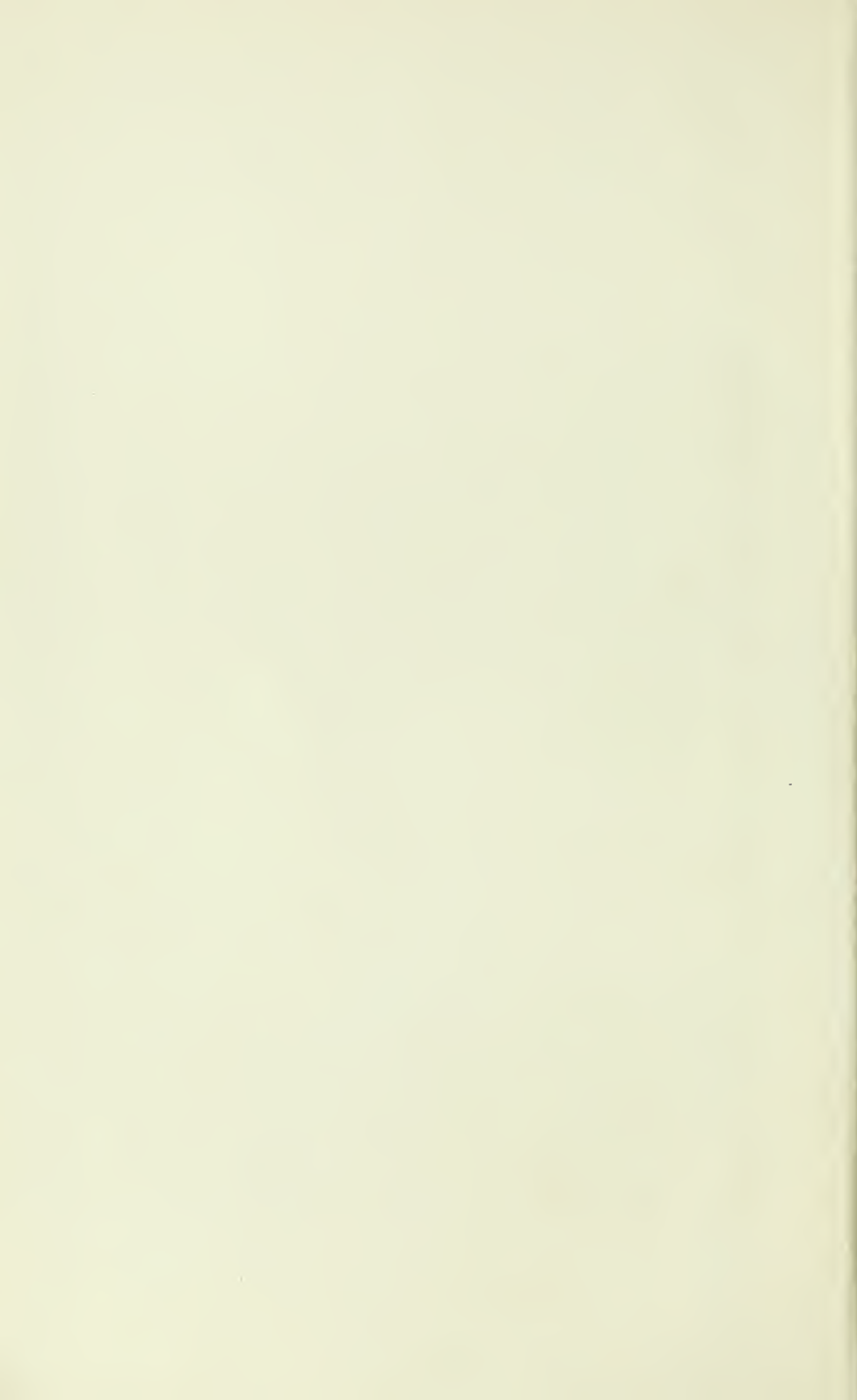



ANNUAL REPORTS
OF THE
SUPERINTENDENT
Yellowstone National Park

National Park Service,
Yellowstone Park,
Wyoming.





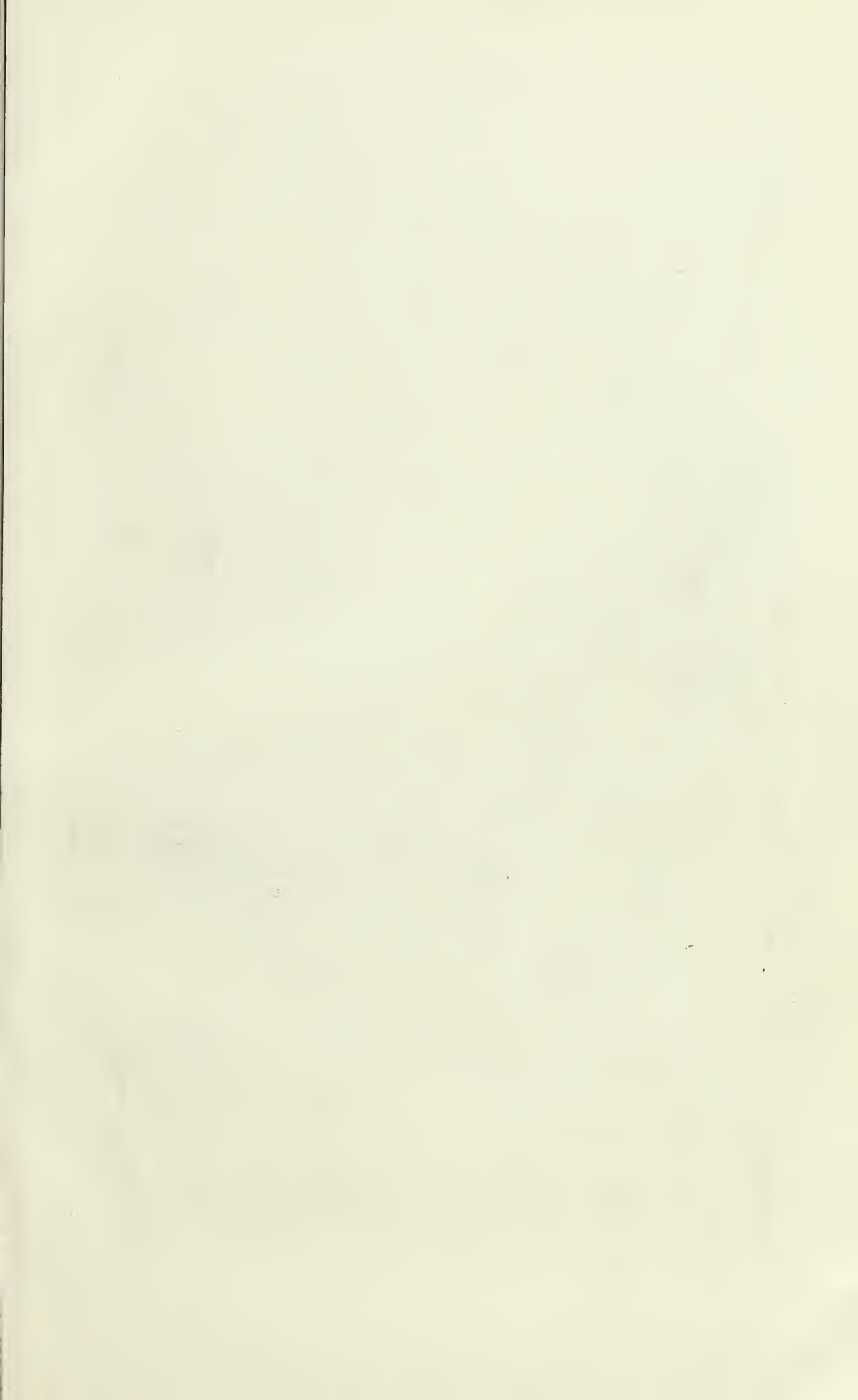
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OLD FAITHFUL GEYSER



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.

355

1901.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.

1901.

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REPORT

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.

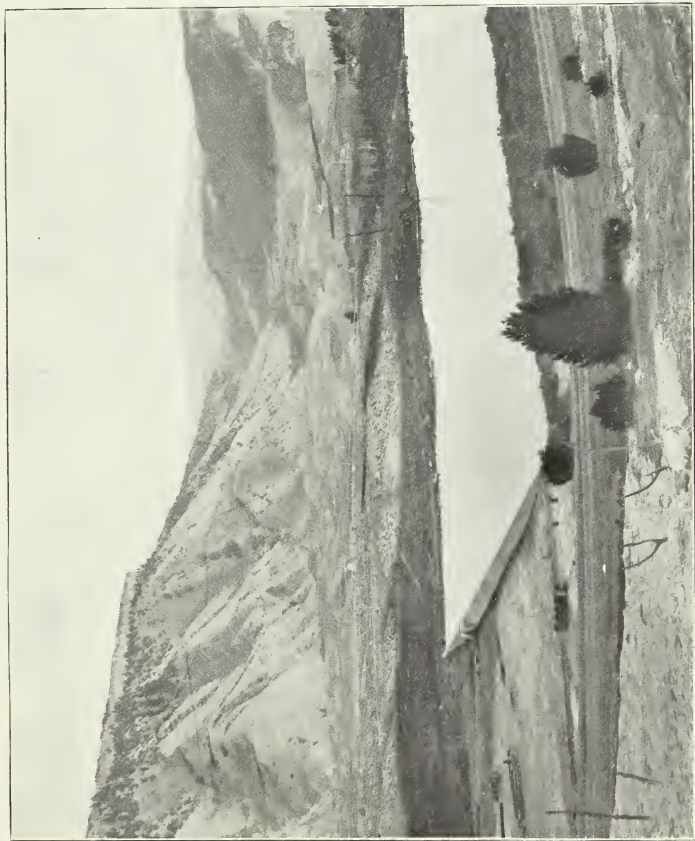
There is scarcely any feature in the park which tourists enjoy more than the trout fishing, which is now to be had in almost any stream in the park. These trout have been planted in nearly all streams in the park except in those that are tributary to the Yellowstone River, and the experiment has been 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.



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.

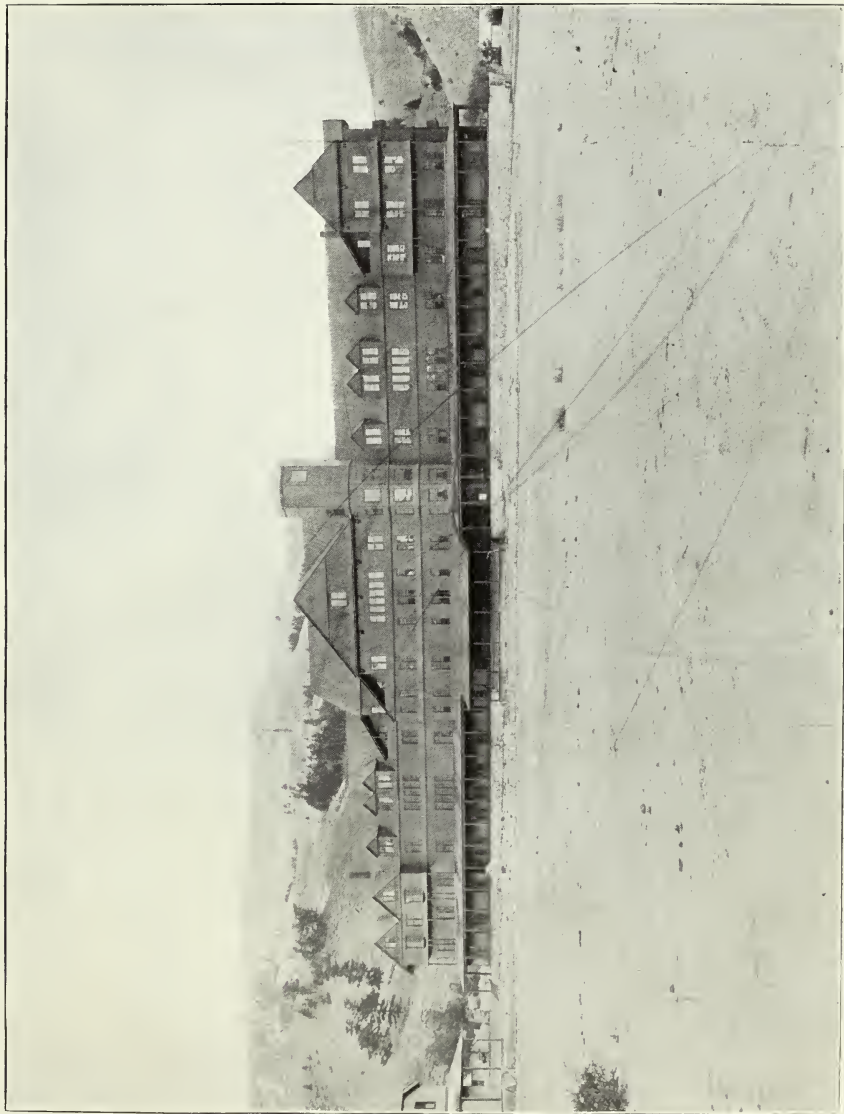
This new company, which commenced operations in 1898, and is known as the Monida and Yellowstone Stage Company, is also well equipped with fine Concord coaches and surreys and has given entire satisfaction to its patrons. Their business has shown a slight increase each year, and it will probably be much 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.

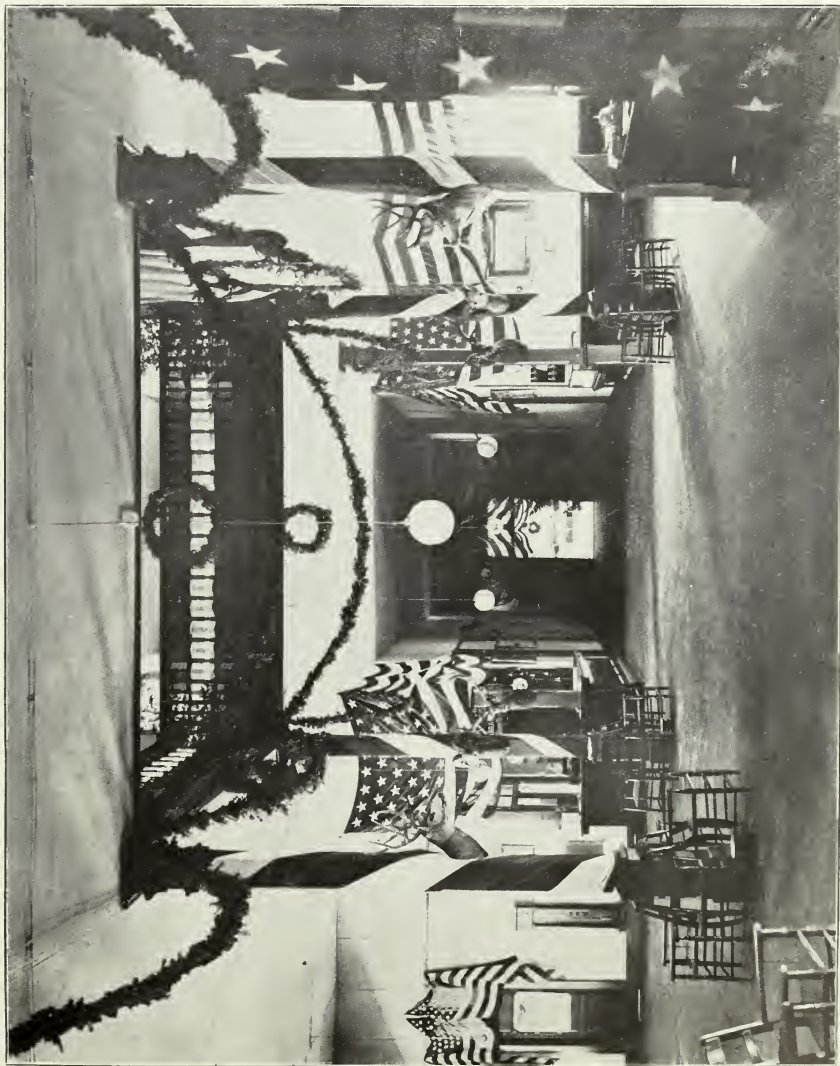
Much time and money have been expended in improving the exterior appearance and modernizing the interior of this structure. The exterior has been neatly painted a terra-cotta color with brown trimmings,



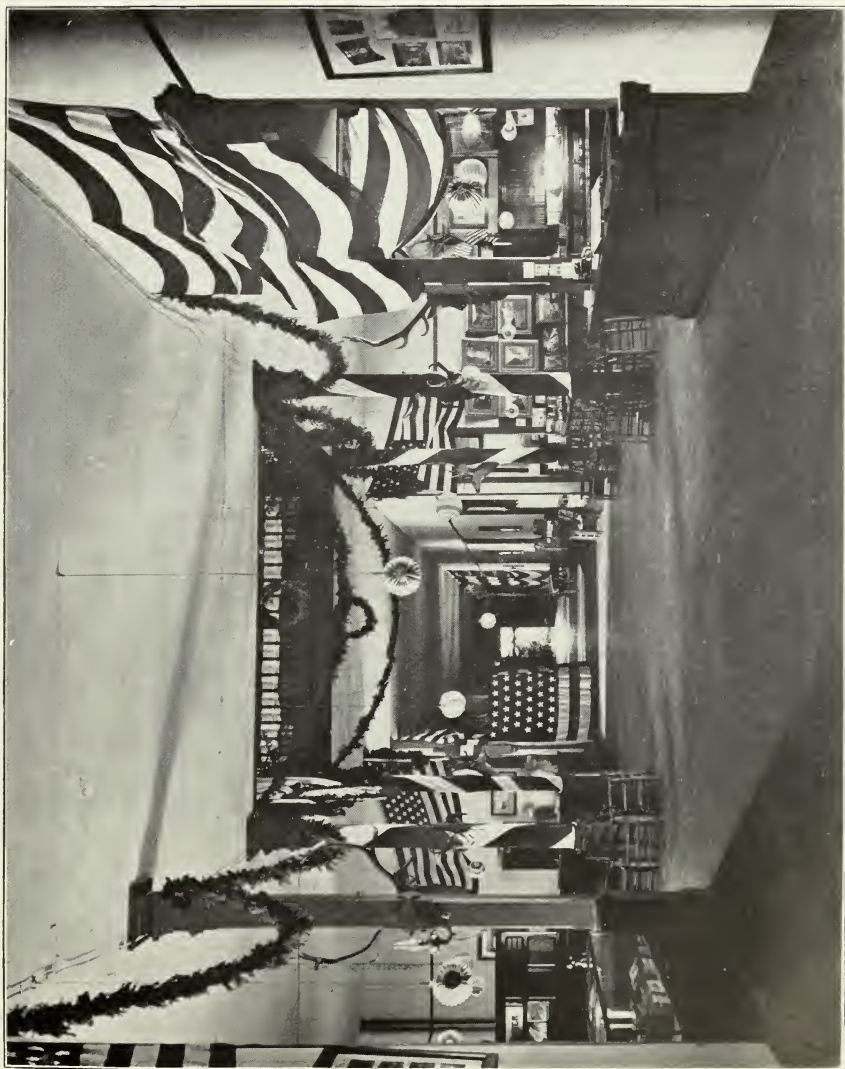
MAMMOTH HOT SPRINGS HOTEL.

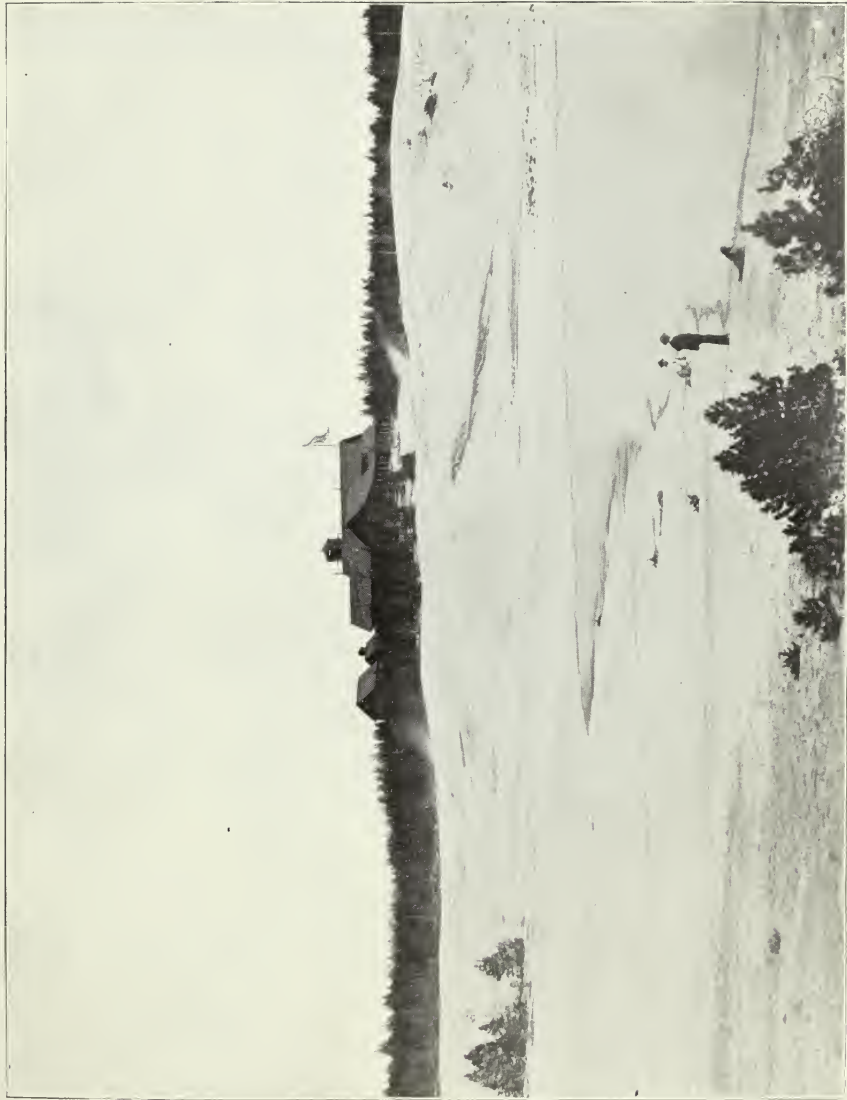


MAMMOTH HOT SPRINGS HOTEL, SHOWING NEW VERANDAS.

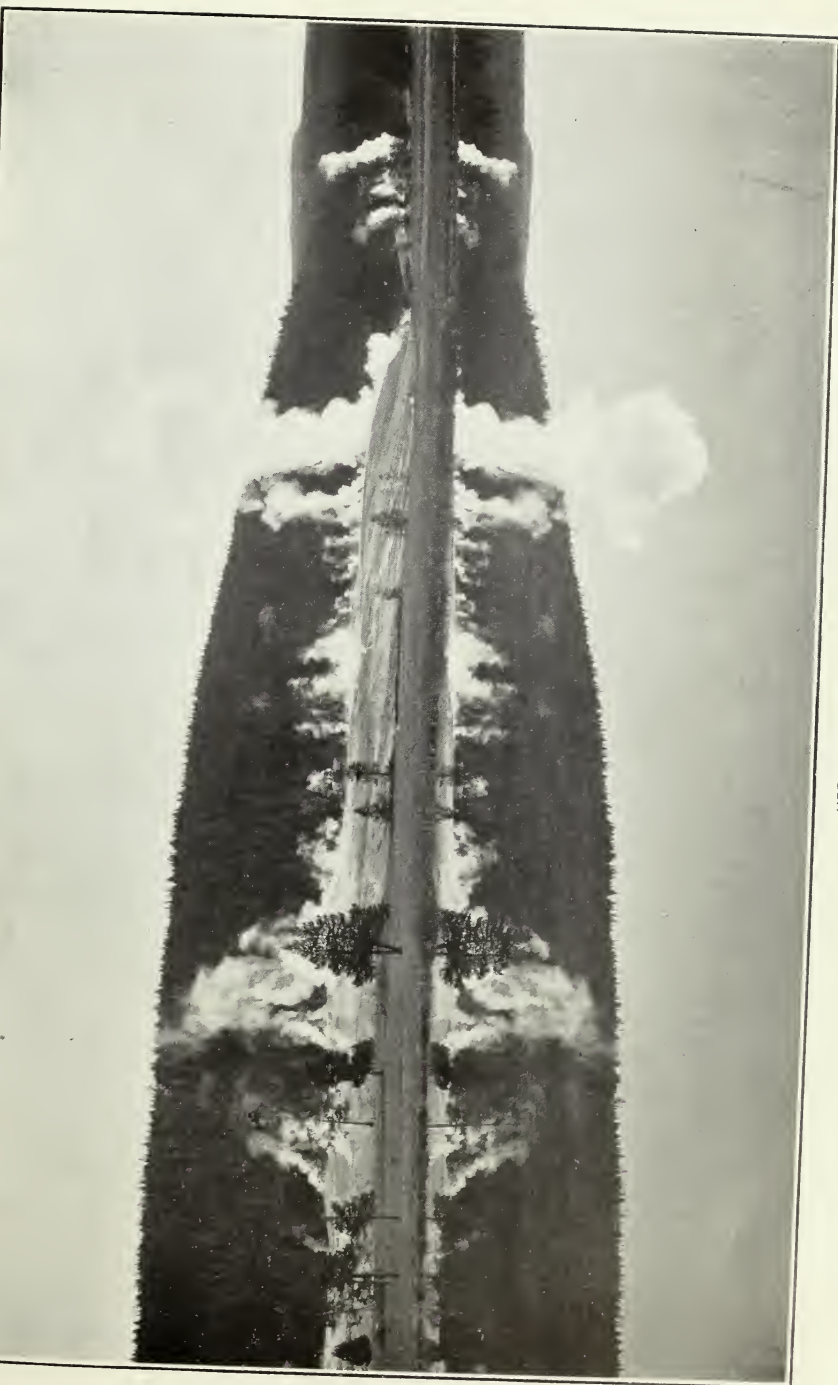


MAMMOTH HOT SPRINGS HOTEL OFFICE.

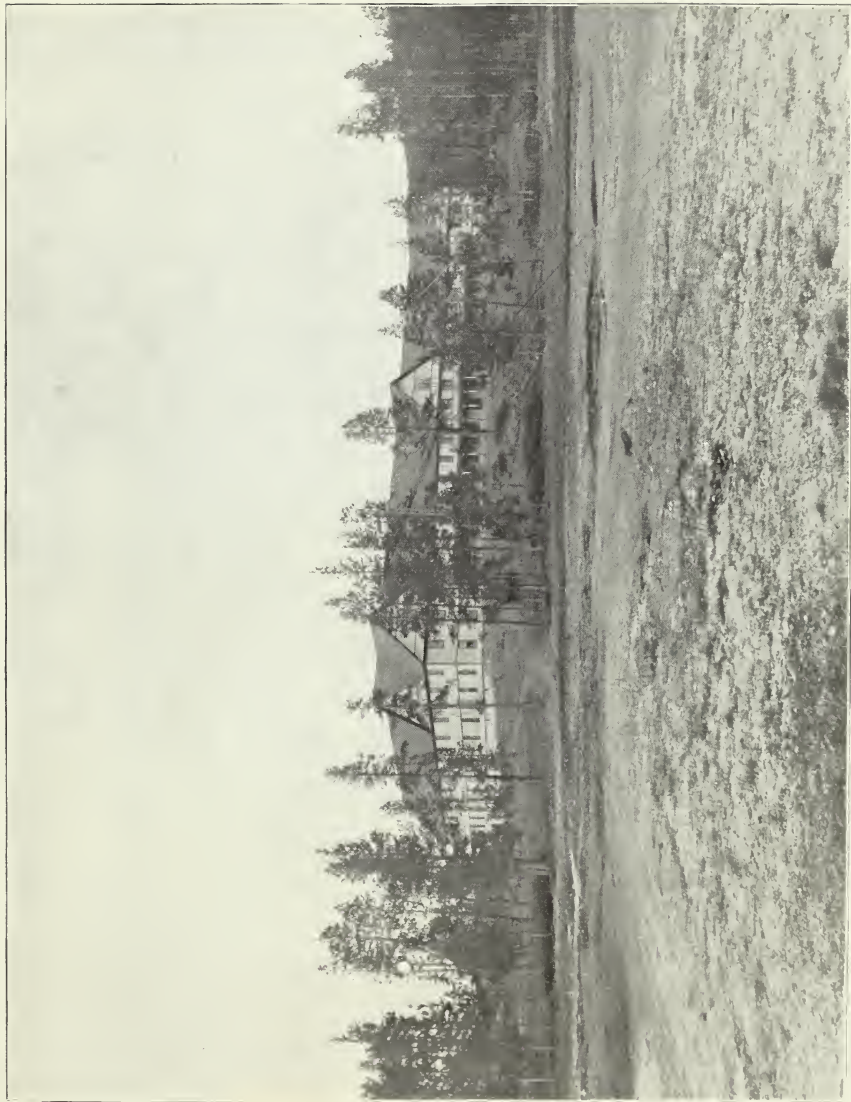




NEW HOTEL AT NORRIS, GEYSER BASIN.

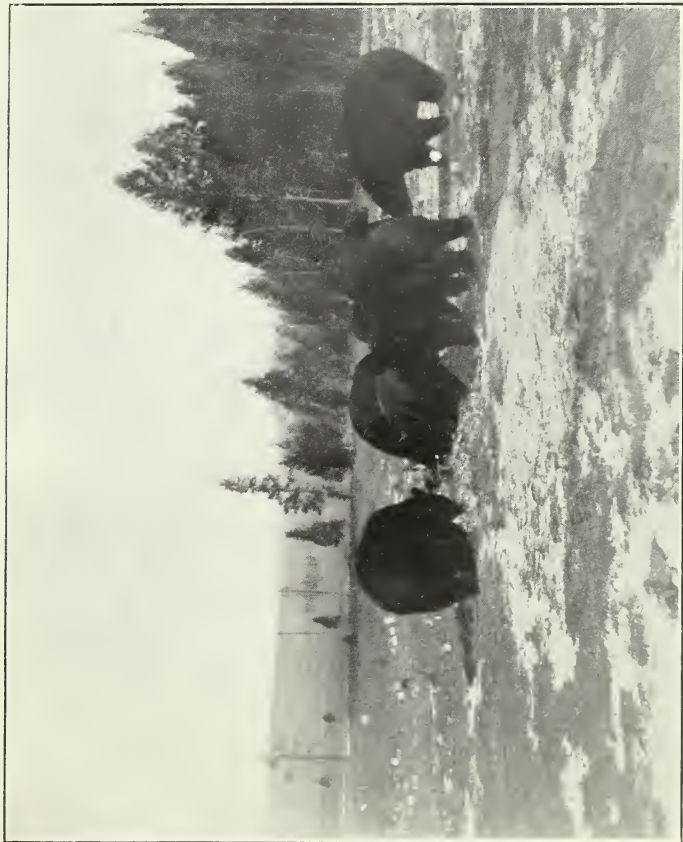


UPPER GEYSER BASIN.



FOUNTAIN HOTEL.

Report Superintendent Yellowstone National Park, 1901.



BEARS NEAR FOUNTAIN HOTEL.



LAKE HOTEL.



CANON 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.

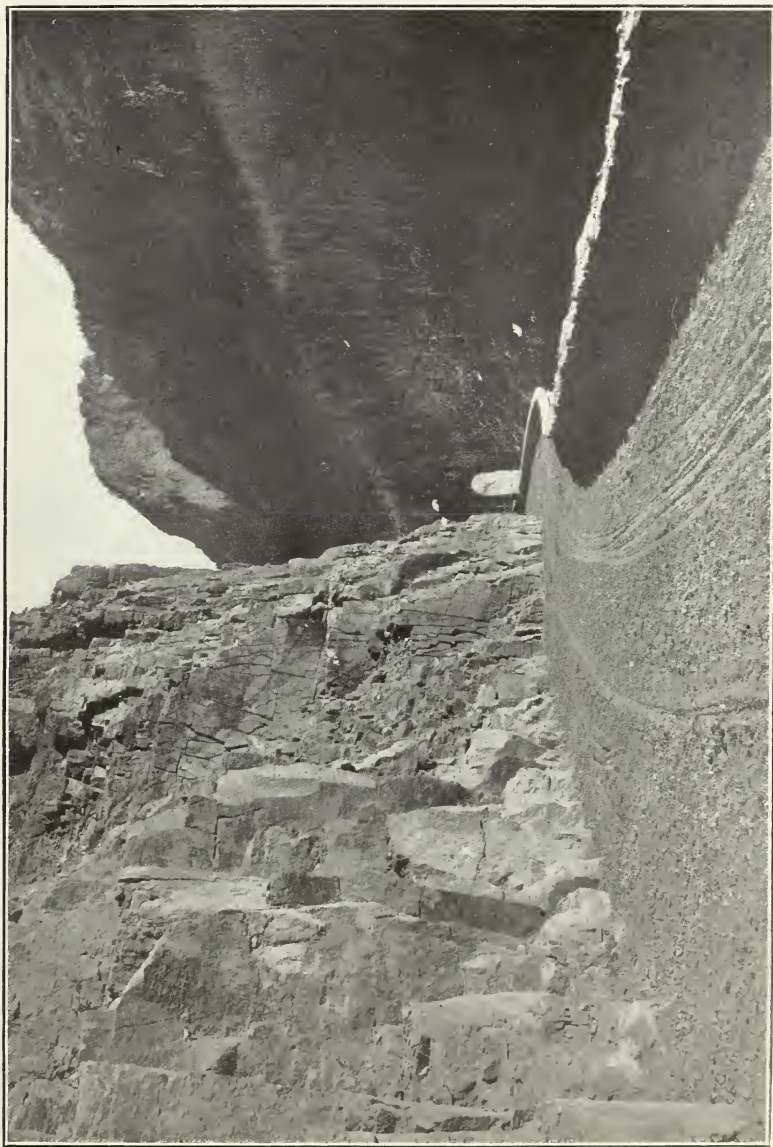
The substantial and permanent character of the road work that can be done by Captain Chittenden, when he has sufficient funds at his disposal, is illustrated by the fine piece of road just completed between the town of Gardiner and the Golden Gate. A few photographs of the most difficult parts of this 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

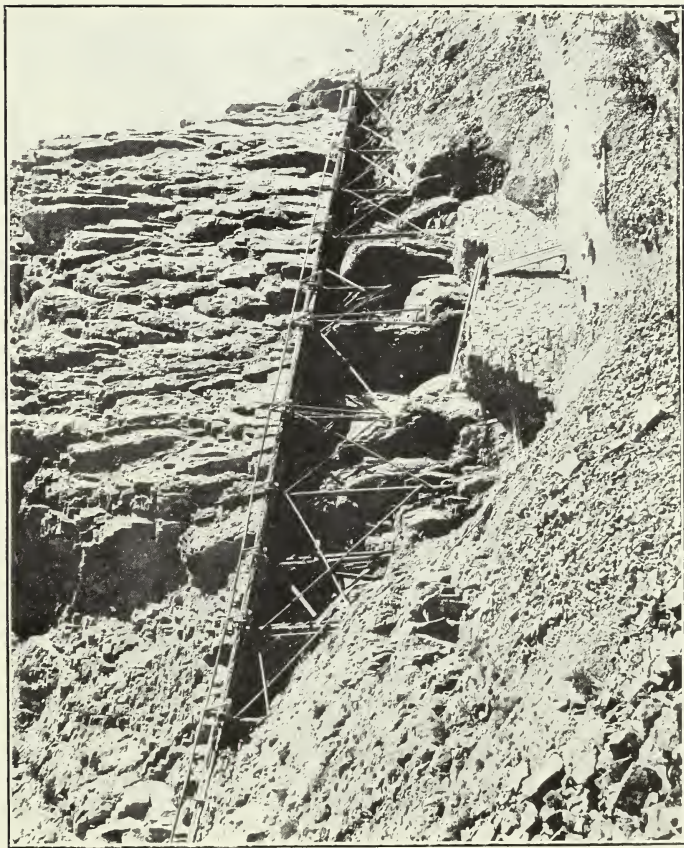


ERECTION OF GOLDEN GATE VIADUCT. GENERAL VIEW FROM UP THE CANYON.



ERECTOR OF GOLDEN GATE VIADUCT. TOP VIEW OF COMPLETED WORK FOR ROAD ABOVE VIADUCT.

Report Superintendent Yellowstone National Park, 1901.



OLD VIADUCT GOLDEN GATE.

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.

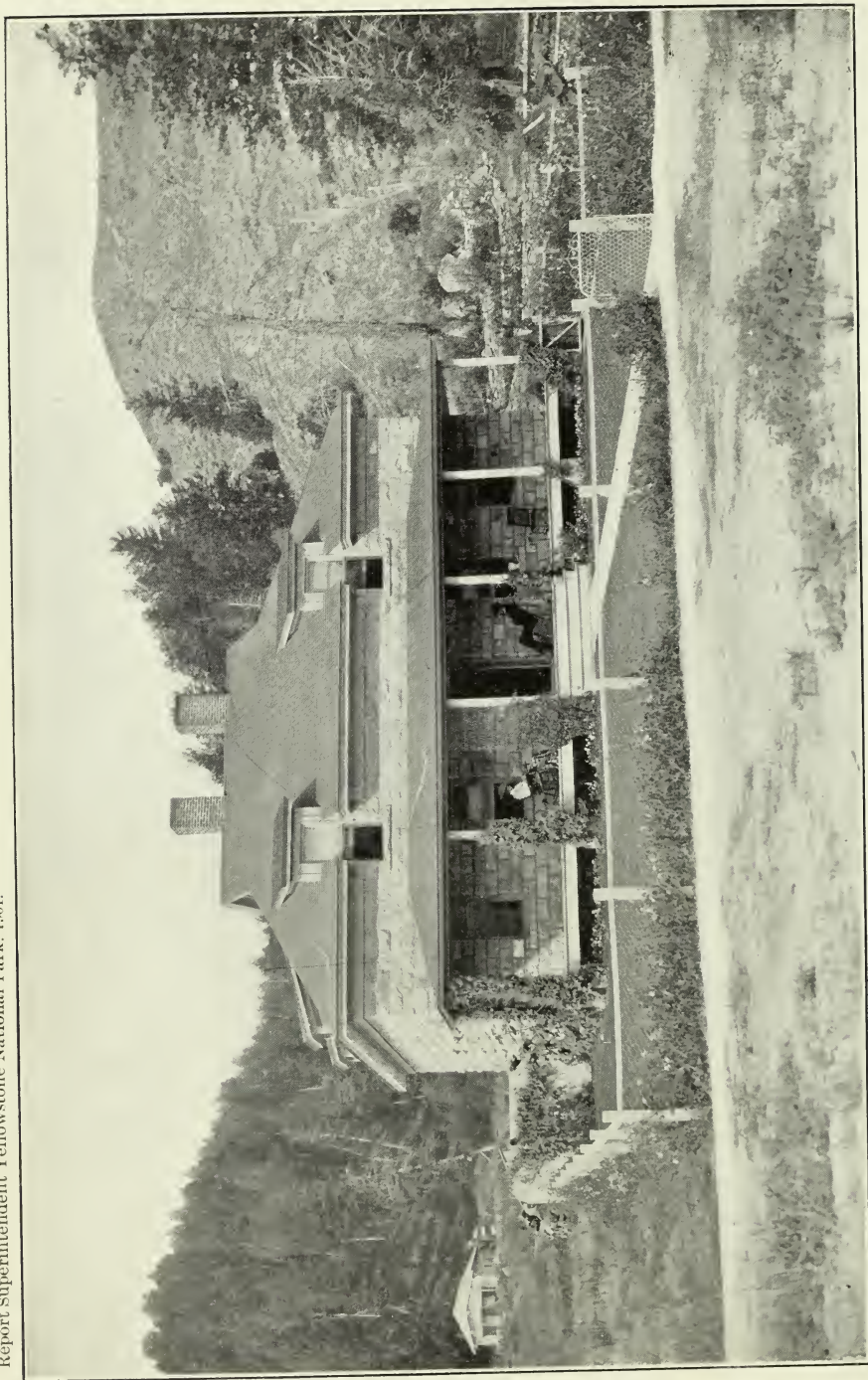
4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and any one failing to comply therewith shall be punished as prescribed by law.

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.

Report Superintendent Yellowstone National Park. 1901.



UNITED STATES COMMISSIONER'S BUILDING, YELLOWSTONE PARK.

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
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
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
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.	.....	Rain.	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.	.....	Snow.
4.....	60	50	10	NW.	.25		4....	59	37	22	E.	.07	
5.....	73	45	28	SW.	.....	Rain.	5....	53	37	16	W.	.18	Snow.
6.....	78	41	37	SW.	.....		6....	40	29	11	SE.	.....	Snow.
7.....	82	40	42	SW.	.....		7....	51	37	14	SW.	.....
8.....	78	45	33	S.	.....		8....	59	27	32	SE.	.....	Snow.
9.....	75	43	32	SW.	.....		9....	62	30	32	SW.	.....
10.....	71	39	32	W.	.....		10...	62	32	30	W.	.....	Snow.
11.....	72	42	30	NW.	.075		11...	65	30	35	SW.	.....
12.....	73	37	36	SW.	.....		12...	62	32	30	SW.	.....	Snow.
13.....	73	39	34	SW.	.....		13...	61	42	19	SE.	.....
14.....	63	44	19	SW.	.....		14...	65	34	31	SW.	.....	Snow.
15.....	60	37	23	NW.	.....		15...	62	31	31	SW.	.....
16.....	64	35	29	SW.	.....	Rain.	16...	67	32	35	SW.	.....	Snow.
17.....	57	35	22	NW.	.10		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	
20.....	62	32	30	NW.	.....	Rain.	20...	45	37	8	SW.	.....	Snow.
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.	.....	Snow.
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		29...	42	37	5	NW.	.....
30.....	57	32	25	SW.	.....	Rain.	30...	34	18	16	SW.	Trace	Rain.
							31...	34	22	12	SW.	Trace	
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.

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	SE.	.....
11.....	52	20	32	SW.	.....		11...	39	14	25	SE.	.....
12.....	52	23	29	W.	.....		12...	35	16	19	SE.	.....
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.	.....
20.....	-2	-12	10	N.	.20	Snow.	20...	38	31	7	S.	.10	Snow.
21.....	20	-11	31	S.	.10	Snow.	21...	38	28	10	NW.	.20	Snow.
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.	.....		Total.	789	221	568	.....	.725	
31.....	18	2	16	S.	.....		Mean	28.18	7.89	20.29	S.	.....
Total.	905	423	482	.....	2.275								
Mean.	29.19	13.64	15.55	SW.	.....							

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	N.	.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, 63.82°. 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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Strip of about 2 miles on north (Montana) and about the same on west (Montana & Idaho) not included in map

Roads and trails are indicated as follows

Roads completed
Roads projected

Roads under construction
Roads available but not now used
by Park Transportation Companies

Trails
Old wagon trails that might be
used for saddle trails

Snowshoe Cabins
Stations

Scale 375,000

Contour Interval 100 Feet

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 a 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 ore 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 human beings and are

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 capercailzie and blackcock, game birds of northern Europe, might be introduced in the park. The capercailzie 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.

MESSRS. HUMPHREY & HAYNES.

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.

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,

H. M. CHITTENDEN,
Captain, Corps of Engineers.

Maj. JOHN PITCHER,
Acting Superintendent Yellowstone Park, Wyo.

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 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, snaring, 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 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 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.....	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.

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355

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, -43° 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	S.	.....		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.	.10	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.	.....							
30.....	12	-1	13	SW.	.....							
31.....	16	+4	12	SW.	.....							
Total.	807	274	533	.....	.96		Total.	1,002	492	510	.....	.61	
Mean.	26.03	8.84	17.19	S.	.....		Mean.	35.76	17.57	18.20	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.

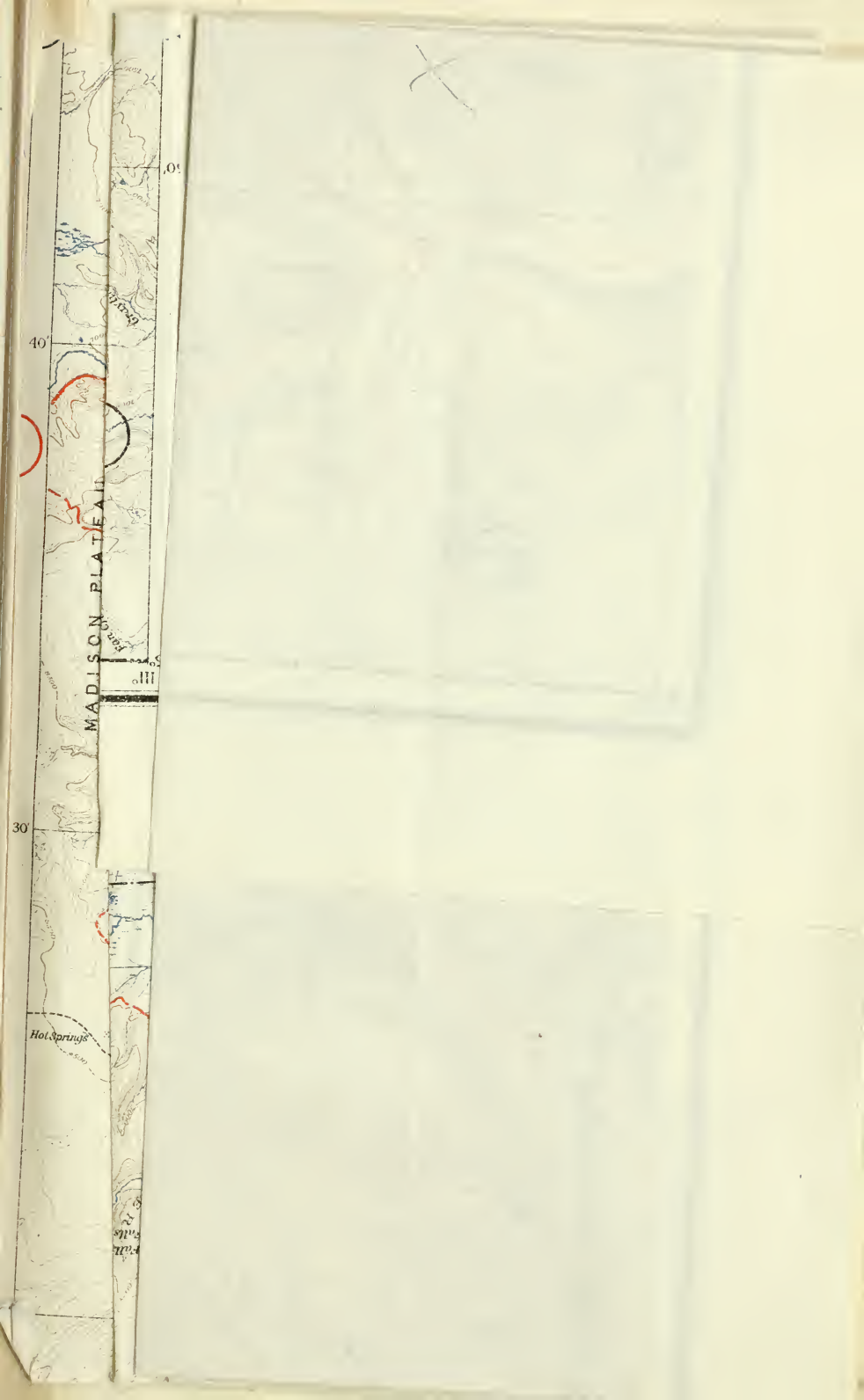
Maximum, 84° on the 9th instant; minimum, 30° on the 17th instant; mean, 53.96°; total precipitation, 1.87 inches; prevailing winds, southwest.

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	SW.	.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	48	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.



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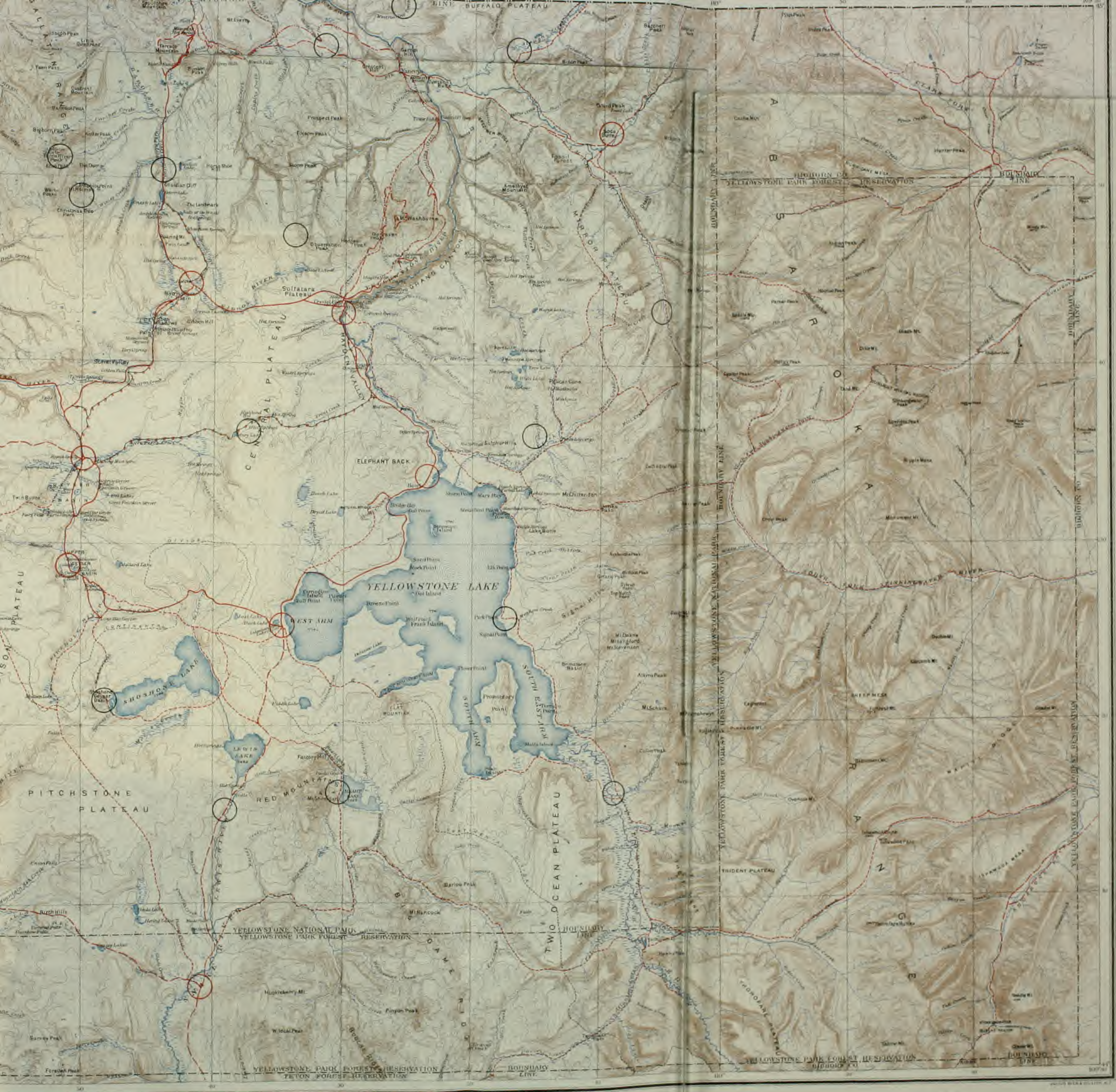
40'

MADISON PLATEAU

30'

Hot Springs

Hot Springs



about 2 miles on north (Montana) and about the
west (Montana & Idaho) not included in map
rest reservation on the south and east is only partially shown

Roads completed
Roads projected

Roads and trails are indicated as follows

Roads under construction
Roads available but not now used
by Park Transportation Companies

Trails
Old wagon trails that might be
used for saddle trails.

Snowshoe Cabins
Stations

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. Stable under a contract awarded him by the honorable Secretary of the Interior. Mr. Stable 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 Good-night 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 at 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 Dunraven 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 was 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 $1\frac{1}{2}$ 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, 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 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.

J. NO. 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.

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.	Snow.	1....	21	- 2	23	NW.	Snow.
2.....	28	15	13	SW.	Trace		2....	16	- 3	19	NW.	.....
3.....	30	25	5	SW.	Trace		3....	13	-13	26	NW.	.....
4.....	39	26	13	SW.	Trace	Snow.	4....	15	- 5	20	NW.	Snow.
5.....	36	25	11	SW.	.....		5....	15	0	15	NW.	Trace
6.....	45	29	16	SW.	.....		6....	13	-13	26	NW.	.....
7.....	40	9	31	SW.	Snow.	7....	20	- 1	21	SW.	Snow.
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.	Snow.
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.	Snow.	13....	10	-20	30	SW.	Snow.
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.	Snow.	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.	Snow.	19....	35	8	27	SW.	Snow.
20.....	26	10	16	SW.	.....		20....	35	8	27	SW.	.....
21.....	34	20	14	SW.	Trace		21....	40	13	27	SW.	.....
22.....	35	28	7	N.	Trace	Snow.	22....	39	14	25	SW.	Snow.
23.....	32	15	7	N.	Trace		23....	35	10	25	SW.	.....
24.....	40	28	12	N.	Trace		24....	32	10	22	SW.	.....
25.....	41	25	16	N.	Trace	Snow.	25....	30	2	28	SW.	Snow.
26.....	26	1	25	NW.	.20		26....	33	3	30	NW.	.....
27.....	26	15	11	NW.	.15		27....	31	- 3	34	NW.	.15	
28.....	25	15	10	NW.	.10	Snow.	28....	28	- 3	28	NW.	.....
29.....	17	- 1	18	SW.	.....		Total	678	41	637	.....	.25
30.....	28	12	16	SW.	.10		Mean	24.21	1.46	22.75	SW.	.....
31.....	26	18	8	SW.								
Total	958	444	51460								
Mean.	30.90	14.32	16.58	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	N.E.	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.

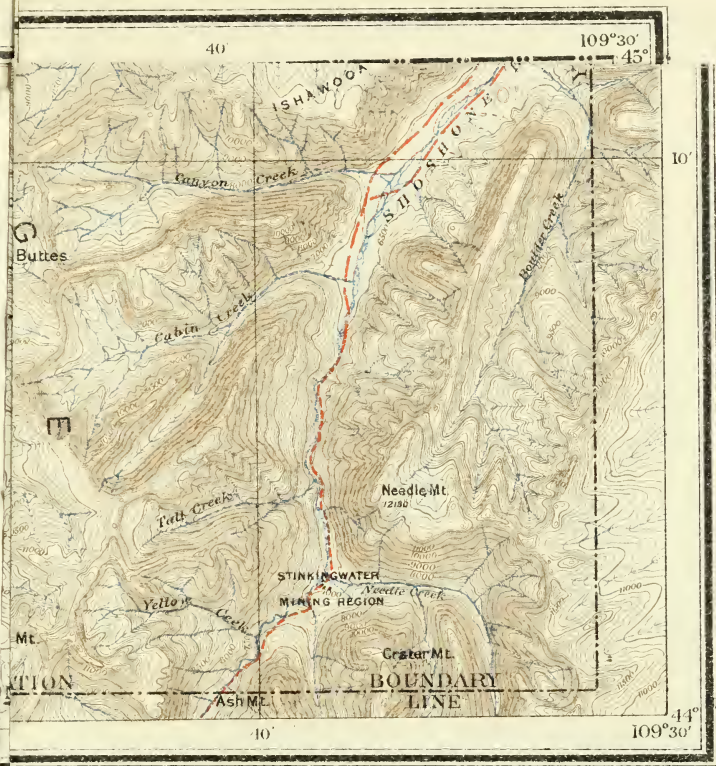
JULY, 1903.						AUGUST, 1903.							
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	68	42	26	SW.	.....	Rain.	1....	60	43	17	NE.	0.45	Rain.
2.....	68	37	31	NW.	0.10		2....	70	40	30	SW.	Trace	Rain.
3.....	57	38	19	NE.	.....		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		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.	.....	Rain.	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		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.	.....	Rain.	28....	75	36	39	SW.	.....
29.....	71	50	21	SW.	Trace		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, 0.55 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.

INDEX.

	Page.
Animals. (<i>See</i> Game.)	3
Archway at park entrance	4
Boundary survey	6
Buffalo	6
Camps	5
Feeding game	3
Fence on northern boundary near Gardiner	4
Fish and fish hatchery	4
Fires, forest	5
Game	3
Gateway at main (northern) entrance to park	6
Hotels	9
Humphrey & Haynes	3
Improvements about Mammoth Hot Springs	7
Improvements, by engineer officer in park	10
Instructions to persons traveling through the park	5
Marking of park boundaries	4
Map of grounds at Mammoth Hot Springs (mentioned)	12
Meteorological report, 1902-3	3
Northern Pacific Railway Company	4
Planting of fish in streams of park	3
President Roosevelt's visit to park	9
Rules and regulations of park	5
Surveys—boundary lines	5
Timber reserves adjoining park	6
Transportation companies	9
Travel, season 1903	4
Weather Bureau	6
Wylie permanent camps	6
Yellowstone Park Association	9
Yellowstone Park Transportation Company	9
Yellowstone Lake Boat Company	9



JULIUS BIEN & CO. LITH N. Y.



Snowshoe Cabins



Stations

RSIDE
TION



Note - Strip of about 2 miles on north (Montana) and about the same on west (Montana & Idaho) not included in map. The forest reservation on the south and east is only partially shown.

Roads completed
Roads projected

Roads and trails are indicated as follows.
Roads under construction
Roads available but not now used by Park Transportation Companies

Scale 1:62,500

Contour Interval 100 Feet

Trails
Old wagon trails that might be used for saddle trails

Snowshoe Cabins



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 cloudburst 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.....	3	18	21
Born spring of 1903.....	2	3	5
Caught spring of 1903.....	2	.....	2
Total October 1, 1903.....	7	21	28
Born spring of 1904.....	6	6	12
Caught spring of 1904.....	.....	1	1
Total.....	13	28	41
Died spring and summer, 1904.....	1	1	2
Total October 1, 1904.....	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.

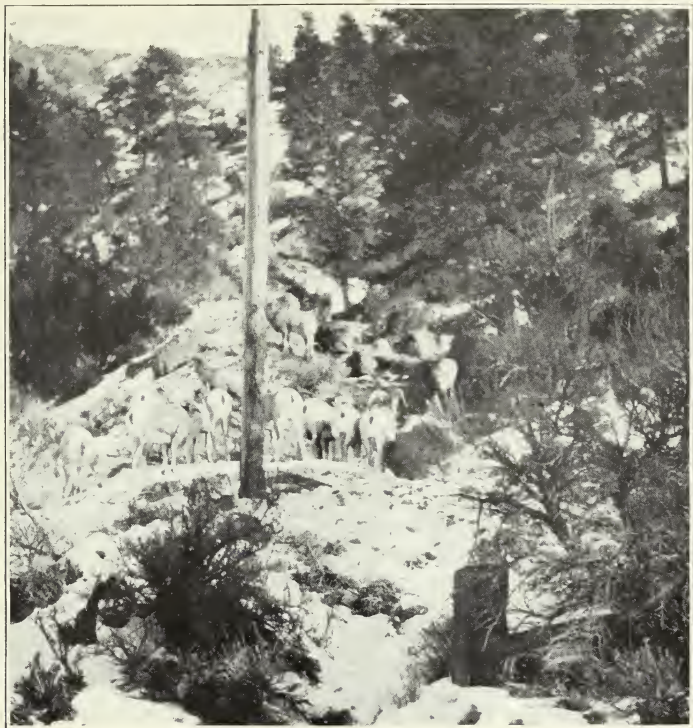
The blacktail or mule deer are also undoubtedly increasing in numbers, and are becoming more tame and fearless each year. One hundred and twenty were counted on the parade ground of Fort Yellowstone one day last winter, and this is considerably more than have ever been seen at any time in the past.



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.

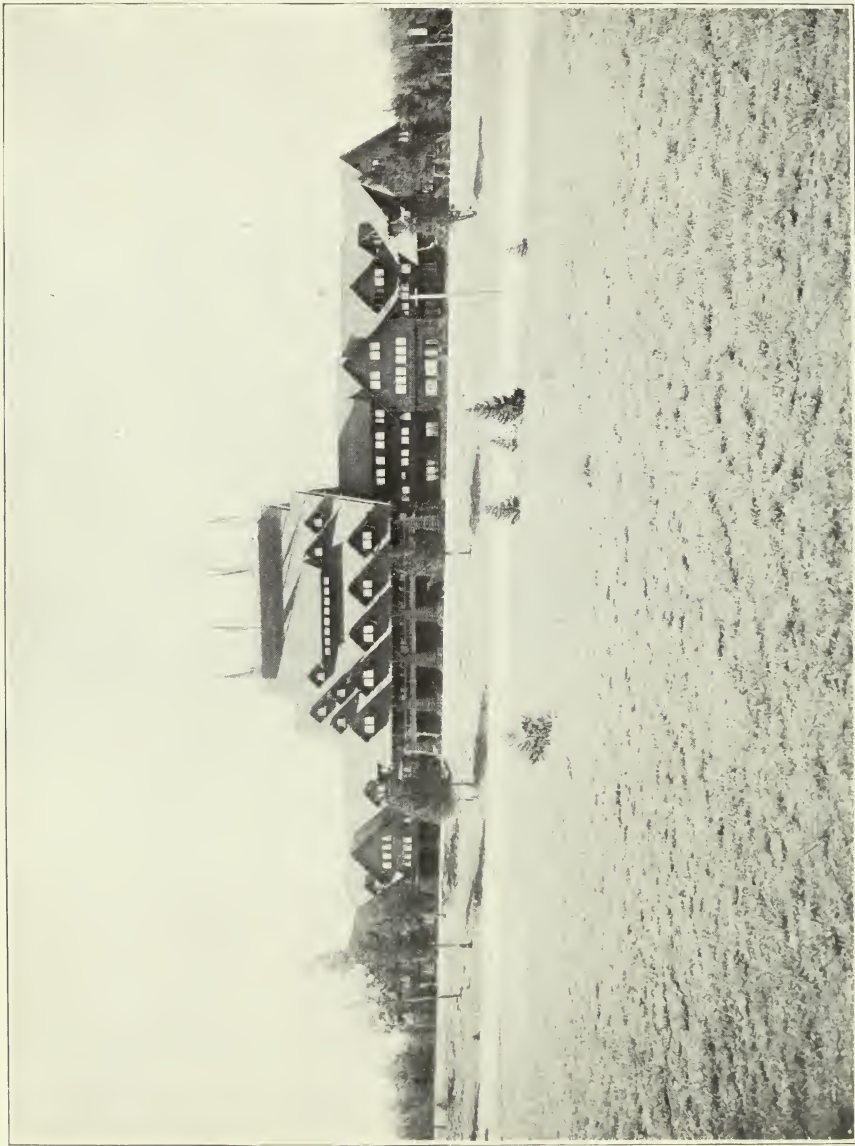
Owing to the limited winter range for all large game, both within the boundary of the park and in the surrounding country, it is only a question of time when it will become absolutely necessary to provide feed for this game during at least a portion of the winter. There are a number of places in the 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.

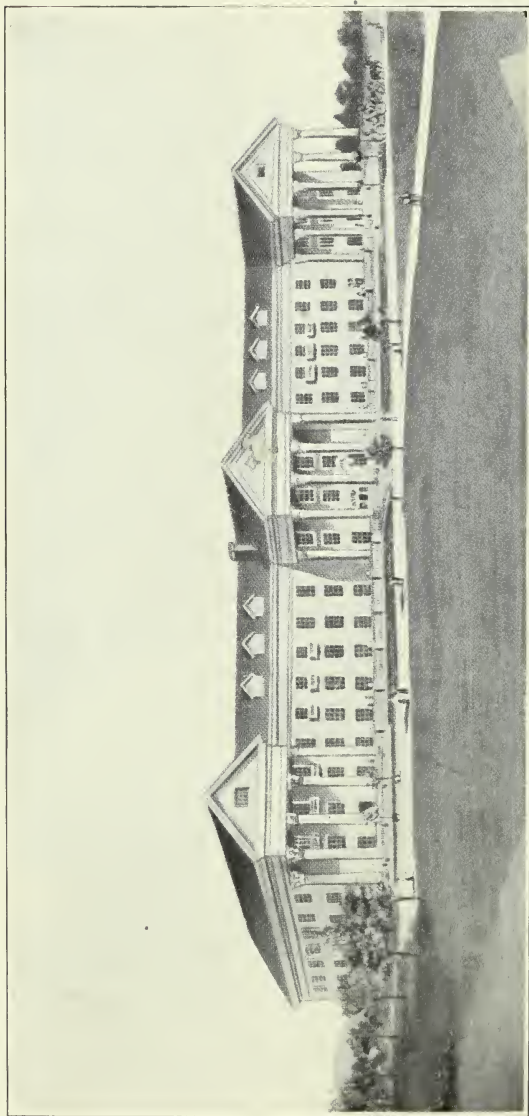


OLD FAITHFUL INN.



OLD FAITHFUL INN.

Report Superintendent Yellowstone National Park, 1904.



NEW HOTEL AT YELLOWSTONE LAKE

The Monida and Yellowstone Stage Company has also improved its 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, baths, 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 now 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 one troop constantly on detached service in the park, and while this is none 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 privates

was 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 four 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
Others 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, 1,092 with W. W. Wylie, and the balance, 117 people, were campers.

Very respectfully,

JNO. PITCHER,

Major, Sixth Cavalry, Acting Superintendent.

THE SECRETARY OF THE INTERIOR,

Washington, D. C.

IMPROVEMENT YELLOWSTONE NATIONAL PARK,
UNITED STATES ENGINEER OFFICE,
Yellowstone Park, Wyo., October 24, 1904.

MAJOR: In compliance with your verbal request I hand you herewith a statement of the work done in the park during the present season under the appropriation for its 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 annual report to the Chief of Engineers for the current year.

Very respectfully,

H. M. CHITTENDEN,
Major, Corps of Engineers.

Maj. JOHN PITCHER,
Acting Superintendent, Fort Yellowstone, Wyo.

NORTH ENTRANCE.

A considerable amount of work was done at the north entrance to the park in fixing up the grounds and enlarging the road across the Gardiner flat. A good deal of shrubbery was planted in the little park near the station and around the entrance arch. The storm water from the hills having proven to be a drawback of serious

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.

GROUND'S 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:

	Miles.
Northern approach	5
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	95
Western approach	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 Grinnell 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 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 record, 1903-4.

SEPTEMBER, 1903.

Date.	Temperature.			Winds.	Precipitation.	Remarks.	Date.	Temperature.			Winds.	Precipitation.	Remarks.
	Maximum.	Minimum.	Range.					Maximum.	Minimum.	Range.			
	° F.	° F.	° F.		Inch.			° F.	° F.	° F.		Inch.	
1.....	82	43	39	SW.	.....		18....	65	33	32	SW.	.....
2.....	81	44	37	SW.	.....		19....	67	39	28	SW.	.....
3.....	79	42	37	SW.	.....		20....	70	40	30	SW.	.....
4.....	76	38	38	N.E.	.....		21....	75	38	37	SW.	.....
5.....	75	47	28	SW.	0.1	Rain.	22....	70	39	31	SW.	.....
6.....	75	43	32	N.E.	.....		23....	75	38	37	SW.	.....
7.....	65	36	29	N.E.	.....		24....	73	41	32	SW.	.....
8.....	52	34	18	N.E.	Trace	Do.	25....	69	43	26	SW.	.....
9.....	55	27	28	W.	.....		26....	56	29	27	SW.	Trace	Rain.
10.....	54	38	16	SW.	Trace		27....	72	32	40	SW.	.....
11.....	43	30	13	NW.	Trace		28....	71	33	38	SW.	.....
12.....	38	26	12	NW.	.....		29....	65	44	21	NW.	.....
13.....	35	27	8	NW.	.5	Snow.	30....	60	37	23	SW.	.....
14.....	40	23	17	NW.	Trace	Do.	Total.	1,903	1,054	849	.....	0.6	
15.....	44	18	26	NW.	Trace	Do.	Mean.	63.43	35.13	28.30	.....	
16.....	58	24	34	NW.	Trace	Do.							
17.....	63	28	35	SW.	.....							

OCTOBER, 1903.

1.....	55	35	20	SW.	0.4		18....	68	35	33	SW.	.....
2.....	50	34	16	SW.	.1		19....	66	33	33	SW.	.....
3.....	50	33	17	SW.	Trace		20....	67	34	33	SW.	.....
4.....	48	30	18	SW.	Trace		21....	64	33	31	N.E.	.....
5.....	47	35	12	SW.	Trace		22....	68	28	40	N.E.	.....
6.....	43	33	10	SW.	.....	Snow.	23....	70	30	40	N.E.	.....
7.....	48	28	20	SW.	.....		24....	67	33	34	SW.	.....
8.....	59	29	30	N.E.	.....		25....	63	29	34	Calm.	.....
9.....	68	35	33	SW.	.....		26....	60	29	31	Calm.	.....
10.....	58	40	18	SW.	.....		27....	62	28	34	SW.	.....
11.....	53	35	18	SW.	.....		28....	58	35	23	SW.	.....
12.....	66	30	36	SW.	.....		29....	52	32	20	NW.	.....	Snow.
13.....	67	33	34	NW.	.....		30....	47	18	29	NW.	.....
14.....	53	24	29	Calm.	.....		31....	55	21	34	SW.	.....
15.....	68	30	38	NW.	.....		Total.	1,837	967	870	.....	0.5	
16.....	68	30	38	SW.	.....		Mean.	59.25	31.19	28.06	.....	
17.....	69	35	34	SW.	.....							

NOVEMBER, 1903.

1.....	58	24	34	SW.	.....	Snow.	18....	39	20	19	SW.	.....
2.....	60	25	35	SW.	.....		19....	38	21	17	SW.	.....
3.....	60	24	36	SW.	.....		20....	41	27	14	SW.	.....	Snow.
4.....	58	35	23	SW.	.....		21....	44	34	10	W.	.....	Do.
5.....	53	35	18	SW.	.....		22....	45	32	13	SW.	.....	Do.
6.....	58	36	22	S.	.....		23....	43	31	12	NW.	Trace	
7.....	55	23	32	NW.	0.4	Do.	24....	44	28	16	SW.	.....
8.....	26	15	11	NW.	.3	Do.	25....	38	24	14	SW.	.....
9.....	26	13	13	SW.	.....	Do.	26....	39	25	14	SW.	.....
10.....	33	13	20	SE.	.2	Do.	27....	48	25	23	SW.	.....
11.....	36	14	22	NW.	.....		28....	45	21	24	SW.	.....
12.....	33	17	16	Calm.	.....	Do.	29....	40	20	20	SW.	.....
13.....	44	27	17	SE.	.3		30....	40	32	8	Calm.	.....
14.....	45	18	27	SW.	.2	Do.	Total.	1,247	657	590	.....	0.14	
15.....	25	12	13	NW.	.....		Mean.	41.56	21.90	19.66	.....	
16.....	13	-10	23	SW.	.....							
17.....	20	-4	24	SW.	.....							

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.		
	° F.	° F.	° F.	Inch.			° F.	° F.	° F.	Inch.	
1.....	45	32	13	.....	Partly cloudy.	18.....	29	10	20	0.14	Partly cloudy.
2.....	28	20	24	.....	Do.	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.						
16.....	40	22	31	.....	Partly cloudy.	Mean.	30.4	14.4	22.4		
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.		
	° F.	° F.	° F.	Inch.			° F.	° F.	° F.	Inch.	
1.....	24	6	15	.....	Clear.	18.....	29	15	22	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.
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.						
16.....	34	28	31	.03	Do.	Mean.	25.5	11.6	18.5		
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.			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.....	29	15	22	Trace.	Partly cloudy.	17.....	30	8	19	.....	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.						
15.....	38	25	32	.01	Cloudy.	Mean.	32.3	15.4	23.7	.....
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.			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.....	34	27	30	0.22	Cloudy.	18.....	43	27	35	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.						
16.....	33	12	22	Trace.	Do.	Mean.	34.1	16.3	25.2	.....
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.		
	° F.	° F.	° F.	Inch.			° F.	° F.	° F.	Inch.	
1.....	49	10	30	.....	Clear.	17.....	51	26	38	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.						
16.....	44	14	29	.02	Do.	Mean.	51.4	26.0	38.7	.....

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.		
	° F.	° F.	° F.	Inch.			° F.	° F.	° F.	Inch.	
1.....	53	27	40	Trace.	Partly cloudy.	18.....	70	41	56	.....	Partly cloudy.
2.....	53	35	44	9.17	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	.12	Do.
15.....	54	30	42	.04	Do.						
16.....	58	26	42	.....	Clear.	Mean.	57.3	33.3	45.3	.....
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.

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.		
	° F.	° F.	° F.	Inch.			° F.	° F.	° F.	Inch.	
1.....	53	37	45	0.15	Cloudy.	17.....	80	42	61	Trace.	Clear.
2.....	53	34	44	.37	Do.	18.....	78	46	62	.....	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 <i>a</i>	72	41	56	.....
13.....	71	34	52	.....	Partly cloudy.	29 <i>a</i>	80	39	60	.....
14.....	72	40	56	Trace.	Do.	30 <i>a</i>	82	43	62	.....
15.....	76	40	58	Trace.	Do.						
16.....	77	44	60	.01	Do.	Mean.	66.6	38.2	52.4	.....

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, <i>a</i>			Precipitation.	Character of day.	Date.	Temperature, <i>a</i>			Precipitation.	Character of day.
	Maximum.	Minimum.	Mean.				Maximum.	Minimum.	Mean.		
	° F.	° F.	° F.	Inch.			° F.	° F.	° F.	Inch.	
1.....	75	48	62	0.04		18.....	72	37	54	.....
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.....	71	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	.....						
16.....	62	34	48	.15		Mean.	73.5	43.1	58.3	.....
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	51	66	Trace.	Partly cloudy.						
16.....	79	50	64	.08	Do.	Mean.	75.5	44.7	60.1	.....
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.						
16.....	74	35	54	.....	Do.	Mean.	67.7	36.9	52.3	.....

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

<i>Inches.</i>		<i>Inches.</i>		<i>Inches.</i>	
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.

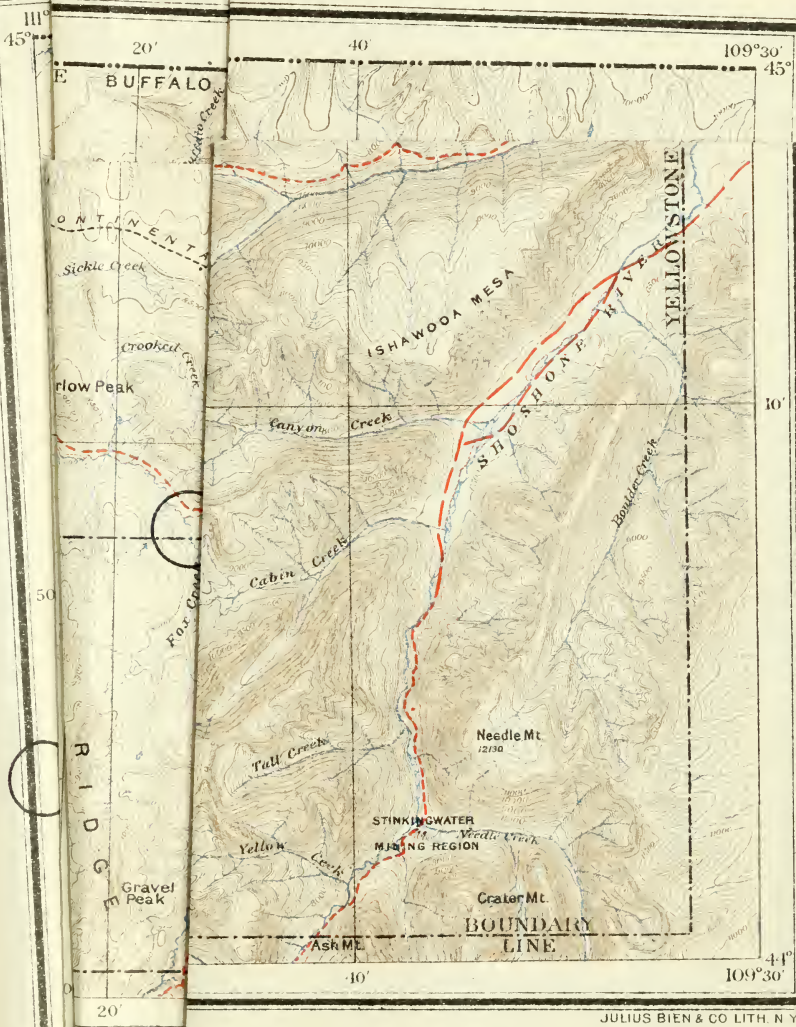
^a Record of post surgeon prior to 1904.

INDEX.

	Page.
Alfalfa	3
Animals. (<i>See</i> Game.)	5
Boundary survey	3
Buffalo	6
Camps	9
Feeding game	8
Fence on northern boundary near Gardiner	3
Fish and fish hatchery	5
Fires, forest	4
Fort Yellowstone	9
Game	5
Gateway at main (northern) entrance to park	3
Hotels, improvements by engineer officer in park	9
Improvements by engineer officer in park	10
Instructions to persons traveling through the park	16
Marking of park boundaries	3
Meteorological report, 1903-4	18
Monida and Yellowstone Stage Company	9
Planting of fish in streams of park	5
Recommendations	3
Rules and regulations of park	15
Surveys, boundary lines	3
Telephone lines	4
Transportation companies	8
Travel, season 1904	10
Wylie permanent camps	9
Yellowstone Park Association	9
Yellowstone Park Transportation Company	8

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REPORT

OF THE

ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1905.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1905.

CONTENTS.

	Page.
Alfalfa.....	3
Animal. (<i>See</i> Game).....	6
Boundary survey.....	3
Boat on Yellowstone Lake.....	5
Buffalo.....	9
Camps.....	4
Fish and fish hatchery.....	10
Fires, forest.....	4
Fort Yellowstone.....	11
Game.....	6
Game preserve.....	10
Gateway at main (northern) entrance to park.....	3
Hotels.....	4
Improvements by engineer officer in park.....	12
Marking of park boundaries.....	3
Meteorological report, 1904-5.....	17
Monida and Yellowstone Stage Company.....	5
Planting of fish in streams of park.....	10
Recommendations.....	14
Roosevelt Arch.....	3
Surveys, boundary lines.....	3
Telephone lines.....	4
Transportation companies.....	4
Travel, season 1905.....	11
Trees (<i>Sequoia gigantea</i>).....	3
Wylie permanent camps.....	4
Yellowstone Park Association.....	4
Yellowstone Park Transportation Company.....	4
Yellowstone Lake Boat Company.....	5

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 of 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.

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.		
	°F.	°F.	°F.	Inch.			°F.	°F.	°F.	Inch.	
1.....	68	45	56	.....	Clear.	18.....	36	17	26	.....	Partly cloudy.
2.....	66	42	54	.....	Do.	19.....	46	29	38	.....	Do.
3.....	65	46	56	Tr.	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.....	58	32	45	.....	Clear.	28.....	64	29	46	.....	Do.
12.....	50	34	42	Tr.	Cloudy.	29.....	61	27	44	.....	Do.
13.....	57	34	46	.....	Partly cloudy.	30.....	58	30	44	.....	Do.
14.....	60	33	46	.....	Clear.	31.....	56	30	43	.....	Do.
15.....	63	33	48	.....	Do.						
16.....	43	33	38	.14	Cloudy.	Mean	55.8	32.3	44.0	.....
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	Average of this month	
1894.....	.89	1901.....	.92	for 16 years.....	1.09
1895.....	.44				

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.		
	°F.	°F.	°F.	Inch.			°F.	°F.	°F.	Inch.	
1.....	57	25	41	.....	Partly cloudy.	17.....	44	32	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	.....	Cloudy.
14.....	49	24	36	.....	Do.	30.....	45	25	35	.....	Partly cloudy.
15.....	48	29	38	Tr.	Partly cloudy.						
16.....	37	28	32	0.01	Cloudy.	Mean	47.7	25.2	36.4	.....

a Records prior to 1904 by post surgeon, United States Army.

18 ACTING SUPERINTENDENT YELLOWSTONE NATIONAL PARK.

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	Average of this month	
1894.....	.15	1901.....	1.25	for 16 years.....	1.59
1895.....	1.30				

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	Mean of this month for	
1893.....	24	1900.....	24	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.....	.40
1890.....	.89	1897.....	.80	1904.....	1.19
1891.....	2.77	1898.....	.67		
1892.....	2.17	1899.....	1.90	Average of this month	
1893.....	1.91	1900.....	1.18	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 24; 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.

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—

	°F.		°F.		°F.
1887.....	14	1894.....	12	1902.....	27
1888.....	27	1895.....	19	1903.....	13
1889.....	20	1896.....	25	1904.....	21
1890.....	18	1897.....	20	1905.....	17
1891.....	14	1898.....	25		
1892.....	24	1899.....	11	Mean of this month	
1893.....	16	1901.....	18	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—

	Inches.		Inches.		Inches.
1887.....	4.65	1895.....	0.34	1903.....	0.25
1888.....	2.02	1896.....	2.07	1904.....	1.50
1889.....	1.93	1897.....	.80	1905.....	.60
1890.....	6.65	1898.....	1.21		
1891.....	2.79	1899.....	3.40	Average of this	
1892.....	2.10	1900.....	1.65	month for 19 years.	1.85
1893.....	.79	1901.....	.72		
1894.....	1.12	1902.....	.61		

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	Tr.	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.	Mean	43.3	21.3	32.3	.....	.....
16....	52	25	38	.....	38	Do.							
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.
1887.....	36	1894.....	27	1902.....	25
1888.....	23	1896.....	25	1903.....	29
1889.....	36	1897.....	20	1904.....	26
1890.....	26	1898.....	21	1905.....	32
1891.....	22	1899.....	23		
1892.....	28	1900.....	34	Mean of this month	
1893.....	24	1901.....	27	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	1902.....	2.46
1889.....	.53	1896.....	2.62	1903.....	.85
1890.....	4.92	1897.....	1.06	1904.....	2.98
1891.....	2.41	1898.....	1.40	1905.....	1.41
1892.....	3.05	1899.....	3.00		
1893.....	.96	1900.....	3.13	Average of this	
1894.....	2.30	1901.....	1.46	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.			
	°F.	°F.	°F.	Inch.	P.ct.			°F.	°F.	°F.	Inch.	P.ct.	
1....	47	14	30	.....	100	Clear.	17...	45	18	32	.....	79	Partly cloudy.
2....	46	19	32	.....	76	Partly cloudy.	18...	58	26	42	Tr.	64	Do.
3....	35	19	27	0.05	85	Do.	19...	47	33	40	0.04	8	Cloudy.
4....	53	12	32	.....	100	Clear.	20...	50	30	40	.....	49	Partly cloudy.
5....	57	22	40	.....	100	Do.	21...	55	33	44	Tr.	40	Do.
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	Mean of this month	
1893.....	31	1901.....	36	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	Average of this month	
1894.....	1.87	1901.....	1.08	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.			
	°F.	°F.	°F.	Inch.	P.ct.			°F.	°F.	°F.	Inch.	P.ct.	
1....	50	36	43	Tr.	14	Cloudy.	18...	45	28	36	0.24	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	.04	Do.
6.....	67	44	56	.....	Partly cloudy.	22.....	62	38	50	.31	Cloudy.
7.....	77	36	56	.....	Clear.	23.....	41	34	38	.08	Do.
8.....	70	42	56	.41	Partly cloudy.	24.....	48	34	41	.20	Do.
9.....	49	40	44	.43	Cloudy.	25.....	56	39	48	.....	Partly cloudy.
10.....	58	39	48	.11	Do.	26.....	64	43	54	.....	Clear.
11.....	68	42	55	.....	Clear.	27.....	71	40	56	.....	Do.
12.....	65	40	52	.25	Partly cloudy.	28.....	65	36	50	.....	Do.
13.....	64	35	50	.....	Do.	29.....	71	37	54	.....	Partly cloudy.
14.....	67	37	52	.04	Do.	30.....	73	39	56	.....	D
15.....	55	37	46	.13	Cloudy.						
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.—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.—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.....	61	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.

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.			
	°F.	°F.	°F.	Inch.	P.ct.			°F.	°F.	°F.	Inch.	P.ct.	
1....	76	44	60	Tr.	80	Clear.	18...	71	38	54	.....	78	Partly cloudy.
2....	81	45	63	.....	74	Partly cloudy.	19...	79	41	60	.....	99	Clear.
3....	77	53	65	0.03	51	Do.	20...	82	50	66	.....	65	Partly cloudy.
4....	78	45	62	.....	81	Clear.	21...	79	46	62	.....	88	Clear.
5....	71	48	60	.....	59	Partly cloudy.	22...	77	52	64	0.05	40	Partly cloudy.
6....	81	40	60	.....	96	Clear.	23...	75	51	63	.14	73	Do.
7....	84	46	65	Tr.	81	Partly cloudy.	24...	83	46	64	.....	90	Clear.
8....	85	49	67	.....	100	Clear.	25...	72	57	64	Tr.	24	Cloudy.
9....	79	47	63	Tr.	43	Partly cloudy.	26...	76	52	64	.....	62	Partly cloudy.
10....	70	46	58	.01	20	Cloudy.	27...	80	49	64	Tr.	61	Do.
11....	78	41	60	.01	69	Partly cloudy.	28...	79	54	66	.....	100	Clear.
12....	76	44	60	.....	49	Do.	29...	80	52	66	.....	96	Do.
13....	80	47	64	.08	53	Do.	30...	76	56	66	Tr.	68	Partly cloudy.
14....	78	44	61	.....	92	Clear	31...	68	46	57	.....	100	Clear.
15....	69	41	55	.....	82	Do.							
16....	63	36	50	.....	46	Cloudy.	Mean	76.3	46.8	61.6	.....	.....
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—

	°F.		°F.		°F.
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	Mean of this month for	
1894.....	68	1901.....	63	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°; 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—

	Inches.		Inches.		Inches.
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	Average of this month	
1894.....	1.75	1901.....	1.65	for 17 years.....	1.03
1895.....	.72	1902.....	.61		

Deficiency of this month as compared with average of seventeen years, 0.74 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.			
1....	°F. 66	°F. 35	°F. 50	.....	100	Clear.	17...	°F. 56	°F. 32	°F. 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.—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.—Total this month, 5.17 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.

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