenters, 8 laborers, and 1 team is engaged in redecking bridges.

A crew of 12 men and 8 teams is at work filling in the approaches to the steel bridges put in last year.

A crew of 12 men and 3 teams is at work replacing worn out, and erecting concrete, piers for steel bridges.

A crew of 12 men and 3 teams is at work on the Cooke City road replacing culverts and bridges and filling in washouts.

Owing to the fact that the appropriation for this work was not available until August 24, 1912, sprinkling was carried on only around Mammoth Hot Springs between July 3 and September 15, and between Mammoth Hot Springs and Gardiner September 3 to 15.

FISH.

The subhatchery maintained by the Department of Commerce and Labor on Yellowstone Lake was in charge of Mr. W. T. Thompson, the superintendent of the United States hatchery at Bozeman, Mont., who has furnished me with the following notes on his operations in the park during the season of 1912:

Prompted by the splendid success of the work of the season of 1911 when over 20,000,000 eggs were secured, the bureau built two 20-foot motor boats and a 16-foot rowboat, and purchased a speed launch to do duty as a scout, and also added to the capacity of the plant so that a larger number of eggs could be handled. Twenty-eight million five hundred and thirty-nine thousand five hundred eggs were taken from Yellowstone Lake and tributaries, the larger portion of these coming from Cub and Clear Creeks on the east side of the lake. One man was again sent to Soda Butte, where he took 781,000 eggs from Trout Lake, bringing the total for the season up to 29,320,500.

Five million one hundred and sixty-seven thousand green spawn, and 15,954,000 eyed eggs were shipped to various parts of the country, the larger shipments going to the near-by States. Montana hatcheries including the United States hatchery at Bozeman received approximately 6,250,000; Wyoming Fish Commission 2,000,000, the United States hatchery at Spearfish, S. Dak. 3,250,000; the various State, national, and local hatcheries in Colorado 10,000,000, and large assignments were shipped to the States of Washington and Oregon. Two small shipments were sent to the aquariums at Battery Park, N. Y., and Belle Isle, Detroit, for exhibition and educational purposes. Large numbers were planted in Yellowstone Lake and small streams adjacent; 50,000 in Duck Lake, 300,000 in Grebe Lake, and 850,000 in De Lacy Creek.

Twenty-six thousand fingerling brook trout (*fontinalis*) were furnished for the park from the United States hatchery at Bozeman, Mont., during the month of July, and of these 3,000 were planted in Blacktail Deer Creek, 16,000 in Glen Creek, and 7,000 in a small lake near Sepulchre Mountain that has never before been stocked with fish of any kind.

WILD ANIMALS.

The past winter was an ideal one so far as game was concerned. The grass was plentiful on the range, and while there was much snow, no crust formed on it, so it was an easy matter for the elk, deer, antelope, etc., to get plenty to eat.

ANTELOPE.

While the experiment of last year of capturing antelope and shipping them to other ranges was successful, it resulted in disturbing the herd, and suggestions received during the past year for similar transfers have, in the interest of the herd, been discouraged.

During the past winter this herd was exceedingly restless, and required the almost constant attention of one scout and an enlisted man to keep the antelopes from leaving the park. The fence along the north line would not hold them, and they seem to care but little for the hay that was put out for them in the vicinity of Gardiner, as the grazing was excellent all winter, and partially on account of the large herds of elk that frequented their feeding grounds. The herd numbered about 500 last winter, and the condition of the animals was most excellent, as was that of all of our wild animals.

The field near the northern entrance that last year produced about 80 tons of wheat hay, was plowed, cultivated, and in the spring sowed

to alfalfa with oats as a nurse crop. The latter has been cut, cured as hay, and stacked for winter use of the game, yielding about 100 tons of excellent hay. The young alfalfa plants are in fine condition, and experts that have inspected the field believe that it has a good stand of alfalfa and will yield a good crop of hay next year.

DEER.

For some unaccountable reason, only about one-half of our fine herd of black-tailed deer returned to their winter range in the vicinity of Fort Yellowstone last fall. No knowledge was had of any unusual slaughter of deer anywhere in the vicinity of the park, although it was reported unofficially that they were quite numerous and tame in the Flathead country in western Montana, several hundred miles from the park, and that hunters had little difficulty in getting the number allowed by law during the open season. Those that did come back were in splendid condition, and scarcely any died during the winter. Four hundred were counted, but as they were scattered over a much larger area than usual, due to the splendid grazing, it was not an easy matter to find all of them. The white-tailed deer still number about 100—ranging mostly within a few miles of Fort Yellowstone, and are in excellent condition.

Both varieties are exceedingly tame.

ELK.

During last April an approximate accurate census was taken of the elk that winter along the northern border of the park. Twenty-seven thousand eight hundred and one animals were counted inside of the park, and 2,300 were observed just outside and therefore belonging to the same herd, making a total of 30,101 that actually belonged to the winter herd of the park. In summer these animals go back into the high mountains in the interior of the park and but few of them are seen by travelers, and many of the herd that winters in Jackson Hole south of the park also come into the park for the summer.

Under authority of the department elk were captured in the park, in pens at the haystacks near Gardiner, Mont., loaded on stock or freight cars and shipping to other ranges as follows: One carload of 60 to Snohomish County, Wash., on March 8; one car of 46 to Skagit County, Wash., on March 18; and the third carload of 31 animals was shipped to Glacier National Park on March 29. The county commissioners paid all expense of capture and shipment of those sent to Washington, the first carload costing them \$10 per head delivered on the cars at Gardiner, and the second one \$7 per head. Those shipped to Glacier National Park were captured and loaded by park scouts assisted by enlisted men.

The State of Montana captured five carloads of elk just outside of the park 2 miles west from the northern entrance, and shipped them to points in western Montana, where they were turned loose to replenish the range.

While a few animals were lost in shipping, the experiment is considered a very successful one, and it is believed that with this experience future captures can be made at less expense and the shipments conducted with but little loss of life.

The problem of handling this large herd of elk to the best advantage of all concerned has become an important one, and one in which many are interested. The Department of Agriculture has, in the interests of the elk, limited the grazing districts for sheep in the National Forests adjoining the park; the States of Montana and Wyoming have set aside game preserves adjoining the park for the protection of the elk and other game; and the latter State as well as the Federal Government has spent money to feed the elk that winter in Jackson Hole.

Members of the United States Biological Survey, Department of Agriculture, and members of the United States Forest Service, who are actively engaged in studying the elk situation, called at my office to discuss the matter on September 9, 1912, and the following points were unanimously agreed upon and recommended:

1. That the whole elk problem should be handled as a unit.
2. That for the present the elk herd of about 50,000, which includes the park herd, the Jackson Hole herd, and those that range in the forest reserves just outside the park, should be maintained at its present size, of which the northern herd should not exceed 35,000.
3. That under present conditions the annual crop from the herd (killed under game laws of the adjoining States, shipped, etc.), should not exceed 7,500 to 8,000.
4. That some equitable arrangement be made whereby the people of the State of Montana may derive their due proportion of the benefits of the herd.
5. That for the present the existing sheep grazing lines on the Gallatin National Forest be maintained.
6. That so far as elk are concerned, the present lines on the Absaroka National Forest (Jardine-Slough Creek trail) are reasonable and should be maintained.

It is believed that with proper supervision, and cooperation on the part of all parties interested, this herd will become a valuable asset. About 600 elk were killed in the State of Montana near the park line during the last few days of the open hunting season last fall, many of them going to families that otherwise might have had a slim meat ration for the winter due to dull times for workingmen in this section of the country.

MOOSE.

Moose are often seen by scouts and patrols traveling in remote portions of the park. They appear to be in first-class condition, and are believed to number about 550 within the limits of the park.

BUFFALO.

WILD HERD.

A special effort was made during the month of July to determine as nearly as possible the exact number of buffalo in the wild herd in the park. Forty-nine animals, including 10 this year's calves, were counted. This is the largest number reported for more than 10 years, and the number of calves indicates that the herd is thriving beyond expectation.

If practicable to do so without disturbing them too much, it is thought advisable to capture some of the calves next spring, and rear them with the tame herd, thus introducing new blood.

TAME HERD.

At the present time there are 143 animals in this herd, 58 males, 61 females, and 24 this year's calves, sex undetermined.

A disease attacked the herd in December, just after the buffalo were taken up from the range where they had been day-herding during the summer, and 22 died before it could be stopped. The Department of Agriculture sent a veterinarian to the park to do what he could, and after examination of specimens from the dead animals sent to that department in Washington the disease was pronounced to be hemorrhagic septicemia, although its symptoms were at first thought to be those of black-leg. The carcasses were burned and all precautions taken to prevent further spread of the disease. In June a veterinarian was sent out by the Department of Agriculture, who vaccinated all of the adults of the herd with serum prepared and furnished by his department, as a protective measure.

In addition to the 22 animals that died of disease, 2 bulls and 4 cows have died or had to be killed for various causes during the year. These, however, were of but little loss to the herd, as they were old or decrepit animals and unfit to remain with the herd.

By constant herding during the summer the herd has become used to being driven, and as a rule is handled with but little trouble on the range. The usual show herd of 15 bulls was brought in to the field near the Mammoth Hot Springs at the beginning of the tourist season, so they could be seen by travelers, and was returned to the main herd on September 18.

Much difficulty has been experienced in harvesting the hay for the buffalo this season, due to almost daily rains, but the crop was a good one and about 200 tons of hay has finally been put in stack, which will be ample for the needs of the herd during the winter. About 15 acres of hitherto almost worthless land, located under the irrigation system at the corrals, have been harrowed and sowed to timothy. About 16 acres in the same field, too rough to irrigate without plowing, has been broken and will be left until next spring so that the heavy sod may rot, when it will be harrowed and sowed to oats to be cut for hay, and eventually sowed to timothy.

There are altogether too many bulls in the herd, and some advantageous means of disposing of the surplus should be found.

BEAR.

Bears are plentiful, and during the summer it has been necessary to have seven killed at different times, to prevent injury and damage to property.

The bears are a continual source of interest to tourists, as they may be seen every day feeding at the dumps of the hotels and camps.

Under authority of the department, the following have been captured and shipped to city parks for exhibition purposes, in each case the expense of capture and shipment having been borne by the parks to which the animals were sent: Male and female black bears on June 27; male and female brown bears on August 11; female grizzly on June 18 and another on September 15, and a male grizzly on August 17—seven in all to the city of Boston, Mass. Male and female

grizzlies to Milwaukee, Wis., for the Washington Park Zoological Society, on August 17 and September 25, respectively. A female grizzly with two cubs to the city park at Memphis, Tenn., on August 18, and a male grizzly to the Zoological Society of St. Louis, Mo., on September 25. The latter city desires a female grizzly, and it is expected we shall be able to secure one before winter sets in.

COYOTES.

Two hundred and seventy coyotes have been destroyed, by poisoning, trapping, and shooting in the park during the past year, by authorized parties, and indications are that there are many left. It is claimed that gray wolves have been heard and that their tracks have been seen in the park, but up to this time none have ever been killed, and there is no absolute proof that they exist within the limits of the reservation, though they have been taken not many miles outside on the cattle ranges in Montana.

MOUNTAIN SHEEP.

The mountain sheep that usually spend most of the winter on Mount Everts and in Gardiner Canyon were more or less scattered last winter, owing to the weather conditions and the abundance of natural feed, although a few could be seen daily along the road between Fort Yellowstone and Gardiner. Some of the band that usually winters in the park were seen several miles outside in the game preserve adjoining the park on the northwest in the State of Montana. All were in fine condition and wintered well. Two hundred and ten were counted last spring.

BEAVER.

Numerous evidences of the workings of these interesting animals are found in all waters of the park, and they are occasionally observed late in the afternoon at work on their dams or houses.

OTHER ANIMALS.

Mountain lions, lynx, foxes, otter, and the smaller varieties of fur-bearing animals are found, as are also many varieties of birds, including waterfowl.

Wire netting with half-inch mesh has been placed over the lower part of Stygian Cave, at the extreme upper or southern end of the Mammoth Hot Springs, as it was found that many song birds of various species stopped there in stormy weather or for the night, especially during the migratory season in spring and fall, and were overcome and killed by the poisonous gases.

PROTECTION OF GAME.

Evidences of poaching within the limits of the park are few. With the cooperation of the game authorities of the adjoining States, and with their game preserves extending up to the park line for many miles along the most important habitats of the game, the matter of protection is considerably simplified. During the open season for hunting big game in Montana in the fall of 1911, in two cases on the

west and one on the north, parties hunting elk were found over the line and were arrested, brought in and tried before the United States commissioner, and paid the penalty of the law. In each case they plead ignorance of the whereabouts of the line.

TRAILS.

Owing to lack of funds, no new firelanes or trails were constructed during the past year. Forty-eight miles of additional firelanes are needed for adequate protection from forest fires and for advantageous systematized work in patrolling the park borders. This item was included in my estimate of funds for the coming fiscal year.

FOREST FIRES.

The agreement entered into on August 14, 1912, between the Departments of the Interior, Agriculture, and War, for the prevention and suppression of forest fires occurring along the park boundary, will be of advantage to both the park and the national forests adjoining. On account of heavy rains that have fallen during the past summer, there has been no danger from forest fires at any time; but as these conditions are not likely to recur another season, all preparations for carrying into effect an efficient system of fire patrols in connection with the rangers in charge of the forests adjoining the park, before the season for forest fires again arrives, are contemplated. Steps have already been taken to secure a good supply of fire-fighting tools.

Little difficulty was had during the past tourist season with camping parties leaving their fires burning when the camps were abandoned.

TELEPHONE LINES.

The War Department has completed a new independent line from Fort Yellowstone to Norris, this part of the line having heretofore been attached to the poles of the hotel company. This makes the War Department line throughout the park an independent one, with the exception of that part from Norris to Lake Outlet via Canyon, and from the Firehole Junction to Riverside Station, which will be built as soon as practicable. An additional station was built during the summer on the park line on Crevice Mountain, east from Gardiner, Mont., and a telephone line will be built to connect it with the Gardiner Soldier Station when practicable.

SANITATION.

Two men with a single team and wagon have been employed constantly during August and September in going over the regular tourist routes and cleaning camps, digging holes for garbage, caring for the earth closets that are maintained at points convenient for the use of the public, and doing such general cleaning up as was required to keep the park in a sightly and sanitary condition. While all lessees in the park are required to keep their premises in a sanitary condition and camping parties are required to carefully police their camps before abandoning them, yet there is a necessity for work of this kind, as the bears dig up the refuse from the pits provided for

the camps, the pits become full and must be covered with earth and new ones provided, lunch boxes and loose papers are strewn along the road, and there is always plenty of work to keep two men busy. This system of cleaning has resulted in a much better general appearance throughout the park, and it is contemplated keeping it up hereafter during three months of the year—July, August, and September.

IMPROVEMENTS UNDER THE WAR DEPARTMENT.

A fine new chapel building, built of native stone, is in process of construction at Fort Yellowstone and will be completed and the furniture installed within a few weeks.

A new post hospital that was begun in 1909 will be completed and ready for occupancy some time during the coming winter.

A pipe line of concrete for conducting the water for the post system from mouth of Panther Creek to Golden Gate, has just been completed.

RECOMMENDATIONS.

That it be decided for a definite period of time by the department maintaining the military force and that controlling the national park if the park shall continue to be policed by United States troops or if they shall in the near future be replaced by a civilian organization. A fixed policy in this regard is essential to a stable and progressive administration.

Very respectfully,

L. M. BRETT,
Lieutenant Colonel, First Cavalry,
Acting Superintendent.

The SECRETARY OF THE INTERIOR.

Chapel

*Received of the Secretary of the Interior
the sum of \$100.00 for the
construction of a chapel at Fort
Yellowstone, Wyoming, on
September 10, 1912*

APPENDIX.

RULES AND REGULATIONS OF MAY 27, 1911.

Washington, D. C., May 27, 1911.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscriptions or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel, or for building purposes when duly authorized, stumps must not be left higher than twelve inches from the ground.

4. Fires shall be lighted only when necessary and completely extinguished when no longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding, or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park excepting for the use of the wild game, and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards, or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

INSTRUCTIONS OF JUNE 6, 1911.

1. The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

2. *Fires*.—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down.

Especial care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

3. *Camps*.—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer

distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

4. *Bicycles*.—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

5. *Fishing*.—All fish less than 8 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than 20 fish in one day.

6. *Dogs*.—Dogs are not permitted in the park.

7. *Grazing animals*.—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

8. *Formations*.—No person will be allowed on any formations after sunset without a guide.

9. *Hotels*.—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, 24 hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

10. *Driving on roads of park*.—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles in passing each other must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway. No stops on the road for luncheon or for camp purposes will be permitted.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, or such vehicles overtake pack trains, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men, on meeting a passenger team on a grade, will halt on the outer side until the team passes. When approaching a passenger team from the rear, warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

11. *Liquors*.—All beer, wine, liquors, whisky, etc., brought into the Yellowstone National Park via Gardiner to be carried over the roads through the reservation to Cooke City, must be in sealed containers or packages, which must not be broken in transit.

12. *Miscellaneous*.—Automobiles are not permitted in the park.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

13. *Penalty*.—The penalty for disregard of these instructions is summary ejection from the park.

NOTICES.—(a) *Boat trip on Yellowstone Lake*.—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(b) *Side trips in park*.—Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park, also at the office of the superintendent.

(c) All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing.

CONCESSIONS.

Concessionaires holding contracts for privileges in the Yellowstone Park during the season of 1912, with rentals exacted therefor.

Yellowstone Park Hotel Co.:

Operation of hotels in the park under leases dated June 13, 1907, running for 20 years from March 20, 1905, covering sites aggregating 20 acres; rental \$300 per annum first 5 years, \$20 per acre per annum (\$400) thereafter. Lease dated November 5, 1907, for 18 years from March 20, 1907, covering sites aggregating 9½ acres, rental \$15 per acre per annum to March 20, 1910, and \$20 per acre per annum thereafter. Leases expire March 20, 1925.

Present
annual
rentals.

Total acreage of sites occupied, 29½ acres, at \$20..... \$585.00

Yellowstone Park Hotel Co.—Continued.

Hotels and lunch stations with accommodations for guests at each as follows:	Present annual rentals.	
Mammoth Hot Springs Hotel.....	350	
Cottage Hotel.....	80	
Norris Station.....	25	
Fountain Hotel.....	350	
Old Faithful Inn.....	400	
Thumb Station, lunch only.		
Lake Hotel.....	450	
Canyon Hotel.....	350	
Yellowstone Park Transportation Co.:		
Operation of transportation and stage lines in the park. Leases as follows:		
June 13, 1907, granting transportation privilege, 20 years, from March 31, 1905.		
October 18, 1907, for 18 years, from March 31, 1907, of sites aggregating 20.95 acres in connection with privileges. Rental \$40 per acre per annum (\$838).		
May 22, 1908, for 18 years, from March 31, 1907, covering 0.11 acre at Mammoth Hot Springs (addition to 9.78 acres under lease October 18, 1907, thereat), at \$40 per acre per annum (\$4.40).		
December 31, 1908, 16 years, from March 31, 1909, for 7.1 acres at Grand Canyon, at \$40 per acre per annum (\$284). Leases expire March 31, 1925.		
Total acreage, 28.16 acres, at \$40 per acre.....	\$1, 126. 40	
Yellowstone Park Boat Co. (transferees of the T. E. Hofer Boat Co.).		
Privilege of operating system of pleasure and fishing boats on Yellowstone Lake, renting and selling fishing tackle, etc.:		
Lease November 12, 1907, for 10 years, covering boat privilege. Rental, \$100 per annum.		
Lease January 30, 1909, for 9 years, from November 12, 1908, covering 2-acre site on shore of lake, at \$40 per acre per annum; use of docks and ways, \$270 per annum; privilege of operating store for selling grain, hay, and other supplies, \$50 per annum.		
Total charge per annum under above.....	500. 00	
Monida & Yellowstone Stage Co.:		
Operation of transportation and stage lines in the park.		
Lease dated March 31, 1906, running for 10 years, covering sites aggregating 11 acres. Rental, \$25 per acre. April 27, 1910, rate increased to \$40 per acre per annum.		
Lease dated July 29, 1912, running for 3 years and 10 months from July 1, 1912, covering sites aggregating 2 acres, at \$40 per acre per annum.		
Leases expire March 31, 1916.....	520	
Wylie Permanent Camping Co.:		
Privilege of transporting passengers through the park and maintaining permanent camps in connection therewith. Lease dated May 4, 1906, running 10 years from March 31, 1906. Rental, \$10 per wagon (no less than 50 wagons to be used). Season of 1912, 104 wagons used, at \$10 each. Lease expires March 31, 1916.....		1, 040. 00
Holm Transportation Co.:		
Operation of transportation and stage lines in the park. Agreement dated April 10, 1912, covering sites aggregating 1.79 acres, at \$40 per acre per annum.....		71. 60
Henderson & Lyall:		
Privilege for store, dwelling, and post office. Lease dated August 7, 1905. Yearly rental, \$100 per annum (lease runs for period of 10 years). Lease expires August 7, 1915.....		100. 00
Pryor & Pryor:		
Privilege for dwelling and store, including soda fountain, selling beverages, etc. Lease dated August 26, 1908; runs for period of 8 years from April 3, 1908; expires April 3, 1916. Yearly rental per annum, \$50. Rental is readjustable. Lease covers plat 13,800 square feet, occupied by dwelling and store.....		50. 00

Henry E. Klammer:	Present annual rentals.
Lease of plat of ground (2 acres) at Upper Geyser Basin for dwelling and general store, dated January 31, 1908, for period of 10 years from June 1, 1907. Rental, \$100 per annum. Privilege reserved in lease to readjust rental at any time or charging for store privilege...	\$100.00
F. Jay Haynes:	
Lease dated June 1, 1904, for 1 acre of ground at Upper Geyser Basin, for period of 10 years from March 31, 1904, for photographic privilege. Yearly rental, \$30 per annum. Lease dated June 1, 1904, for sixty-four one-hundredths of an acre at Mammoth Hot Springs; runs for period of 10 years from March 31, 1904; photographic privilege. Yearly rental, \$30. Leases expire March 31, 1914.....	60.00
Total of rentals under leases.....	4, 153.00

COOPERATIVE AGREEMENT BETWEEN THE DEPARTMENT OF THE INTERIOR, THE DEPARTMENT OF AGRICULTURE, AND THE DEPARTMENT OF WAR FOR THE PREVENTION AND SUPPRESSION OF FOREST FIRES OCCURRING ALONG THE BOUNDARIES OF THE YELLOWSTONE NATIONAL PARK.

This agreement, made this 14th day of August, 1912, by and between the Secretary of the Interior, the Secretary of Agriculture, and the Secretary of War,

Witnesseth: For and in consideration of the mutual promises and agreements hereinafter contained, to be kept and performed, in so far as possible and authorized by law, the said parties hereby promise and agree as follows:

1. This agreement shall extend and apply to the territory embraced within the Yellowstone National Park and the following national forests: Absaroka, Beartooth, Gallatin, Madison, Shoshone, Targhee, and Teton, provided that it may be extended to cover any national park and adjacent national forests upon the mutual consent of both parties hereto.

2. Each of the parties hereto agree to keep a vigilant lookout for forest fires along the boundary between the park and the national forests by means of patrolmen and other employees provided for under the appropriation for such department, and to promptly notify the nearest officer having charge of the territory of any fires observed.

3. Each of the parties hereto agrees to take immediate steps to suppress any fires which may be discovered on either side of and within a reasonable distance of the boundary between the park and any national forest, to continue fighting the fire until it is extinguished or until the proper officer within whose territory the fire is burning arrives and assumes charge, and thereafter to render every assistance compatible with the regular duties of employees of the department.

4. Whenever a forest fire occurs upon an area covered by this agreement which is under the jurisdiction of one of the departments concerned herein, and such fire is so located as to endanger another such area under the jurisdiction of another department, such other department agrees that its employees, voluntarily and upon request, will furnish to the department upon whose area such fire occurs any available food supplies, tools, men, transportation, or other equipment as may be needed in fighting such fires, provided: That no other department will be expected to render such assistance when such action would jeopardize the safety or seriously interfere with the proper administration of the territory under its jurisdiction.

5. It is mutually agreed that in so far as practicable the system of telephone lines, roads, and trails within the territory embraced in this agreement will be coordinated so as to be of the greatest use in the protection of the area from fire and that wherever possible the telephone lines of the park and the national forests will be connected so as to permit rapid communication.

6. It is mutually agreed that the officer in charge of the Yellowstone National Park and the supervisors of the several national forests will confer at such times and at such places as may be most convenient and will arrange a definite plan of cooperation; dividing the territory into protective units in accordance with the topography, means of communication, and accessibility, deciding the division of responsibility for the territory, the location and number of patrolmen, the improvement projects to be undertaken, and all other points essential to a clear-cut, fire-protective plan.

7. It is mutually agreed that any expenses incurred by either party to this agreement in carrying out the plan of action herein stated more properly chargeable to the appropriation for the other department, will be approved by the local officers representing either department, and a statement of such expenses forwarded to the proper officer at Washington, D. C., upon receipt of which the funds will be transferred between the appropriations for the departments through a Treasury settlement.

8. This agreement shall continue in force and effect until terminated by written notice from either party to the others: Provided, however, that the notice of termination of agreement must be given between the dates of November 1 of any year and April 30 of the following year.

In witness whereof, the hand and seal of the Secretary of the Interior, on the date first hereinbefore written, and the hand and seal of the Secretary of Agriculture, and the hand and seal of the Secretary of War, are hereto affixed this 14th day of August, 1912.

WALTER L. FISHER,
Secretary of the Interior.
JAMES WILSON,
Secretary of Agriculture.
H. L. STIMSON,
Secretary of War.



ATTACHED MAP / DRAWING

SEE ORIGINAL

REPORT OF
THE ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR

1913



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Map of Yellowstone National Park..... Facing p. 21

REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

DEPARTMENT OF THE INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 15, 1913.

SIR: I have the honor to submit annual report of the condition of affairs in and the management of the Yellowstone National Park from October 1, 1912, to the present date.

GENERAL STATEMENT.

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

The military force available for duty in the park consists of one squadron of Cavalry and a machine-gun platoon containing the normal quota of officers and an enlisted strength increased by 75 men. The headquarters is located at Fort Yellowstone, but the command also garrisons 15 soldier stations scattered throughout the park, requiring 200 men during the tourist season and from 75 to 100 during the remainder of the year.

A telephone system connects the soldier stations and the post.

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

The work of the detachments of soldiers at the 15 soldier stations was well done. The tourists spoke in the highest terms of the courteous treatment received and of the neat and soldierly bearing of the men at all times. Commissioned officers were constantly on duty in those parts of the park most visited by tourists during the season and several visits were made to the stations during the winter months.

TRAVEL.

The roads were in fairly good condition at the opening of the season, except between the lake and the east boundary, and the thumb of the lake and the south boundary, and these were almost impassable. All of the roads have been improved since the opening of the season, but they are all far from suitable park roads.

The aggregate number of persons making park trips during the season of 1913 was as follows:

Travel during the season of 1913.

Yellowstone Park Transportation Co., entering via northern entrance---	5,923
Monida & Yellowstone Stage Co., entering via western entrance-----	5,760
Holm Transportation Co., entering via eastern entrance-----	323
Others at hotels, traveling with private or Government transportation, bicyclers, foot travelers, etc-----	53
Total hotel travel-----	12,059
Wylie Permanent Camping Co.:	
Entering via northern entrance-----	2,413
Entering via western entrance-----	3,989
Entering via eastern entrance-----	193
-----	6,595
Shaw & Powell Camping Co.:	
Entering via northern entrance-----	1,807
Entering via western entrance-----	619
-----	2,426
With other licensees of personally conducted camping parties-----	522
Making park trips with private transportation as camping parties-----	3,080
-----	24,682
Total number making park trips-----	24,682
Number making short trips with special licensees-----	247
-----	24,929
Grand total of travel, season of 1913-----	24,929

The Yellowstone Park Boat Co. reports that 4,205 passengers took the boat trip across Yellowstone Lake during the season, of which 1,860 were traveling with the Yellowstone Park Transportation Co., 1,345 with the Monida & Yellowstone Stage Co., 765 with the Wylie Permanent Camping Co., 178 with Shaw & Powell Camping Co., and 57 miscellaneous.

Travel by the different entrances.

From the north, via Gardiner, Mont-----	11,294
From the west, via Yellowstone, Mont-----	11,907
From the south, via Jackson Hole-----	417
From the east, via Cody, Wyo-----	1,311
-----	24,929
Total-----	24,929

The Wylie Permanent Camping Co. had 128 vehicles in use during the season, in connection with its transportation business and maintenance of permanent camps in the park, the Shaw & Powell Camping Co. used 85 wagons in transportation of passengers and maintenance of permanent camps, and, in addition to these, special licenses were issued during the season for conducting movable camping outfits covering the use of 65 wagons and 228 saddle and pack animals and for 8 wagons for special livery work.

The Monida & Yellowstone Stage Co. reports that 778 passengers made the trip from Canyon to Mammoth via Mount Washburn and Tower Falls during the season in its vehicles, and many others made this trip with other companies and with licensees of personally conducted camping parties, showing a gratifying increase of the

travel over the road, from which is enjoyed a view of the most beautiful scenery in the park.

IMPROVEMENTS BY CONCESSIONERS.

The Yellowstone Park Hotel Co. completed a new wing to the hotel at Mammoth Hot Springs, increasing its capacity by 124 fine guest rooms, and including 28 private baths and 8 public baths.

This company has a crew of men at work enlarging Old Faithful Inn, at Upper Geyser Basin, where increased facilities for caring for tourists are much needed. Over 100 rooms will be added to this already large hotel.

The Wylie Permanent Camping Co. established a new camp near the eastern entrance of the park for the accommodation of such of its tourists as enter via the Cody route, abandoning the site near Sylvan Lake that was in use during the season of 1912.

The Shaw & Powell Camping Co. was authorized to establish permanent camps in the park, and has operated such camps at Willow Creek, near Gibbon Falls, on Nez Perce Creek near Fountain Station, Upper Geyser Basin, West Thumb of Lake, Grand Canyon, and near Tower Falls. Buildings such as kitchen, dining room, storehouse, laundry, wagon sheds, stables, blacksmith shop, granary, bathhouse, etc., were authorized, and many of these have been built during the summer or are now in process of construction.

Messrs. Henderson and Lyall sold their concession for a post-office store at Mammoth Hot Springs, with approval of the department, to Mr. George Whittaker, who was appointed postmaster to succeed Mr. Alexander Lyall. Mr. Whittaker has made considerable improvement in fixtures and internal arrangement of his store and contemplates enlarging and improving the building in the near future.

On the night of September 10 an outbuilding located just back of the curio shop owned by Mesdames Pryor and Trischman and used by them as a laundry and storeroom was destroyed by fire, caused probably by defective wiring. A plain frame building to take its place is in process of construction.

The old log house located in Clematis Gulch near the Mammoth Hot Springs, which was built by James McCartney before the park was withdrawn from settlement and has been used in late years as a Chinese laundry, caught fire on December 4, 1912, and was completely destroyed.

STREAM GAUGING.

On March 19, 1913, the department instructed the acting superintendent of the Yellowstone National Park to cooperate, as far as possible without interfering with the regular administration of the park, with the water-resources branch of the United States Geological Survey in the matter of the collection of data in regard to the flow of streams in the park. At the same time Mr. G. Clyde Baldwin, district engineer of the water-resources branch, with headquarters at Boise, Idaho, was instructed by the survey to take the subject up with the acting superintendent and to cooperate with him.

Mr. Baldwin has recently made a report relative to this subject, as follows:

SUMMARY OF STREAM-GAUGING WORK, JUNE TO SEPTEMBER, 1913.¹

Stations established.—Four gauging stations were established within the park during the month of June, as follows:

Madison River near Yellowstone, Mont.

Gibbon River at Wylie Lunch Station near Yellowstone, Mont.

Yellowstone River above Upper Falls near Yellowstone Park, Wyo.

South Fork Snake River at south boundary Yellowstone National Park.

Vertical staff gauges were installed at the three first-mentioned stations and an overhanging chain gauge at the station on South Fork Snake River. All four gauges are supplied with cast bronze faces graduated to feet and tenths. Three of the stations are located within a very short distance of a regular soldier or guard station, thus making it possible for the soldiers detailed to these stations to make daily gauge readings with very little loss of time and without interfering seriously with their other duties. The fourth station, namely, the one on Gibbon River, is located immediately below the highway bridge at the so-called Terrace Road crossing. The gauge has been read daily during the summer by an employee of the Wylie Co., and during the winter readings can be secured each time the road patrol passes this point. This, I understand, will be about two or three times each week.

Methods.—The methods employed in carrying on this work are described in detail in the water-supply papers of the United States Geological Survey. In brief, they consist in securing a sufficient number of actual current meter measurements at different stages of flow to define a satisfactory rating curve or curves for each station. Daily gauge readings are made and recorded by a local observer, and when the rating curves are satisfactorily developed the discharge for each day is determined by applying the gauge height for that day to the rating curve applicable for that period. Where actual measurements are secured at relatively infrequent intervals the accuracy of the above-described methods depends very largely upon whether or not the relation between gauge height and discharge remains constant. Great care is taken in selecting the location of each gauge in order, if possible, to secure this constant relation or permanent condition.

Results.—Rating curves have been developed for the range of stage covered by daily gauge readings at the station on Madison River and also for the original gauge at the station on Gibbon River. On August 30 the original gauge at the Gibbon station, together with the bridge abutment to which it was attached, was removed by the United States Army Engineer Corps and a new bridge was constructed. This construction work changed the relation between gauge height and discharge and made it necessary to establish a new gauge at a slightly different location. A rating has not yet been developed for the new gauge.

Cooperation.—Daily gauge readings have been furnished by the soldiers detailed to stations adjacent to the location of four gauges.

¹ By G. Clyde Baldwin.

These readings have been made in accordance with instructions to the soldiers issued by the superintendent of Yellowstone National Park. In addition, the superintendent of the park has furnished transportation within the park boundaries to survey hydrographers who have visited the different gauging stations for the purpose of securing current meter measurements. In one or two instances, also, where hotel accommodations were not readily procurable, survey hydrographers have been furnished lodging at the soldier stations free of cost. Two trips of this character have been made during 1913. All other expenses incident to this work have been paid from funds of the United States Geological Survey.

Future work.—The scope of future stream-gauging work within the park is dependent directly upon the appropriation made available. It is hoped that sufficient funds will be allotted to permit the purchase and installation of cable and car equipments at the Yellowstone and South Fork Snake River stations, as these installations are necessary before the stations can be satisfactorily rated for high stages. A Friez type automatic water-stage register has been secured and is now stored at the Canyon Soldier Station. It was not possible to install this gauge during the present season, but if the allotment is sufficient it will be installed and housed in a substantial and attractive manner during the year 1914. In addition to this new construction work, in order to maintain the stations already established in such a way as to secure first-class records, it will be desirable to secure a larger number of current meter measurements during the next calendar year.

The installation of additional stations on other park streams is undoubtedly desirable and will probably be undertaken if the appropriation is large enough to warrant the expansion. It is believed that quality rather than quantity of records is to be desired, however, and, in consequence, an attempt will be made to provide for securing first-class records at the existing stations before new ones are established.

ROADS.

The sundry civil bill, approved June 23, 1913, appropriated for maintenance and repair of improvements \$125,000, including not to exceed \$15,000 for maintenance of the road in the forest reserve, leading out of the park from the east boundary, and not to exceed \$5,000 for maintenance of the road in the forest reserves leading out of the park from the south boundary, to be expended by and under the direction of the Secretary of War.

For widening and improving surface of roads, and for building bridges and culverts from the belt line road to the western border, from the Thumb Station to the southern border, and from the Lake Hotel Station to the eastern border, all within Yellowstone National Park, to make such roads suitable and safe for animal-drawn and motor propelled vehicles, \$75,000.

This work is in charge of Capt. C. H. Knight, United States Engineer Corps, who has furnished the following notes on the work under his department since the date of my last report:

In the fall of 1912 the work of widening, grading, and surfacing of the west approach road was continued until November 8, when the weather became too severe to continue work in that vicinity. This

crew, consisting of 35 men and 14 teams, moved to The Mammoth Hot Springs—Gardiner road, where the work consisted of widening and graveling road, and cutting off points on sharp curves; this work was suspended on December 10, 1913.

Three hundred linear feet of rock masonry retaining wall laid in cement mortar was completed along the Gardiner River near the 3-mile post from Gardiner.

Numerous earth slides on the road in Gardiner Canyon were removed.

A grader crew shaped up the roads and opened the ditches around the belt line in October, in order to prevent excessive washouts by melting snow in the spring.

All out-door work was suspended on December 10, on account of the severe weather. The removal of occasional earth slides, and the construction of water and oil storage tanks was continued throughout the winter at Mammoth Hot Springs.

Road work recommenced on April 3, 1913, in Gardiner Canyon. During the present season 100 feet of rock masonry retaining wall laid in cement mortar was completed along the Gardiner River, and 200 feet of rubble retaining wall along the Gibbon River, where the old wall failed.

Two crews were engaged in widening and repairing road and bridges in the forest reserve east of the park, and one crew in the forest reserve south of the park.

The original estimate for improving the west, south, and east approaches within the park was given in Senate Document No. 871, Sixty-second Congress, second session. The total for the three approaches was \$340,700. The sundry civil act of August 24, 1912, appropriated \$77,000, and that of June 23, 1913, appropriated \$75,000 to be spent in improving these entrances, leaving a total of \$188,700 still to be appropriated before the entire work is provided for. The total disbursements for this work to September 30, 1913, approximated \$85,000, and the improvement of the roads was about one-fourth completed.

The work on the west entrance road to September 30, 1913, consisted in the widening of 8 miles of road to 25 feet and graveling of this distance to provide subsurface, and the widening of 9 miles to about 18 feet preparatory to final widening to 25 feet. This gives a partially improved road to the belt line junction 10 miles south of Norris Geyser Basin. The Firehole River branch has not been improved. Of the 3 miles of this road about $1\frac{1}{2}$ will be relocated. Surveys for this relocation are completed, and the construction work on the roadbed will be completed during the summer of 1914. Contracts for two bridges on the west road have been let, and bridges will be in place at the beginning of the next tourist season. With a continuance of present appropriation, the entire west entrance road will be widened to 25 feet by the end of the 1914 working season, but the improvement of the road will not be finished until several years later.

The work on the east entrance road to September 30, 1913, consisted in general widening of the most narrow and dangerous portions to 18 feet, which will be the completed width of the road. Complete or partial widening was done on 20 miles of the 28 miles of this road. Local road material was placed on the road in a num-

ber of places to provide foundation. A finished road was started from the east entrance of the park during the first part of September, 1913, and several miles will be completed during the present season in case weather conditions permit.

The work on the south entrance road was of comparatively minor character and consisted mainly in clearing off the roadway preparatory to widening to 18 feet, the replacement of culverts, and repair of bridges. None of the roads will be in a safe and suitable condition next season for animal-drawn and motor-propelled vehicles.

Maintenance and repair work to roads, bridges, and culverts, and sprinkling of 100 miles of roads was continued throughout the season on the belt line, Mount Washburn, and Cooke City roads.

Contracts were let for one 40-foot steel arch bridge on the Gibbon River, one 80-foot and one 67-foot concrete bridge over the Gibbon River, one 65-foot and one 40-foot concrete bridge over the Firehole River, all to be completed this fall. Contract was also let for a 200-foot concrete arch bridge at the Canyon, to be completed next year. Work has been commenced on two of the concrete bridges, and the abutments of the steel bridge are practically completed.

All the steel bridges in the park and the Engineer Department buildings are being repainted.

Four log barns and two log cabins were built at permanent camps during the season, and a wagon shed 136 by 25 feet was completed at Mammoth Hot Springs.

The construction of reinforced concrete arch culverts at Spring Creek and at the canyon is being begun.

The Secretary of the Interior, Hon. Franklin K. Lane, and the assistant to the Secretary, Mr. Adolph C. Miller, visited the Yellowstone National Park from July 30 to August 3, 1913. They were impressed with the excellence of the road and bridge systems laid out by Gen. Hiram M. Chittenden while engineer officer in charge of the work, and especially with the road from the canyon to the top of Mount Washburn. The Secretary decided that the valuable work of Gen. Chittenden was worthy of recognition, and, on motion of Mr. Miller, announced that hereafter the road from the Canyon Junction to the top of Mount Washburn be known as "Chittenden Road," and directed the acting superintendent to make that fact of record and cause suitable sign posts to be erected.

FISH.

The Department of Commerce made considerable improvements to its plant in the Park. A hatchery building 34 by 60 feet was constructed of hewed logs, shingled over to present an attractive appearance, on the site near the outlet of Yellowstone Lake selected and approved by the department last year. This building is furnished with modern equipment. The loft was finished and used during the past season as quarters for the employees and will be available for storage use after other contemplated buildings are constructed. This building furnishes room for apparatus with a capacity for eyeing 30,000,000 eggs. A small dam was built across the creek about 400 feet upstream from it, and water supply for the work is drawn from this pond through a 12-inch wooden stave pipe.

Under the authority of the department of August 6, 1913, a building 14 by 30 feet, with ell in the rear 10 by 12 feet, was built at

Clear Creek. This building was made from timber cut on the ground, finished with drop siding, and is used for mess house and quarters for the employees engaged in taking fish spawn from Clear and Cub Creeks. As yet no building has been constructed at Columbine Creek.

Mr. W. T. Thompson, superintendent of the United States hatchery at Bozeman, Mont., who also has charge of this subhatchery in the park, informs me that for some unexplained reason the run of fish was much smaller than for two seasons past, and that the number of eggs taken was also below the average proportional to the number of fish, though the quality was unexcelled.

A total of 7,446,060 eggs of the black-spotted trout were secured, from which 6,886,360 eyed eggs were shipped to various National and State hatcheries in Wyoming, South Dakota, Montana, Idaho, Colorado, and Oregon, and smaller consignments were forwarded to the New York Aquarium at Battery Park and the Detroit Aquarium for educational purposes, and probably for later use in stocking suitable waters. The balance secured were planted in park waters as follows: Jones Creek, 8,000; Crow Creek, 12,000; Middle Creek, 15,000; Sylvan Lake, 22,800; Eleanor Lake, 28,500; Pelican Creek, 25,000, and Clear Creek, 12,000.

Mr. Thompson also had 22,500 brook trout (*fontinalis*) fingerlings shipped to the park from the Bozeman hatchery, and these were planted, one-half in Glen Creek and the balance in Blacktail Deer Creek, to replenish these streams, that are convenient to the road and are therefore sometimes depleted.

The workings of the Fish Commission in the park is a matter of considerable interest to tourists, and is the most important point for collection of eggs of the black-spotted trout in the world.

WILD ANIMALS.

The winter conditions for wild game were again excellent. With plenty of grass, and the snow remaining soft so they could paw through it to get food, the elk, deer, antelope, and mountain sheep wintered well and with but little loss.

ANTELOPE.

The herd of antelope is in good condition and has increased slightly, but was more or less restless during the winter and had to be driven back into the park frequently from down the Yellowstone Valley. These were fed from the hay cut on the field near the entrance arch, but as usual their feeding was interfered with more or less by the large herds of elk. A new 7-foot Page woven-wire fence is now being constructed for about 4 miles west from Gardiner on the park line, to take the place of the old one, which was inadequate, and it is believed that this fence will hold them entirely inside the park, preventing much loss and saving much of the work of driving them back across the line. The supply of hay was fed out, and owing to a late severe storm last spring it was necessary to purchase about 6 tons additional from a near-by ranch.

Two crops of excellent alfalfa hay were cut on the field during the past summer, aggregating about 105 tons, for use during the coming winter.

DEER.

Both the black-tailed and white-tailed deer are apparently thriving. While the black-tailed deer were not seen in large herds during the past year, during the winter they were noted in small numbers scattered for many miles along the northern boundary just inside of the park line. No apparent change in numbers of the white-tailed species, which ranges almost entirely along the Gardiner River near Fort Yellowstone, has been noted. A scarcity of large males of both varieties has been noticed during the past two years.

ELK.

A census of elk in and along the north line of the park was taken between April 9 and May 1. The count showed 32,229, after having shipped 738, as noted below, making a total of 32,967, or an increase of 2,866 over the number found by the count of April, 1912. The elk were in excellent condition all winter, and but few dead ones were found. Of 337 dead elk noted by the men making the count, 90 per cent were yearlings.

During December, January, February, and March, 538 elk were captured in the park near the northern entrance and shipped by freight for stocking public parks and ranges as follows: Eighty (2 carloads of 40 each) to Kings County, Wash.; 50 (2 carloads of 25 each) to Yakima County, Wash.; 40 (1 carload) to Garfield County, Wash.; 50 (2 carloads of 25 each) to Shasta County, Cal.; 50 (2 carloads of 25 each) to Pennsylvania for Clinton and Clearfield counties; 50 (2 carloads of 25 each) to West Virginia; 80 (2 carloads of 40 each) to Arizona; 25 (1 carload) to Hot Springs, Va.; 3 to City Park, Aberdeen, S. Dak.; 4 by express (crated) to the City Park at Boston, Mass.; 6 by express (crated) to the City Park at Spokane, Wash. One hundred were captured and shipped under direction of the Department of Agriculture, of which 25 went to Sundance, Wyo.; 25 to Estes Park, Colo.; 25 to Walla Walla, Wash.; and 25 to points in Utah. The cost of capture and loading on board the cars at Gardiner was \$5 per head, which was paid by the States and parks receiving the elk. The loss in capturing and up to time of delivery at their destination was but 22 animals out of 538 shipped. During the same period the game wardens of the State of Montana captured 200 elk just outside of the park line and shipped them to points in the State where it is desirable to restock them. They reported a loss of about 3 per cent in capturing and shipping. I can see no reason why from 500 to 1,000 elk can not be spared from this herd each year if desired. The experiment of the past two years in capturing and shipping them has surely proven successful.

In addition to the public benefits secured through shipment of elk, the overflow from the herd into the adjoining States insures good hunting during the open season, although much of the territory immediately adjoining the park has been set aside as game preserves by the States of Wyoming and Montana. Hunters were fairly successful west of the park in Montana last fall, but the slaughter of the preceding year on Crevice Mountain just at the end of the open season was not repeated.

MOOSE.

Moose have been seen frequently in their regular haunts by scouts, patrols, and others. They have usually been reported in good condition.

BUFFALO.**WILD HERD.**

No accurate count of the wild herd of buffalo was made, but scattering bands of them have been seen, and one party on patrol reports having seen 7 calves with a herd at a distance. It is believed that there has been some increase.

TAME HERD.

This herd now consists of 162 animals, 81 of each, male and female. In February 2 old bulls that had become dangerous to life had to be disposed of, and under authority of the department they were killed, and the skin and skeleton of one was shipped to the National Museum at Washington, D. C., and the other was sold as a specimen for mounting to Baker University, of Baldwin, Kans. In June, two 2-year-old bulls were donated to the Department of Agriculture to assist in stocking the new bison preserve at Niobrara, Nebr. The latter part of June, 1 very old cow, 1 yearling cow, and 2 yearling bulls were found dead in the field, doubtless from the effects of eating a poison weed (larkspur) that happened to be abundant in that section at the time. The carcasses had been badly torn up by coyotes, but such bones as could be saved were shipped to the National Museum for specimens. During the summer 27 calves have been born, of which 15 are males and 12 are females.

The 24 calves born in 1912 were too young to vaccinate against hemorrhagic septicemia when the herd was treated in June. The veterinarian of the Department of Agriculture therefore returned to the park on November 12 for this purpose, and finished the job on November 27. There has been no indication of a reappearance of this very fatal disease. Fourteen of the old bulls were brought in to Mammoth Hot Springs on June 13, where they were held during the summer so that they could be seen by tourists. They were returned to the main herd on September 22. The main herd has been kept out on the range daily in charge of a herder, and will be so long as the weather will permit. About 200 tons of excellent hay was cut at the buffalo farm on Lamar River for use of the herd during the winter.

At least three-fourths of the number of bulls on hand could be dispensed with to the advantage of the balance of the herd.

BEAR.

Both black and grizzly bears are plentiful. Thirty-two grizzlies were noted at one time on the garbage dumps at the canyon on August 20. During the summer it has been necessary to have five killed that had become dangerous to life and a menace to property. Attempts were made to save the robes for the National or other

museums, but in only one instance was this attempt successful, owing to lack of immediate facilities for saving the skins in hot weather. The one saved was sent to the National Museum at Washington, D. C.

Bears have been captured and shipped alive for public parks as follows: October 25, 1912, a female grizzly to the Zoological Society of St. Louis, Mo.; July 31, 1913, a female grizzly with two cubs to the City Park at Atlanta, Ga.; September 14, 1913, a female grizzly to the park commissioners at Spokane, Wash.

These shipments were all made under department authority, at no expense to the Government.

COYOTES.

One hundred and fifty-four coyotes were destroyed by shooting, poisoning, and trapping during the past year. They are quite numerous and destructive of other game.

MOUNTAIN SHEEP.

The mountain sheep are apparently holding their own. They are very tame and during the winter are seen daily along the road in Gardiner Canyon, where they are fed hay. Considerable numbers have been reported at various points outside of the park along the northern boundary. Two that were about to die from an apparent disease (possibly sheep scab) were killed in February, and the entire carcasses burned to prevent possible spread of the disease.

OTHER ANIMALS.

Beaver are found in great abundance in practically every stream in the park. Mountain lions, foxes, lynx, otter, and many of the smaller varieties of fur-bearing animals are quite numerous. Many varieties of waterfowl and song birds are found.

PROTECTION OF ANIMALS.

But few evidences of attempted poaching have been found. The lines adjoining hunting territory are closely watched during the open season in Montana, Wyoming, and Idaho, and there are but few hunters who care to take any risk by crowding the park line, and when they do get over it is usually through ignorance of the whereabouts of the line.

TRAILS.

Fifty-eight miles of new fire lanes or trails have been constructed along the western boundary line and from Gallatin Station to Headquarters via Sportsman Lake. In addition to acting as fire lanes, these passageways greatly facilitate important patrolling.

FOREST FIRES.

The cooperative agreement entered into on August 14, 1912, between the Interior, Agricultural, and War Departments for the

prevention and suppression of forest fires along the park boundary, has been carried into effect. Caches of fire-fighting tools have been made, districts assigned to the various stations nearest the border, and a perfect understanding maintained between the soldiers at these stations and the forest rangers. Fortunately there has been much rainfall and little dry weather during the summer, and as no fires of any importance occurred, there has been no necessity for calling for assistance from either side of the line.

SANITATION.

The experiment of last summer of keeping two men with a team and wagon constantly on the move around the park, cleaning up camping grounds and other débris, and looking after the earth closets that are maintained for the use of the public, resulted in such a marked improvement that it was repeated during the past summer, with very satisfactory results. One additional set of closets was provided at Norris Basin.

The question of sanitation and stream pollution is a very important one, which must be met by some general plan in the near future, as park travel increases. Mr. R. B. Dole, department chemist, made a very thorough sanitary inspection, but his report has not yet been received.

CHANGE IN REGULATIONS.

The regulation prohibiting the use of automobiles in the park was so amended as to allow their use on the road leading from Bozeman, Mont., to the southern portion of Gallatin County, Mont., but, due to the condition of the road, as yet no attempt has been made to make this trip in an automobile.

CONCESSIONS.

Concessioners holding privileges for a year or more in Yellowstone National Park, under existing contracts, with rentals and usage tax exacted.

Yellowstone Park Hotel Co.: Contracts (two) dated February 26, 1913, run for period of 20 years, and grant to company right to use certain land in the park and erect and maintain thereon hotels and necessary buildings connected therewith.

Annual rental: \$40 per acre on 29.43 acres, \$1,177.20. Usage tax 1913: 25 cents per capita on guests during 1912 season, \$2,700.25.

Yellowstone Park Transportation Co.: Contract dated February 26, 1913, runs for period of 20 years, and authorizes company to establish and maintain a stage and transportation line, and agrees to lease necessary land at eight designated sites on which to construct and maintain buildings required for accommodation of stock, carriages, employees, etc.

Annual rental: \$40 per acre on 27.16 acres, \$1,086.40. Usage tax 1913: 25 cents per capita on passengers carried during 1912 season, \$1,348.

Yellowstone Park Boat Co.: Contract dated February 7, 1913, runs for 10 years, and grants to company privilege of maintaining, operating, and conducting on Yellowstone Lake, and such other park lakes as may be designated, motor boats and launches, motor vessels, rowboats, and dories for accommodation of tourists, with right to sell and rent fishing tackle, and sell fruits, nuts, confectionery, books, periodicals, cigars, tobacco, and camping supplies, and lease or sell bathing suits. Contract agrees to lease lands on shores Yel-

lowstone Lake on which wharves and ways are constructed, and at other points to be agreed upon on which to erect buildings for storage of equipment, accommodation of employees, etc.

Compensation for boat privilege, \$100 per annum. Annual rental for land used (approximately 2 acres), \$80.

Wylie Permanent Camping Co.: Contract of May 4, 1906, runs for 10 years from March 31, 1906, and grants transportation privilege in park, with sites for maintenance of permanent camps therein, and right to conduct lunch stations at points near Gibbon River and West Thumb of Yellowstone Lake.

Annual rental: \$10 per wagon (not less than 50 to be used) on 128 wagons used during 1913 season, \$1,280. Usage tax 1913: 50 cents per capita on passengers carried during 1912 season, \$2,870.25.

Shaw & Powell Camping Co.: Special permanent camping license issued to company April 19, 1913, and running for a period of one year from May 1, 1913, or until such time as it may be revoked, authorizes it to maintain, conduct, and carry on the business of transporting tourists in and through the park, and provide for their accommodation at permanent camps to be established on sites at designated points in the reservation, and to maintain a lunch station on Madison River between the present Wylie camp and the State line.

Annual rental: \$10 on each wagon used (75 passenger and 10 freight wagons used 1913 season), \$850. Usage tax 1913: 25 cents per capita on passengers carried during 1912 season, \$377.25.

Holm Transportation Co.: Contract entered into March 14, 1913, with company for the period of one year from and after March 31, 1913, authorizes the establishment and maintenance of a stage and transportation line in the park, with the right to use and occupy such parcels of land as may be necessary at or near designated points therein on which to construct and maintain suitable buildings and inclosures for accommodating stock, carriages, and employees.

Annual rental: \$40 per acre on approximately 1.79 acres, \$71.60. Usage tax 1913: 25 cents per capita on passengers carried during the 1913 park season, \$80.75.

George Whittaker: Contract dated March 13, 1913, for period of 10 years, grants use of 24,000 square feet of land at or near Mammoth Hot Springs, with privilege of maintaining a dwelling, store, and post office.

Annual charge, \$100. Usage tax 1913, \$800 per annum. Total, \$900.

Monida & Yellowstone Stage Co.: Contract of March 31, 1906, running for period of 10 years, grants to company privilege of establishing and maintaining stage and transportation line in the park, and lease of same date, and running for like period of time, authorizes use of land at eight different sites in the reservation, aggregating 11 acres, on which to construct and maintain buildings for accommodation of stock, carriages, and employees. Supplemental lease of July 29, 1912, running for 3 years and 10 months, authorizes use of additional land at Tower Falls, on the Mount Washburn Road, comprising 2 acres, as a relay station and for stable purposes.

Annual rental, \$40 per acre on 13 acres, a total of \$520. Usage tax 1913: 25 cents per capita on passengers carried during 1912 park season, \$1,253.50. A total of \$1,773.50.

This contract canceled September 20, 1913, for violation by the contractor of provisions of article 18 of the contract.

Pryor & Trischman: Contract dated August 26, 1908, running for period of 8 years, from April 3, 1908, issued to George R. and Anna K. Pryor, interest of former transferred to Elizabeth Trischman through assignment approved by Department of the Interior, October 29, 1912, grants use of tract of land near Mammoth Hot Springs in park, containing 13,800 square feet, on which to maintain dwelling, store, and soda fountain.

Annual rental, \$50; usage tax of \$115 per annum. Total, \$165.

Henry E. Klamer: Contract of January 31, 1908, for period of 10 years beginning June 1, 1907, authorizes use of 2-acre tract of land at or near Upper Geyser Basin, with privilege of maintaining thereon building or buildings for use as dwelling and conduct of a general store.

Annual rental, \$100; usage tax, \$1,200 per annum. Total, \$1,300.

F. Jay Haynes: Contracts (two) dated June 1, 1904, each running for 10 years from March 31, 1904, authorize use of 0.64 acre of land at Mammoth Hot Springs and 1 acre at or near Upper Geyser Basin, with privilege of maintaining thereon buildings for the preparation and sale of photographic views.

Annual rental, \$60; usage tax, \$850 per annum. Total, \$910.

PERSONAL NATIONAL PARK.
 Personally conducted camping party and special licenses issued in the Yellow-
 stone National Park during the season of 1913.

ENTERING AT GARDINER OR NORTHERN ENTRANCE.

Name of licensee.	License No.	Usage tax (25 cents per capita passengers carried 1912 season).		Amount paid special licenses issued.	Number of wagons at \$10 each.	Number of horses at \$2 each.	Total paid.
		Number carried.	Paid.				
Howard Eaton.....	3, 4, 46, 47	64	\$16.00	{ 1 \$25.00 1 wagon }	6	75	\$226.00
S. E. & J. Larsen.....	{ 10, 11, 34, 12..... }	22	5.50				
H. P. Grant, Fred Dissley, and A. Lycan.....	19	23	5.75	{ 1 25.00 1 wagon }	5	11	82.50
E. L. Robertson.....	21						
W. B. Shore & C. Gilbert.....	22, 23, 37			{ 1 wagon }	2	10	40.00
Newcomb & Ryerson.....	24, 25, 39						
W. N. & O. M. Hefferlin.....	26, 27	114	28.50	{ 1 25.00 1 wagon }	2	5	30.00
H. Sexton.....	28						
H. W. Lloyd.....	29			{ 2 30.00 1 wagon }	8	2	112.50
Jno. T. Gilbert.....	35						
Dave Rhode.....	44, 45			{ 2 15.00 1 wagon }	1	4	18.00
Total.....		223	55.75	120.00				27	107	659.75

ENTERING AT NORTHERN AND WESTERN ENTRANCES.

B. D. Sheffield.....	20	34	\$8.50		3		\$38.50
O. & A. L. Roseborough.....	32, 33	54	13.50		7	2	87.50
Total.....		88	22.00		10	2	126.00

ENTERING AT CODY OR EASTERN ENTRANCE.

W. H. Jordan.....	1, 2, 36	3	\$0.75		4	2	\$44.75
R. W. Crane.....	6, 7, 48, 49				3	9	48.00
N. E. Brown.....	{ 13, 14, 30, 31..... }	50	12.50		6	35	142.50
Frost & Richard.....	{ 15, 16, 38, 43..... }	273	68.25		7	29	196.25
P. Kelly.....	17, 18	6	1.50		3	2	35.50
J. E. McLaughlin.....	40, 41	5	1.25		2	3	27.25
Joe E. Jones.....	42					23	46.00
F. Morris.....	50, 51	11	2.75		3	14	60.75
Total.....		348	87.00		28	117	601.00

ENTERING AT SOUTHERN OR SNAKE RIVER ENTRANCE.

Chas. C. Moore.....	52, 53	32	\$8.00		3	27	\$92.00
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ENTERING AT WESTERN OR YELLOWSTONE ENTRANCE.

Joe Clause.....	8, 9	15	\$3.75		3	2	\$37.75
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SUMMARY. (ALL PARK ENTRANCES.)

Park entrance.	Usage tax, 25 per cent per capita passengers carried season 1912.		Amount paid special licenses issued.	Number of wagons at \$10 each.	Number of horses at \$2 each.	Total paid.
	Number carried.	Paid.				
Licenses entering at northern entrance, and at both northern and western entrances combined.....	311	\$77.75	¹ \$120.00	37	109	\$785.75
Licenses entering at eastern entrance.....	348	87.00	.....	28	117	601.00
Licenses entering at southern entrance.....	32	8.00	.....	3	27	92.00
Licenses entering at western entrance.....	15	3.75	.....	3	2	37.75
Total.....	706	176.50	120.00	71	255	1,516.50

¹ Special licenses issued for conducting passengers on short one-day trips into park from Gardiner, Mont., to Mammoth Hot Springs, vicinity and return.

² Special licenses issued for carrying of passengers and small express packages to parties operating mail routes between Gardiner and Yellowstone Park, Mont., and Gardiner and Cooke, Mont.

RECOMMENDATIONS.

It is recommended that an amendment be secured to section 4 of the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes," making the term of imprisonment prescribed therein to read "not exceeding one year" instead of "not exceeding two years."

This change in the law is necessary by reason of the fact that the Attorney General in a letter dated June 5, 1913, to the United States attorney for Wyoming said:

Since the act to which you refer (Comp. Stat. U. S. 1901, vol. 2, pp. 1562-1563) authorized a punishment of imprisonment not exceeding two years, offenses under it are clearly crimes within the meaning of the Constitution of the United States, and must, therefore, be prosecuted by indictment in the regular way. (See *Parkinson v. United States*, 121 U. S., 281; *Callan v. Wilson*, 127 U. S., 540, 551, 552, 556; *Schick v. United States*, 195 U. S., 65, 68.)

It is true that the Yellowstone Park act evidently intends this offense to be dealt with as a misdemeanor, to be tried and punished as such by the Commissioner of Yellowstone Park, but Congress can not deprive an accused of his rights secured to him under the Constitution, and if the offense is one, as it is in this case, which may be punished by a term in the penitentiary, it ceases to be such a petty offense as may be proceeded with by information or by way of punishment by a commissioner. The authorities cited above are conclusive upon this point.

This holding vitiates the jurisdiction of the park commissioner as to final disposition of such cases and increases the cost of the prosecution thereof at least tenfold, as it necessitates the holding of all violators of the act of May 7, 1894, to the United States district court at Cheyenne, Wyo.

Very respectfully,

LLOYD M. BRETT,
Lieutenant Colonel, First Cavalry,
Acting Superintendent.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

REGULATIONS APPROVED MAY 27, 1911.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes, United States and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscriptions or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb in any manner or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.
2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.
3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel, or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.
4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.
5. Hunting or killing, wounding, or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park, guard parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.
6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.
7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.
8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads

of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park excepting for the use of the wild game and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000. or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

INSTRUCTIONS APPROVED FEBRUARY 28, 1912.

1. The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

2. *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down.

Especial care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

3. *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places, where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

4. *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

5. *Fishing.*—All fish less than 8 inches in length should at once be returned to the water with the least damage possible to the fish. Fish that are to be retained must be at once killed by a blow on the back of the head or by thrusting a knife or other sharp instrument into the head. No person shall catch more than 20 fish in one day.

6. *Dogs.*—Dogs are not permitted in the park.

7. *Grazing animals.*—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

8. *Formations.*—No person will be allowed on any formations after sunset without a guide.

9. *Hotels.*—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, 24 hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

10. *Driving on roads of park.*—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles in passing each other must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway. No stops on the road for luncheon or for camp purposes will be permitted.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, or such vehicles overtake pack trains, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on

patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear, warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

11. *Liquors*.—All beer, wine, liquors, whisky, etc., brought into the Yellowstone National Park via Gardiner to be carried over the roads through the reservation to Cooke City must be in sealed containers or packages, which must not be broken in transit.

12. *Miscellaneous*.—Automobiles are not permitted in the park.¹

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

13. *Penalty*.—The penalty for disregard of these instructions is summary ejection from the park.

Notices.—(a) Boat trip on Yellowstone Lake: The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb lunch station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(b) Side trips in park: Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park; also at the office of the superintendent.

(c) All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing.

¹ See note on p. 14 for subsequent regulation regarding automobiles.

ATTACHED MAP / DRAWING

SEE ORIGINAL



REPORT OF
THE ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE
SECRETARY OF THE INTERIOR

1914



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REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., September 30, 1914.

SIR: I have the honor to submit annual report of the condition of affairs in and the management of the Yellowstone National Park from October 15, 1913, to the present date.

GENERAL STATEMENT.

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

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

The Second Squadron, First Cavalry, which constituted the military force of the park since September 26, 1910, departed for its new station, the Presidio of Monterey, Cal., on July 3.

The headquarters is located at Fort Yellowstone, but the command also garrisons 15 soldier stations scattered throughout the park, requiring 106 men during the tourist season and 75 during the remainder of the year.

A telephone system connects the soldier stations and the post.

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

The detachments of soldiers at the 15 stations performed their duties, with few exceptions, in a very satisfactory manner, and rendered most efficient service in preventing and extinguishing forest fires during the past season, which was the driest one on record.

TRAVEL.

The opening of the tourist season, June 15, found all the roads in good condition for travel. There were no funds to sprinkle the roads until early in August, and as the season was without rain, except a few local showers, there were many complaints of dust.

The aggregate number of persons making park trips during the season of 1914 was as follows:

Travel during the season of 1914.

Yellowstone Park Transportation Co., entering via northern entrance	3,919
Yellowstone-Western Stage Co., entering via western entrance	4,116
Holm Transportation Co., entering via eastern entrance	145
Total at hotels	8,180
Wylie Permanent Camping Co.:	
Entering via northern entrance	1,936
Entering via western entrance	2,651
Entering via eastern entrance	166
Shaw & Powell Camping Co.:	4,753
Entering via northern entrance	1,728
Entering via western entrance	693
With other licensees of personally conducted camping parties	2,421
Making park trips with private transportation as camping parties	586
	4,148
Total making park trips	20,088
Number making short trips with special licensees	162
Grand total of travel, season of 1914	20,250

The Yellowstone Park Boat Co. reports that 3,537 passengers took the boat trip across Yellowstone Lake during the season, of which 1,362 were traveling with the Yellowstone Park Transportation Co., 1,101 with the Yellowstone-Western Stage Co., 875 with the Wylie Permanent Camping Co., 190 with the Shaw & Powell Camping Co., and 9 miscellaneous.

Travel by the different entrances.

From the north, via Gardiner, Mont	8,929
From the west, via Yellowstone, Mont	9,875
From the south, via Jackson Hole	379
From the east, via Cody, Wyo	1,067
Total	20,250

The travel by way of Tower Falls by regular tourists returning to Mammoth Hot Springs from Grand Canyon is increasing, the Yellowstone-Western Stage Co. alone reporting 1,082 passengers via that route during the season. Many traveling with the other companies also came over this road, which is a very popular one with all who take it, as it affords the finest mountain scenery to be found in the park at a small additional expense for transportation.

The season's travel was light as compared with previous years, the available transportation facilities being greater than required to handle the traffic. The Wylie Permanent Camping Co. had 101 vehicles in use during the season, the Shaw & Powell Camping Co. used 85 wagons in transporting its passengers and hauling supplies to its permanent camps, and, in addition to these, movable camp licenses were issued during the season covering a total of 69 wagons and 225 saddle and pack animals and for 5 special wagons for livery work.

An increase in the number of private camping parties touring the park is notable.

A few private automobiles have passed over the road leading from Bozeman, Mont., to the southern part of Gallatin County, Mont., through the northwest corner of the park. This is the only road in the park on which motor-propelled vehicles are allowed, and it is not a part of the regular tourist route.

The popular sentiment of those touring the park is against the admittance of automobiles.

CONCESSIONERS.

The business of all concessioners in the park has been satisfactorily conducted and but few complaints have been received.

The Yellowstone Park Hotel Co. finished the extensive repairs and enlargements of hotels at Mammoth and Upper Geyser Basin, and there has been ample room for all guests during the season, and also an excess of rooms with extra accommodations, baths, etc., for those who desired to pay the extra charges for them.

The Yellowstone-Western Stage Co. took over the business of the Monida & Yellowstone Stage Co., whose contract was canceled September 20, 1913, for violation of its provisions, under a contract for one year, and has given satisfactory service.

The one-year contract with the Holm Transportation Co., which expired March 31, 1914, was extended for a period of three years on January 23, 1914.

The Shaw & Powell Camping Co. completed a log bungalow for use as a dining room and lobby at the Willow Park camp, where the sleeping tents were also rebuilt and many new ones of an approved new pattern furnished; constructed a new log kitchen 24 by 24 feet and installed a new water system at the camp on Nez Perce Creek; nearly completed a bungalow of logs for dining room and lobby at Old Faithful camp and piped fine mountain water about 900 feet into that camp; and at Thumb camp have completed a log kitchen 24 by 24 feet. This company has also begun the work of constructing a log bungalow for dining room and lobby at the camp at Grand Canyon.

Mr. George Whittaker made a substantial enlargement to his post-office store at Mammoth Hot Springs, putting in a plate-glass front and adding generally to the attractiveness of his place of business, installing new fixtures, and making a general rearrangement of the interior.

A ten-year concession was granted to Mr. Henry J. Brothers, of Salt Lake City, Utah, to establish and maintain a natural hot-water plunge and bath houses at Upper Geyser Basin. An open plunge 50 by 100 feet and five private plunges 5 by 10 feet each have been constructed, and he is now at work on his buildings and one-half mile of 6-inch pipe line, preparatory to opening up his business next year.

Mr. Henry E. Klamer, who for many years was connected in a business way with the park, and who for the past six years has held a general store concession at the Upper Basin, died August 12. His service to the park and the public was of great value, as the guiding motive of his every act was the park's best interest.

STREAM GAUGING.

The stream gauges installed last season have been cared for and read and records made under the direction of Mr. G. Clyde Baldwin, district engineer of the water-resources branch of the United States Geological Survey, whose headquarters are at Boise, Idaho. Mr. Baldwin furnishes the following report on this work:

SUMMARY OF HYDROMETRIC WORK, OCTOBER 1, 1913, TO SEPTEMBER 30, 1914.¹

The funds available for expenditure on hydrometric work within the park have not been sufficient to permit undertaking any new work during the past year. For the same reason it has been impossible as yet either to erect measuring cables at the stations on Yellowstone and Snake Rivers or to install the automatic water-stage register at the former.

The four gauging stations established during June, 1913, have been continued on a strictly maintenance basis. During the latter part of February and early in March of 1914 one of the survey hydrographers visited each of these stations and secured actual current meter measurements at what was very nearly the minimum stage of flow for the winter. Another visit to each was made during September, 1914, at which time the staff gauges were checked with a level and minor repairs made to put them in shape for the coming winter.

As a result of this work it is now possible to make complete discharge computations for the following stations from the date of their establishment until September 30, 1914:

Madison River near Yellowstone, Mont. (Records good.)

Gibbon River at Wylie Lunch Station near Yellowstone, Mont. (Some uncertainty due to a shift in the gauge, but records good with this exception.)

South Fork Snake River at south boundary, Yellowstone National Park. (Not well rated, but records believed to be good where discharges are less than 1,300 second-feet.)

The station on Yellowstone River above Upper Falls can not be well rated until a cable from which current meter measurements can be secured is installed. Approximate data for low stages of flow can now be obtained, however, based upon one wading measurement and on three measurements secured from the Fishing Bridge at the outlet of Yellowstone Lake. Difficulty has been experienced at this station in securing winter gauge readings because of ice formation near the banks of the stream. On this account no readings were obtained during the greater portion of the past winter.

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

ROADS.

The sundry civil bill, approved August 1, 1914, appropriated for maintenance and repair of improvements \$125,000, including not

¹By G. Clyde Baldwin.

to exceed \$7,500 for maintenance of the road in the forest reserve leading out of the park from the east boundary, and not to exceed \$2,500 for the maintenance of the road in the forest reserves leading out of the park from the south boundary, to be expended by and under the direction of the Secretary of War.

For widening to not exceeding 18 feet and improving surface of roads and for building bridges and culverts, from the belt-line road to the western border; from the Thumb Station to the southern border; and from the Lake Hotel to the eastern border, all within Yellowstone National Park, to make such roads suitable and safe for animal-drawn and motor-propelled vehicles, \$100,000.

For widening to not exceeding 18 feet and improving the surface of roads and for building bridges and culverts, in the forest reserve leading out of the park from the east boundary, to make such roads suitable and safe for animal-drawn and motor-propelled vehicles, \$30,000.

This work is now in charge of Maj. Amos A. Fries, United States Engineer Corps, who relieved Capt. C. H. Knight, United States Engineer Corps, under paragraph 25 of Special Orders, No. 131, War Department, Washington, D. C., June 5, 1914. Maj. Fries has furnished the following notes on the work in the park under his department:

The following concrete bridges have been erected:

- Over the Gibbon River near the junction of the Gibbon and Firehole Rivers.
- Over the Firehole River $2\frac{1}{2}$ miles east of the Upper Geyser Basin.
- Over the Gibbon River 7 miles south of Norris.
- Over the Firehole River near the junction of side road to Lone Star Geyser.

A steel bridge was constructed over the Gibbon River 10 miles south of Norris.

The 465-foot bridge over the Yellowstone River near the lake outlet was redecked.

A number of wooden bridges throughout the park were repaired.

The 200-foot Canyon Arch Bridge being built under contract, dated October 14, 1913, is completed far enough so that traffic can pass over it at the opening of the season of 1915, there remaining to be done only necessary finishing and the erection of the side rails.

On July 2 notification was received that a 15-day extension of last year's appropriation had been made, which would give this office \$8,333.33. The sprinkling system was immediately started in operation, though all sprinklers were not working until after the middle of July, due to difficulty in getting water in certain places, following a very light snowfall during the previous winter. Sprinkling covered a distance of nearly 95 miles, being a slight extension over the mileage sprinkled the previous year. Several good rains occurring in the early part of July, coupled with the sprinkling, kept the roads in excellent shape. Beginning the latter part of July there was practically no rain, and sections of the road across the Continental Divide between the Thumb and the Lake and between Canyon and Norris that were not sprinkled became exceedingly dusty, and during the high winds particularly annoying. In order to increase the number of miles that may be sprinkled hereafter without the purchase of more sprinkler wagons, two gasoline engine pumping sets have been purchased and are being tried out with a view to installing them on all wagons hitherto equipped with hand-pumping

sets. This will increase the distance which these wagons can sprinkle from about 3 or $3\frac{1}{2}$ miles to about 6 or $6\frac{1}{2}$ miles and will enable this office with the present plant, excepting pumping sets, to sprinkle the entire belt line, providing water can be obtained.

With this last object in view wells have been dug in low, swampy places across the hill between Norris and Canyon and water has been found at frequent enough intervals to make the sprinkling of the hill practicable, providing three or four wells about which there is doubt do not give out, once steady sprinkling is begun. The exceedingly dry season following a light snowfall put several sprinkler tanks out of commission, especially along the section now sprinkled between the Thumb and the Lake. In connection with the sprinkling, light split-log drags were furnished a number of sprinkler stations and used to drag the roads during and immediately after showers when too wet for sprinkling. This was a material benefit, but, due to the crown on many of the roads, was not so successful as it is believed it can be made.

The subject of oiling the roads for dust prevention has been under consideration for some time and the preliminary tests were made. Due to the lateness of the appropriation, followed by cold weather and an exceedingly heavy snow and rain storm, beginning September 12, but 2 miles of road were oiled between Gardiner and Mammoth. This oiling was rather unsatisfactory for several reasons. The nights were getting very cold and men competent to run the oiling apparatus could not be found. Moreover, just as the distributor was getting into good running order a careless teamster ran it into a bridge, breaking several parts, and causing a delay of two weeks until new parts could be obtained and the slight amount of oiling done could be completed. Enough work was done to indicate that the cost of oiling roads for dust prevention, unless such roads be good gravel or broken-stone macadam, will prove very expensive, and, indeed, then to be satisfactory may require a lighter oil than has been found best in other localities, due to the cold nights and high rate of evaporation, resulting from the high altitude which makes a very material decrease in the atmospheric pressure as found at sea level.

The concrete oil tank, with a capacity of two large cars of oil, was built at Gardiner. Plans are being made to build this fall or next spring a similar tank at Yellowstone. At this latter place 2 to 4 miles will be graded and surfaced as a gravel and broken-stone macadam, which will be oiled as soon as the weather is hot enough in the season of 1915.

Early in the season plans were made for installing an electric-driven pumping plant for sluicing out the Gardiner slide, which has proven troublesome for a number of years. On September 30 the power line will be practically complete and ready to install the pump as soon as it should arrive, which is expected to be within the first five days of October. It is believed that by this method the Gardiner slide can be taken care of each spring or fall without interruption to traffic and at a very low cost.

Notice of the passage of the regular appropriation for the improvement of roads in the park was not received until August 6, bill having been signed August 1. Prior to this, however, one small party was put to work widening and surfacing the roads in the vicinity of

the 9-mile post from the west boundary, and another party to building retaining and guard walls along the Virginia Cascades on the Norris-Canyon Road. This latter work was completed in very good shape during the last part of August and the crew shifted to other work.

Immediately after the passage of the appropriation bill parties were organized and equipped and put to work as follows: On west road, four, one of these parties grading and finishing a macadam section at the west entrance. In this work the road roller that has not been operated for a number of years has been successfully used both during the tourist season and afterwards. However, during the tourist season the road roller was run at night, light being furnished by an acetylene headlight. At the end of September the rock-crushing plant had been put in operation, and it is expected to continue work with it. Another party continued widening between the 9 and 11 mileposts from the west boundary along the Madison River, while a third party was widening and improving the road in the vicinity of the junction of the Firehole and Gibbon Rivers, and a fourth party began widening in narrow rock cuts along the Firehole about 3 miles from its junction with the Gibbon.

About the middle of August a survey party was sent to carefully resurvey the line which it is proposed to rebuild for about $1\frac{1}{4}$ miles along the Firehole River, observation having indicated that a much better line from the scenic point of view than the one surveyed last year could be built, and at probably about the same cost. At the end of the month a survey had been completed and estimates of costs made while maps of the line were being prepared.

As soon as practicable two parties were organized to build turnouts and construct reinforced concrete culverts to replace a number of wooden bridges. This work was considerably interfered with by the weather, so that on September 30 only one 12-foot bridge had been completed and one 10-foot concrete arch culvert to replace a bridge of nearly 100-foot span. Work was, however, progressing very favorably upon two other bridges, while a large number of turnouts had been completed, so that the moment the season opens in 1915 work can be pushed and bridges completed at an early date. Approaches of three concrete bridges completed late in 1913 or early in 1914 were completed, the old bridges removed, and the new bridges put in operation.

At the south entrance one good-sized working party was organized and sent to work immediately after the passage of the appropriation. This party has done excellent work, and completing about 2 miles of road from the south boundary northward, and though driven out of that locality by heavy snow on the 13th, 14th, and 15th of September, and after putting in eight days of very hard work at fire fighting, the season having been a dry one, and the danger of fires such that orders were issued to all foremen to use their whole crew if necessary to put out any fires in their vicinity. This has been done on three or four other instances, besides the one mentioned above, but for much shorter time, no one working more than one day. At the end of the month this party had moved its camp to the Thumb, and had begun work on the section of the road between the Thumb and Lewis Lake. This work will be pushed as long as the cold and snow will allow.

At the east entrance two parties were put in the field in the forest reserve as soon as practicable, and at the end of June had completed 3 miles of road to a width of 18 feet, and had done considerable work on 2 other miles. It is proposed to have these parties work downstream and continue their work as long as the season is open enough. On the east road inside of the park one party was organized immediately after the appropriation passed and began work at the east boundary, and are working their way westward. About $2\frac{1}{2}$ miles of road have been completed, and work done on 2 other miles of this road is in heavy rock cut, and naturally has been slow.

The one party in the forest reserve straightened out the very bad reversed curve at the entrance to the park, and has made what was a very poor entrance an excellent one. Two other parties were later put to work on the east road, one at the summit of Sylvan Pass and working westward, the other in the vicinity of Cub Creek about halfway between the belt line and the east boundary, clearing the way for a new road across Cub Creek, in order to avoid the very heavy side hill cuts and slides that have been a considerable menace to the road in this vicinity for some years. This entire road had been about half cleared when the above-named parties were driven off the east road to the belt line by 3 or 4 feet of snow, which fell on the 13th and 15th of September. The crew working at the summit did most efficient work, and had nearly completed 2 miles of widening, half of it being in heavy rock slides from the summit to the west end of Sylvan Lake. Not much work was undertaken on the belt line other than the construction of culverts and bridges mentioned above, except on the west slope of Mount Washburn and in Dunraven Pass, where two parties began work about the middle of August. One party widened the very narrow road about one-half mile from the junction. This road was very narrow and dangerous, but has been put in good shape, the work being practically completed and the party moved elsewhere at the end of September. The other party has done excellent work in reshaping and to a slight extent resurfacing the road on the west slope of Mount Washburn, and especially in the construction of a number of wooden culverts at intervals of 300 to 400 feet, in order to avoid the severe washing of the road that has occurred in the past, due largely, it is believed, to its lack of culverts.

In the latter part of September a small party began graveling the center of the road on Swan Lake Flat just above Golden Gate, where the light surface had been worn down to the rock base. This work will be continued as long as the weather permits.

The project having been approved for the expenditure of \$4,000 from the funds for maintenance and repairs for the improvement of the road to the northeast boundary leading into Cooke, Mont., a party was organized and sent to that boundary early in August, where it has worked steadily since. At the end of the month about 3 miles of road had been completed and about one dozen large sized culverts, in addition to one 36-foot bridge across Soda Butte Creek. It is expected that this party will work at least until October 31, as the altitude along Soda Butte Creek is comparatively low and the weather milder than at other places in the park.

A joint inspection of every mile of the park roads was made by the acting superintendent and the engineer officer, and most of the roads

several times. The condition of the roads and the progress of the work on them has been under the constant supervision of the engineer officer, and every dollar so far expended has given a commensurate return in work done.

FISH.

The work at the subhatchery on Yellowstone Lake was continued during the season under Mr. W. T. Thompson, superintendent of the United States hatchery at Bozeman, Mont., who furnished trout for planting in park waters, as follows:

Ten thousand young brook trout (*salvelinus fontinalis*) for Glen Creek, and the same number for Blacktail Deer Creek, on June 18, 1914, shipped in from the Bozeman hatchery.

Also 560,000 blackspotted trout fry (*salmo mykiss*) from the subhatchery in the park, planted as follows: Thirty thousand in Sylvan Lake, 25,000 in Tower Creek, 90,000 in Yellowstone River, and the balance in seven of the small streams emptying into Yellowstone Lake. Eleven million four hundred and sixty-three thousand eggs of the blackspotted trout were shipped away. In notes furnished by Mr. Thompson he emphasizes the importance of returning an abundant supply of fish to Yellowstone Lake and tributary waters, so that there may be no diminution in the number that furnish the spawn for years to come, as this source of supply is an important one and is becoming widely known as such, and the demand from United States and State hatcheries, county and angling association hatcheries, etc., is increasing from year to year.

The Bureau of Fisheries made important improvements during the season, as follows: A one and one-half story log building was put up on Columbine Creek for use of employees. A bungalow was erected near the Lake Hotel, and a frame barn large enough to accommodate four horses, with storage for hay and grain, was also provided at the same point. The grounds were much improved by clearing up fallen timber, trimming trees, and improving the lawn.

The main buildings of the subhatchery, located within walking distance from the Lake Hotel, attract the attention of many travelers, and the workings of the plant have become a matter of interest to so many tourists as to require at times the services of one of the attendants almost constantly in showing them around.

Dr. Hugh Smith, the United States Fish Commissioner, visited the park in June and made an inspection of the hatchery and of conditions in the park as relating to his department.

WILD ANIMALS.

The weather and other natural conditions for all game were ideal, and the antelope, deer, elk, and mountain sheep wintered in splendid condition.

ANTELOPE.

The new woven-wire fence extending from the entrance arch at Gardiner 4 miles west on the north line was completed in October and was effective in holding all antelope inside of the park during the winter. They were fed when the weather was severe enough

to warrant from the hay cut on the alfalfa field near Gardiner, but the winter was so open that only about two-thirds of the hay available was used, the balance being carried over. Two good crops of hay have been cut from this field during the summer and stacked for winter use, the total amount being about 150 tons. About 600 antelope were counted, which shows an increase of about 100 over last year.

DEER.

The deer are becoming tamer each year, and it is sometimes hard to convince strangers that they are really wild animals and not some that have been raised in captivity. The white-tailed variety do not seem to increase noticeably, but their numbers remain about the same (around 100) from year to year. Careful observation of the black-tailed deer indicates that at least 1,100 wintered in the park, scattered in small bands throughout the northern part, and they frequently stray outside into the adjoining States, where they are killed by hunters during the open season.

ELK.

A census was again made of the elk, comprising the northern herd in the park, between April 11 and May 2 and showed a total of 35,209 in this herd. Ninety-nine were shipped away before the census was taken, making a total of 35,308, an increase of 3,079 over the total number found the previous year. In making this count only 30 dead elk were found. The condition of the herd could hardly be better. Under the regulations of the department governing the distribution of animals from the Yellowstone National Park, 1913-14, promulgated December 3, 1913 (Appendix A), authority was granted for shipment of 782 elk from the park during the past winter. In some cases the authority was canceled by request of those who had secured it; in other cases those who had secured proper authority were unable to raise funds to pay the expense of making the capture and shipment, and others who wanted the elk were unable to get them on account of the winter being so warm and open and natural feed so plentiful that they did not come down to the hay put out to attract them to the pens where they are caught. The result was that only 99 of the 782 allotted were captured and shipped, these being shipped in February and March, as follows: Thirty-one to Denver, Colo., of which 25 were for the Genesee Mountain Park and 6 for the zoological gardens in Denver; 6 to Portland, Oreg., for the city park; 2 to Valley City, N. Dak.; 25 to Stevens County, Wash.; 3 to Toledo, Ohio; 2 to Hot Springs, S. Dak.; and 30 to Anaconda, Mont. The small shipments were made by express and the balance by carloads by freight. The expense of capturing and loading on the cars was the same as last year, namely, \$5 per head for capture and loading on the freight cars at Gardiner in carload lots and \$15 each if crated for shipment by express, the difference being in the cost of the crates. Several applications for elk were denied for various reasons.

The work of capturing and shipping wild elk in quantities is no longer experimental, but it has become a well-established fact that under ordinary winter conditions they can be captured and

shipped long distances with but little greater percentage of loss than would be experienced in shipping ordinary range cattle.

Another of the effects of the open fall and winter was poor hunting in the adjoining States, as the elk remained high up in the mountains until late in the fall after the open season had closed and very few crossed the line until they were protected by the State laws.

MOOSE.

Patrols and others have frequently seen moose in various parts of the park, and they are reported to be in good condition.

BUFFALO.

WILD HERD.

No particular effort was made to make an accurate count of the wild herd of buffalo, but they have been seen in considerable numbers on several occasions, and there is every reason to believe that they are in good condition and are increasing slowly.

TAME HERD.

The tame herd of buffalo consists of 193 animals, of which 96 are males and 97 females. Of these, 19 males and 15 females are this year's calves. Two female calves were born in October, 1913, after my annual report had been made. The mother of one of them did not recover well and died during December. The remains were sent to the National Museum at Washington, D. C., for use as specimens. Four live bulls were donated to cities that already owned buffalo cows, they paying all expense of crating and shipment, as follows: Two to Denver, Colo., one to Kansas City, Mo., and one to Portland, Oreg. One of those shipped to Denver was injured in shipment, so that it finally had to be killed, and the city had it mounted as a specimen.

A veterinarian of the Agricultural Department came to the park in November and vaccinated the calves of the herd against hemorrhagic septicemia.

Early in June the experiment was made, by permission of the department, of turning loose 20 of the old bulls of the buffalo herd in an attempt to persuade them to join the wild herd in the park. They were driven up the Lamar River as far as the high water and melting snow would permit, but all have gradually wandered back to the herd. Later in the season another attempt will be made to separate these bulls from the herd. Sixteen bulls were driven in to Mammoth Hot Springs for the summer as a show herd, and 10 of those driven up Lamar River also wandered back and were put in the pasture with them, making a total of 26 bulls that were held during the summer where they could be viewed by tourists, making one of the main attractions at this point. They were returned to the main herd on September 4.

The fences around the pastures at the buffalo farm on Lamar River were in bad condition last spring, most of the posts having rotted off. Extra laborers have been employed repairing them and

irrigating the meadows and doing general ranch work during the entire summer, in addition to the work of the regular employees. About 4 miles of fence has already been renewed, and the work is still in progress.

The hay crop was not up to the standard, necessitating going over more ground than is included in the field set apart as a meadow. Considerable hay of the native variety was cut from 2 to 4 miles up Lamar River, making, with the irrigated hay, about 210 tons in all, which will be sufficient for the use of the herd the coming winter.

BEARS.

While there has been less complaint than usual during the past season of depredations by bears, there seems to be an abundance of them, and they are seen by practically everyone touring the park. Only three dangerous bears had to be killed during the season, all of them brown or black bears that had become tame while cubs and were therefore fearless when they grew up. In one case the remains were prepared and shipped to the National Museum, but in the other two cases this was impracticable and they were destroyed. Shipments to public parks, under authority of the department, were made of live bears as follows: October 19, 1913, a mother grizzly and one cub to Dallas, Tex.; October 20, 1913, a male grizzly to Spokane, Wash.; June 12, 1914, two yearling grizzlies, male and female from different litters, to Madison, Wis.; June 16, 1914, a female grizzly with one cub to Denver, Colo.; June 23, 1914, a male brown bear to Spokanne, Wash.; and July 24, 1914, a male grizzly to Kansas City, Mo. In all cases the cities receiving the bears paid all expense of capture and shipment.

COYOTES AND WOLVES.

One hundred and fifty-five coyotes were killed by officers, noncommissioned officers in charge of stations, scouts, and others on duty in the park. Gray wolves have made their appearance in the park in considerable numbers, having been seen traveling in packs of 10 or less. While efforts have been made to kill them, thus far none have been taken inside of the park, though a few have been killed just outside, along the northern border. They are very destructive of game, and efforts will be made to kill them.

MOUNTAIN LIONS.

Mountain lions are quite numerous, and are destructive of deer, elk, and sheep. Nineteen were run down with dogs and killed during the year.

MOUNTAIN SHEEP.

The mountain sheep are very tame and are seen daily during the winter. They are in excellent condition.

OTHER ANIMALS.

Other small animals, such as beaver, foxes, lynx, otter, marten, and mink are numerous.

Under authority of the department, a family of four beaver (a male, two females, and one kitten) was captured alive in the park and shipped on April 25, 1914, to the park commissioners at Toledo, Ohio.

PROTECTION OF GAME.

Several arrests have been made of poachers and persons found hunting in the park, and in some cases where the accused plead guilty at the hearing before the United States commissioner the grand jury failed to return an indictment and the offenders were discharged.

BIRDS.

Birds of many varieties are found, and waterfowl are particularly numerous, many of them remaining in the park all winter, in the streams that are fed by the hot springs, and are therefore open all the year round.

IMPROVEMENTS.

The 4 miles of high woven-wire fence extending west from the entrance arch at Gardiner along the north line to the mountains was finished last fall; also a 5-foot steel picket fence a little over 2,000 feet long, built under contract, from the entrance arch east in front of the town of Gardiner to the Gardiner River. These fences serve to keep cattle and dogs out of the park and to hold the antelope inside the park in winter.

On August 7, 1914, the Snake River soldier station at the southern entrance burned to the ground. The men on duty at the station were all out at work at the time, and the building and contents were a total loss. It has been replaced by a one-story log building 16 by 50 feet, with an addition 16 by 24 feet, which gives the T shape to the structure.

During the summer a crew of 15 men constructed a new fire lane about 27 miles long from Obsidian Creek bridge about $7\frac{1}{2}$ miles south of Fort Yellowstone, in a general southwesterly direction to Riverside soldier station near the western entrance, and began another new fire lane from Snake River station, east toward the southeast corner of the park, with the intention of building to Yellowstone River, thence down the Upper Yellowstone to connect with another fire lane at Mountain Creek, but snow came when they were 6 miles up Snake River from the station and they were unable to proceed. This work can not be completed until next season. The same crew also went over the fire lanes from the town of Yellowstone on the west line of the park to Bechler station, thence east along the south line to Snake River, a distance of about 61 miles, and cleared out and repaired them. It is now engaged in going over and repairing the fire lane extending from the Cody road south along the east shore of Yellowstone Lake and the Upper Yellowstone River and will be kept out as long as the weather will permit working to an advantage.

STAGE ROBBERY.

For the fourth time in the history of the park passenger coaches were held up on the road and the occupants forced at the point of a gun to give up their money and valuables. This robbery occurred at

about 10 o'clock a. m. on the morning of July 29, 1914, at Shoshone Point, about 11 miles east from Upper Geyser Basin, toward Thumb of the Lake, only about 7 miles from the scene of the hold-up of August 24, 1908. Fifteen coaches, surreys, etc., were stopped one at a time and the passengers made to get down and fall in line and deposit their money in a sack which was placed on the ground in front of the robber, who controlled the situation by very forcible language backed by a dangerous-looking rifle which he held in a position ready for instant use. The driver of the sixteenth rig, suspecting that something was wrong ahead, managed to turn around and drive back without being noticed. He warned all teams that he met of the danger and hurried back to Upper Basin and gave the alarm.

The word reached headquarters at about 11 o'clock, and all haste was made to get all available men on the trail. It was generally believed that there were two men connected with the robbery; in fact, it was so stated by many of the victims, but on close questioning most of them said they believed there was a second man who kept himself concealed in the forest, but they could give no description of him. The fresh trail of two horses was picked up not far away, and it was followed south along the east shore of Shoshone Lake and from the outlet of the lake southwest across Pitchstone Plateau, until dark; and next day it was again found very fresh, and followed, but was lost about the south line of the park in wet ground where there had been a recent heavy storm. The tracks of the same horses were later found on the road leading toward Ashton, Idaho, and followed some miles, but were finally lost where the road was much traveled.

The facts with a description of the robber were telegraphed and mailed to all parts of the adjacent country, and rewards aggregating \$1,100 were offered by the transportation companies and the Department of Justice. The victims were interviewed and a list of their names and addresses, with statement of losses, was kept on file for reference. The list, which is not quite complete, as a few did not wish to make any statement, includes 82 people and shows a total loss of \$915.55 in cash and about \$130 worth of jewelry, though the robber stated several times that he wanted nothing but cash. Several parties succeeded in snapping their kodaks on the scene, and one lady from Chicago got a fairly good picture of the robber, of which she has kindly furnished a copy for identification purposes. But he was masked with a black handkerchief and from various descriptions it is thought that he had on superfluous outer clothing which he disposed of soon afterwards, so that it will be a difficult matter to identify him by sight should he ever be apprehended. Two apparently good clues have had to be abandoned on account of lack of funds to follow them up, and one man who was brought in under strong suspicion was interviewed by some of the drivers and other victims who failed to identify him as the stage robber and he was discharged.

SANITATION.

Two men with a team and wagon were kept at work all through the tourist season keeping the public camping grounds in good order and caring for the public earth closets maintained by the department.

Measures to prevent the pollution of the drinking water used by visitors to the park are now under consideration by the department,

and it is important that they be put in operation before the fine health record of the park is broken.

Mr. Mark Daniels, the general superintendent of national parks, made his first annual inspection in August.

FOREST FIRES.

The cooperative agreement of August 14, 1912, between the Departments of the Interior, War, and Agriculture to render mutual assistance in prevention and suppression of forest fires occurring in the vicinity of the park boundary is still in effect, but, although there have been many forest fires in both the park and the adjoining national forests during the latter part of the past summer, in only two instances were they near enough to the line to make this agreement applicable. Both occurred in the adjoining forests, the first one about a half mile outside of the park and about 7 miles south from the town of Yellowstone, Mont., on September 7, when on request five soldiers from the nearest soldier station assisted the forest rangers for several hours and succeeded in getting it under control, and the second time just over the south boundary and about 8 miles west from Snake River station, when the soldiers from that station assisted the rangers and also succeeded in controlling the fire within a few hours. Last spring opened early, the snows were not deep and disappeared earlier than usual, and with only a few local showers during the summer, the forests became exceedingly dry, and, notwithstanding the utmost vigilance on the part of everyone, fires broke out almost daily, several of them gaining considerable headway before they were controlled. Through an understanding with the officer in charge of road construction we were authorized to call upon the nearest road crew in emergency in case of forest fires, and on several occasions the timely assistance of these crews saved very extensive and serious forest fires. The crew engaged in building fire lanes also had to be utilized for a number of days in fighting the most extensive forest fire we had to contend with, the one on the eastern end of Pitchstone Plateau, which was discovered on August 23 and had to be watched until about September 14, when a heavy general storm put an end to any further danger of forest fires in all parts of the park. The most serious fires were as follows:

One on the main road 10 miles east from Riverside soldier station on August 16. This burned so rapidly that but for remarkably quick action on the part of the road crew working about 3 miles away the result would have been disastrous. As it was about 2 acres were burned over. On August 22 another smaller fire was found and extinguished along the same road but about 3 miles east from the soldier station. This one was extinguished before it did much damage. In both of these cases there is little doubt that the fires started by a match or cigar or cigarette stub thrown out of a passing vehicle.

On August 23 a party from Fort Yellowstone were fishing on Yellowstone River about 6 miles above Tower Falls station, when a sudden gust of wind blew sparks from their camp fire—which had been left in charge of one of the members of the party while the others went fishing—into the brush close by and spread so rapidly that the whole party and all available men from Tower Falls station

had to work hard for several hours to get it under control, and it had to be carefully watched for several days afterwards to see that it did not break out again. This fire burned over an area of about 2 acres.

On the same date the fire on Pitchstone Plateau, about 8 miles north from Snake River station and about 2 miles west from the road, was discovered. This one covered an area about $1\frac{1}{2}$ miles long by one-half mile wide, and at times required the united efforts of the crew engaged in building fire lanes and one of the road crews to hold it in check, and it was not left unguarded until a big storm, ending in snow, came on. This fire was probably started by lightning.

On September 2 a fire was discovered on the trail about one-fourth mile north of Shoshone Lake, evidently caused from a camp fire of some party fishing in the stream emptying into the lake. This threatened to be an extensive fire and required the combined efforts of the soldiers from Upper Basin and Thumb stations and the nearest road crew to get it under control. It burned over about 5 acres.

On the same date the men on duty at Soda Butte station reported a fire on a small lake about 3 miles northeast from the station up Soda Butte Creek, apparently started by lightning. They managed to control it without assistance after it had burned over an area of about 2 acres.

Many camp fires found burning have been extinguished that showed evidence that the usual precautions had been taken to put them out, but owing to the extreme dryness they had smoldered on under ground and finally broke out again. Many other small fires started by unknown causes were found and put out before any serious consequences resulted. Altogether, I consider that the park has been most fortunate to have passed through the period of unprecedented drouth without very extensive forest fires, and am satisfied that this has been due to extreme vigilance on the part of all and cooperation on the part of those working or doing business in the park.

NATURAL PHENOMENA.

No unusual changes have been noted in the natural phenomena, except that a small new geyser broke out at Upper Basin, between the Beehive and Lion, on September 12, 1914, which still continues to play two to three times a day to the height of about 20 to 30 feet. The crater known as the Cascade which has been dormant for several years, also began to play to about the same height at about the same time, and the Beehive has apparently discontinued to play. Observations are being made of these two new geysers, and if they continue their activity they will be added to the list of natural wonders.

CONCESSIONS.

Concessioners holding privileges for a year or more in Yellowstone National Park under existing contracts, with rentals and other taxes exacted.

Yellowstone Park Hotel Co.: Contracts (two) dated February 26, 1913, run for period of 20 years, and grant to company right to use certain land in the park and erect and maintain thereon hotels and necessary buildings connected therewith.

Annual rental: \$40 per acre on 29.43 acres, \$1,177.20. News-stand privilege at hotels and lunch stations, \$750. Usage tax, 1914: 25 cents per capita on guests during 1913 season, \$ —.

Yellowstone Park Transportation Co.: Contract dated February 26, 1913, runs for period of 20 years, and authorizes company to establish and maintain a stage and transportation line, and agrees to lease necessary land at eight designated sites on which to construct and maintain buildings required for accommodation of stock, carriages, employees, etc.

Annual rental: \$40 per acre on 27.16 acres, \$1,086.40. Usage tax, 1914: 25 cents per capita on passengers carried during 1913 season, \$ —.

Yellowstone Park Boat Co.: Contract dated February 7, 1913, runs for 10 years, and lease dated May 19, 1914, for 9 years from February 7, 1914, grants to company privilege of maintaining, operating, and conducting on Yellowstone Lake and such other park lakes as may be designated motor boats and launches, motor vessels, rowboats, and dories for accommodation of tourists, with right to sell and rent fishing tackle and sell fruits, nuts, confectionery, books, periodicals, cigars, tobacco, and camping supplies, and lease or sell bathing suits. Contract agrees to lease lands on shores of Yellowstone Lake on which wharves and ways are constructed, and at other points to be agreed upon on which to erect buildings for storage of equipment, accommodation of employees, etc.

Compensation for boat privilege, \$100 per annum. Annual rental on 1.8592 acres at \$40 per acre, \$74.37.

Wylie Permanent Camping Co.: Contract of May 4, 1906, runs for 10 years from March 31, 1906, and grants transportation privilege in park, with sites for maintenance of permanent camps therein, and right to conduct lunch stations at points near Gibbon River and West Thumb of Yellowstone Lake.

Annual rental: \$10 per wagon (not less than 50 to be used) on 101 wagons used during 1914 season \$1,010. News-stand privilege at permanent camps \$500. Usage tax, 1914: 50 cents per capita on passengers carried during 1913 season, \$ —.

Shaw & Powell Camping Co.: Special permanent camping license issued April 19, 1913, and running for a period of one year from May 1, 1913, or until such time as it may be revoked, authorizes it to maintain, conduct, and carry on the business of transporting tourists in and through the park and provide for their accommodation at permanent camps to be established on sites at designated points in the reservation, and to maintain a lunch station on Madison River between the present Wylie camp and the State line.

Annual rental: \$10 on each wagon used (75 passenger and 10 freight wagons used 1914 season), \$850. News-stand privilege at permanent camps, \$100. Usage tax, 1914: 25 cents per capita on passengers carried during 1913 season, \$ —.

Holm Transportation Co.: Contract entered into March 14, 1913, with company for the period of one year from and after March 31, 1913, authorizes the establishment and maintenance of a stage and transportation line in the park, with the right to use and occupy such parcels of land as may be necessary at or near designated points therein on which to construct and maintain suitable buildings and inclosures for accommodating stock, carriages, and employees. Supplemental agreement entered into with company on January 23, 1914, extending the contract further for a period of three years from March 14, 1914.

Annual rental: \$40 per acre on approximately 1.79 acres, \$71.60. Usage tax, 1914: 25 cents per capita on passengers carried during the 1914 park season, \$ —.

George Whittaker: Contract dated March 13, 1913, for period of 10 years, grants use of 24,000 square feet of land at or near Mammoth Hot Springs, with privilege of maintaining a dwelling, store, and post office.

Annual charge, \$100. Usage tax, 1914, \$800 per annum. Total, \$900.

Yellowstone-Western Stage Co.: Contract dated February 2, 1914, authorizing, for the term from February 2, 1914, to December 31, 1914, establishment and maintenance of a stage and transportation line, and permitting the use of certain parcels of land in connection with such privilege, aggregating 13 acres, together with use of buildings located thereon, approximately 47 in number, for accommodation of stock, carriages, and employees.

Rental for period of contract: \$40 per acre on 13 acres, \$520. For use of buildings, \$2,500.

Pryor & Trischman: Contract dated August 26, 1908, running for period of eight years, from April 3, 1908, issued to George R. and Anna K. Pryor, in-

terest of former transferred to Elizabeth Trischman through assignment approved by Department of the Interior October 29, 1912. grants use of tract of land near Mammoth Hot Springs in park, containing 13,800 square feet, on which to maintain dwelling, store, and soda fountain.

Annual rental, \$50; usage tax of \$115 per annum. Total, \$165.

Henry E. Klamer: Contract of January 31, 1908, for period of 10 years, beginning June 1, 1907, authorizes use of 2-acre tract of land at or near Upper Geyser Basin, with privilege of maintaining thereon building or buildings for use as dwelling and conduct of a general store. Mr. Klamer died August 12, 1914, since which date the business has been conducted by his wife, his sole heir and executrix.

Annual rental, \$100; usage tax, \$1,200 per annum. Total, \$1,300.

F. Jay Haynes: Contract of May 25, 1914, for period of three years from April 1, 1914, authorizes use of 2.64 acres of land at Mammoth Hot Springs and 1 acre at or near Upper Geyser Basin, with privilege of maintaining buildings thereon for the preparation and sale of photographic views. Contract also agrees to lease not to exceed 1 acre of land at or near Grand Canyon for buildings for photographic purposes.

Annual rental: \$40 per acre on 2.64 acres, \$105.60. For privileges accorded, \$1,000 at Mammoth Hot Springs, \$1,000 at Upper Basin, and \$500 at Grand Canyon. Total, \$2,605.60.

Henry J. Brothers: Contract of July 1, 1914, for a period of 10 years from same date, authorizes use of approximately 2½ acres of land, at \$40 per acre \$100, to be leased to him at Upper Geyser Basin, with privilege of maintaining bathhouse and bathing pools. Compensation for bathhouse privilege, \$200 per annum.

Annual rental: \$40 per acre for land leased. Also \$200 for privilege. Payments to begin one year from time bathhouse is open to public. Work now in progress.

Personally conducted camping party and special licenses issued in the Yellowstone National Park during the season of 1914.

ENTERING AT GARDINER, OR NORTHERN, ENTRANCE.

Name of licensee.	License No.	Usage tax (25 cents per capita passengers carried), 1913 season.		Amount paid, special licenses issued at \$25 (1 wagon each).	Number of wagons, at \$10 each.	Number of horses, at \$2 each.	Total paid.
		Number carried.	Paid.				
Howard Eaton.....	5, 6, 39, 40	63	\$15. 75		6	72	\$219. 75
S. E. & E. J. Larsen.....	13, 14	19	4. 75		3	1	36. 75
H. P. Grant, Floyd Brogan & A. Lycan.....	7, 50	75	18. 75		5		68. 75
E. L. Robertson.....	28, 49			\$25. 00	1		35. 00
T. E. Newcomb.....	34, 38	10	2. 50			17	36. 50
W. N. and O. M. Hefferlin.....	22, 23	80	20. 00		8	2	104. 00
John Dougherty.....	25			25. 00			25. 00
Chas. G. Davis.....	52			25. 00			25. 00
Bert Stewart & O. C. Mack.....	15			25. 00			25. 00
O. O. Roseborough.....	24			25. 00			25. 00
Total.....		247	61. 75	125. 00	23	92	600. 75

ENTERING AT NORTHERN AND WESTERN ENTRANCES.

B. D. Sheffield.....	51	15	\$3. 75		3		\$33. 75
Oscar and A. L. Roseborough.....	20, 21, 48	19	4. 75		4	1	46. 75
Total.....		34	8. 50		7	1	80. 50

Personally conducted camping party and special licenses issued in the Yellowstone National Park during the season of 1914—Continued.

ENTERING AT CODY, OR EASTERN, ENTRANCE.

Name of licensee.	License No.	Usage tax (25 cents per capita passengers carried), 1913 season.		Number of wagons, at \$10 each.	Number of horses, at \$2 each.	Total paid.
		Number carried.	Paid.			
W. H. Jordan and J. W. Howell.....	{ 1, 2, 30, 37, 41, 42	6	\$1.50	7	14	\$99.50
R. W. Crane.....	{ 9, 10, 35, 36, 44	8	2.00	3	18	68.00
N. E. Brown.....	26, 27, 29	51	12.75	5	20	102.75
Frost & Richard.....	18, 19, 43	96	24.00	5	15	104.00
Simon Snyder.....	16, 17, 33			3	10	50.00
Joe A. Jones, M. G. Jones, and J. McGill..	3, 4	7	1.75	1	5	21.75
F. Morris.....	45, 46	16	4.00	3	7	48.00
Total.....		184	46.00	27	89	494.00

ENTERING AT SOUTHERN, OR SNAKE RIVER, ENTRANCE.

Chas. C. Moore.....	31, 32			3	25	\$80.00
S. N. Leek.....	47				16	32.00
Total.....				3	41	112.00

ENTERING AT WESTERN, OR YELLOWSTONE, ENTRANCE.

Joe Clause.....	11, 12	24	\$6.00	3	2	\$40.00
M. A. Hougren and J. E. Phillips.....	8			6		60.00
Total.....		24	6.00	9	2	100.00

SUMMARY (ALL PARK ENTRANCES).

Park entrance.	Usage tax (25 cents per capita passengers carried), 1913 season.		Amount paid, special licenses issued.	Number of wagons, at \$10 each.	Number of horses, at \$2 each.	Total paid.
	Number carried.	Paid.				
Licenses entering at northern entrance and at both northern and western entrances combined.....	281	\$70.25	\$125.00	30	93	\$681.25
Licenses entering at eastern entrance.....	184	46.00		27	89	494.00
Licenses entering at southern entrance.....				3	41	112.00
Licenses entering at western entrance.....	24	6.00		9	2	100.00
Total.....	489	122.25	125.00	69	225	1,387.25

RECOMMENDATIONS.

I desire to renew my recommendation of last year that an amendment be secured to section 4 of the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes,"

making the term of imprisonment prescribed therein to read "not exceeding one year" instead of "not exceeding two years." This change in the law is desirable by reason of the fact that the Attorney General, in a letter dated June 5, 1913, to the United States attorney for Wyoming, said:

Since the act to which you refer (Comp. Stat. U. S. 1901, vol. 2, pp. 1562-1563) authorized a punishment of imprisonment not exceeding two years, offenses under it are clearly crimes within the meaning of the Constitution of the United States, and must, therefore, be prosecuted by indictment in the regular way. (See *Parkinson v. United States*, 121 U. S., 281; *Callan v. Wilson*, 127 U. S., 540, 551, 552, 556; *Schick v. United States*, 195 U. S., 65, 68.)

It is true that the Yellowstone Park act evidently intends this offense to be dealt with as a misdemeanor, to be tried and punished as such by the commissioner of Yellowstone Park, but Congress can not deprive an accused of his rights secured to him under the Constitution, and if the offense is one, as it is in this case, which may be punished by a term in the penitentiary, it ceases to be such a petty offense as may be proceeded with by information or by way of punishment by a commissioner. The authorities cited above are conclusive upon this point.

This holding vitiates the jurisdiction of the park commissioner as to final disposition of such cases and increases the cost of the prosecution thereof at least tenfold, as it necessitates the holding of all violators of the act of May 7, 1894, to the United States district court at Cheyenne, Wyo.

Very respectfully,

LLOYD M. BRETT,

Colonel of Cavalry, Acting Superintendent.

The SECRETARY OF THE INTERIOR.

APPENDIX A.

REGULATIONS GOVERNING THE DISTRIBUTION OF ANIMALS FROM THE YELLOWSTONE NATIONAL PARK, 1913-14.

DEPARTMENT OF THE INTERIOR,

December 3, 1913.

1. *General.*—Distribution of animals will be limited to applications from Federal, State, and municipal authorities.

2. Allotments will be made in the order of receipt of applications, but preference will be given to shipments intended for national reservations.

3. Applicants will be expected to bear all expenses of capture, crating, and hauling, and to arrange for payment of transportation charges from Gardiner, Mont., to destination. Provision should be made for an attendant to accompany elk shipped in carload lots. Small consignments of elk or other animals should be forwarded by express if not in charge of an attendant. Special provision should be made for suitable crates in which to transfer animals from the car to point of destination.

4. *Antelope.*—The superintendent of the park recommends that on account of its present small size, the herd of antelope should not be distributed at present. Consequently no antelope will be distributed during the year.

5. *Bears.*—Bears, not to exceed two, for any public park or zoological garden may be shipped when properly crated.

6. *Beaver*.—A limited number of beaver will be distributed to points where the animals will have complete protection and where conditions are favorable for their increase.

7. *Elk*.—During the present fiscal year the total number of elk to be distributed will not exceed 800, and not more than 50 head will be shipped to any one State.

8. In view of the existence of several peculiar forms of elk on the Pacific coast, and the importance of keeping these elk distinct from the Rocky Mountain species, requests for elk intended for the Cascades, Sierra Nevada, or points west of these ranges will not receive approval.

9. In shipping elk the number of head in any one car shall not exceed 40; this number will be permitted only in the case of yearlings shipped in a 36-foot car; in all other cases the number of elk shall not exceed 25 head per car. When cattle cars are used for shipment of elk the lower part of the car must be covered with burlap, canvas, or some similar material to screen the animals from view and prevent them from being disturbed at stations en route; when box cars are used the doors should be left partly open for ventilation. Before shipping the elk all cars must be padded inside to a height equal to the shoulders of the animals. Ample arrangements must be made to provide food and water when cars are likely to be more than 12 hours en route. Whenever possible the elk should be fed and watered within the car, otherwise shipments will be governed by the 28-hour law (act of Congress of June 29, 1906, 34 Stat., 607). When convenient, snow should be furnished the elk instead of water, and tubs containing water or snow must be placed at the ends as well as in the middle of the car. Two partitions, one on each side of the door, must be provided as a place for food and water.

APPENDIX B.

RULES AND REGULATIONS.

Regulations Approved May 27, 1911.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscriptions or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb in any manner or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel, or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding, or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park, guard parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park excepting for the use of the wild game and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards or any of the platforms, seats, railings, steps, or any structures, or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes

in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

Instructions Approved April 15, 1914.

1. The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

2. *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down.

Especial care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

3. *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places, where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

4. *Concessionaires.*—All persons, firms, or corporations holding concessions in the park must keep the grounds used by them properly policed and maintain the premises in a sanitary condition to the satisfaction of the superintendent.

5. *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

6. *Fishing.*—All fish less than 8 inches in length should at once be returned to the water with the least damage possible to the fish. Fish that are to be retained must be at once killed by a blow on the back of the head or by thrusting a knife or other sharp instrument into the head. No person shall catch more than 20 fish in one day.

7. *Dogs.*—Dogs are not permitted in the park.

8. *Grazing animals.*—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

9. *Formations.*—No person will be allowed on any formations after sunset without a guide.

10. *Hotels.*—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, 24 hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

11. *Driving on roads of park.*—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles in passing each other must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway. No stops on the road for luncheon or for camp purposes will be permitted. A team attached to a vehicle will not be left without the custody of a person competent to control it; a team detached from a vehicle will be securely tied to a tree or other fixed object before being left alone.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, or such vehicles overtake pack trains, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear, warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

12. *Liquors*.—All beer, wine, liquors, whisky, etc., brought into the Yellowstone National Park via Gardiner to be carried over the roads through the reservation to Cooke City, must be in sealed containers or packages, which must not be broken in transit.

13. *Miscellaneous*.—Automobiles are not permitted in the park.¹

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

14. *Penalty*.—The penalty for disregard of these instructions is summary ejection from the park.

Notices.—(a) Boat trip on Yellowstone Lake: The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb lunch station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(b) Side trips in park: Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park; also at the office of the superintendent.

(c) All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing.

¹The regulation prohibiting the use of automobiles in the park was so amended as to allow their use on the road leading from Bozeman, Mont., to the southern portion of Gallatin County, Mont.

ATTACHED MAP / DRAWING

SEE ORIGINAL

DEPARTMENT OF THE INTERIOR

REPORT OF
THE ACTING SUPERINTENDENT OF THE
YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR

1915



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REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., September 30, 1915.

SIR: I have the honor to submit annual report of the condition of affairs in and the management of the Yellowstone National Park from October 15, 1914, to the present date.

GENERAL STATEMENT.

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

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

The headquarters is located at Fort Yellowstone, but the command also garrisons 15 soldier stations scattered throughout the park, requiring 135 men during the tourist season and 75 during the remainder of the year.

A telephone system connects the soldier stations and the post.

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

The detachments of soldiers at the 15 stations performed their duties in a very satisfactory manner.

TRAVEL.

An unusually early spring opened all roads to travel before the tourist season, but on account of heavy rains in May and up to past the middle of June, they were very muddy for a few days after the opening on June 14, but dried up so rapidly that they required sprinkling before the end of the month.

The aggregate number of persons making park trips during the season of 1915 was as follows:

Travel during the season of 1915.

Guests at hotels:

Entering via the western entrance with Yellowstone-Western Stage Co.	20, 151
Entering via the northern entrance with Yellowstone Park Transportation Co.	6, 722
Entering via eastern entrance with Holm Transportation Co.	144
	<hr/> 27, 017

Wylie Permanent Camping Co.:	
Entering via northern entrance.....	3, 306
Entering via western entrance.....	7, 027
Entertaining via eastern entrance.....	208
	10, 541
Shaw & Powell Camping Co.:	
Entering via northern entrance.....	3, 261
Entering via western entrance.....	1; 966
	5, 227
Hefferlin Camps:	
Entering via northern entrance.....	1, 080
Entering via western entrance.....	612
	1, 692
With other licensees of personally-conducted camping parties.....	265
Making park trips with private transportation:	
With automobiles.....	3, 513
With other private transportation as "private camping parties"....	3, 448
	6, 961
Total making park trips.....	51, 703
Number making short trips with special licensees.....	192
	51, 895
Grand total of travel, season of 1915.....	

The Yellowstone Park Hotel Co. reports that 27,017 people were accommodated at the hotels in the park during the season of 1915, of which 6,722 entered at the northern entrance, 20,151 at the western entrance, and 144 at the eastern entrance.

The Yellowstone Park Boat Co. reports that 4,277 people took the boat trip across Yellowstone Lake during the season, of which 1,863 were traveling with the Yellowstone Park Transportation Co., 1,699 with the Yellowstone-Western Stage Co., 589 with Wylie Camping Co., 111 with Shaw & Powell Camping Co., 4 with Holm Transportation Co., and 11 miscellaneous.

Travel by the different entrances.

From the west, via Yellowstone, Mont.....	32, 551
From the north, via Gardiner, Mont.....	17, 463
From the south, via Jackson, Wyo.....	331
From the east, via Cody, Wyo.....	1, 550
	51, 895
Total.....	51, 895

The travel by way of Tower Falls by regular tourists returning to Mammoth Hot Springs from Grand Canyon was less, in proportion to total travel, than last year. The falling off in the number taking this trip, which is the most beautiful in the park, was due to a desire on the part of the transportation companies to spare their horses the pull up the mountain and the longer journey. All touring the park in automobiles took the Mount Washburn route and were most enthusiastic over the scenery.

The Wylie Permanent Camping Co. had 158 wagons in use during the season, the Shaw & Powell Camping Co. had 85 wagons in use. W. N. and O. M. Hefferlin had 42 wagons and 4 saddle horses in use transporting tourists and supplies to their 4 permanent camps in the park, and in addition movable camp licenses were issued during the season, covering a total of 43 wagons and 247 saddle and pack animals and 4 special wagons for livery work.

An inspection of the figures giving the travel for the season shows that about three-fifths of all the visitors to the park entered by the

western gateway. This was due to several causes, chief of which was the reduced rates on certain central western railways to the Panama-Pacific Exposition in San Francisco, with side trips to National Parks and other points of interest. This concentration of travel to one entrance made the task of the transportation companies operating therefrom exceedingly difficult, but with the exception of a few days when the numbers arriving were too large for all to be given transportation the traveling public was well handled.

AUTOMOBILES.

Under instructions in connection with your announcement of April 21, 1915, that automobiles would be admitted to the park beginning August 1, such privilege to be extended to pleasure vehicles only, preparations were at once begun. Four extra first-class rangers were employed for the purpose of checking automobiles, telephone lines were extended and old ones repaired, and new telephones installed at several points along the roads where checking was necessary. On June 7 and 8 a trial trip was made by park officers and members of the transportation companies, as a result of which regulations and schedules were planned and recommended to the department, and these were printed and distributed before the opening date.

Prior to the opening date for automobiles, August 1, heavy rains throughout the West made the roads approaching and in the park heavy and difficult, yet 50 automobiles with 171 tourists entered the park on that day. No accidents to the occupants of horse-drawn vehicles due to automobiles marred this radical departure in viewing the park and the regulations and schedules worked perfectly, although travel was the heaviest in the history of the park. It was found possible to grant special schedules and night travel to those whose time was limited, and it is believed that new schedules can be added to those in force which will add to the pleasure of those touring the park in automobiles. Another season should find open to automobiles the road from Tower Falls to the northeast corner of the park, passing through the Lamar River and Soda Butte Creek valleys, by the buffalo farm and on to the lofty and rugged mountains that border the northern boundary of the park. The officers, enlisted men, and rangers had no difficulty in handling the automobile travel, and their efforts to keep cars within the schedules were met by courteous and appreciative responses on the part of the occupants.

The following table shows the total number of automobiles, and number of tourists carried by them, that have taken advantage of the opportunity to make the park trip from August 1 to the end of the season:

<i>Automobile travel.</i>		Automobiles.	Tourists.
Entering via the northern entrance.....		365	1, 377
Entering via the western entrance.....		392	1, 403
Entering via the eastern entrance.....		193	701
Entering via the southern entrance.....		8	32
Total.....		958	3, 513

This travel is included in the aggregate number of tourists taking park trips, heretofore mentioned.

On April 21, 1915, authority was granted by the department to issue a permit to Robt. I. McKay, of Cooke, Mont., to transport machinery, ore, and supplies between Gardiner and Cooke, Mont., using 15 automobile trucks and 25 trailers, under proper restrictions as to schedules, etc., and to use one car as a utility or repair car, all on condition that he make certain repairs to the roads between Soda Butte and Mammoth Hot Springs, and pay a license fee of \$20 per annum for each truck used, \$10 per annum for each trailer used, and \$10 per annum for repair and utility car. Mr. McKay arrived at Gardiner about July 15 with one truck and one utility car. He deposited funds to cover license fee on these and the following morning went to Cooke with them, after having made arrangements with the engineer officer in regard to repairing the roads. Since that time he has had the truck at work in connection with the work of repairing the road between Tower Falls and Cooke, but the improvements have not progressed up to the present time sufficiently as to render it practicable to haul heavy loads over the roads with trucks, but his crews are still at work.

Hon. Stephen T. Mather, Assistant to the Secretary of the Interior, visited the park twice during the season, once before and once after the admission of automobiles.

CONCESSIONERS.

The Shaw & Powell Camping Co. completed the work begun last season of constructing log dining rooms, kitchens, and storerooms at permanent night camps.

The Wylie Permanent Camping Co. constructed a temporary log building for use as a hospital at its Swan Lake Camp, and another at the Riverside camp which accommodates the offices and news stand, and is also used as a recreation room.

Mr. Henry J. Brothers completed his bathhouses and plunge at Upper Geyser Basin and opened them to the public on July 1. These baths have proven popular with travelers as well as with employees of the park. Mr. Brothers reports that the total number of bathers since July 1 was 7,681.

Mr. C. A. Hamilton bought the Klamer general store at Upper Geyser Basin and took charge of it at the beginning of the season.

STREAM GAGING.

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

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

Madison River near Yellowstone, Mont.

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

Yellowstone River above Upper Falls, near Canyon Station.

Snake River at south boundary of the Yellowstone National Park.

The small allotment of funds available for this work has proved sufficient only to keep up the necessary office work connected therewith and to permit the making of one visit during the year to each

of the gaging stations. Consequently it is still impossible to compute discharges of Snake and Yellowstone Rivers for anything except low stages of flow because of the impossibility of securing high-stage measurements until cables have been installed at these stations.

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

ROADS.

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

The sundry civil bill of March 3, 1915, appropriated money as follows for road work in Yellowstone National Park and the adjacent forest reserve on the east and south:

Yellowstone National Park: For maintenance and repair of improvements, \$125,000, including not to exceed \$7,500 for maintenance of the road in the forest reserve leading out of the park from the east boundary, and not to exceed \$2,500 for maintenance of the road in the forest reserves leading out of the park from the south boundary, to be expended by and under the direction of the Secretary of War, to be immediately available: *Provided*, That no portion of this appropriation shall be expended for the removal of snow from any of the roads for the purpose of opening them in advance of the time when they will be cleared by seasonal changes.

For widening to not exceeding eighteen feet of roadway and improving surface of roads and for building bridges and culverts from the belt-line road to the western border from the Thumby Station to the southern border, and from the Lake Hotel Station to the eastern border, all within Yellowstone National Park, to make such roads suitable and safe for animal-drawn and motor-propelled vehicles, to be immediately available, \$50,000.

For completing the widening to not exceeding eighteen feet of roadway and improving the surface of roads and for building bridges and culverts in the forest reserve leading out of the park from the east boundary, to make such roads suitable and safe for animal-drawn and motor-propelled vehicles, to be immediately available, \$20,000.

In addition there remained available on October 1, 1914, about one-half of the \$255,000 appropriated for the same purposes in the sundry civil bill of August 1, 1914 (pp. 8 and 9, report of acting superintendent, September 30, 1914).

On account of early spring and the desire to expedite work in anticipation of record travel through the park during 1915, due to the combined influence of the European war and of the San Francisco and San Diego Expositions, work was vigorously prosecuted during the spring and summer of 1915 under both appropriations, and consequently almost all crews have either exhausted their apportioned funds or completed their work prior to the date of this report and have been disbanded.

The work during the year included general repair and maintenance of the entire system, including the west, south, and east approaches, both in the park and in the forest reserve on the east, and the Cooke City road; widening and improving the west, south, and east approaches, including the east forest reserve; sprinkling of 100 to 112 miles of belt line and west approach road; repair and construction of bridges; construction of concrete, wood, and galvanized-iron cul-

verts; clearing of dead and fallen timber from the roadside; reshaping and ditching roads; maintenance of trees, shrubs, vines, and lawns.

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

BELT LINE ROAD (INCLUDING NORTH ENTRANCE ROAD).

General road repairs.—In the fall of 1914, in order to prevent excessive damage to the roads during the winter, work on a considerable portion of the belt line was done to improve the drainage, smoothing and reshaping the roads, cleaning out ditches and culverts, and constructing "thank-you-ma'ams," or water bars, on some of the steeper grades. This work extended generally from the Thumb to Gardiner, via Lake, Canyon, Norris, and Mammoth, and from Norris south toward Madison Junction. Similar repairs were made on about $4\frac{1}{2}$ miles of the Mount Washburn road, between miles $10\frac{3}{4}$ and $15\frac{1}{4}$ from Canyon Junction.

Owing to continued rainy weather during the latter half of May and the first half of June, during the spring of 1915, and to the great amount of freighting being done into the park by the hotels and various transportation companies in anticipation of a large amount of travel in the park during the summer, the road in a number of places became very badly rutted and in some places almost impassable. It became necessary early in June to establish so-called drag stations at a number of the worst places, from which split-log drags were operated over the roads, thus smoothing them out, reducing the ruts, and giving the roads a chance to drain off. The same bad weather caused a large fill over the 10-foot reinforced concrete arch culvert, built in 1914 about 1,000 feet south of Canyon Junction, to slide away; and a very considerable amount of work was required to repair this damage and bring the fill up to the cross section required. Between May 20 and July 3 a flying grader squadron, consisting of four graders, was sent entirely around the belt line, shaping up the roads, cleaning ditches, cleaning out and making minor repairs to culverts. To assist in maintaining the roads during the tourist season, each sprinkler crew was equipped with a split-log drag; and whenever rainy weather gave an opportunity for so doing, these drags were used to reshape and smooth out the ruts in the roads. This process the heavy tourist traffic made very necessary.

Gardiner slide.—The slide in the Gardiner Canyon, about 2 miles from the north entrance at Gardiner, Mont., which has given considerable trouble to the Gardiner Road for a number of years, was cut back in the fall of 1914 and the spring of 1915, prior to the tourist season, by means of hydraulic sluicing. During the fall of 1914 a 4-inch pipe-line, fed by an electric motor-driven pump, was used to furnish the water for the sluicing; but in the spring of 1915 this was displaced by a 6-inch pipe-line, conveying a gravity stream from a lake about a thousand feet west of, and 130 feet above, the top of the slide. This latter method allowed a greater amount of material to be moved and at less cost. It is believed, however, that the slide will continue to cause trouble for several years to come and will require sluicing once or twice a year until stopped. Notwithstanding the very excellent condition of the road at this point when the sluicing was discontinued early in June, the slide has again

encroached on the road, although not sufficiently to cause any inconvenience to traffic.

Sprinkling and dragging.—During the tourist season of 1915 from 100 to 112 miles of road was sprinkled, including, however, a large portion of the west approach. After the continued rains of late May and early June, an excessively dry spell started in and lasted for about a month. This, coupled with the excessive evaporation due to the high altitude of the park, made it impracticable in many places during this period for sprinkling to cope with the situation and satisfactorily lay the dust. These conditions were made somewhat worse by the fact that this excessive dry period unfortunately occurred at the very beginning of the sprinkler season. When the sprinklers are first started, the men operating them are new and inexperienced, and numerous small defects that occur each year in water ditches, rams, tanks, and valves have to be remedied before the sprinkling system can attain its maximum efficiency. In the latter half of July and thereafter occasional showers occurred, however, and these greatly relieved the situation. In addition to laying the dust, the showers enabled the sprinkler crews to operate their road drags, with which all crews are equipped, as already stated under "General Road Repairs."

The length of road sprinkled was increased at the opening of the season in 1915 to 112 miles. Difficulty was experienced, however, in several places, through the water supply of tanks giving out, due, as last year, to the very light snowfall during the preceding winter. The sprinklers which run between the Thumb and the 5-mile post toward the Lake, and between the 1 and 6-mile posts from the Canyon toward Norris, had to be abandoned during August, the benefits not being sufficient to justify the cost.

Considerable experimenting was done prior to the sprinkling season with gasoline engine pumping sets, with which it was hoped to replace all hand pumps on the sprinkler wagons where pumping is necessary, thus economizing in labor and extending, without increase in cost or plant (except for the purchase of the pumping sets) the total number of miles sprinkled. These experiments have not, however, shown the gasoline sets to be sufficiently reliable to justify their actual installation in the place of the present hand pumps, as owing to the hard conditions of service and to the probably inexpert attendance, the gasoline pumps would be out of commission a great part of the time and the sprinkling consequently often interrupted.

Oiling Gardiner Road.—In the spring of 1915, 1.6 miles of road inside the entrance arch at Gardiner was scarified, regraded, and treated with oil and gravel surfacing, as was also the 0.3 of a mile of branch freight road at Gardiner. For this purpose a light oil, which was left over from the preceding summer, was used, the intention being to prevent dust and avoid having to sprinkle this stretch of road. The process used answered the purpose very well, much better than the application of thin oil on the unprepared road, as experimentally done one year ago. It is not believed, however, that this stretch of road will have the wearing qualities expected from the oil and rock macadam surfacing used at the west entrance.

Resurfacing.—In addition to the oil surfacing at Gardiner, there were resurfaced during the year several stretches of road which had

been particularly troublesome in wet weather, aggregating about 7 miles, as follows: From about $1\frac{1}{2}$ to $4\frac{3}{4}$ miles from Mammoth Springs toward Norris; from Canyon Junction about 1,000 feet south to the Canyon Arch Bridge; and $7\frac{1}{2}$ to $10\frac{1}{2}$ miles from the Canyon Junction toward the Lake Hotel.

Norris realignment.—A realignment a little more than 1 mile in length was built at the Norris Geyser Basin to avoid two bad hills—one north and one south of the Minute Man Geyser.

Bridges and culverts.—The reinforced concrete Canyon Arch Bridge, which was built under contract, was completed and accepted on June 16, 1915. This is one of the most beautiful structures in the park—210 feet long over all, with a 145-foot arch.

In line with the policy adopted several years ago, there were built or installed this spring on the section between the Upper Basin and the Thumb, 12 reinforced concrete-slab culverts, eight being of 8-foot span and the other four of 6-foot span, and about 14 galvanized-iron culverts, mostly 18 inches in diameter, and three triple 24-inch galvanized-iron culverts, with head walls. There were also installed some galvanized iron culverts at other parts of the belt line, notably about six of 24-inch diameter on the section between the Lake and the Canyon, and about the same number on the realignment, already mentioned, at Norris Geyser Basin.

In addition, a number of wooden culverts were repaired, on all portions of the belt-line system; the wooden bridge on the Bunsen Peak Road, over the Gardiner River, and the four steel bridges between Mammoth and Gardiner were refloored; and several concrete bridges, built in 1914, were backfilled and placed in commission in time for the 1915 tourist season.

WEST APPROACH.

On the west approach maintenance work, similar to that on the belt line, including sprinkling, was done. In addition, the work of widening and improving the road, to make it safe for animal-drawn and motor-propelled vehicles, has been pushed to the limit of the funds appropriated for this purpose.

Widening and grading.—During the year widening and grading of the west approach has been extended to include all of the Madison River branch of the approach, except about $1\frac{1}{2}$ miles (11 to $12\frac{1}{2}$ miles from the west boundary) and about half of the Gibbon River branch. This work has involved considerable minor realignment, and some few more important relocations, including one 2,500 feet long, between 8 and 9 miles from the boundary, which avoided widening and improving a stretch of rocky hillside road and eliminated a bad climb, while going down stream, over a 30-foot hill; and one about 1,000 feet long near the junction of the Gibbon and Firehole Rivers, where the triangle connecting the roads to Yellowstone, Norris and the Fountain, was made considerably smaller, and the grade improved.

Surfacing.—The top surfacing being used on the west approach is an oil and rock macadam. The rock crusher on hand proving to be of insufficient capacity, an additional one was purchased and placed in operation, together with the old one, early this spring. The plant was also increased by an additional road roller and several less important items of machinery. For the storage of oil a concrete pit,

equipped with steam-heating coils, was built at the boundary, at Yellowstone, Montana, with a capacity of two cars of oil, and a track of the Oregon Short Line Railway extended to permit unloading of cars direct into the pit. A retort was also built adjacent to the pit, to heat the oil, prior to use, to a higher degree than practicable with steam.

Five miles of road at the west entrance was completed with oil-macadam surfacing during the year, although it is possible that the last three-quarters of a mile will require considerable repair next spring. The rock used on this particular stretch, although crushed from boulders which seemed of good quality, has not turned out as well as desired under rolling and the wear of traffic.

In the oil-macadam work so far done there have been used two different grades of heavy California asphalt oils, and one mile has been treated with Tarvia, experimentally, in lieu of oil. The wear of these adjacent stretches should, by the next season, give a very good comparison of the different materials used, which will be a valuable aid in further surfacing in the park.

Firehole River realignment.—This realignment, which will replace most of the road lying between the Madison Junction and the Firehole Cascades, was begun in June and completed for a distance of about 3,500 feet. Surveys have been made beyond this distance. This new location will greatly improve the grades and will open up a very fine stretch of river scenery, replacing with an unusually attractive road one which is quite deficient in such qualities. When this new road is completed and opened up it is believed that the main traffic will shift to it instead of passing over the Mesa Road, which, like the present Firehole River branch of the west approach, is extremely uninteresting and hilly.

The new road is for the most part in very heavy rock work, for which reason an air-compressor drilling plant has been purchased and installed, resulting in very considerable increase in speed and decrease in the cost of the work.

SOUTH APPROACH.

IN THE PARK.

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

Widening and grading.—About 5½ miles of road south of the Thumb has been widened and graded during the year, including a realignment about 3,000 feet long.

Bridges and culverts.—The 4-span log bridge over Lewis River was rebuilt, as were several other small bridges and culverts.

IN THE FOREST RESERVE.

Snake River Bridge.—The allotments for the two fiscal years 1915 and 1916 for the road in the forest reserve south of the park have been lumped for the purpose of building a 100-foot span steel bridge over Snake River. The contract for the steel and erection has been let, and the abutments have been built. The bridge will not be completed until next year.

EAST APPROACH.

As on the belt line, general repairs were made to the east approach, both in the park and in the forest reserve, to maintain same in condition for traffic; and the work of widening and improving the road, to make same safe for both animal-drawn and motor-propelled vehicles, under the special appropriation for this purpose, was pushed as much as the money available would permit.

IN THE PARK.

Early snows and freezing weather in the fall of 1914, and the extremely wet weather in the spring of 1915, retarded the work and increased the cost considerably on the section of the east road located inside the park.

Widening and grading.—This work has been brought to completion on all except about 5 miles, of which $1\frac{1}{2}$ miles ($9\frac{1}{2}$ to 11 miles from the Lake Junction) has been partially widened. The balance uncompleted consists of the 2 miles between the 11 and 13-mile posts and about $1\frac{1}{2}$ miles between the 19 and 21-mile posts, which last-named stretch involves considerable rock work.

The work during the past year included grading down short hills and filling in the intervening low places, besides widening, between the 4 and $6\frac{1}{2}$ -mile posts; widening and grading from the $6\frac{1}{2}$ to the $9\frac{1}{2}$ -mile points, including a 1,000-foot realignment to greatly improve the alignment and grade on the hill eastward from Turbid Lake; partially widening and grading between the $9\frac{1}{2}$ and 11-mile posts; a $1\frac{1}{4}$ -mile relocation of the road at the crossing of Cub Creek, about $13\frac{1}{2}$ miles from the Lake Junction, where the old road was in a bad location on the creek bank, and subject to serious slides (it was here considered better and more economical to build a new road on nearly level benches farther from the creek than to improve the old road); and widening and grading between the $14\frac{1}{2}$ and 18-mile posts (including a 1,000-foot realignment at the highest point on the east road near the 15-mile post from the Lake) and between $20\frac{1}{2}$ and $23\frac{1}{2}$ miles from the Lake.

Graveling.—The road was graveled over about one-quarter of a mile between the Lake Junction and the Yellowstone River bridge; over the 2 miles between the 3 and 5-mile posts from the Lake Junction, and for 1 mile between the 7 and 8-mile posts from Lake Junction. Both of the first two stretches needed graveling very badly, having during the rains of May and June this year become all but impassable.

Turnout at Lake Junction.—A turnout was built at the Lake Junction, completing a triangle at this point and connecting the east road with the branch of the belt line leading to the north or in the direction of the Canyon. Previously the junction had consisted of a single turnout from the east approach to the south branch of the belt line, making the turn for traffic from the north belt line onto the east road so sharp that freight wagons could not make it, but were compelled to pass to a point beyond where they could turn completely around and then enter the east road from the south.

Bridges and culverts.—A new log bridge of 20-foot span was built at the crossing of the realignment over Cub Creek. The bridge at

the outlet to Turbid Lake, about 6½ miles from Lake Junction, was rebuilt, the elevation of the bridge and approaches being made 5 feet higher than originally, thereby eliminating the former sharp descent to the bridge. Minor repairs to other bridges were made where necessary, and a number of galvanized-iron culverts were installed in connection with the other work of improvement. The viaduct or loop bridge on the east slope of Sylvan Pass needs replacing, and the work of so doing has been begun, but will not be completed until next year, work now having been suspended.

IN THE FOREST RESERVE.

Widening, grading, and surfacing.—During the year about 22 miles of the east approach was widened and graded, and surfaced where needed, making a total of 25 miles completed and leaving 2½ miles (between the 6 and 8½-mile posts from the park boundary) yet to be improved. A large amount of very heavy rockwork was involved in this section, especially the half farther from the park. The work also included several realignments as follows: One about one-quarter of a mile long, 900 feet of which was along a rock cliff, 2½ miles from the park boundary; one 6,000 feet long at Holm Lodge and Libby Flats, between 8 and 10 miles from the boundary; and one about 1 mile long at the location of the new steel bridge over the North Fork of Shoshone River, 21½ miles from the park boundary.

Steel bridges.—Contracts were let for the steel and erection of three low curved top chord-steel bridges, 100-foot span each, with riveted joints, located as follows: Two over the North Fork of the Shoshone River, 2 and 21½ miles, respectively, from the park boundary, and one over Elk Fork, 23 miles from the boundary. The concrete abutments and floors of these bridges are being built by the Government. At this date the Elk Fork bridge is practically completed except for the floor, and the abutments for the two bridges over the North Fork are about half completed.

Other bridges and culverts.—Minor repairs were made where necessary to other bridges and culverts, and a number of galvanized iron culverts were installed in connection with the other work of improvement.

COOKE CITY ROAD.

General improvement.—The work begun last year of widening and improving the road leading from Tower Falls to the northeast boundary, known as the Cooke City Road, was continued during the summer of 1915. The road was widened for about 4 miles and graveled an aggregate distance of about 2 miles, where most needed; and about 65 log bridges and culverts of various spans were installed. About 7 miles of road, beginning at the northeast boundary, has now been placed in very fair condition.

Work by Robert I. McKay.—In addition to the work done at Government expense on the Cooke City Road, there has been some work done by Mr. Robert I. McKay and associates, who have considerable mining interests at Cooke City, Mont., about 4 miles outside the northeast boundary. As Mr. McKay has a permit from the Interior Department to operate motor trucks and trailers through the park from Cooke City to Gardiner, Mont., for the purpose of

hauling ore, machinery, etc., he and his associates are interested in the upkeep and improvement of the road. The principal work done by these interests to date consists of a realignment, 3,600 feet long, around what is known as the Ash Grade and S Hill, between 8 and 9 miles from the northeast boundary. This realignment slightly shortened the road and eliminated a hill with a 130-foot climb, having an average road grade of about $6\frac{1}{2}$ per cent and a maximum grade of about 19 per cent. The work included the removal of considerable rock, boulders, gravel, etc., by blasting, the building of some crib retaining wall, and the construction of a 10-foot log bridge and five 3-foot and three 4-foot log culverts. In addition, some work was done not on the realignment mentioned, including the building of two log culverts of about 4-foot span each, and the replacing of a 21-foot span log bridge over Lost Creek, a short distance beyond Tower Falls toward Cooke City. At present work is being done by Mr. McKay and his associates on a realignment around a bad hill west of Pebble Creek, about 11 miles from the northeast boundary, on a realignment between the Soda Butte flat and the Jackson grade, about $14\frac{1}{2}$ miles from the boundary; and on graveling considerable portions of the road.

WORK IN GENERAL.

Telephone lines.—The opening of the park to automobiles on August 1 made essential an improved telephone service throughout the park. Sixty-three miles of new single-wire telephone line was built by the Engineer Department, which is being paid for by the Interior Department. There was repaired or rebuilt, in addition, 75 miles of telephone line, also at the expense of the Interior Department, excepting a small portion which was paid for by the Engineer Department.

Checking stations.—There were built during the year, for the use of and at the expense of the Interior Department, three automobile checking stations, of log construction, located, respectively, at the west entrance, at the Madison Junction, $13\frac{1}{2}$ miles from the west entrance, and at the north junction of the Mount Washburn and Dunraven Pass Roads.

Automobile truck.—In line with the opening of the park to automobiles on August 1, 1915, there was purchased by the Engineer Department a 5-ton automobile truck. This has effected a large saving in the cost of the freight hauled by the truck. With the hoped-for extension next year of this method of transportation there will be effected a very considerable economy in the matter of hauling freight, which has always been a serious item in the costs of work done in the park.

Storehouse at Madison Junction.—A substorehouse for the Engineer Department, 108 feet long by 38 feet wide, of log construction, was built during the summer of 1915 at the junction of the Firehole, Gibbon, and Madison Rivers, about $13\frac{1}{2}$ miles from the west boundary, to be used principally for the storage of forage purchased in the fall, when the prices are most reasonable.

Gasoline storage tank.—Owing to the large increase in the amount of gasoline engine-driven plant it became advisable to build a 10,000-

gallon capacity steel storage tank at Mammoth Hot Springs, thus enabling gasoline to be purchased by the tank carload, and saving about 35 per cent over the cost of the same when purchased in barrels or drums.

FISH.

The usual season's work of collecting eggs of the black-spotted trout and distributing them from the subhatchery on Yellowstone Lake to points throughout the United States was continued under the direction of the superintendent of the United States hatchery at Bozeman, Mont., Mr. W. T. Thompson, who also furnished trout for planting in park waters as follows:

May 11, 1915, 15,000 eastern brook trout in Blacktail Deer Creek, and the same number on the same date in Obsidian Creek. The usual plants of the surplus black-spotted trout were also made in park waters adjacent to the lake.

A pamphlet on "The Fishes of the Yellowstone National Park," Bureau of Fisheries, Document 818, printed in 1915, has been furnished for distribution during the past season and has proven a very popular and useful document to those interested in fishing in the park.

WILD ANIMALS.

Frequent rains throughout the summer, causing constant growth of grass, provided an abundance of pasture for all kinds of herbivorous animals. And on account of the cool weather due to the rains, elk, deer, and antelope remained in lower altitudes than usual, and were consequently often seen by tourists along the regular stage routes.

ANTELOPE.

The woven-wire fence along the north line of the park near the northern entrance kept the antelope from leaving the park by drifting down the Yellowstone River, as they are inclined to do during severe storms if allowed to follow their own instincts. They were fed whenever necessary during the winter from the alfalfa hay raised on the field near the entrance arch, and while the winter was so open and the herd so scattered that an accurate count was not secured they were all in fine condition in the spring, and there is no doubt that there was a normal increase in the herd. Last fall there were 192 tons of alfalfa hay on hand for use during the winter in feeding the antelope, mountain sheep, and deer. As the winter was very mild it was necessary to feed but 80 tons, leaving 112 tons that were carried over to this year. During the summer the 45½-acre field has been kept watered and has been cut twice and the hay, amounting to 82½ tons, stacked for next winter. A part of the field has grown up enough so that it will be cut again, so there are something over 200 tons of hay in stack for the coming winter. This field was cared for and hay cut and stacked under contract this season at a cost of \$5 per ton for the hay in stack. The same work cost \$6.09 per ton season of 1914.

DEER.

While due to the open winter the deer were not in evidence in large herds as they are sometimes found, there seemed to be at least the usual numbers of both black-tailed and white-tailed varieties, and they were in splendid condition all winter. Deer are frequently killed in open season by hunters several miles outside of the park, and I am convinced that many of them stray over the boundaries of the park annually.

ELK.

The weather was so mild and there was so little snow in March and April that the elk went up to high ground earlier than usual, and it was impracticable to take an accurate census of them. They were all in splendid condition, however, and careful estimates by experienced men placed the increase in the northern herd at 10 per cent and the decrease from natural causes at 3 per cent. Taking this into consideration, and deducting 375 elk shipped out of the park under authority of the department during the winter of 1914-15 leaves an estimated total of 37,192 in the herd. Those shipped were consigned as follows: January 25, 2 crated by express to the city park at Columbia, S. C.; January 27, 4 crated by express to the park commissioner, Borough of Queens, N. Y.; January 29, 3 crated by express to the mayor of St. Joseph, Mo.; February 12, 50 in 2 cars by freight to the State game warden of New Mexico; February 15, 50 in two cars by freight to the State of Montana; February 19, 50 in two cars by freight to the State of Idaho; February 21, 50 by express in a large express car to the State of South Dakota; February 24, 2 by express, crated, to Little Falls, Minn.; February 26, one car of 25 by freight to the State of Michigan, one car of 30 yearlings by freight to the State of Wisconsin, and 4 for the New York Zoological Society in the car by freight with elk for Michigan as far as St. Paul where they were crated and shipped the balance of the journey by express; March 3, 50 in a large car by express to the State of Colorado by the United States Biological Survey; March 5, one car of 25 by freight to the State of Utah by the United States Biological Survey; and the last shipment, on March 12, of one car of 30 by freight to the State of Minnesota. Allotments of elk for some other States were not filled on account of quarantine regulations for foot-and-mouth disease, which was prevalent in various sections during the winter. Unusual difficulty was found in capturing the elk wanted for shipment, as they did not come down for hay, on account of the warm winter. The experiment of shipping elk in carload lots by express, in the cases of South Dakota and Colorado, proved very satisfactory, as the animals receive better care than when shipped by freight, are not so long on the road, and with 50 in one large car the cost of shipping should not be much greater than if shipped in carloads of 25 by freight. In shipping by freight, rough handling of the cars by the railroads often results in considerable loss. Mr. F. M. Dille, who had charge of the shipment of the allotments made through the Department of Agriculture, is of the opinion that the method of shipment by express is far better than by freight. The presence of several bands of wolves has recently been noted on the elk ranges,

and it is feared that they will kill many of the calves. Arrangements are now being made to systematically hunt the wolves and coyotes in the park.

MOOSE.

Moose are frequently seen in various sections of the park. They are reported as thriving and increasing in numbers.

BUFFALO.

WILD HERD.

Little has been seen of this herd for the past two years, and it has not been practicable to get an accurate count of them.

TAME HERD.

The tame herd, which is kept on Lamar River near the mouth of Rose Creek, 30 miles east from headquarters, has been in the best of condition during the year. This herd now numbers 239 animals, as follows:

	Males.	Females.	Total.
Number Oct. 1, 1914 (last report).....	96	97	193
Born in November, 1914.....	1	.....	1
Born summer of 1915.....	28	21	49
Total to account for.....	125	118	243
Died or disposed of during the year.....	3	1	4
Balance now in the herd.....	122	117	239

Of those disposed of one 5-year-old bull was donated by the department to the city of St. Joseph, Mo., and shipped at the expense of the city on January 4; one 6-year-old bull was killed in the herd April 5; one yearling bull was found dead on the range, apparently from eating poisonous weeds, the latter part of June, and one 6-year-old cow died September 17.

The herd is kept out on the range most of the time during the summer months. Several attempts have been made to drive a number of the old bulls out to the range of the wild herd and to get them together, but they always return to the main herd. The usual show herd of 15 bulls was brought in to Mammoth Hot Springs on June 15 and returned to the main herd on September 20. At the present rate of increase in the herd it will soon become necessary to dispose of a large number of them or provide additional facilities for their care. The herd would be in much better shape if at least a hundred of the bulls could be disposed of. About 200 acres of meadow land was kept watered during the summer, and the hay was cut and stacked in August, yielding about 150 tons, at a cost for cutting and stacking of \$5.08 per ton. About 70 tons of last year's crop of hay is still on hand, and it is expected that 20 to 30 tons of good hay will be cut and stacked from a field sowed to oats last spring. This will insure an adequate supply of forage for the winter. Last winter being an open one, it was not necessary to begin feeding hay until January 26.

BEARS.

But few complaints were received during the summer of depredations by bears. Travel being heavy they found an ample supply of food at the garbage dumps near hotels and permanent camps, and therefore did not have to resort to stealing from ice boxes and camper's supplies, as is sometimes the case. Two bears had to be killed during the summer to protect life and property.

A 5-year-old male grizzly bear was captured at Grand Canyon and shipped alive on November 2, 1914, to the Board of Park Commissioners at Kansas City, Mo., at their expense. Two grizzlies, male and female 2-year-olds, were captured at Grand Canyon and shipped to the city of Los Angeles, Cal., on September 16 at the expense of the city.

COYOTES AND WOLVES.

Coyotes are numerous, although they are much hunted during the winter by employees on duty in the park. About 100 were killed during the year. Gray wolves are increasing, and have become a decided menace to the herds of elk, deer, mountain sheep, and antelope. Several were killed in the park last winter, and an effort will be made the coming winter to capture or kill them.

MOUNTAIN LIONS.

Mountain lions are numerous and are in evidence during the winter when their tracks are found in abundance in the vicinity of the large herds of elk. None were killed last winter, as there was not enough snow to track them to cover.

MOUNTAIN SHEEP.

The mountain sheep, like the deer and antelope, were considerably scattered during the winter, as the weather was mild, grass plentiful and there was scarcely any snow to drive them down to the lower altitudes. They were apparently plentiful and wintered in excellent condition.

OTHER ANIMALS.

Other smaller animals usually found in this altitude, such as beaver, foxes, lynx, otter, marten, etc., are frequently seen.

BIRDS.

Many kinds of birds are found in the park, and all, more particularly those classed as game birds in the States, are noticeably tamer than they are outside of the park. They, as well as many of the wild animals, seem to know where the park lines are located, although many hunters have complained that these lines are not marked plainly enough. The interest of travelers in bird life in the park has increased noticeably since the publication of a list of the names of birds found in the park in the circular of information which is generally distributed to all.

ATTACHED MAP / DRAWING

SEE ORIGINAL

PROTECTION OF GAME.

The question of game protection in the park has been much simplified of recent years by the hearty cooperation of the authorities of the adjoining States and of the officials of the national forests which adjoin the park on all sides. The States also establish game preserves in many places adjoining the park, changing their boundaries as conditions demand. Last winter the Montana Legislature withdrew from the game preserve that section immediately west of the northwest corner of the park, thus opening up a good hunting region for elk and deer, but still retain as a preserve that section just north of the park extending from the northwest corner to the mouth of Gardiner River. It also extended the season for hunting elk and deer to December 15, so as to enable those who depend upon the fall hunt for a winter supply of meat to get it late enough in the fall so it will not spoil. Hunting has been very poor during the last two seasons, as cold, stormy weather did not come in time to drive the elk down before the close of the hunting season. Last winter the Wyoming State Legislature set aside a large part of the area east of the park as a game preserve.

Additional scouts were employed during the hunting season in adjoining States, and several arrests were made; but in few cases were the parties indicted, and under the present law it is an expensive and difficult process to prosecute offenders, as under a decision of the Attorney General the United States commissioner in the park can not dispose of a case but can only hold violators of the park laws to trial before the United States district court. In most cases where evidences of depredations were found the guilty parties were discovered and brought to trial. One violator of the law—a soldier who was a member of the detachment stationed in the southwest corner of the park—pleaded guilty to the charge of killing an elk in the park, before a general court martial, and was sentenced: "To be dishonorably discharged the service of the United States; to forfeit all pay and allowances now due, or to become due while in confinement under this sentence; and to be confined at hard labor at such place as the reviewing authority may direct for one and one-half years." The United States Disciplinary Barracks, Alcatraz, Cal., was fixed by the reviewing authority as the place where the sentence would be served.

Seventeen snowshoe cabins were put in repair and supplied for the use of patrols traveling on skis during the winter.

VIOLATIONS OF LAW.

Several violations of law were discovered, in addition to those protecting game, and in many cases arrests have been made.

In February, the evening of the first or morning of the second, some miscreant cut the high woven-wire fence on the north line of the park, about $3\frac{1}{2}$ miles west from the entrance arch. Tracks of a man were found leading away from the point where the fence had been cut, but it was impossible to fix the blame. On the evening of February 3 some one went to the pens, at the haystacks on the flat, in sight of the town of Gardiner, and killed five of the elk that had been captured for shipment. It was apparent that the elk had been killed

with a large knife tied to a long stick, from the outside of the pen. As scarcely any of the meat had been taken, it appeared likely that the work was done by some one for spite, possibly by the same persons who cut the fence. Efforts were made to fix the blame, but so far they have been fruitless.

A highway robbery occurred about 10 o'clock a. m.; July 9, at a point about a mile south of Madison Junction, on the road toward Fountain. The day was very rainy; and being one of the days of heavy travel from the western entrance, about 12 miles of passenger vehicles were in the line leaving Yellowstone that morning. After one vehicle had passed without being molested five were held up and the passengers forced to give up some of their money. The robber, who was masked and carried a rifle, was described by all who saw him as evidently an amateur in the business, and he was doubtless frightened away before he had completed the job by seeing a man from one of the rigs pulling up from the rear drop off, and go back on the road to give the alarm. Had he continued a few minutes longer he would have been captured in the act, as soldiers were at the scene within about half an hour. The alarm was at once given and all available men from stations and scouts from headquarters were at once sent out, some to the scene of the holdup to try and pick up some trail or bit of evidence and others to cover trails, roads, etc., leading out of the park. The country was searched for two days for several miles around, but not a trace or clue was found. This, however, might easily have been due to the excessive rain that day, which completely obliterated all tracks. Suspicion rested on some near-by road camps, where many men of unknown character were employed as laborers, and as they did not work the morning of that day on account of the rain it was a difficult job to check and account for them. Later the Department of Justice sent detectives to the scene, who still have the matter in hand and are following clues. The total amount secured by the robber is less than \$200.

Through the efforts of the secret-service men of the Department of Justice a man is now being held in jail charged with the crime of holding up the coaches in the park on July 29, 1914, and it is believed that the evidence is strong enough to convict him.

SANITATION.

During the tourist season frequent inspections of hotels and camps were made by officers of my command with a view to keeping them in the best possible condition of cleanliness. Two men with a two-horse team and wagon were kept on the move all summer keeping the camping grounds in a sanitary condition and caring for the earth closets maintained for public use throughout the park.

Since the admission of automobiles on August 1, a demand has been created for special sanitary camps for parties traveling in private automobiles and carrying their own camp equipment. The regular camps are selected with a view to providing grazing for horses, which also need to be kept at some distance from hotels and permanent camps. A separate set of camps, about three in number, located at Mammoth Hot Springs, Upper Geyser Basin, and Grand Canyon, not too far from the points of interest and provided with a few conveniences, would be appreciated by those who travel in their own automobiles, and as the

automobile tickets of passage, for which a charge is made by the department, are a source of considerable revenue, it seems that an expense for this purpose is warranted.

FOREST FIRES.

Almost constant wet weather during the past summer prevented danger at any time of forest fires, and in few cases were the usual summer fire patrols considered necessary.

IMPROVEMENTS.

Fire lanes.—The crew of men constructing fire lanes in the southeast corner of the park last fall completed about 10 miles of new fire lanes, as far as the crossing of the Yellowstone River, when they discontinued the work on account of bad weather. A total of 31 miles of fire lanes were constructed season of 1914, at an average cost of \$60.20 per mile. About June 1 a crew was again put into the field, and during the month of June went over and repaired 75 miles of old fire lanes at an average cost of \$18.34½ per mile, the high rate being due to the fact that one of the fire lanes repaired—the one from Soda Butte Creek up Lamar River and down Pelican Creek to Mary Bay, 48 miles in length—had not been repaired for several years and needed more work than usual. Since July 1 this crew has repaired 154 miles of fire lanes at an average cost of \$10.23 per mile, and built a new fire lane from the crossing of the Upper Yellowstone River west as nearly as practicable along the south boundary, to connect with the one built last season, 6 miles northeast of Snake River Station, a total of 27 miles, at a cost of \$32.12 per mile. All fire lanes were gone over and repaired during the season, except the one from Snow Pass to the Gallatin road, through Fawn Pass, a distance of 24 miles.

The wire fence around the pasture at Mammoth Hot Springs, used in summer for the show herd of buffalo bulls, was repaired in April and May, requiring 70 new cedar posts to replace those that had rotted off. Two thousand seven hundred feet of this fence was taken down and moved in, to get it away from the stage road from Tower Falls to Mammoth, and this required 135 new posts. Due to change of location, it took 3,000 feet of fencing to replace the 2,700 feet taken down. Most of this work was done by regular employees.

A new log house was built at the mouth of Rose Creek on Lamar River, for use of the buffalo keeper. It is built of logs with shingle roof, finished inside with beaver board. The main part is a one-story building 30 by 30 feet, with porch over the front door, brick chimney in the center, and is divided into dining room 15 by 15 feet, living room 15 by 15 feet, and three bedrooms each 10 by 15 feet. Built on the same line in front is an addition 12 by 14 feet, one story built of logs, with brick chimney, and porch on the back side over the door. This work has all been done by park employees, in addition to their regular duties, and has only recently been completed. The cost of the material was \$654.19.

Telephone lines.—Under a decision by the Comptroller of the Treasury that the Interior Department may improve and extend the park telephone system which was built at the expense of the War Depart-

ment, the sum of \$10,000 was allotted for the extension and repair of the system, in connection with the opening of the park to automobiles.

The engineer officer in charge of road improvements in the park found that he was badly in need of efficient telephone service in connection with his work of building and repairing roads, and he was permitted to install telephones on the park line at all of his principal road camps in the park, greatly facilitating his work. He also secured a small allotment of funds from the road appropriation for keeping up the line, and he has kindly had all of the work on the lines done by his crews, under his supervision and mine, bills to be paid by this department except for a small portion which is covered by his allotment. By this cooperation, expense is reduced, and the telephones installed in the road camps are also frequently very convenient for use of our patrols in making reports and in checking automobiles. It was over a telephone in one of the engineer camps that the first news of the holdup of July 9 was received at headquarters, several minutes earlier than it would have been received from the nearest soldier station.

The material necessary for the extension and repair of these lines was purchased by special authority from the Signal Corps of the Army, at a minimum figure, and shipped on a Government bill of lading from Omaha, Nebr. The work completed during the summer was as follows:

A new line from Norris, via Canyon to Lake Outlet, 27 miles, at a cost of about \$120 per mile. A new line from the western entrance of the park to Firehole Cascades, where it connects with the Norris-Upper Basin line, a total of about 16½ miles, at an approximate cost of \$172 per mile for the first 9½ miles from the west boundary, and about \$119.50 per mile for the remaining 7 miles. A new line from Canyon to Tower Falls Soldier Station, about 20 miles, at a cost of about \$106 per mile. The building of these new lines made the Government lines, which had heretofore been carried on poles of the hotel company between Norris and Lake Outlet, and on the poles of the Yellowstone-Western Stage Co. to the west boundary, entirely independent, and established communication between Canyon and Tower Falls via Dunraven Pass, necessary in checking automobiles. Repairs were also made to telephone lines as follows:

Norris to Upper Basin, about 29 miles, at an approximate cost of \$52 per mile. Thumb to Lake Outlet, about 16 miles, at an approximate cost of \$60 per mile. About 12 miles of the line east from Lake Outlet toward Sylvan Pass Station, at an approximate cost of \$72.50 per mile. And the line from Tower Falls Station to Headquarters, 18 miles, at an approximate cost of \$44.60 per mile. No repair work was done on the balance of the Sylvan Pass line, on the line from Thumb to Bechler Station via Snake River Station, or from Swan Lake flats to Gallatin Station, except slight repairs made by park employees or enlisted men. The lines from Fort Yellowstone to Gardiner, and from Fort Yellowstone to Norris have been kept in repair by enlisted men.

Checking stations.—Under allotments from park revenues, stations for checking automobiles were constructed as follows: A log building 14 by 14 feet at the west boundary entrance, with tarred paper and gravel roof, at an approximate cost of \$200; a similar building at a cost of about \$100 at the north end of Dunraven Pass about 11 miles

from Canyon Junction; and a log building 14 by 28 feet inside measurements, with shingled roof, at Madison Junction, 14 miles from the west boundary, at a cost of about \$250. The engineer officer also kindly had this work done by his crews who were on the ground, thus saving considerable expense of moving special crews out long distances to those points. Additional checking stations were authorized, but were not found necessary during the short season for automobiles since August 1. The Engineer Department buildings at Beaver Lake, between Fort Yellowstone and Norris, and at De Lacy Creek, between the Upper Basin and Thumb, were also used as checking stations.

With permission of the department, the Engineer Department built a short spur of railroad track into the park from the Oregon Short Line Railroad depot at Yellowstone, Mont., for the purpose of switching and unloading road oil into their storage tank at that point.

The military authorities have torn down and destroyed the old barracks and stables originally known as Camp Sheridan, located close to the road opposite Jupiter Terrace, thereby greatly improving the appearance of the landscape at that point.

NATURAL PHENOMENA.

Few changes of any importance have been noted in the geysers, hot springs, etc., during the past year.

An earthquake was noted at 7.55 a. m. on May 8. Three distinct shocks were noticed at Grand Canyon and Tower Falls, and one was noticed at Mammoth Hot Springs. No damage was done.

CONCESSIONS.

CONCESSIONERS HOLDING PRIVILEGES FOR A YEAR OR MORE IN YELLOWSTONE NATIONAL PARK UNDER EXISTING CONTRACTS, WITH RENTALS AND OTHER TAXES EXACTED.

Yellowstone Park Hotel Co.—Contracts (two) dated February 26, 1913, run for period of 20 years, and grant to company right to use certain land in the park and erect and maintain thereon hotels and necessary buildings connected therewith.

Annual rental: Forty dollars per acre on 29.44 acres, \$1,177.60. News-stand privilege at hotels and lunch stations, \$750. Usage tax, 1915, 25 cents per capita on guests during 1915 season, \$6,722.

Yellowstone Park Transportation Co.—Contract dated February 26, 1913, runs for period of 20 years, and authorizes company to establish and maintain a stage and transportation line and agrees to lease necessary land at eight designated sites on which to construct and maintain buildings required for accommodation of stock, carriages, employees, etc.

Annual rental: Forty dollars per acre on 27.16 acres, \$1,086.40. Usage tax, 1915, 25 cents per capita on passengers carried during 1915 season, \$1,655.25.

Yellowstone Park Boat Co.—Contract dated February 7, 1913, runs for 10 years, and lease dated May 19, 1914, for 9 years from February 7, 1914, grants to company privilege of maintaining, operating, and conducting on Yellowstone Lake and such other park lakes as may be designated, motor boats and launches, motor vessels, rowboats, and dories for accommodation of tourists, with right to sell and rent fishing tackle and sell fruits, nuts, confectionery, books, periodicals, cigars, tobacco, and camping supplies, and lease or sell bathing suits. Contract agrees to lease lands on shores of Yellowstone Lake on which wharves and ways are constructed, and at other points to be agreed upon on which to erect buildings for storage of equipment, accommodation of employees, etc.

Compensation for boat privilege, \$100 per annum. Annual rental on 1.8592 acres, at \$40 per acre, \$74.37.

Wylie Permanent Camping Co.—Contract of May 4, 1906, runs for 10 years from March 31, 1906, and grants transportation privilege in park, with sites for maintenance of permanent camps therein, and right to conduct lunch stations at points near Gibbon River and West Thumb of Yellowstone Lake.

Annual rental: Ten dollars per wagon (not less than 50 to be used) on 158 wagons used during 1915 season, \$1,580. News-stand privilege at permanent camps, \$500. Usage tax, 1915, 50 cents per capita on passengers carried during 1914 season, \$2,376.50.

Shaw & Powell Camping Co.—Special permanent camping license issued April 19, 1913, and running for a period of one year from May 1, 1913, or until such time as may be revoked, authorizes it to maintain, conduct, and carry on the business of transporting tourists in and through the park and provide for their accommodation at permanent camps to be established on sites at designated points in the reservation and to maintain a lunch station on Madison River between the present Wylie camp and the State line.

Annual rental: Ten dollars on each wagon used (75 passenger and 10 freight wagons used 1915 season), \$850. News-stand privilege at permanent camps, \$100. Usage tax, 1915, 25 cents per capita on passengers carried during 1914 season, \$606.25.

Holm Transportation Co.—Contract entered into March 14, 1913, with company for the period of one year from and after March 31, 1913, authorizes the establishment and maintenance of a stage and transportation line in the park, with the right to use and occupy such parcels of land as may be necessary at or near designated points therein on which to construct and maintain suitable buildings and inclosures for accommodating stock, carriages, and employees. Supplemental agreement entered into with company on January 23, 1914, extending the contract further for a period of three years from March 14, 1914.

Annual rental: Forty dollars per acre on approximately 1.915 acres, \$76.60. Usage tax, 1915, 25 cents per capita on passengers carried during the 1915 park season, \$36.

George Whittaker.—Contract dated March 13, 1913, for period of 10 years, grants use on 24,000 square feet of land at or near Mammoth Hot Springs, with privilege of maintaining a dwelling, store, and post office.

Annual charge, \$100. Usage tax, 1914, \$800 per annum. Total, \$900.

Yellowstone-Western Stage Co.—Contract dated January 26, 1915, authorizing, for the term from January 1, 1914, to December 31, 1915, establishment and maintenance of a stage and transportation line, and permitting the use of certain parcels of land in connection with such privilege, aggregating 13 acres, together with use of buildings located thereon, approximately 47 in number, for accommodating stock, carriages, and employees.

Rental for period of contract: Forty dollars per acre on 13 acres, \$520. For use of buildings, \$2,500; 25 cents per capita tax on passengers carried during 1915 park season, \$4,934.25.

Pryor & Trischman.—Contract dated August 26, 1908, running for period of eight years, from April 3, 1908, issued to George R. and Anna K. Pryor, interest of former transferred to Elizabeth Trischman through assignment approved by Department of the Interior October 29, 1912, grants use of tract of land near Mammoth Hot Springs in park, containing 13,800 square feet, on which to maintain dwelling, store, and soda fountain.

Annual rental, \$50; usage tax of \$115 per annum. Total, \$165.

C. A. Hamilton.—Contract dated November 23, 1914, running for a period of three years, from August 13, 1914, issued to Mary R. Klamer, widow of Henry E. Klamer, and by her transferred through assignment approved by Department of the Interior June 25, 1915, authorizes use of 2-acre tract of land at or near Upper Geyser Basin, with privilege of maintaining thereon building or buildings for use as dwelling and conduct of a general store.

Annual rental, \$100; usage tax, \$1,200 per annum. Total, \$1,300.

F. Jay Haynes.—Contract of May 25, 1914, for period of three years from April 1, 1914, authorizes use of 0.64 acre of land at Mammoth Hot Springs and 1 acre at or near Upper Geyser Basin, with privilege of maintaining buildings thereon for the preparation and sale of photographic views. Contract also agrees to lease not to exceed 1 acre of land at or near Grand Canyon for buildings for photographic purposes.

Annual rental: Forty dollars per acre on 2.64 acres, \$105.60. For privileges accorded, \$1,000 at Mammoth Hot Springs, \$1,000 at Upper Basin, and \$500 at Grand Canyon. Total, \$2,605.60.

Henry J. Brothers.—Contract of July 1, 1914, for a period of 10 years from same date authorizes use of approximately 2½ acres of land, at \$40 per acre, \$100, to be leased to him at Upper Geyser Basin, with privilege of maintaining bathhouse and bathing pools. Compensation for bathhouse privilege, \$200 per annum.

Annual rental, \$40 per acre for land leased; also \$200 for privilege. Payments to begin one year from time bathhouses opened to public July 1, 1915.

Personally conducted camping party and special licenses issued in the Yellowstone National Park during the season of 1915.

ENTERING AT NORTHERN ENTRANCE.

Name of licensee.	License No.	Usage tax (25 cents per capita on passengers carried 1914 season).		Amount paid, special licenses issued (1 wagon each).	Number of wagons, at \$10 each.	Number of horses, at \$2 each.	Total paid.
		Number carried.	Amount paid.				
S. E. and E. J. Larson.....	15, 16	22	\$5.50	-----	3	1	\$37.50
O. O. Rosenborough and H. P. Grant ¹	21, 24	93	23.25	-----	11	-----	133.25
Bert Stewart and J. McPherson.....	12, 17	-----	-----	\$25.00	1	-----	35.00
Howard Eaton.....	10, 11, 43, 44	63	15.75	-----	4	51	157.75
Chas. G. Davis.....	35	-----	-----	25.00	-----	-----	25.00
E. L. Robertson.....	22	-----	-----	25.00	-----	-----	25.00
Do.....	23	-----	-----	15.00	-----	-----	15.00
Total.....	-----	178	44.50	90.00	19	52	428.50

ENTERING AT NORTHERN AND WESTERN ENTRANCES.

W. N. and O. M. Hefferlin ²	8, 9	110	\$27.50	-----	42	4	\$455.50
B. D. Sheffield.....	1, 37, 38	33	8.25	-----	3	3	44.25
Total.....	-----	143	35.75	-----	45	7	499.75

ENTERING AT WESTERN ENTRANCE.

T. E. Newcomb.....	29	4	\$1.00	-----	-----	18	\$37.00
Joe Clause.....	13, 14	32	8.00	-----	3	2	42.00
Total.....	-----	36	9.00	-----	3	20	79.00

¹ Roseborough and Grant had special permission to erect a permanent storage camp at Apollinaris Spring, but did not avail themselves of it.

² W. N. and O. M. Hefferlin had special authority for season 1915 for four permanent camps for their patrons, which they erected and operated.

ENTERING AT EASTERN ENTRANCE.

Name of licensee.	License No.	Usage tax (25 cents per capita on passengers carried 1914 season).		Number of wagons, at \$10 each.	Number of horses, at \$2 each.	Total paid.
		Number carried.	Amount paid.			
J. W. Howell.....	39, 40	-----	-----	1	6	\$22.00
Frederick Morris.....	41, 42	9	\$2.25	1	8	28.25
H. Mullendore.....	2, 3	-----	-----	2	2	24.00
Will B. Shore and Geo. T. Hopkins.....	6, 7, 20, 25, 30	40	10.00	5	28	116.00
N. W. Frost and Fred J. Richard.....	34	-----	-----	-----	24	48.00
W. H. Jordan.....	4, 5, 46	41	10.25	1	9	38.25
E. C. Brown and Simon Snyder.....	18, 19	26	6.50	5	20	96.50
Total.....	-----	116	29.00	15	97	373.00

ENTERING AT SOUTHERN ENTRANCE.

C. E. Carrington.....	36	-----	-----	-----	12	\$24.00
James S. Simpson.....	26, 27	-----	-----	1	6	22.00
Chas. C. Moore.....	31, 32	15	\$3.75	2	14	51.75
S. N. Leek.....	33	5	1.25	-----	11	23.25
Total.....	-----	20	5.00	3	43	121.00

ENTERING AT SOUTHERN AND EASTERN ENTRANCES.

Joe A. and M. G. Jones and Joseph McGill.....	28, 45	3	\$0.75	-----	32	\$64.75
Total.....	-----	3	.75	-----	32	64.75

Personally conducted camping party and special licenses issued in the Yellowstone National Park during the season of 1915—Continued.

SUMMARY (ALL PARK ENTRANCES).

Park entrance.	Usage tax (25 cents per capita passengers carried 1914 season).		Amount paid special licenses issued.	Number of wagons at \$10 each.	Number of horses at \$2 each.	Total paid.
	Number carried.	Paid.				
Licensees entering at northern entrance and at both northern and western entrances combined.....	321	\$80.25	\$90.00	64	59	\$928.25
Licensees entering at western entrance.....	36	9.00	.....	3	20	79.00
Licensees entering at eastern entrance.....	116	29.00	.....	15	97	373.00
Licensees entering at southern entrance and at both southern and eastern entrances combined.....	23	5.75	.....	3	75	185.75
Total.....	496	124.00	90.00	85	251	1,566.00

RECOMMENDATIONS.

That it be decided for a definite period of time by the department maintaining the military force and that controlling the national park if the park shall continue to be policed by United States troops or if they shall in the near future be replaced by a civilian organization. A fixed policy in this regard is essential to a stable and progressive administration.

Very respectfully,

LLOYD M. BRETT,
Colonel of Cavalry, Acting Superintendent.

The SECRETARY OF THE INTERIOR.

APPENDIX.

RULES AND REGULATIONS.

Regulations of October 24, 1915, governing the distribution of animals from the Yellowstone National Park during the fiscal years 1914-15.

1. *General.*—Distribution of all animals will be limited to applications from Federal, State, county, and municipal authorities. None will be given to private parties. Allotments will be made in the order of receipt of applications, but preference will be given to shipments intended for National reservations and to those States not having theretofore received animals. Before elk will be allotted evidence must be furnished that the laws of the State where they are intended to be transported afford them complete protection during the close as well as the open season. In the case of all animals assurance must be given that they will be humanely and properly cared for.

2. *Expense.*—No charge will be made for animals, but applicants will be required to bear all expense of capture, crating, and hauling to Gardiner, Mont., the shipping point, and to arrange for payment of transportation charges from that place to point of destination. Provision should be made for an attendant to accompany elk shipped by freight in carload lots. Small consignments of elk or other animals should be forwarded by express, and arrangements should be made for suitable crates in which to transfer animals from car to place of destination.

3. *Elk.*—During the present fiscal year the total number of elk to be distributed will not exceed 1,000, and not more than 50 head will be allowed to any one State.

In view of the existence of several peculiar forms of elk on the Pacific coast, and the importance of keeping these elk distinct from the Rocky Mountain species, requests for elk intended for the Cascades, Sierra Nevada, or points west of these ranges will not receive approval.

In shipping elk by carload the number of head in any one car shall not exceed 30. This number will be permitted only in the case of yearlings shipped in a 36-foot car; in all other cases the number of elk shall not exceed 25 head per car. When cattle cars are used for the shipment of elk the lower part of the car must be covered with burlap, canvas, or some similar material to screen the animals from view and prevent them from being disturbed at stations en route. When box cars are used the doors should be left partly open for ventilation. Before shipping the elk all cars must be padded inside to a height equal to the shoulders of the animals. Ample arrangements must be made to provide food and water when cars are likely to be more than 12 hours en route. When-

ever possible the elk should be fed and watered within the car; otherwise shipments will be governed by the 28-hour law (act of Congress of June 29, 1906, 34 Stat., 607). When convenient snow should be furnished the elk instead of water, and tubs containing water or snow must be placed at the ends as well as in the middle of the car. Two partitions, one on each side of the door, must be provided as a place for food and water.

4. *Buffalo*.—A limited number of the older bulls from the tame herd will be distributed to such municipal parks—not more than two to any one park—the authorities of which will defray all expense of crating, hauling to cars, and transporting, and upon the further condition that at least two buffalo cows will be procured for each bull donated. Cows from the park herd will not be disposed of under any conditions.

5. *Beaver*.—A limited number of beaver will be distributed to points where the animals will have complete protection and where conditions are favorable for their increase.

6. *Bears*.—Bears, not to exceed two for any public park or zoological garden, may be shipped when properly crated.

7. *Other animals*.—Antelope, deer, moose, and mountain sheep will not be distributed at this time, owing to their limited numbers.

Applications should be addressed to the Secretary of the Interior, Washington, D. C.

GENERAL REGULATIONS APPROVED MAY 27, 1911.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscriptions or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb in any manner or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel, or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person

or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park, guard parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park excepting for the use of the wild game and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards or any of the platforms, seats, railings, steps, or any structures, or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than \$1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

INSTRUCTIONS APPROVED APRIL 15, 1914.

1. The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

2. *Fires*.—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down.

Especial care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

3. *Camps*.—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places, where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

4. *Concessionaires*.—All persons, firms, or corporations holding concessions in the park must keep the grounds used by them properly policed and maintain the premises in a sanitary condition to the satisfaction of the superintendent.

5. *Bicycles*.—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

6. *Fishing*.—All fish less than 8 inches in length should at once be returned to the water with the least damage possible to the fish. Fish that are to be retained must be at once killed by a blow on the back of the head or by thrusting a knife or other sharp instrument into the head. No person shall catch more than 20 fish in one day.

7. *Dogs*.—Dogs are not permitted in the park.

8. *Grazing animals*.—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

9. *Formations*.—No person will be allowed on any formations after sunset without a guide.

10. *Hotels*.—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, 24 hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

11. *Driving on roads of park.*—(a) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(b) Vehicles in passing each other must give full half of the roadway. This applies to freight outfits as well as any other.

(c) Racing on the park roads is strictly prohibited.

(d) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(e) In making a temporary halt on the road for any purpose all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway. No stops on the road for luncheon or for camp purposes will be permitted. A team attached to a vehicle will not be left without the custody of a person competent to control it; a team detached from a vehicle will be securely tied to a tree or other fixed object before being left alone.

(f) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(g) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(h) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, or such vehicles overtake pack trains, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(i) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(k) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(l) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear, warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(m) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

12. *Liquors.*—All beer, wine, liquors, whisky, etc., brought into the Yellowstone National Park via Gardiner to be carried over the roads through the reservation to Cooke City, must be in sealed containers or packages, which must not be broken in transit.

13. *Miscellaneous.*—Automobiles are not permitted in the park.¹

¹ The regulation prohibiting the use of automobiles in the park was so amended as to allow their use on the road leading from Bozeman, Mont., to the southern portion of Gallatin County, Mont., and on Aug. 1, 1915, the Secretary of the Interior admitted automobiles for pleasure purposes only, under regulations and schedules approved by him.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

14. *Penalty.*—The penalty for disregard of these instructions is summary ejection from the park.

Notices.—(a) Boat trip on Yellowstone Lake: The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb lunch station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(b) Side trips in park: Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park; also at the office of the superintendent.

(c) All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing.

REGULATIONS OF JULY 7, 1915, GOVERNING THE ADMISSION OF AUTOMOBILES FOR THE SEASON OF 1915.

[Effective Aug. 1, 1915.]

Pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894, the following regulations governing the admission of automobiles into the Yellowstone National Park are hereby established and made public:

1. *Automobiles.*—The park is open only to such automobiles as are operated for pleasure and not to those carrying passengers who are paying, either directly or indirectly, for the use of the machine.

2. *Motor cycles.*—Motor cycles are not permitted to enter the park.

3. *Tickets of passage.*—Ticket of passage must be secured and paid for at the checking station where the automobile enters the park. This ticket must be conveniently kept, so that it can be exhibited to park guards on demand, and must be surrendered at the last checking station on leaving the park. Tickets of passage will show (a) name of owner, (b) license number of automobile, (c) name of State issuing license, (d) make of machine and manufacturer's number, (e) name of driver, (f) seating capacity of machine, and (g) number of passengers.

4. *Fees.*—Fees are payable in cash only, and will be as follows for each trip through the park:

For runabouts or single-seated cars.....	\$5. 00
For 5-passenger cars.....	7. 50
For 7-passenger cars.....	10. 00

5. *Muffler cut-outs.*—Muffler cut-outs must be closed while approaching or passing riding horses, horse-drawn vehicles, hotels, camps, or soldier stations.

6. *Distance apart—Gears and brakes.*—Automobiles while in motion must not be less than 100 yards apart, except for purpose of passing, which is only permissible on comparatively level or slight grades. All automobiles, except while shifting gears, must retain their gears constantly enmeshed. Persons desiring to enter the park in an automobile will be required to satisfy the guard issuing the ticket of passage that the machine in general, and particularly the brakes

and tires, are in first-class working order and capable of making the trip, and that there is sufficient gasoline in the tank to reach the next place where it may be obtained, and carry two extra tires. For this purpose all drivers will be required effectually to block and skid the rear wheels with either foot or hand brake, or such other brakes as may be a part of the equipment of the automobile. Gasoline can be purchased at regular supply stations as per posted notices.

7. *Speeds*.—Speeds must be limited to 12 miles per hour ascending and 10 miles per hour descending steep grades, and to 8 miles per hour when approaching sharp curves. On good roads with straight stretches, and when no team is nearer than 200 yards, the speed may be increased to 20 miles per hour. Horns must be sounded at all curves where the road can not be seen for at least 200 yards ahead, and when approaching teams or riding animals.

8. *Teams*.—When teams, saddle horses, or pack trains approach, automobiles will take the outer edge of the roadway, regardless of the direction in which they may be going, taking care that sufficient room is left on the inside for the passage of vehicles and animals. Teams have the right of way, and automobiles will be backed or otherwise handled as may be necessary so as to enable teams to pass with safety. In no case must automobiles pass animals on the road at a greater speed than 8 miles per hour.

9. *Fines*.—Fines or other penalties will be imposed for arrival of automobiles at any point before approved lapse of time, hereinafter given, at the following rates: \$0.50 per minute for each of first five minutes; \$1 per minute for each of the next 20 minutes; \$25 fine or ejection from the park, or both, in the discretion of the acting superintendent of the park, for being more than 25 minutes early.

10. *Penalties*.—Violation of any of the foregoing rules or general regulations for government of the park will cause revocation of ticket of passage, and, in addition to the penalties hereinbefore indicated, will subject the owner of the automobile to any damage occasioned thereby, immediate ejection from the reservation, and be cause for refusal to issue new ticket of passage to the owner without prior sanction in writing from the Secretary of the Interior.

11. *Accidents*.—When, due to breakdowns or accidents of any other nature, automobiles are unable to keep going or to reach the next stopping place on time, they must be immediately parked off the road, or where this is impossible, on the outer edge of the road, and wait until the next schedule for automobiles past that point, or until given special permission to proceed by park guards.

12. These regulations and schedules do not apply to automobiles passing over the county road in the northwest corner of the park, en route to the town of Yellowstone, Mont.

SCHEDULES AND GENERAL INSTRUCTIONS.

Automobiles may leave the park by any one of the authorized routes of entrance. Automobile drivers should compare their watches with the clocks at checking stations.

Automobiles stopping over at points other than the hotels and permanent camps will be allowed to resume travel only at such time as permits them to fall in with a subsequent regular automobile

schedule past the point of stop-over. Such automobiles while stopping over must park out of sight of, or at least 100 yards from, the main road.

Automobiles stopping over at permanent camps must leave the same at the proper time to conform with the published schedules from the nearest hotels. Detailed times of departure to comply with this provision will be posted at the particular camps concerned.

When, due to breakdowns or accidents of any other nature, automobiles are unable to keep going, or to reach the next stopping place on time, they must be immediately parked off the road, or where this is impossible, on the outer edge of the road, and wait until the next schedule for automobiles past that point, or until given special permission to proceed by park guards.

Automobiles will not be permitted for use on local trips around hot springs formations or other points of interest off the main roads, except in the case specially noted at Artist Point, in the morning schedule from the Lake Hotel to Canyon Hotel.

Speeds.—Speeds must be limited to 12 miles per hour ascending and 10 miles per hour descending steep grades, and to 8 miles per hour when approaching sharp curves. On good roads with straight stretches, and when no team is nearer than 200 yards, the speed may be increased to 20 miles per hour. No automobile shall pass another while in motion going in the same direction.

Horns.—The horn will be sounded on approaching curves, stretches of road which can not be seen for about 200 yards, and driving or riding animals; also on meeting other machines.

Teams.—When teams, saddle horses, or pack trains approach, automobiles will take the outer edge of the roadway, regardless of the direction in which they may be going, taking care that sufficient room is left on the inside for the passage of vehicles and animals. Teams have the right of way, and automobiles will be backed or otherwise handled as may be necessary so as to enable teams to pass with safety. In no case will automobiles pass animals on the road at a greater speed than 8 miles per hour.

In addition to the schedules herein given, automobiles must keep clear of any horse-drawn passenger vehicles running upon regular schedules which may be following them; and upon overtaking any horse-drawn passenger vehicles running upon regular schedules, automobiles must not attempt to pass or approach closer than within 150 yards of the same.

Reduced engine power—Gasoline, etc.—Due to the high altitude of the park roads, averaging nearly 7,650 feet for the belt line and east, north, and west entrances, the power of all automobiles is much reduced, so that about 50 per cent more gasoline will be required than for the same distance at lower altitudes. Likewise one lower gear will generally have to be used on grades than would have to be used in other places. A further effect that must be watched is the heating of the engine on long grades, which may become serious unless care is used. Gasoline can be purchased at regular supply stations as per posted notices.

	Miles.	Schedule A.		Schedule B.	
		Not earlier than—	Not later than—	Not earlier than—	Not later than—
Gardiner to Norris:					
Leave Gardiner entrance.....	0	6.00 a. m.	6.30 a. m.	2.30 p. m.	3.00 p. m.
Arrive Mammoth Hot Springs.....	5	6.30 a. m.	7.00 a. m.	3.00 p. m.	3.30 p. m.
Leave Mammoth Hotel.....	0	6.45 a. m.	7.15 a. m.	.....	.....
Leave 8-mile post.....	8	.....	8.00 a. m.	.....	.....
Arrive Norris.....	20	8.30 a. m.	9.00 a. m.	.....	.....
Norris to west entrance:					
Leave Norris.....	0	.....	.....	4.00 p. m.	4.30 p. m.
Arrive west entrance.....	27	.....	.....	6.00 p. m.	6.30 p. m.
(For Gallatin Station entrance see Note 1.)					
Norris to Fountain:					
Leave Norris.....	0	8.45 a. m.	9.15 a. m.	4.00 p. m.	4.30 p. m.
		(Via Mesa Road.)		(Via Mesa Road or Madison Junction.)	
Leave Firehole Cascades.....	14.7	.....	10.30 a. m.	.....	.....
Arrive Fountain Hotel.....	20	10.30 a. m.	11.00 a. m.	5.45 p. m.	6.15 p. m.
(For Gallatin Station entrance see Note 1.)					
West entrance to Fountain Hotel:					
Leave west entrance.....	0	6.45 a. m.	7.15 a. m.	.....	.....
Arrive Fountain Hotel.....	21	8.30 a. m.	9.00 a. m.	.....	.....
Fountain Hotel to Thumb:					
Leave Fountain Hotel.....	0	10.30 a. m.	11.00 a. m.	5.45 p. m.	6.15 p. m.
Arrive Upper Basin (Old Faithful Inn).....	9	12.00 m.	12.30 p. m.	6.45 p. m.	7.00 p. m.
Leave Upper Basin (Old Faithful Inn).....	0	2.30 p. m.	3.00 p. m.	7.00 a. m.	7.30 a. m.
Arrive Thumb Station.....	19	4.30 p. m.	5.00 p. m.	9.00 a. m.	9.30 a. m.
(For south entrance see Note 1.)					
Thumb to Lake Hotel:					
Leave Thumb Station.....	0	4.30 p. m.	5.00 p. m.	9.00 a. m.	9.30 a. m.
Arrive Lake Hotel.....	15	5.45 p. m.	6.15 p. m.	10.30 a. m.	11.30 a. m.
Lake Hotel to east boundary:					
Leave Lake Hotel.....	0	7.00 a. m.	7.30 a. m.	2.00 p. m.	2.30 p. m.
Arrive east boundary.....	28	9.30 a. m.	10.30 a. m.	4.30 p. m.	5.30 p. m.
East boundary to Lake Hotel:					
Leave east boundary.....	0	3.15 p. m.	3.45 p. m.	7.30 a. m.	8.00 a. m.
Arrive Lake Hotel.....	28	5.45 p. m.	6.15 p. m.	10.00 a. m.	11.00 a. m.
Lake Hotel to Canyon Hotel:					
Leave Lake Hotel.....	0	7.00 a. m.	7.30 a. m.	2.00 p. m.	2.30 p. m.
Leave Canyon Station.....	16	9.00 a. m.	10.00 a. m.	.....	.....
(See Note 2.)					
Arrive Canyon Hotel.....	17	9.10 a. m.	10.10 a. m.	3.15 p. m.	3.45 p. m.
Canyon to Norris:					
Leave Canyon Hotel.....	0	2.15 p. m.	2.30 p. m.	.....	.....
Arrive Norris.....	12	3.15 p. m.	3.30 p. m.	.....	.....
(For schedules from Norris to Fountain, Upper Basin, and west entrance, see p. —.)					
Canyon Hotel to Tower Falls:					
Leave Canyon Hotel.....	0	1.30 p. m.	2.00 p. m.	7.00 a. m.	7.30 a. m.
Arrive Tower Falls:					
Via Dunraven Pass.....	16	3.15 p. m.	3.45 p. m.	8.45 a. m.	9.15 a. m.
Via Mount Washburn.....	19	4.15 p. m.	4.45 p. m.	9.45 a. m.	10.15 a. m.
(For Cooke City entrance see Note 1.)					
Tower Falls to Gardiner:					
Leave Tower Falls.....	0	3.15 p. m.	4.45 p. m.	9.15 a. m.	10.15 a. m.
Arrive Mammoth Hot Springs.....	20	5.30 p. m.	6.45 p. m.	11.15 a. m.	12.15 p. m.
Leave Mammoth Hot Springs (via main road).....	0	7.00 a. m.	7.30 a. m.	2.30 p. m.	3.00 p. m.
Arrive Gardiner entrance.....	5	7.30 a. m.	8.00 a. m.	3.00 p. m.	3.30 p. m.
Mammoth Hot Springs to Gardiner:					
Leave Mammoth Hot Springs (via old road).....	0	8.45 a. m.	9.00 a. m.	11.45 a. m.	1.00 p. m.
Arrive Gardiner entrance.....	5	9.30 a. m.	9.45 a. m.	12.15 p. m.	1.45 p. m.

The acting superintendent of the park has authority to change these schedules if necessary.

NOTE 1.—Owing to scarcity of travel on the roads named, automobiles will be permitted to travel without schedule on the roads between the south entrance and the thumb; between the northeast or Cooke City entrance and Tower Falls Station; and between the west entrance (Yellowstone, Montana), and the northwest or Gallatin Station entrance. Upon entering the main roads at the Thumb, Tower Falls, and the west entrance, however, automobiles must conform to the regular schedules.

NOTE 2.—Automobiles making the morning trip from the Lake to the Canyon will be permitted to make the side trip to Artist Point provided they keep within the schedule upon passing Canyon Station.

DEPARTMENT OF THE INTERIOR

REPORT

OF THE

GENERAL SUPERINTENDENT AND
LANDSCAPE ENGINEER OF
NATIONAL PARKS

TO THE

SECRETARY OF THE INTERIOR

1915



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REPORT OF THE GENERAL SUPERINTENDENT AND LANDSCAPE ENGINEER.

DEPARTMENT OF THE INTERIOR,
OFFICE OF GENERAL SUPERINTENDENT AND
LANDSCAPE ENGINEER OF NATIONAL PARKS,
San Francisco, Cal., Monadnock Building.

SIR: The work in this office during the first year of its life has brought into strong relief the need of further study of the problems involved in the administration of our national parks. There is a growing feeling that our scenic areas, and particularly those which have been set aside as national parks, have not received the attention which their importance as a factor in both the economic and aesthetic development of our country would seem to justify. This is evidenced by the marked increase in the attention paid by the press to the affairs of our parks and by the apparent desire on the part of the public to know more of them and the particular part they play in the life of the Nation.

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

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

FUNCTIONS OF OUR NATIONAL PARKS.

The first step in the consideration of a general policy for the administration of the national parks is the determination of just what functions they perform. Clearly they are not designated solely for the purpose of supplying recreation grounds. The fostering of recreation purely as such is more properly the function of the city, county, and State parks, and there should be a clear distinction between the character of such parks and national parks. The latter

should constitute a class that is of national interest. In the category of national parks should be no reservation that is of local interest only. What, then, are the functions of our national parks as distinguished from State and local parks? As I view this question our national parks should serve three distinct functions:

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

NATIONAL PATRIOTISM.

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

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

KNOWLEDGE AND HEALTH.

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

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

Pregnant with mystery and romance, these ancient ruins beckon the traveler across the great green mesa and cast about him the spell of endless conjecture. If for no other reason, the value of these treasures as a medium for the furthering of knowledge and health

fully justifies the plea for further aid, both moral and financial, from our Federal Government.

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

THE TOURIST.

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

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

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

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

Many of our parks are truly vast in area, encompassing within their boundaries innumerable wonders. To reach these the tourist, upon arriving at the park, must hire saddle animals, pack animals, a guide, cook, and other help. The expense of such an outfit is prohibitive to all but the wealthy. Those who have waited and saved their money are denied the fuller enjoyment of our parks, for they can not bear the expense of transporting their supplies over the trails. There is but one solution of the problem of caring for this class of tourists, and that is the establishment of small inns at convenient intervals, so that tourists may travel the trails afoot, purchasing their provisions and other necessities as they go. As you are aware, the first

steps in an effort to bring about such a condition have been taken in Yosemite National Park. If this work is carried through, a blessing will have been conferred upon those whose lack of money has shut them from the greater part of our national parks. It will also be, in my opinion, the most potent factor in retaining, through the medium of our parks, a material percentage of tourist travel and will necessitate a careful consideration of the problem of a general policy.

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

A GENERAL POLICY.

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

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

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

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

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

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

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

WHAT HAS BEEN ACCOMPLISHED.

The work in this office has been distributed among the parks, giving attention where it seemed to be most needed.

One of the first steps taken after the creation of this office was the laying out of organization charts for the office of the general superintendent and a typical organization chart for the Yosemite National Park. Three charts were drawn—one for the office of the general superintendent, one organization chart for the Yosemite National Park, and a functional organization chart making a complete and detailed analysis of the functions of the various officers in Yosemite National Park.

INSTALLATION OF COST-KEEPING SYSTEM IN YOSEMITE NATIONAL PARK.

With these organization charts well in mind, a system was devised which will enable the department to keep a close and accurate record of the operations in the parks where the system was adopted. This system was installed in the Yosemite National Park, and the records and information shown in the monthly reports therefrom enable this office to make many material reductions in the cost of operation. For example, the report of May, 1915, showed a cost of \$1.66 per mile for sprinkling roads. The analysis given in the report enabled us to find the leaks and losses, and the monthly report for August, 1915, after repairs had been made to the sprinkling system, showed a cost of 72 cents per mile for sprinkling roads. Similar reductions were made possible in other departments.

This system of cost keeping comprises two general divisions, namely, statistical reports and financial reports. Copies of the monthly reports are forwarded to the department, showing clearly the operations of the month.

Before this system could be installed it was necessary to take an inventory of the physical assets, such as buildings, bridges, power plant, materials on hand, etc. This inventory was made, and disclosed the astounding fact that there were in the Yosemite National Park on April 30, 1915, \$23,625.34 represented by materials and supplies on hand. The inventory further showed that the assets in the park in the form of construction work done, utilities, etc., amounted to \$613,635.03, apportioned in the following manner:

Construction work, such as trails, bridges, culverts, etc.....	\$453, 923. 15
Public utilities operated by the department, such as electric system, telephone system, etc.....	96, 601. 75
Equipment, comprising live stock, wagons, machinery, etc.....	36, 434. 29
Inventories, comprising materials and supplies, forage, etc.....	23, 625. 34
Accounts receivable, cash on hand, etc.....	3, 050. 50
	613, 635. 03

The items that go to make up this inventory are segregated, showing fully what has been expended on each piece of work, and it is proposed hereafter to keep a record so that the department will have on file the amount of money spent on each road, trail, bridge, and every other feature in the park that demands an expenditure of money. It is considered that only in this way will it be possible to carefully

check the expenditures. Further than this, it is only by resorting to a unit cost-keeping system that the department will be able to segregate accurately the moneys for maintenance from those expended for improvements and betterments.

PURCHASE OF SUPPLIES.

This office, since the 1st of April, 1915, has been purchasing all supplies for Yosemite and Sequoia National Parks and for the other parks where it was practicable to do so. It was found that a better quality of goods could be obtained and a better price could be had by making a personal inspection of the supplies purposed to be furnished.

It has been the custom in the past for the local supervisor or superintendent to purchase the supplies direct. The parks are so situated that they are usually quite a distance from a market, and this custom resulted in loss of time in sending proposals back and forth. When the goods arrived, they were often found to be of inferior quality and not exactly what the supervisor or superintendent desired. San Francisco has a factory representative of practically every line of manufacture in this country, and the purchase of supplies for the national parks can be done here on the same basis as though the purchasing agent visited each factory and made a personal investigation of samples of the supplies to be furnished. Shipping these supplies over bond-aided railroads to the various parks places the local dealers in the vicinity of the parks (who have heretofore had this business) in direct competition with the manufacturers and wholesale dealers of supplies required in the operation of the parks. This new system of purchasing from this office from factory representatives and wholesale dealers has resulted in a great saving to the department.

The superintendent or supervisor of each park makes a requisition on this office for material and supplies that he desires purchased. This office then submits proposals to the various dealers, makes personal inspection of the goods to be supplied, and makes the award, whereupon the supplies are shipped to the park, thereby saving a great deal of time as well as money.

IMPROVEMENT IN TRANSPORTATION, YOSEMITE NATIONAL PARK.

Starting on June 1, 1915, the Yosemite Stage & Turnpike Co. placed in operation between the Mariposa Grove of Big Trees and the village of the Yosemite Valley an automobile service for the transportation of tourists between these points. This service replaced the old horse-drawn stages, which were uncomfortable and slow, requiring at least four hours and a half between Yosemite Village and the Wawona Hotel and an additional hour and a half between the Wawona Hotel and the Mariposa Grove of Big Trees, and with this service it was not possible for tourists to go from the village in the valley to the Mariposa Grove without stopping at least one night at the Wawona Hotel. The new service provided a schedule that enabled the tourists to leave the valley in the morning and spend one hour and a half at the Mariposa Grove and return to the valley in the evening in time for 6 o'clock dinner.

This service has proven very satisfactory to the traveling public, especially the summer just past, as it would have been a physical impossibility to handle the volume of travel that went over this road with the old horse-drawn stages.

ACQUISITION OF ROADS.

The department has acquired title to that portion of the Tioga Road lying within Yosemite National Park. This road has been rehabilitated this summer and was formally opened on the 28th of July to the public. The opening of this road makes accessible that portion of the park known as the High Sierras and has opened up a section that is extremely beautiful and traverses the park in an easterly and westerly direction. The department's acquiring the Tioga Road has met with great public favor, and when same has been put in good condition it will be the most popular pass for transcontinental tourists through the Sierra Nevada Mountains, as well as being a favorite trip for local automobiles.

The department has also acquired title to that portion of the Big Oak Flat Road lying within Yosemite National Park, and improvement of same is now in progress. In the past this road has been operated by private owners as a toll road. Its acquisition by the Government makes this a free road and is one of the shortest and most practical, as well as being one of the easiest grades, of any road entering Yosemite Valley.

ROAD AND TRAIL MAPS.

During the year 1914 a topography map was started by the surveyors from the Office of Public Roads of the Agricultural Department, under the charge of Mr. T. Warren Allen, showing the topographical conditions on a section of the floor of Yosemite Valley. This survey was made so as to show buildings, trails, roads, and bridges on a scale that could be used for working drawings in planning further improvements. This map was compiled in this office.

It became evident during the first days of the life of this office that a comprehensive plan for the road and trail development of all of the national parks was an essential, to the end that the habit of building disconnected bits of roads and trails might be stopped. Plans for the complete road and trail systems for each of the five national parks were then drawn in preliminary form. The parks thus covered were Yosemite, Crater Lake, Rainier, Glacier, and Sequoia.

THE VILLAGE PLAN FOR YOSEMITE.

Using the topographic map above referred to, an exhaustive study was made of conditions on the floor of Yosemite Valley with the intention of relieving the congested condition around the present village. As a result, three plans were drawn in the course of the studies made.

In addition to the village plan, studies were made for the new hotel to be constructed on the floor of the valley. Plans were also drawn for the new hotel to be constructed at Glacier Point, together with tentative studies for 12 village buildings.

In conjunction with the work done on the replanning of the village, an entire new plan of operation for the concessions in Yosemite National Park was considered. This plan contemplated the granting of a concession to a large operator who would build a hotel of sufficient size to accommodate the demands on the floor of the valley, a smaller hotel at Glacier Point, and 15 mountain inns in the High Sierra in the park, to be built at the rate of three inns each year. Several attempts have been made in the past to secure a concessionaire who would perform this service, but all had been unsuccessful, due to the fact that certain terms could not be agreed upon. The terms considered in this plan were on a profit-sharing basis, the concessionaire under the terms of this arrangement to receive a permit of 20 years' duration and to share the net profits of his concession with the Federal Government. This plan of sharing profits will overcome the difficulty of establishing a graduated scale of charges, thereby making it possible to grant a long-term permit.

With a large hotel on the floor of the valley, a new one on Glacier Point, and a chain of mountain inns throughout the park so spaced that they will be within easy walking distance of one another, it will be possible for those of small financial means to see the entire park to an extent that is now denied them.

In addition to this, the adoption of the village plan will do away with the unsightly buildings that now mar the scenery and will establish a village properly planned, comprising buildings of carefully studied architecture.

The above paragraphs have dealt with work originating in this office. The remainder of the work done in this office will be segregated under the headings of the parks for which the work was done.

YOSEMITE NATIONAL PARK.

In addition to the work above outlined, plans and specifications for the new El Capitan Bridge over the Merced River were prepared in this office, and the bridge constructed under contract for the sum of \$2,965.

Plans were also drawn for a new bridge over the Merced River in the vicinity of the present village, which plans are now being considered by bidders.

Plans and specifications were drawn for ranger cabins in the Yosemite National Park, three of which were built at a total cost of \$2,990.

In December, 1914, new regulations for the park ranger force were drawn and promulgated by the Secretary. In conformance with these regulations a uniform was designed and insignia of the officers selected. The park rangers in Yosemite National Park are now uniformed according to regulation, and the organization of the park ranger force under the new regulations has been perfected and has demonstrated the merits of the steps taken.

CRATER LAKE NATIONAL PARK.

Plans were begun on the new village for Crater Lake National Park in the year 1915. The work done under this plan comprised studies in architectural character, together with an investigation of

the most feasible method of laying out roads for the circulation of traffic.

In addition to this work, a tour of inspection was made, together with a study of the road and trail system in this park.

MESA VERDE NATIONAL PARK.

A tour of inspection was made of this park in the late summer of 1914, and the needs of roads, trails, and other developments carefully considered. Plans and specifications were drawn for a ranger cabin to be built of stone in the vicinity of the ruins of Spruce Tree House.

GLACIER NATIONAL PARK.

The work in this office on this park has been confined to the purchasing of materials and planning of the road and trail system which followed as a result of a more or less prolonged inspection of the park.

SEQUOIA NATIONAL PARK.

Trips of investigation have been made to Sequoia National Park, and a system of roads and trails planned. A survey has also been made (finished in June, 1915) of the Mineral King Road, which traverses the park, together with a survey and location of the proposed changes necessary to make this road practical and passable to motor-propelled and other vehicles.

RECOMMENDATIONS

AS TO THE OFFICE OF THE GENERAL SUPERINTENDENT AND LANDSCAPE ENGINEER OF NATIONAL PARKS.

The following recommendations are based upon the assumption that it is the Secretary's desire to hold the general superintendent and landscape engineer responsible for the work in the national parks and that the general superintendent should in turn hold the officers in the parks responsible to him.

The general superintendent should have the authority to employ or dismiss any men in the service, and that suspension should remain effective until revoked by the Secretary.

Allotments from the annual appropriations should be made in the general superintendent's office after a general plan for the expenditure of money has been submitted to the Secretary and approved.

I recommend that the general superintendent be given authority to enter into contracts for construction work as well as for the purchase of materials by contract in accordance with the general scheme of expenditures approved by the Secretary.

This office has purchased all supplies for Yosemite, Sequoia, and General Grant National Parks since April 1, 1915. Considerable saving has been accomplished by purchasing in San Francisco rather than through local dealers in the neighborhood of the parks. Some purchasing has also been done for other parks west of the Rocky Mountains, and in some instances from 15 to 25 per cent has been saved. I recommend that this system of purchasing and the forms

used be adopted and the practice extended throughout the various parks wherever practicable.

In order that the general superintendent may be thoroughly familiar with the phases of the work for which he is held responsible, it is my opinion that correspondence from the parks should be addressed to the general superintendent, or through him to the Secretary, and, likewise, all communications that have to do with operations in the parks should be forwarded from the department through the general superintendent to the parks.

I recommend that all regulations and instructions to be enforced in the parks be promulgated from the general superintendent's office.

It is impossible to accomplish economical management of the parks without the aid of a practical working unit cost-keeping system. Such a system has been installed in the Yosemite National Park and is producing most satisfactory results. I recommend that this system be extended to each and every other national park. This will involve the taking of an inventory on the physical assets in each park such as was taken in Yosemite. This work should also be carried on in other parks.

The title of general superintendent and landscape engineer of national parks carries with it two distinct and separate classes of duties. There is sufficient work under each of these two titles to keep one man very busy throughout the year. It is not humanly possible for one man to act in the capacity of general superintendent and landscape engineer and perform the duties that each of these two titles require. I recommend, therefore, that the title be split and two officers appointed for this work—a general superintendent and a landscape engineer.

Perhaps the most important work that can be carried on in this office is the planning of improvements in the various parks, and I strongly urge that the work that has begun in the way of planning new villages for the Yosemite and Crater Lake National Parks be continued in the remaining parks where such work is needed.

Several attempts have been made to establish by an act of Congress a national park service, and there can be no doubt in the minds of those who are familiar with the problems of administering our national parks that such a service is seriously needed. I would urge that every effort be made to secure the enactment of a law that will establish the national park service on a firm footing.

The title of superintendent in any national park should be dispensed with and a title of supervisor should indicate the officer in immediate charge of the park, as the title of superintendent is confusing with the title of general superintendent.

RECOMMENDATIONS FOR THE VARIOUS PARKS.

YOSEMITE NATIONAL PARK.

The steps that have been taken for the erection of the new hotel on the floor of the valley and another at Glacier Point, and a chain of mountain inns throughout the park, will undoubtedly bring a materially increased travel. To prepare for this, more road and trail construction work in the park is necessary. The road from El Portal

to the valley should be widened and properly surfaced. The road on the north side of the valley from Pohona Bridge to the new hotel site should be surfaced. That portion of the road on the south side of the valley which is now a dirt road should be surfaced. A new bridge should be erected in place of the present Sentinel Bridge, which has several times been condemned and which is now not strong enough to carry passenger trucks.

When the village on the north side of the river is completed it will be necessary to erect new barns and headquarters for the Government employees and stock. There is also a crying need for a new administrative building. The old building occupied at present by the superintendent is insanitary and rapidly falling to pieces.

It is recommended that three motor-driven power sprinkling trucks be purchased for use in sprinkling the roads in Yosemite National Park, as the cost of sprinkling the roads in this park by horse-drawn sprinklers is entirely too high. For the months of May, June, July, and August, 1915, 6,162 miles of roads were sprinkled in this park, at an average cost of 93 cents per mile. The reason for this apparent high cost is that horse hire and forage for the subsistence of stock is very high. The average cost per horse-day for the months of May, June, July, and August was \$1.07. By installing motor-driven sprinkling trucks and making some slight improvements in the water system this expense could be reduced 50 per cent.

The purchase of the Tioga Road has widened the activities of the park ranger force, and this force should be augmented to control the travel.

The park rangers in the Yosemite Park have no headquarters of their own in the valley. A ranger barrack should be erected, in which will be lockers for each ranger. A stable should be constructed in conjunction with the barrack where the park rangers called to the valley for special duty may stable and feed their horses.

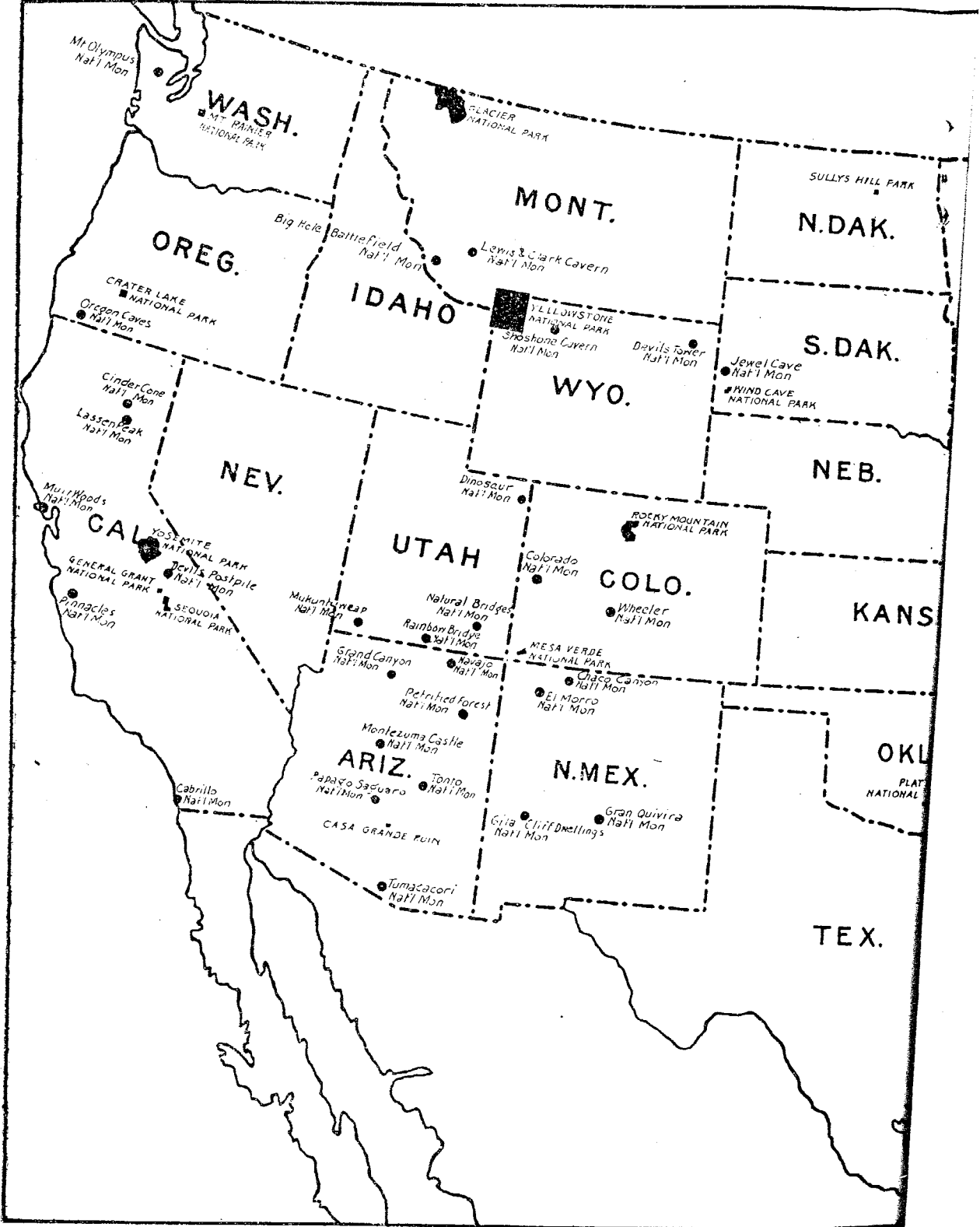
An information bureau has been in operation for a few months during the season of 1915 and has met with enthusiastic approval on the part of the public. This bureau gives information direct to the tourists regarding the condition of the roads, trails, and all other information desired in a way that is not biased by local prejudice. I strongly urge that a system of local information bureaus operated by the department be adopted in all of the parks and continued in Yosemite National Park.

A collection of stuffed birds and animals indigenous to the area covered by Yosemite National Park has been started, and the same is being placed on exhibition in the bureau of information. The exhibits are supplied through Dr. Joseph Grinnell, director of the museum of vertebrate zoology of the University of California. Some of the park rangers have been instructed by Dr. Grinnell and his assistants in the securing and stuffing of the birds and animals. The work done to date has aroused considerable public interest and has met with enthusiastic appreciation.

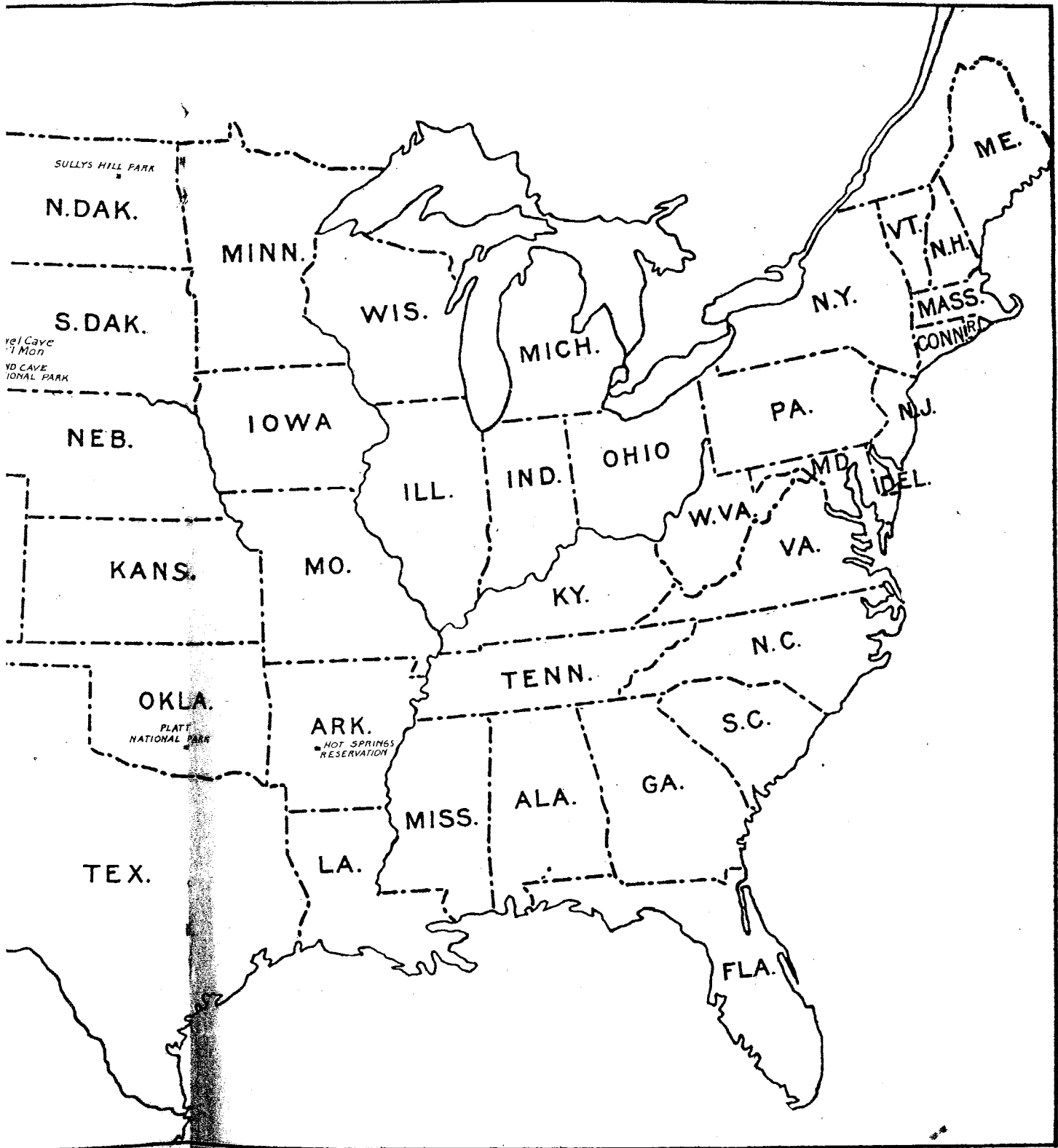
A collection of wild flowers is also being completed and placed on exhibition. With each flower is a water-color drawing showing the true color of the flower. This work is being carried on through the park ranger force and the bureau of information.

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Map showing location of nation



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SEQUOIA NATIONAL PARK.

The Mineral King Road, which traverses the Sequoia National Park from the western boundary to the eastern boundary, connects the San Joaquin Valley with a small summer resort named Mineral King. There is urgent demand on the part of the public to use this road, which use has been denied them. I recommend that the department put this road in shape for travel at the earliest possible date.

The Mount Whitney Power Co. has built a road up the canyon of the Middle Fork of the Kaweah. Surveys for the extension of this road should be made so that it may connect with the Giant Forest Road, thus forming a loop in the park. Another survey of a road connecting Sequoia Park with General Grant Park has been made by the Office of Public Roads. This survey should be considered and, if accepted, adopted and plans for its construction undertaken.

To the east of Sequoia National Park is some of the finest mountain scenery in the world. The area in which the scenery lies is of little or no value for purposes other than the pleasure of scenery lovers. It contains the great Kern Canyon, Kings River Canyons, and Mount Whitney, the highest peak in the United States, together with almost innumerable other features. I can not recommend too strongly that the Sequoia National Park be enlarged to take in the areas to the southeast and east which contain these examples of wonderful mountain scenery.

CRATER LAKE NATIONAL PARK.

The present headquarters of the superintendent are at a point a thousand feet below the rim of the crater. The location is not satisfactory. Plans should be made for a secondary summer headquarters on the rim of the crater, either at the location of the present hotel or at some other point on the rim.

The ranger force in this park is not of sufficient size to adequately protect the park in the winter. The force should, therefore, be augmented to prevent poaching.

A trail should be built as near to the water's edge as possible and as far around the lake as practicability will allow.

Ranger cabins in the form of automobile-checking stations should be erected at each roadway entrance to the park.

The patrolling of this park is rather difficult, as it is in all parks, and in order that the superintendent may perform his duties effectively he should be furnished with an inexpensive automobile.

MOUNT RAINIER NATIONAL PARK.

The entire stretch of road in this park from the park entrance to Paradise Valley should be surfaced with crushed rock.

A survey of the entire road and trail system as outlined on the roads and trails map executed in this office should be made and the feasibility of following out the plans indicated should be investigated. Steps should be taken at once for the development of an encircling road around Mount Rainier and all construction work should be confined to portions of the general plan.

The village at Longmire Springs is particularly unsightly, and steps should be taken to either clean this place and bring about a more harmonious architectural scheme or the site should be abandoned and another one established. The plans for extensions of the trail system as recommended by the supervisor in his report should be adopted.

Tourists climbing the mountain are frequently overcome with fatigue before they reach the summit and are forced to stop over en route. A small comfort station should be erected along the trail to accommodate such people.

Satisfactory headquarters for department officials should be erected in the village and the park rangers in this park should be uniformed according to regulations.

GLACIER NATIONAL PARK.

The development of travel in Glacier National Park has been in an easterly and westerly direction. As a result most of the trails in the park traverse the Great Divide. It is impossible to take a trip paralleling the Great Divide, which would be by far the most beautiful trip that could be devised in this park. In addition to this, there are practically no roads within the boundaries of the park, and automobile touring, therefore, is excluded. I strongly urge, therefore, that the plans shown on the map executed in this office for the roads and trails development of this park be adopted in general and surveys made to determine how much of the roads and trails indicated thereon are feasible and practicable.

The headquarters of the supervisor are established at the foot of McDonald Lake. This is not in my estimation the proper location. A thorough investigation of the available sites at Belton and some point on the eastern side of the park, either near St. Marys Lake or in the vicinity of Glacier Park Hotel, should be studied and steps taken to establish the headquarters at the location chosen.

The park ranger force in this park is not adequate to properly patrol the area.

The telephone system should be improved and all metallic circuits installed. It is not in any way satisfactory that the Government should use private telephone lines erected by concessionaires. It is my opinion that the department should own its own telephone system, so that immediate service may be had in case of forest fires or serious accidents.

YELLOWSTONE NATIONAL PARK.

This park is administered by the Secretary of the Interior, using the soldiers and officers detailed by the Secretary of War for the purpose of patrolling and maintaining order. This constitutes more or less of a dual administration, which can never be satisfactorily carried out. In my opinion this park should be administered solely by the Secretary of the Interior or solely by the Secretary of War.

I recommend that the improvements requested by the acting superintendent for the buffalo farm be carried out and that the additional fire lanes requested by him be constructed.

At Mammoth Hot Springs are several buildings formerly occupied by soldiers of this military post which might be put to better purposes than those for which they are now used. There is a real demand for a museum, and I recommend that the feasibility of rearranging the interior of one of these buildings be investigated, and if it is found the same can be accomplished for reasonable cost, plans be drawn and contract let for the construction work necessary to establish this museum.

MESA VERDE NATIONAL PARK.

The present road, leading from the park entrance to the top of the great mesa, is poorly located and unnecessarily long. The recommendations regarding this road submitted by the superintendent should, in my opinion, be carried out.

Many of the ruins are in such shape that it is practically impossible to get about among them. I would urge that a sufficient appropriation be secured to permit the Smithsonian Institution to carry on the work of restoration recommended by the superintendent.

The many relics of a forgotten race that were once in this park have been scattered to the four corners of the world. Those which were retained by the residents of the district are slowly disappearing. If a museum, even of the smallest kind, were erected in the park, most of these relics could be secured either by loan or gift and some of the implements, textiles, and other objects of interest could be permanently preserved.

ROCKY MOUNTAIN NATIONAL PARK.

This park is the newest in the system. The first steps that should be taken, in my opinion, are the preliminary investigations looking forward to a complete road and trail system. This park will doubtless receive the greatest tourist travel of all of the mountain parks, and I recommend that plans for its development be at once undertaken on a broad and comprehensive scheme.

I would suggest also that no steps be taken in the granting of concessions in this park until a policy is established for their operation similar to that which is now being developed in Yosemite and Mount Rainier National Parks. The crying need of this park for the next two years will be roads and trails.

PLATT NATIONAL PARK.

Platt National Park, like the Hot Springs Reservation, lays claim to its place in the category of national parks by virtue of the health-giving waters to be found there. The accommodations and facilities for the proper use of these waters, however, have not been developed in any way commensurate with the real value of the water. There are two ways in which this water could be used and placed at the disposal of the great number of people who might be benefited by them:

1. By erecting a large hotel or sanitarium in the park.
2. By bottling the waters for distribution.

I believe these two possibilities should be thoroughly investigated and the choice determined. It is possible that both might be advisable. The principal question, however, is the quantity of the various waters that can be secured.

The French Republic operates a bottling plant at Vichy Springs and sends water from these springs to all parts of the world. If the flow of water in the various springs in Platt National Park is of sufficient volume or can be developed, I believe that it will be the part of wisdom to see that these waters are more generally distributed. Last year over 50,000 gallons of water were shipped by private individuals from Platt National Park to all parts of the country.

It will be entirely feasible, in my opinion, to secure the cooperation of a concessionaire to build a hotel or the bottling plant on a long-term and profit-sharing lease, providing a sufficient quantity of water is available. I would recommend, therefore, that the flows of these springs be thoroughly tested and the possibility of increasing them investigated. If the results justify, I would further recommend that steps be taken to secure a concessionaire who will carry on the operations in accordance with the above outline.

HOT SPRINGS RESERVATION.

There are two important problems in this reservation that should receive immediate attention. First is the public bath operated by the Government where medical services and treatments are free to those who are unable to pay for them. The present bathhouse is crumbling with decay, unsightly, insanitary, and reflects anything but credit upon the Federal Government.

Hundreds of thousands of people have been relieved of suffering and as many have had their lives saved to them by virtue of the medicinal qualities of the waters of Arkansas. It is a great institution and one that fully warrants the hearty support of our Federal Government. The bathhouses that are privately owned are many of them luxuriously appointed, and the growing contrast between the people who have money and can afford these bathhouses and the conditions with which the poor are confronted in the free bathhouse is one that arouses righteous anger. I can not conceive a more noble act or more justifiable expenditure of public money than the erection of a new and beautiful bathhouse as a gift from the Federal Government to the suffering poor of this country.

The second feature that needs attention is the general development of the reservation from the standpoint of a landscape architect. Several plans have been submitted for the reservation, but none has been adopted.

WIND CAVE NATIONAL PARK.

As a curious wonder, I doubt if there is anything in this country which equals the Wind Cave in this park, which contains over 90 miles of explored passages which are hung with stalactites and sparkling crystals.

The cave, however, is in utter darkness and the tourists visiting it are only able to secure a glimpse now and then while a bit of

magnesium tape is being burned by the guide. I recommend that a system of lighting the cave be worked out. A test is now being made with storage batteries loaned by the Edison Electric Co. The object of using storage batteries is to avoid the necessity of running wires through the cave. If these prove successful it will be possible to carry the batteries from the various chambers for re-storing.

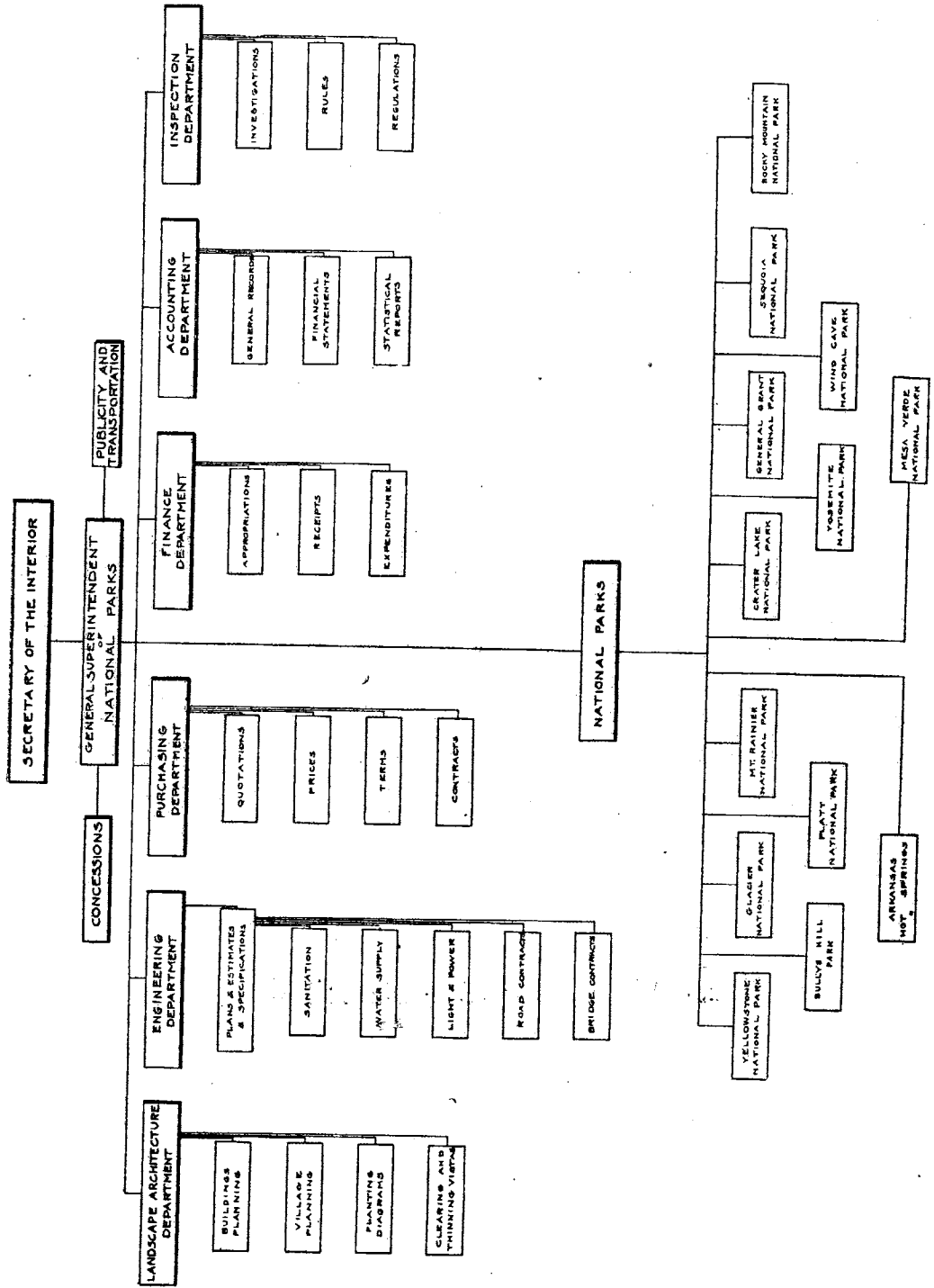
The results to date indicate that this method of lighting the cave will probably be feasible, and if upon further test our present opinion is corroborated, I would recommend that some of the main chambers be equipped with these storage-battery lights.

Respectfully submitted.

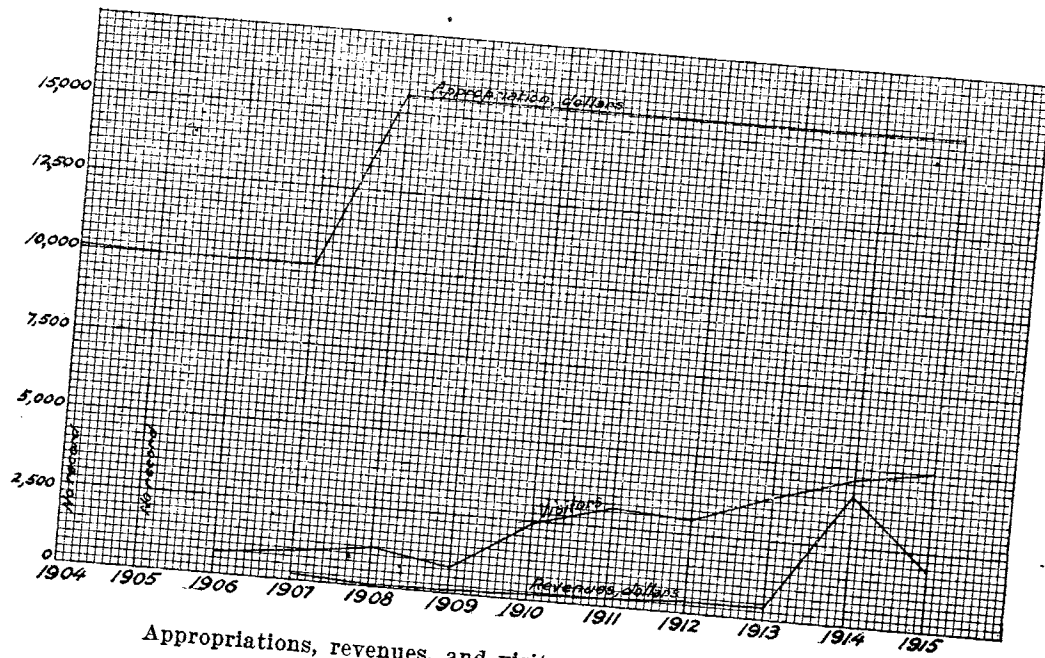
MARK DANIELS,
*General Superintendent and
Landscape Engineer of National Parks.*

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

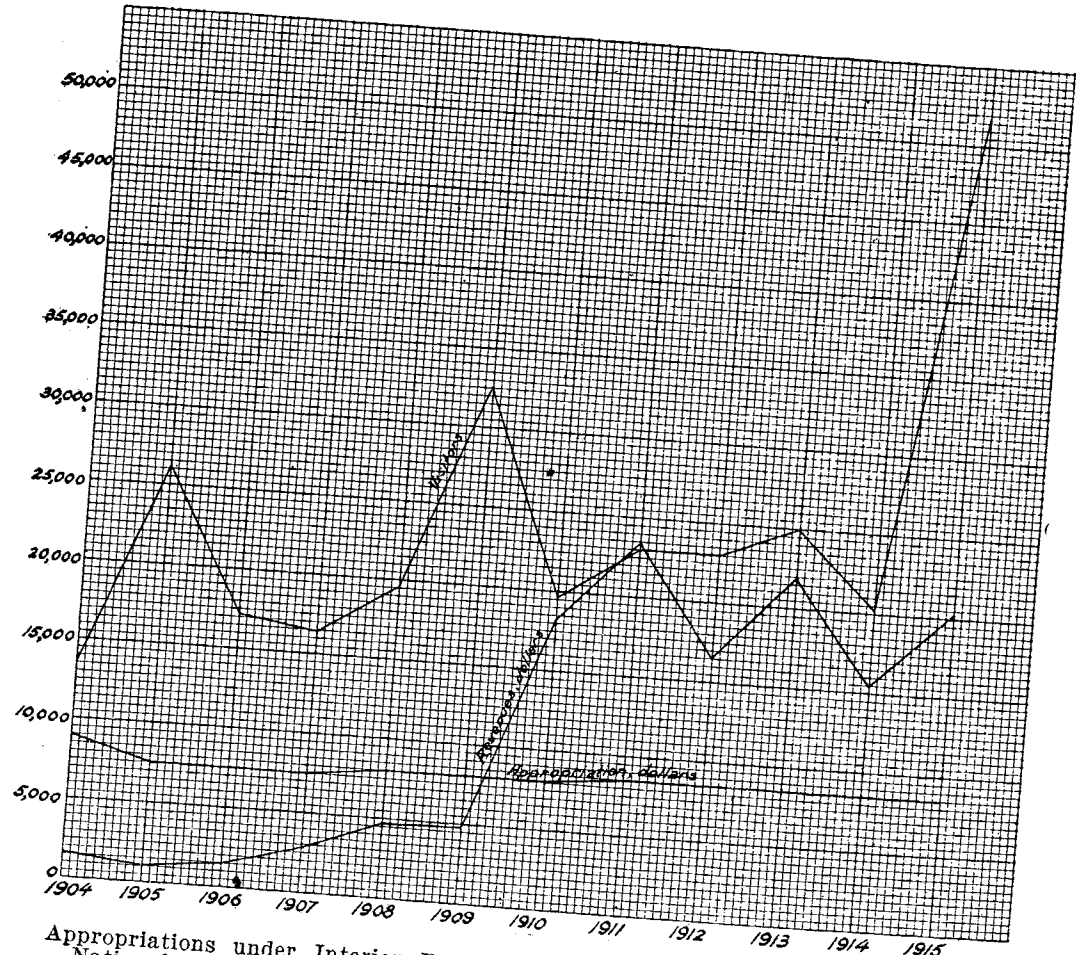
YELLOWSTONE NATIONAL PARK LIBRARY



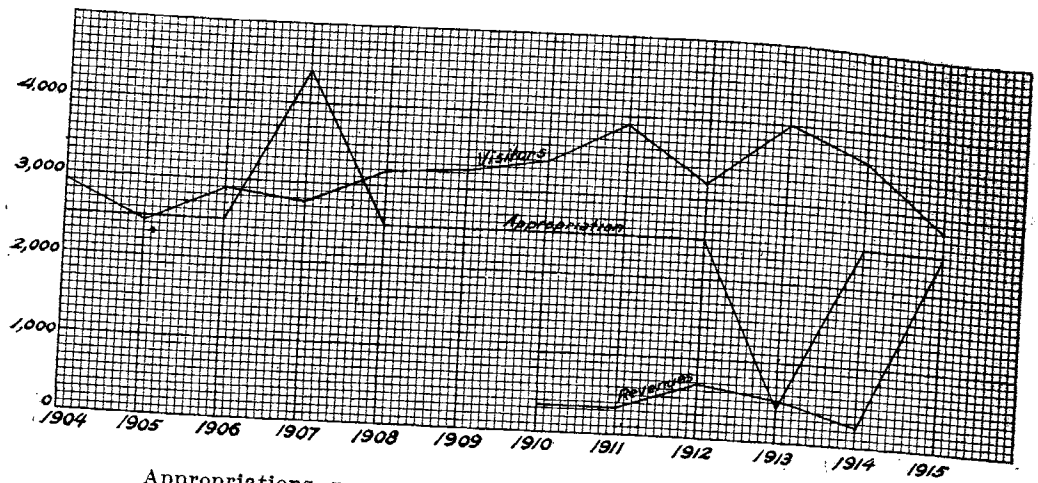
Suggested organization for supervision of national parks.



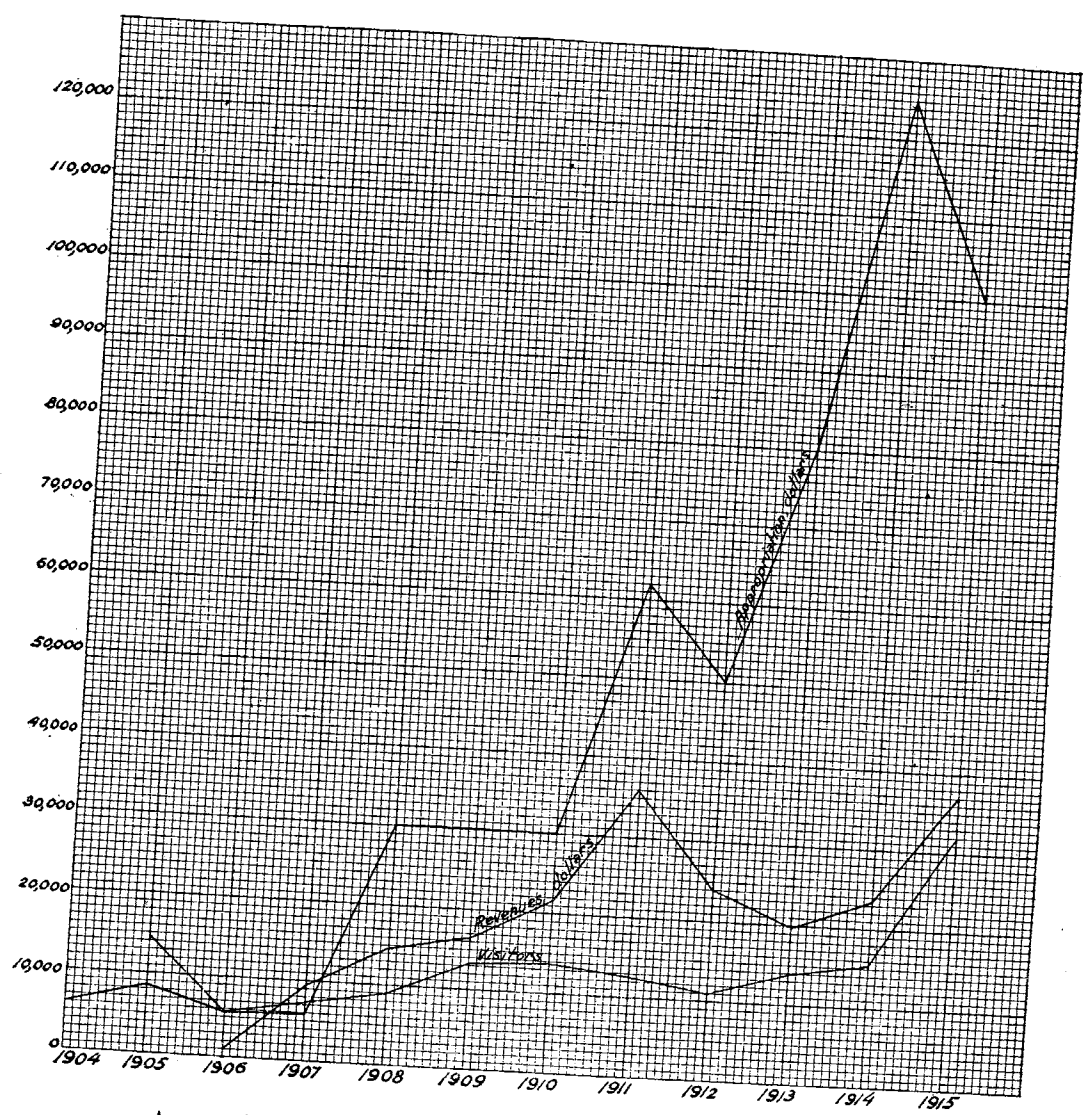
Appropriations, revenues, and visitors, Sequoia National Park.



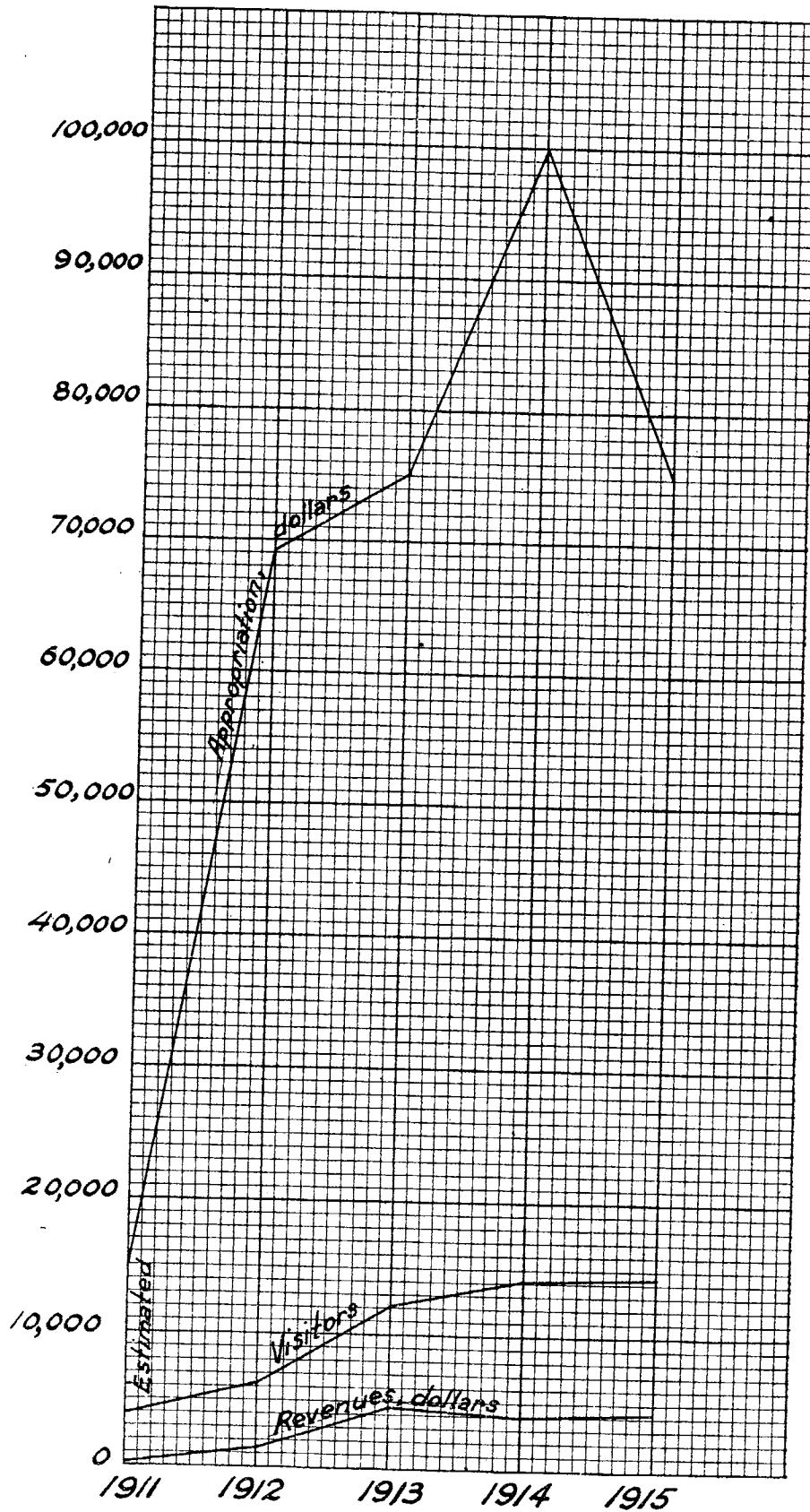
Appropriations under Interior Department, revenues, and visitors, Yellowstone National Park. Appropriations for road work under War Department not included in this diagram.



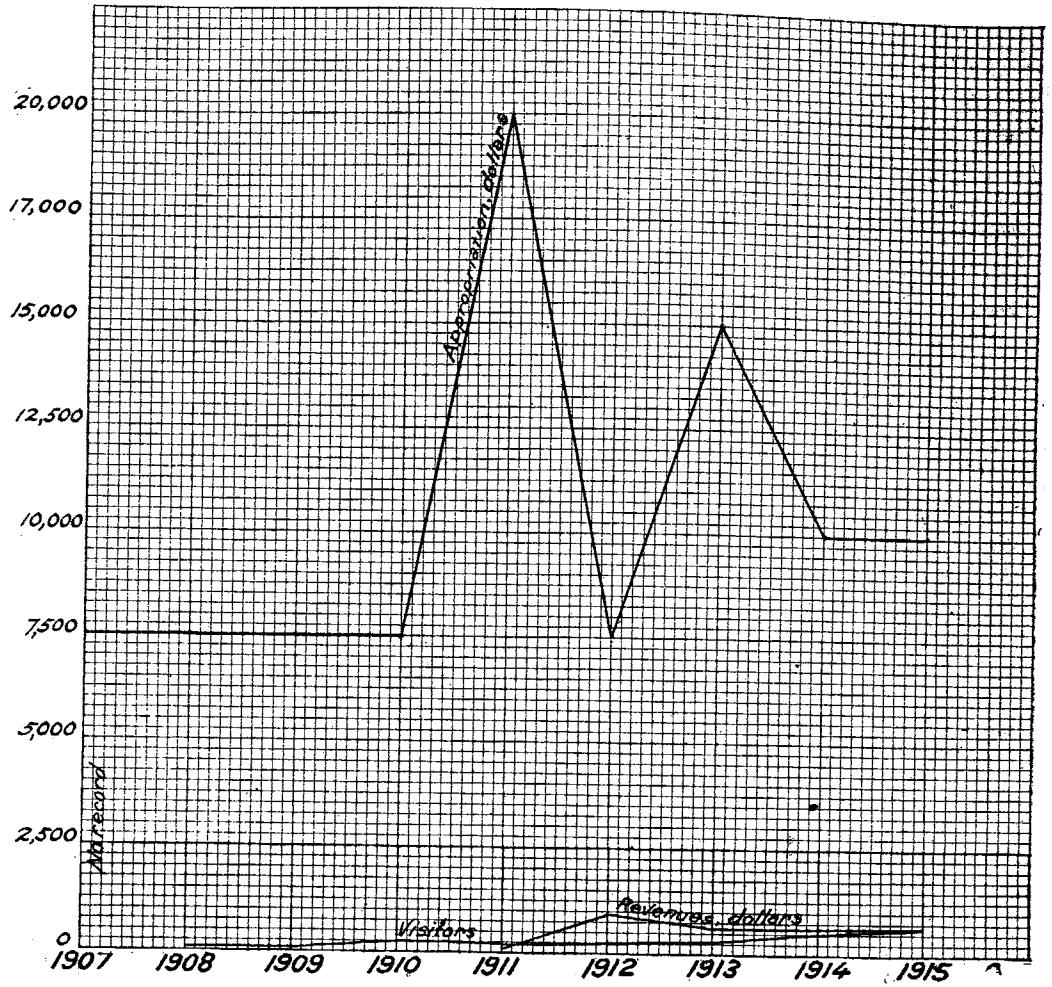
Appropriations, revenues, and visitors, Wind Cave National Park.



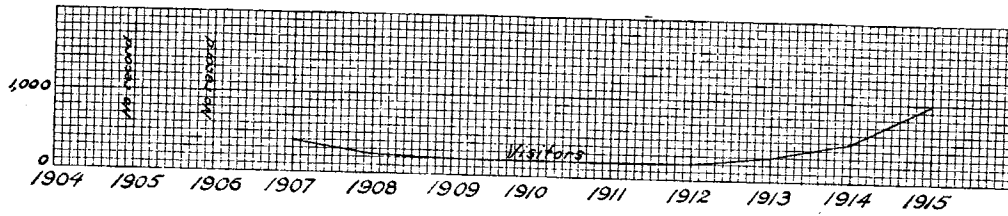
Appropriations, revenues, and visitors, Yosemite National Park.



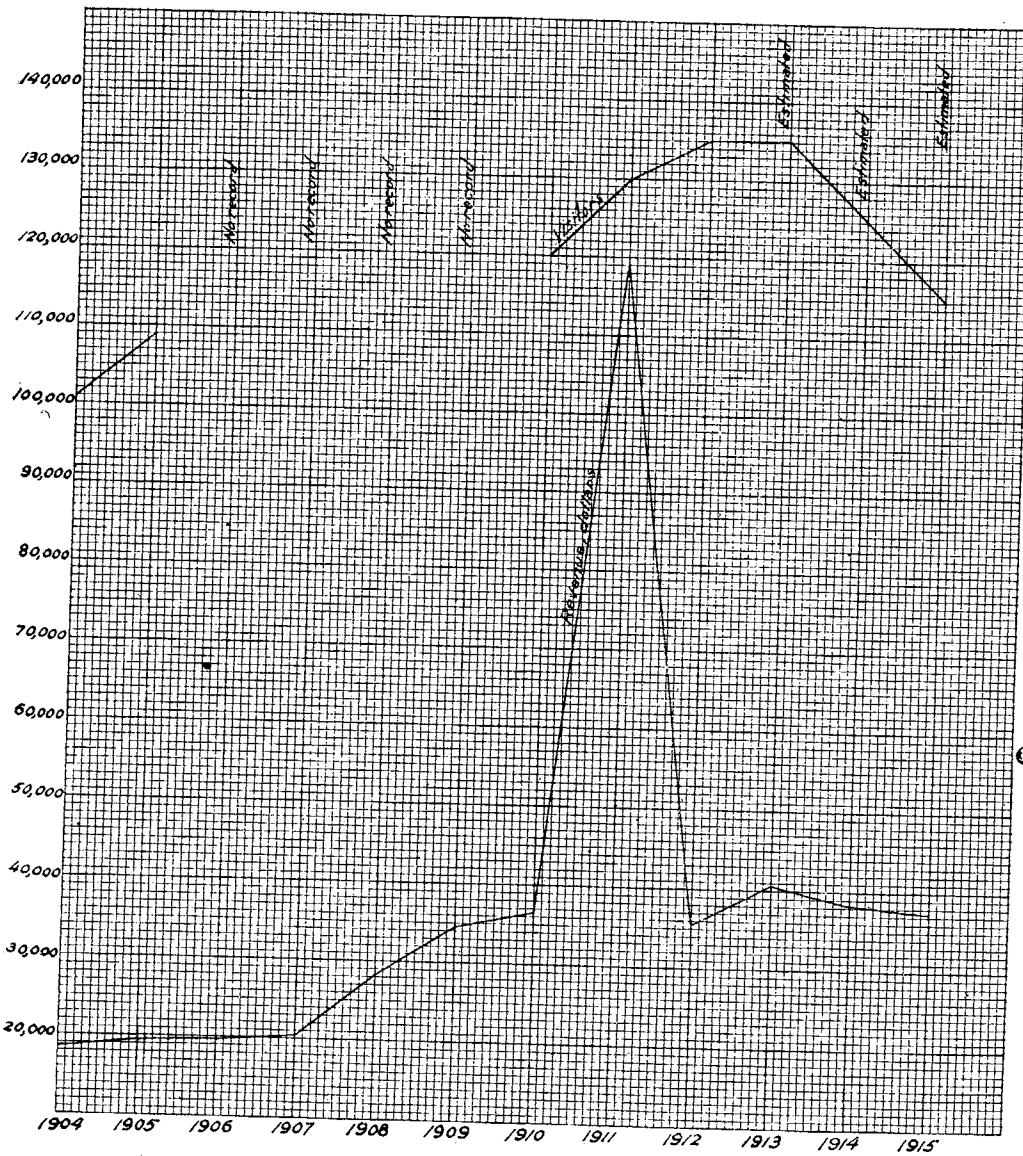
Appropriations, revenues, and visitors, Glacier National Park.



Appropriations, revenues, and visitors, Mesa Verde National Park.

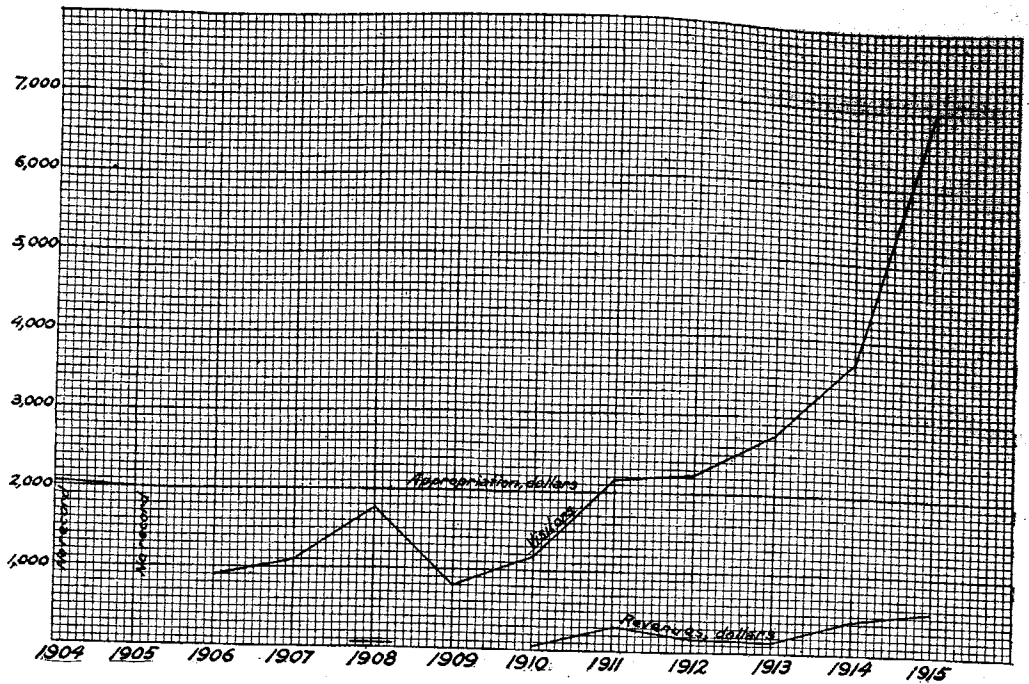


Visitors, Sullys Hill Park.

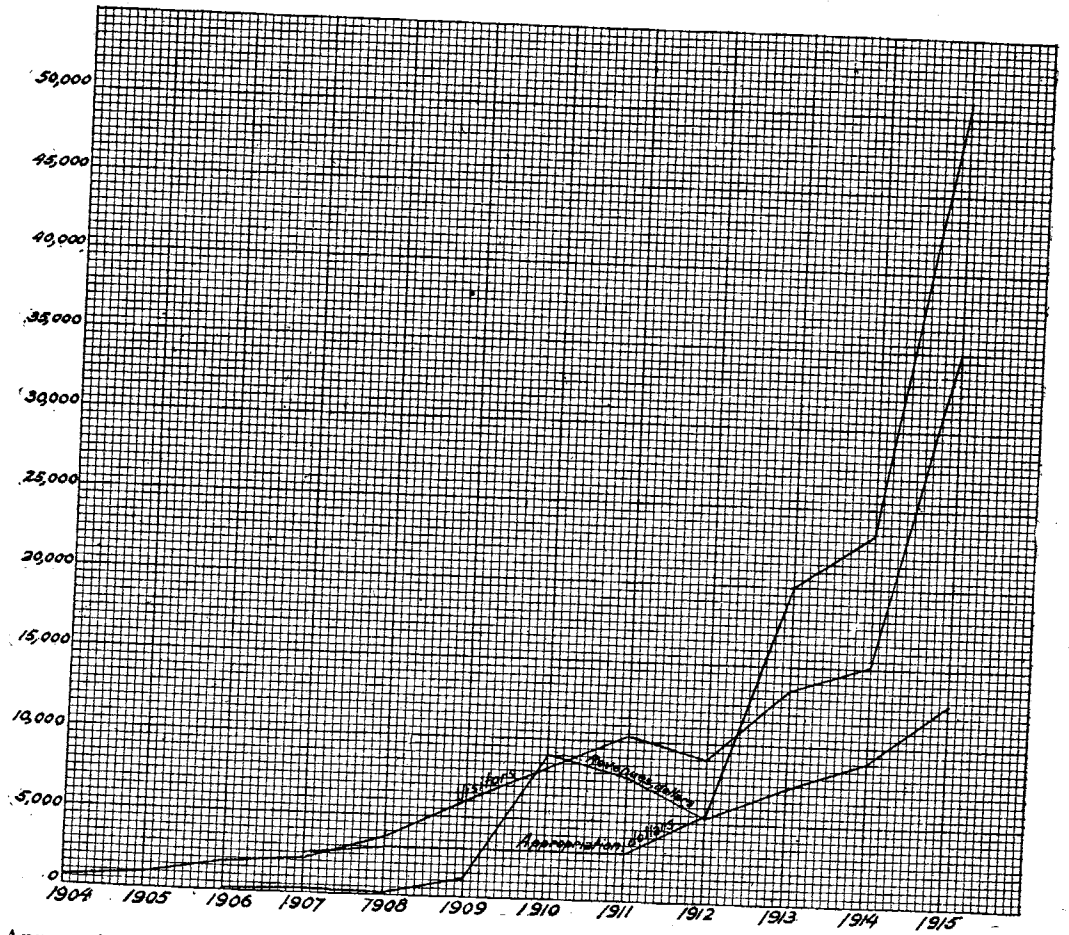


Revenues and visitors, Hot Springs Reservation.

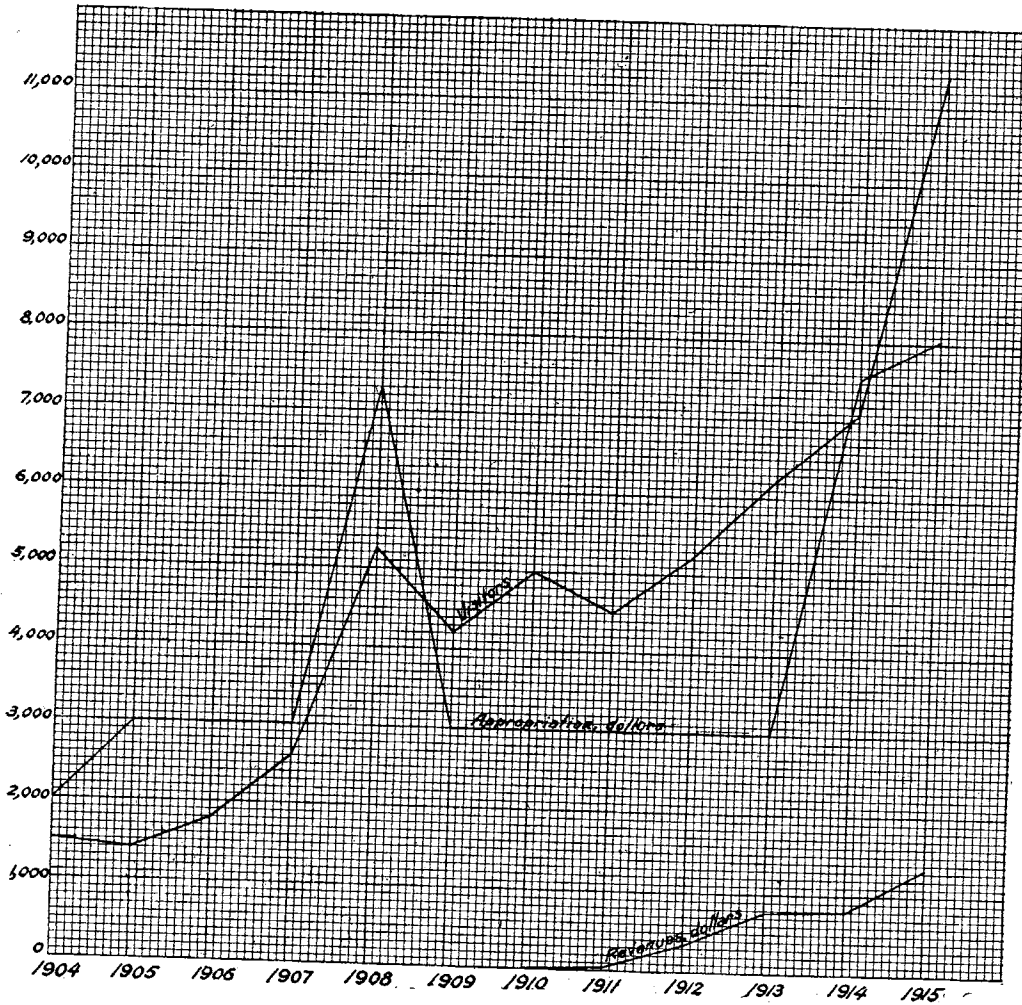
Lots sold at Hot Springs in March, 1911, yielded \$82,818; other revenues amounted to \$36,060.



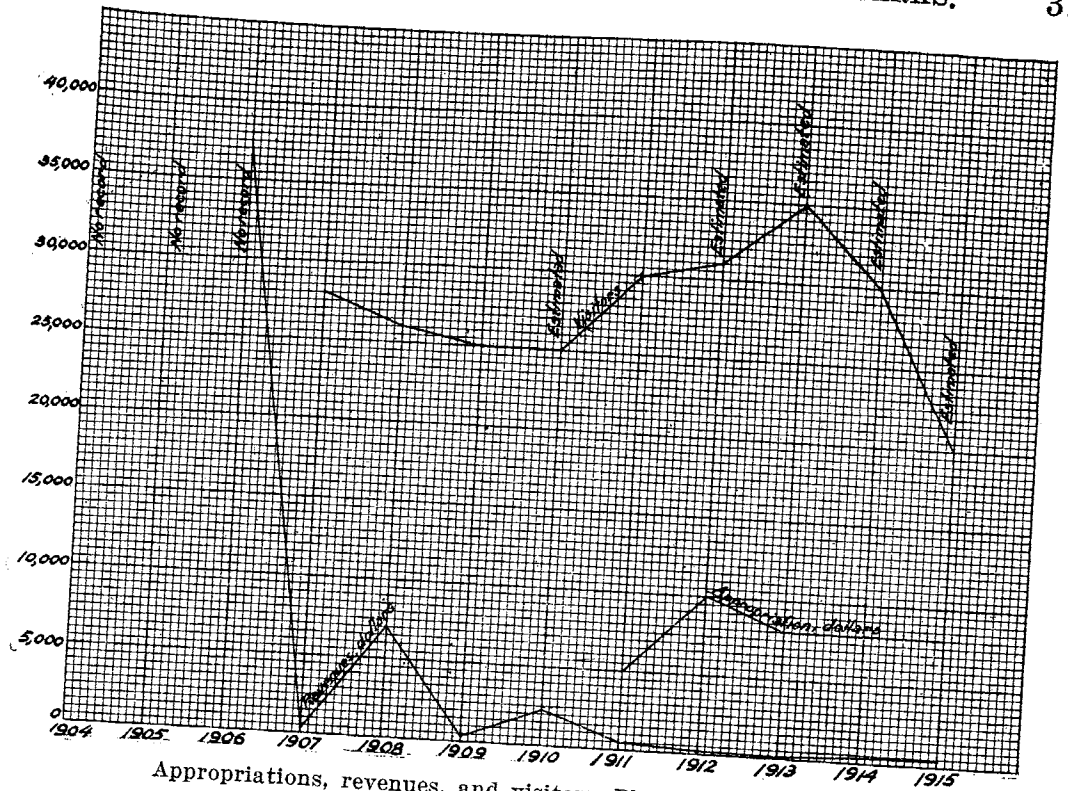
Appropriations, revenues, and visitors, General Grant National Park.



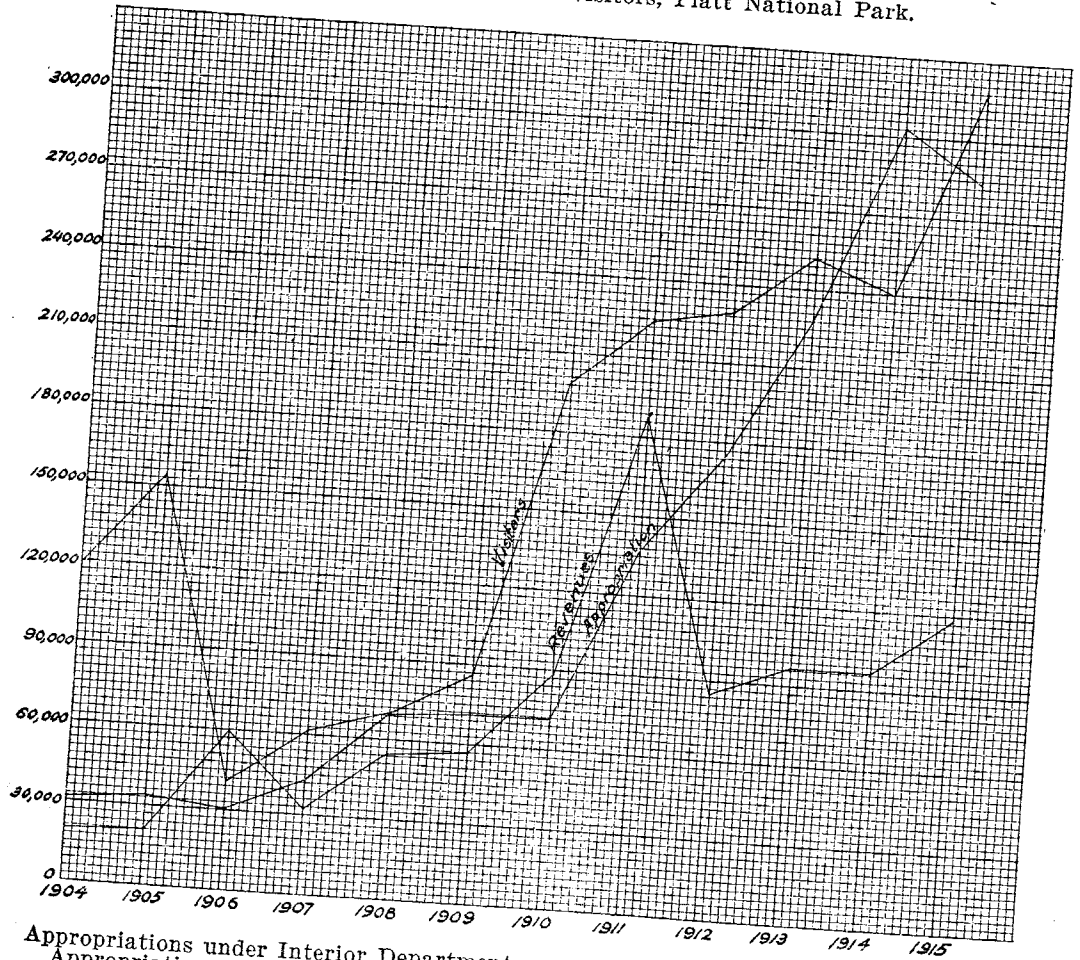
Appropriations under Interior Department, revenues, and visitors, Mount Rainier National Park. Appropriations for road work under War Department not included in this diagram.



Appropriations under Interior Department, revenues, and visitors, Crater Lake National Park. Appropriations for road work under War Department not included in this diagram.



Appropriations, revenues, and visitors, Platt National Park.



Appropriations under Interior Department, revenues, and visitors, all national parks. Appropriations for road work under War Department in Yellowstone, Mount Rainier, and Crater Lake parks not included in this diagram.