


ANNUAL REPORTS  
OF THE  
SUPERINTENDENTS  
Yellowstone National Park











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# REPORT

OF THE

SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

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1886.

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GOVERNMENT PRINTING OFFICE.

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# REPORT

## OF THE

### SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

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MAMMOTH HOT SPRINGS, WYOMING,  
*August 20, 1886.*

SIR: In compliance with your request of July 31 I have the honor to submit the following report of the operations of my office for the year ending June 30, 1886.

I assumed control of the Park as Superintendent on the 1st day of July, 1885. When I took control I found everything in confusion. Buildings in a dilapidated condition, fences down, the stock in a run-down and unserviceable condition from hard usage and improper attention. I immediately set to work to recruit the stock and get such of it as was possible in a serviceable condition. I have built about 4 miles of pasture fence, and repaired all the buildings and made them ten-antable. I built an addition to one of the assistant superintendent's houses which I occupied as a headquarters during the long, cold winter, and have continued to occupy up to this time. A new building for the Superintendent should be built at the earliest possible time, where wood and water are convenient and the residence accessible.

#### EXPENDITURES.

Of the \$40,000 appropriated by the act of Congress for the protection and improvement of the Yellowstone National Park for the fiscal year ending June 30, 1886, \$39,000 have been placed to my credit and has been disbursed.

#### ROADS AND BRIDGES.

The roads and bridges in the Park, constructed by Capt. Dan C. Kingman, Corps of United States Engineers, are in good condition, but owing to the want of funds and the failure of Congress to make an appropriation for roads in the Park earlier in the season there has been nothing, except repairing the roads already constructed, done. No new roads have been built this season, and the season is so far advanced now that there can be very little accomplished before the cold weather sets in. I am, however, informed by Captain Kingman that work on the roads will be continued until some time in October, or as long as the weather will permit. Of Captain Kingman's work in the Park too much cannot be said in praise.

#### HOTEL ACCOMMODATIONS.

The hotel accommodations have been far better this season than ever before. The Yellowstone Park Association have leased hotel sites at

Mammoth Hot Springs, Norris Geyser Basin, Upper Geyser Basin, and the Grand Cañon, and have run hotels and furnished good accommodations at all the above-named places at reasonable rates. They have completed the erection of a splendid new hotel building on their lease at Norris, and contemplate building new hotels at all the other points mentioned as soon as practicable and before the commencement of the tourist season next year.

#### TRANSPORTATION.

The transportation during the season has been good and ample to accommodate the heavy travel. No serious accident of any kind has occurred to my knowledge, and no complaints have been made by any one.

#### LAWS OF THE PARK.

I would most earnestly call your attention to the entire inadequacy of the laws to provide punishment for violations of the regulations for the protection of the Park. In fact, so far as the enforcement of the laws of the Park proper there is no system available by which it can be done. The protection that I have been able to give the Park has been through the Territorial laws of Wyoming, which the legislature repealed last winter. I would suggest that a law be enacted by Congress establishing a court within and for the Yellowstone National Park, with exclusive jurisdiction of all misdemeanors, and with power to examine and hold to bail all cases of felonies, to be tried at the nearest court having criminal jurisdiction; that the assistant superintendents be authorized to serve any process of said court; that the judge thereof be a man learned in the law and of good moral character. With a court of this character, and an efficient force of assistants to act as ministerial officers, there would be comparatively little trouble in protecting and keeping the Park in a state of preservation, beautiful to look upon; but unless some stringent enactment is made, and that at the earliest possible time, it will be too late. One of the most difficult things I have had to contend with was the prevention of fires in the Park, of which, I am happy to say, up to this time none have occurred worth mentioning. A very stringent law should be enacted against the spread of fires or leaving camp-fires without extinguishing them completely.

#### LINES OF THE PARK.

I would most respectfully suggest that it is of the greatest importance that the lines of the Park be surveyed at the earliest possible time, and so marked that there can be no mistaking them. This I deem next in importance to the organizing of a proper court for the protection and enforcement of the laws of the Park.

#### GAME.

There is more game in the Park now of every kind than was ever known before. Elk, antelope, deer, and mountain sheep are here in large bands, and within less than four miles of Mammoth Hot Springs. I have since I came here paid particular attention to the enforcement of the laws for the protection of the game, and have by their rigorous enforcement stopped the wholesale slaughter of game that existed theretofore. In the enforcement of the law I have been greatly assisted by assistant superintendents C. J. Baronett, Ed. Wilson, William Wilson,

E. L. Fish, Monroe Berry, William McClellan, Thomas E. Brocken, and George. B. Miller, whose services have been invaluable, and too much praise cannot be awarded them for the faithful and efficient manner in which they have discharged their duties; better men for the service would be hard to find. In order to protect the trust confided to my keeping, I remained at my post of duty all last winter and kept my men constantly on the scout for trespassers, hunters, and other violators of the law. When the snow got too deep for them to travel on horseback I sent them out on snow-shoes. I think I am justified in saying that there have been fewer violations of the law and better order in the Park during the past year than was ever known before.

#### TRAVEL.

The travel in the Park this season has been much greater than ever before. Many distinguished persons, both from home and abroad, have come to see the wonders of the nation's play-ground, and I am gratified to say that none, so far as I have been able to learn, have been disappointed, no complaints having been made to me by any one.

#### APPROPRIATION.

I would most respectfully repeat my recommendation for the appropriation asked last year, as follows :

For every object and purpose necessary for the protection and improvement of the Yellowstone National Park, \$150,000, as follows:	
For pay of superintendent .....	\$3,500
For pay of 15 assistant superintendents, at \$1,000 each per year.....	15,000
For pay of one secretary .....	1,500
Incidental expenses.....	7,500
For headquarters building and other buildings for Government use .....	10,000
For suitable stables and sheds for the use of Government stock .....	2,500
For extinguishment of claims prior to the dedication of the Park, or as much thereof as may be awarded by a duly constituted commission to be appointed by the Secretary of the Interior .....	5,000
For the erection of telephone wires for the use of the officers of the Park....	5,000
For construction of roads and bridges.....	100,000

Congress having failed to make any provision for the pay of the Superintendent or his assistants or for the protection of the Park, I was notified on August 14, by telegram from the Secretary of the Interior, that he had called upon the Secretary of War for a detail of soldiers to do duty in the Park, and that Capt. Moses Harris's Troop M, First United States Cavalry, would arrive in a few days, and was directed upon the arrival of Captain Harris to turn over to him all public property in my charge, taking receipts therefor. On the 17th of August Captain Harris, with 50 men of Troop M, First Cavalry, arrived in the Park. On the 20th of August he assumed control of affairs in the Park and I turned over to him all public property in my charge, taking receipts therefor as instructed.

Before closing my report I desire to say that I have endeavored to do my duty, and my whole duty, fearlessly and without favor or affection toward any one. In my official capacity I have done nothing that I would not do over under similar circumstances, and have no apologies or excuses to offer for anything I have done.

I am, sir, very respectfully, your obedient servant,

D. W. WEAR,

*Superintendent Yellowstone National Park.*

THE SECRETARY OF THE INTERIOR,

*Washington, D. C.*



**REPORT OF CAPT. MOSES HARRIS, FIRST CAVALRY, ACTING SUPER-INTENDENT.**

YELLOWSTONE NATIONAL PARK,  
OFFICE OF SUPERINTENDENT,  
*Mammoth Hot Springs, Wyo., October 4, 1886.*

SIR: In compliance with your telegram of the 31st ultimo, I have the honor to submit the following report:

In obedience to the orders of my military superiors I arrived with my command, Troop M, First United States Cavalry, at the Mammoth Hot Springs, Yellowstone National Park, late in the evening, August 17, 1886, and at once reported by telegraph to the honorable Secretary of the Interior. Having, in response to my telegram, been informed that it was desired that I should assume the duties previously performed by the superintendent of the Park, I assumed those duties, relieving Col. D. W. Wear, the late superintendent, August 20, 1886. Colonel Wear accompanied me through the Park, and I stationed detachments from my command at the following points, viz: The Norris Geyser Basin; the Fire Hole, or Lower Geyser Basin; the Upper Geyser Basin; the Grand Cañon, or Falls of the Yellowstone; Riverside, on the Madison River; and Soda Butte, on the road to Cook City. These stations have been continued to the present time, and from frequent inspections made by myself and the officers of my command I am assured that the private soldiers and non-commissioned officers in charge have performed their duties faithfully, and that the Park has received all of the protection possible under the circumstances. A copy of the order published for the guidance of these several detachments in the discharge of their duties is forwarded with this report and marked A. It is proper to here state that much efficient assistance has been rendered by the following-named gentlemen, who were formerly employed as assistant superintendents, viz: Mr. C. J. Baronett, William McClellan, and Ed. Wilson. The first-named has been employed as a scout and guide under authority received from the War Department, and, owing to his long experience and perfect familiarity with the mountain trails, his services are invaluable. It is to be regretted that it has been found inexpedient to authorize the employment of more than one of these experienced scouts.

Upon assuming my present duties I found two persons, Mr. Metcalf and a Mrs. Crary, residing at the Mammoth Hot Springs in violation of the Park regulations, and I at once served each of them with the requisite thirty days' notice to vacate. The order was promptly obeyed in both instances, and the buildings improperly occupied will soon be demolished and removed. I have also found it necessary, for the preservation of good order and property, to expel a number of disreputable characters from the Park. This is at present the only authorized method for the enforcement of good order in the Park, and although the exercise of this authority may at times appear harsh and arbitrary, it is indispensable to the proper protection of life and property. I have also found it necessary to forbid the turning loose of stock to graze in the vicinity of the Hot Springs and Geyser formations. This practice was not only a source of annoyance to visitors, but of much injury to the formations.



## FOREST FIRES.

I regret to have to report that destructive forest fires have been raging in the Park during the greater portion of the present season. The most destructive one, which was burning when I arrived in the Park, originated on the 14th of August last, near the East Fork of Gardiner River, in full view from the Mammoth Hot Springs Hotel and about seven miles distant. This fire is still burning, and has extended over a tract of country some ten or twelve miles in length by three to five in width.

It was the opinion of my predecessor, Colonel Wear, that this fire was started maliciously by some of his personal enemies; but nothing is positively known as to its origin. Another fire, of less magnitude, originated on Tower Creek about the 10th of September. It was confined principally to the timber along the creek. Several other fires have originated, and after burning a short time have either been extinguished by the efforts of the men of my command, or have failed to spread destructively from the absence of suitable material. A large number of fires have been extinguished by men of my detachments stationed through the Park, many of them under circumstances which led to the belief that they had been set maliciously. The most of these fires originated on the eastern side of the Park, near the road from Gardiner to Cook City, and while some of them may have been started maliciously, the most of them were probably caused by the carelessness of camping parties. Those fires which have been started intentionally may be attributed to unscrupulous hunters, who, being prevented from hunting in the Park, resort to this method of driving the game beyond the Park limits. The Park is surrounded by a class of old frontiersmen, hunters and trappers, and squaw-men, who, as the game diminishes outside the Park, increase their efforts and resort to all sorts of expedients to get possession of that which receives the protection of law. The facility with which forest fires can be started, and the impossibility of extinguishing them, when once under way, by any available methods, render it extremely difficult in this high and wind-swept region to guard against them. The only provision against them which can be proposed is that which is also required for the protection of the Park in other respects—"a stringent law vigorously enforced." Two fires were started on the west border of the Park some two weeks ago; and the presence of a small band of Bannock Indians from the Lemhi Reservation, who left as soon as the fires were seen well under way, was to me a sufficient explanation of their origin. Fortunately, they were extinguished by an opportune snow-storm before much damage had resulted. A considerable band of these Indians approached the western border of the Park, along the Beaver Cañon road, in the latter part of August last; but upon my reporting the fact by telegraph to the Department, they were promptly recalled by their agent. These Indians are, however, allowed entirely too much liberty, and are a constant source of annoyance. They visit the Madison Valley, on the western border of the Park, and in their hunting excursions are not particular whether they cross the line of the Park or not. It is reported to me that they are incited to hunt in the Park by unscrupulous white men, who also furnish them whisky.

## GAME AND ITS PROTECTION.

From the reports of reliable scouts, familiar with the ranges of the elk, the deer, and the buffalo, there can be but little doubt that there

is an abundance of game in the Park. Detachments from my command on the eastern and western sides of the Park have constantly scouted the portions of the Park not frequented by ordinary tourists, and the scout Barronett has also been constantly on the go, watching suspected parties. I am confident that up to the present date there have been no depredations of any magnitude, and that the game has been well protected."

#### THE GEYSERS.

It is apparent from the most casual observation that the means heretofore employed for the preservation of the natural objects of wonder and beauty in the Park have been entirely inadequate. It may be said without exaggeration that not one of the notable geyser formations in the Park has escaped mutilation or defacement in some form. Those that have been most fortunate are covered with lead-pencil inscriptions recording the names of those shallow-minded visitors to whom such a distinction is a pleasure. A lead-pencil mark seems to be a very harmless defacement, but names bearing date of 1880 are still discoverable through the thin deposit of silica, and if this marking should go on unchecked, in a very few years these once beautiful formations will have become unsightly and unattractive objects. At the Upper Geyser Basin names with date of June, 1886, have been chiseled into the solid geyserite so deep that, in the slow process of nature, many years must elapse before this mutilation will be obliterated. Not content with the defacement of the formations, efforts are constantly being made to destroy the geysers themselves by throwing into them sticks, logs of wood, and all sorts of obstructions. The eruptive force of several of the geysers has been totally destroyed by vandalism of this character. The footsteps of the throngs of visitors are wearing away the delicate and lace-like tracery of the silicious deposits, and in a few years the formations surrounding the geysers will present the appearance of the worn pavements of a city street. The willful defacement of these beautiful objects can only be prevented by watchful supervision, supported by the rigid enforcement of lawful penalties. A certain amount of wear and deterioration, incident to the multitude of visitors, is probably unavoidable.

#### ROADS.

Cap. Dan C. Kingman, Corps of Engineers, United States Army, the officer in charge of the construction and improvement of the roads of the Park, will doubtless submit, through the chief of his corps, a detailed report of the work preformed under his supervision.

The small appropriation for the construction of roads and bridges in the Park for the present fiscal year was not made available until towards the last of August, and it was not until the first part of September that work was finally commenced; but by the vigorous efforts of Captain Kingman much good work has already been accomplished, and before the end of the season it is expected that the new road from the Norris Geyser Basin to the Grand Cañon and Falls of the Yellowstone will be completed, and a bad piece of road along the Obsidian Cliff, where construction is extremely difficult, thoroughly improved.

After consultation with Captain Kingman, I have, in my estimate of appropriation required for the fiscal year ending June 30, 1888, placed the amount which can be judiciously and economically expended in the construction and improvement of the roads of the Park at \$150,000. The appropriation by Congress of this amount will render it practicable to construct a good road from the Upper Geyser Basin, the terminus

of the present road, to the Shoshone Geyser Basin; thence around the southern shore of Shoshone Lake and across the continental divide to the west arm of the Yellowstone Lake; thence along the western shore of Yellowstone Lake to lake outlet, and along the Yellowstone to the Falls and Grand Cañon. From the falls the road will be continued down the Yellowstone to a junction with the present road to Cook City, which will be improved from the point of junction to the Mammoth Hot Springs. It is also in contemplation to improve the present road from Mammoth Hot Springs to the Upper Geyser Basin throughout its length, and also the Beaver Cañon road from the Fire Hole to the western boundary of the Park. Although this scheme does not embrace all of the roads necessary or desirable in the Park, it will, when carried into effect, enable tourists to visit the principal objects of interest without discomfort, and without passing twice over the same road.

Owing to the shortness of the season in which labor can be profitably expended upon roads in this region, it is of the utmost importance that any appropriation made by Congress should be made available at the earliest possible date.

#### HOTEL ACCOMMODATIONS.

The hotel accommodations in the Park have in general been excellent. During the rush of visitors in the month of August the hotel managers at two or three points in the Park found some difficulty in providing for their numerous guests, but although some inconvenience by visitors may have been experienced, there was but little actual discomfort. A fine new hotel has been completed at the Norris Geyser Basin, and I am informed that before the next season it is the intention of the Yellowstone Park Association to erect one equally as spacious at the Grand Cañon.

It is to be hoped also, that the structures at the Lower and Upper Geyser Basins may soon be replaced by others more suitable for the accommodation of the increasing number of annual visitors.

#### TRANSPORTATION.

The transportation facilities have been adequate to the demands of travel. No serious accidents have occurred, and no complaints of incivility on the part of the drivers, or of extortion by the proprietors have been made. There have been during the season a large number of irresponsible persons doing business in the Park with saddle animals and pack outfits. These parties do not reside permanently in the Park but come in for the season.

In my opinion no persons should be allowed to do business of this character in the Park without first obtaining permission from the superintendent, and registering their names in his office.

A person so authorized to do business, or act as guide, should be furnished with a certificate to that effect, and the visiting public should be cautioned to do business with those parties only who are thus duly authorized.

The tariff of charges for transportation for all persons doing business in the Park should be uniform, and should include the charge per day for saddle and pack animals, and for all kinds of carriages in use.

#### LEASES.

As far as I am informed by the records of this office the following-described leases are the only ones now operative in the Park, viz: John F. Yancy, ten acres upon the mail route from Mammoth Hot



Springs to Cook City, to be measured from the building now occupied by said Yancy as a central point. Helen S. Henderson and Walter J. Henderson, ten acres of land at Mammoth Hot Springs. James A. Clark 4 acres of land at Mammoth Hot Springs. F. Jay Haynes 4 acres of land at Mammoth Hot Springs, and 4 acres at the Upper Geyser Basin. Charles Gibson four different sites in the Yellowstone National Park, containing seven acres in all. No. 1 at Mammoth Hot Springs, No. 2 at Norris Geyser Basin, No. 3 at the Grand Cañon of the Yellowstone, No. 4 at the Yellowstone Lake. All of the rights and privileges conferred by Mr. Gibson's lease appear to be exercised by a stock company known as the Yellowstone Park Association. Mr. Gibson has executed an instrument transferring the lease to this company, and the paper was forwarded for the approval of the honorable Secretary of the Interior through this office, September 15, 1886. The Park Association has carried on the business of hotel keeping during the past season at the following points in the Park, viz: Mammoth Hot Springs, Norris Geyser Basin, Grand Cañon of the Yellowstone, Fire Hole, or Lower Geyser Basin, and Upper Geyser Basin.

At none of these points are the buildings occupied by the Park Association located upon land described in the leases. It appears that permission was granted by the Department, by telegraph June 10, 1886, to change the original location at Norris Geyser Basin subject to the approval of the Department, upon formal application by the lessee, with description of site selected. I am not informed whether or not this application has been made and approved. A good hotel has been erected upon the new site, and it appears to be well located.

It appears by a letter from the Department, on file in this office, dated May 27, 1886, that permission was granted Mr. Gibson to erect a temporary building to be used for hotel purposes at the Grand Cañon of the Yellowstone, with the understanding that it should be removed on or before the 1st day of August, 1886. This building has not yet been removed, nor has the erection of the permanent building at that point been commenced.

At the Fire Hole, or Lower Geyser Basin, there are three buildings occupied by the Park Association, a hotel building of limited capacity and rude construction, and two cottages used in connection with it. A piece of ground at this place, four acres in extent, was leased to G. W. Marshall in January, 1884. A half interest was subsequently transferred to one Henderson, and I believe several sales and transfers of this lease have since been made without the authority of the Department. It is presumed that the Park Association are occupying the buildings at this point under the color of this lease. I am unable to state by what process it came into possession.

The company is also occupying a hotel building at the Upper Geyser Basin, which, I believe, was originally erected by the Park Improvement Company. This building is less than one-fourth of a mile from the Old Faithful Geyser, contrary to the provisions of the act of March 3, 1883. The hotels of the Park Association at these points have been of unmixed benefit to the public, and the accommodations they have afforded have enabled many visitors to enjoy the wonderful objects in their vicinity who would otherwise have been unable to do so; but it is recommended that if this company is to continue to occupy these sites that it be required to have them accurately surveyed, and that leases be applied for and taken out in proper form. The remaining lease holders in the Park have, so far as I am informed, complied with the requirements of their leases.



## RULES AND REGULATIONS.

The only rules and regulations of the Park which have received the approval of the Department are those bearing date of May 4, 1881, as amended by Secretary Teller, January 15, 1883.

These regulations are no longer applicable under the changed conditions in the Park. Probably for this reason they have not been posted in the Park or generally published. Various rules have been, from time to time, established by the superintendent, but they have not been so published or posted as to be generally known, and their enforcement has consequently been difficult. I have prepared certain rules and regulations which appear to me proper and necessary, and submit them herewith (paper inclosed and marked B) for the consideration of the Department. If approved, I recommend that 1,000 copies be printed on muslin and forwarded in time to be posted throughout the Park before the next season for visitors opens. The enforcement of these rules and regulations will be difficult until some more effective penalty for their infringement is provided than expulsion from the Park.

The necessity of a form of government for the National Park is becoming, year by year, more urgent, as the number of visitors to the Park increases. All sorts of worthless and disreputable characters are attracted here by the impunity afforded by the absence of law and courts of justice. Evanston, the county seat of Uinta County, Wyoming, more than 250 miles distant, with a rugged and mountainous region intervening, is the nearest point at which even a justice of the peace with the necessary jurisdiction can be found.

This subject has been so frequently brought to the attention of the Department, and of Congress, that any recommendation from me would seem superfluous.

In the preparation of the estimate of appropriations required for the Yellowstone National Park for the fiscal year ending June 30, 1888, I have assumed that the civil administration of the affairs of the Park would be continued, and have estimated for the pay of a superintendent and a sufficient number of assistants to insure some effective protection to the Park. The amount included in these items may, in view of previous appropriations for this purpose, appear excessive, but after giving the subject careful consideration, I am of the opinion that a less amount would be inadequate to the end in view.

I have also included in this estimate the necessary amounts for a suitable residence and office for the superintendent and for the purchase and keeping of such animals as will be necessary to replace those which have been ordered sold because no fund is available from which they can be subsisted.

I am, sir, very respectfully, your obedient servant,

MOSES HARRIS,

*Captain First Cavalry, Acting Superintendent.*

The SECRETARY OF THE INTERIOR.

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A.

[Orders No. 5.]

CAMP SHERIDAN, MAMMOTH HOT SPRINGS, WYO.,

*August 21, 1886.*

I. The following Park Regulations will be enforced by the soldiers of this command stationed at the various points of interest for the protection of the National Park:

(1) The cutting of green timber, or the removal or displacement of any mineral deposits or natural curiosities, is forbidden.

(2) Hunting or trapping and the discharge of firearms within the limits of the Park is prohibited. Fishing is forbidden except with hook and line, and the sale of fish so taken is also disallowed.

(3) Wagon tires on all wagons used for freighting purposes on the roads constructed by the Government are required to be at least four inches in width.

(4) Camping parties will only build fires when actually necessary, and must carefully extinguish them when no longer required.

(5) The sale of intoxicating liquors, except by hotel proprietors to their guests, for their own use, is strictly prohibited.

(6) Trespassers within the Park for illicit purposes, or persons wantonly violating the foregoing rules, will be summarily removed from the Park.

(7) No stock will be allowed to run loose in the vicinity of the various points of interest within the Park frequented by visitors.

(8) No rocks, sticks, or other obstructions, must be thrown into any of the springs or geysers within the Park.

It is enjoined upon all soldiers, when on duty at points frequented by tourists, to be vigilant and attentive in the enforcement of the foregoing regulations, and also to see that the stage drivers and other employes of the hotels do not use abusive language to, or otherwise maltreat, the visitors to the Park. They will also at all times exert themselves to preserve peace and order at the points where they are stationed.

They will in the enforcement of their orders conduct themselves in a courteous and polite, but firm and decided, manner. They will not hesitate to make arrests when necessary, reporting at once by telephone to the commanding officer.

II. All loose stock found in the vicinity of this camp or the formation of the hot springs, will be driven into the corral near the office of the Park superintendent, and there held until a proper guaranty is given that they will not again be turned loose.

By order of Captain Harris.

H. E. TUTHERLY,

*First Lieutenant, First Cavalry, Adjutant.*

MOSES HARRIS.

## B.

### RULES AND REGULATIONS PROPOSED FOR THE PROTECTION OF THE YELLOWSTONE NATIONAL PARK.

(1) The cutting or spoliation of timber within the Park is strictly forbidden by law: also the removing of mineral deposits, natural curiosities or wonders, or the displacement of the same from their natural condition.

(2) Permission to use the necessary dry or fallen timber, or to cut hay within the Park, must be obtained from the superintendent, and be subject at all times to his supervision and control.

(3) Fires shall only be kindled when actually necessary, and shall be immediately extinguished when no longer required. Under no circumstances must they be left burning when the place where they have been kindled shall be vacated by the party requiring their use.

(4) The shooting at, wounding, capturing, or killing of any animal or bird within the Park is hereby prohibited. Fishing except with hook and line is also prohibited. The outfits of all persons found hunting, or having in their possession game killed within the Park, shall be subject to seizure and confiscation.

(5) No person will be permitted to reside permanently within the Park without permission from the Department of the Interior.

(6) The sale of intoxicating liquors is prohibited, except to hotel guests for table use. No bar-room or saloon shall be maintained within the Park.

(7) No advertisements shall be posted or displayed within the Park, except such as may be necessary on buildings situated on leased ground.

(8) No person shall do business of any kind in the Park, or act as guide, without a license from the superintendent, who shall have power to revoke such license in his discretion.

(9) The defacement of any of the geyser or hot spring formations, by written inscription or otherwise, is strictly forbidden, as is also the throwing of any substance into the geyser vents.

(10) Riding or driving upon any of the geyser or hot spring formations, except upon regularly established driveways, or the turning loose of stock to graze in their vicinity, is prohibited.

(11) All persons who shall render themselves obnoxious by bad behavior, or who shall violate any of the foregoing rules, shall be summarily removed from the Park under the authority of Section 2475 Revised Statutes of the United States, which pro-

vides that the National Park "shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be to make and publish such rules and regulations as he shall deem necessary or proper," and who "generally shall be authorized to take all such measures as shall be necessary or proper to fully carry out the object and purposes of this act."

MOSES HARRIS,  
*Captain, First Cavalry, Acting Superintendent.*

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ESTIMATE OF APPROPRIATION FOR FISCAL YEAR ENDING JUNE 30, 1888.

For every object and purpose necessary for the protection and improvement of the Yellowstone National Park, \$200,000.

For pay of 1 superintendent.....	\$3,000
For pay of 1 chief gamekeeper.....	1,200
For pay of 10 assistant gamekeepers.....	9,000
For pay of 1 chief of police.....	1,200
For pay of 20 policemen.....	18,000
For pay of 1 clerk.....	900
For construction of building for residence and office of superintendent....	6,000
For purchase of necessary animals to be used for protection of Park.....	3,000
For construction of stables for public animals.....	2,000
For subsistence of public animals.....	1,000
For incidental expenses.....	4,700
For construction and repair of roads and bridges.....	150,000
Total.....	<u>200,000</u>









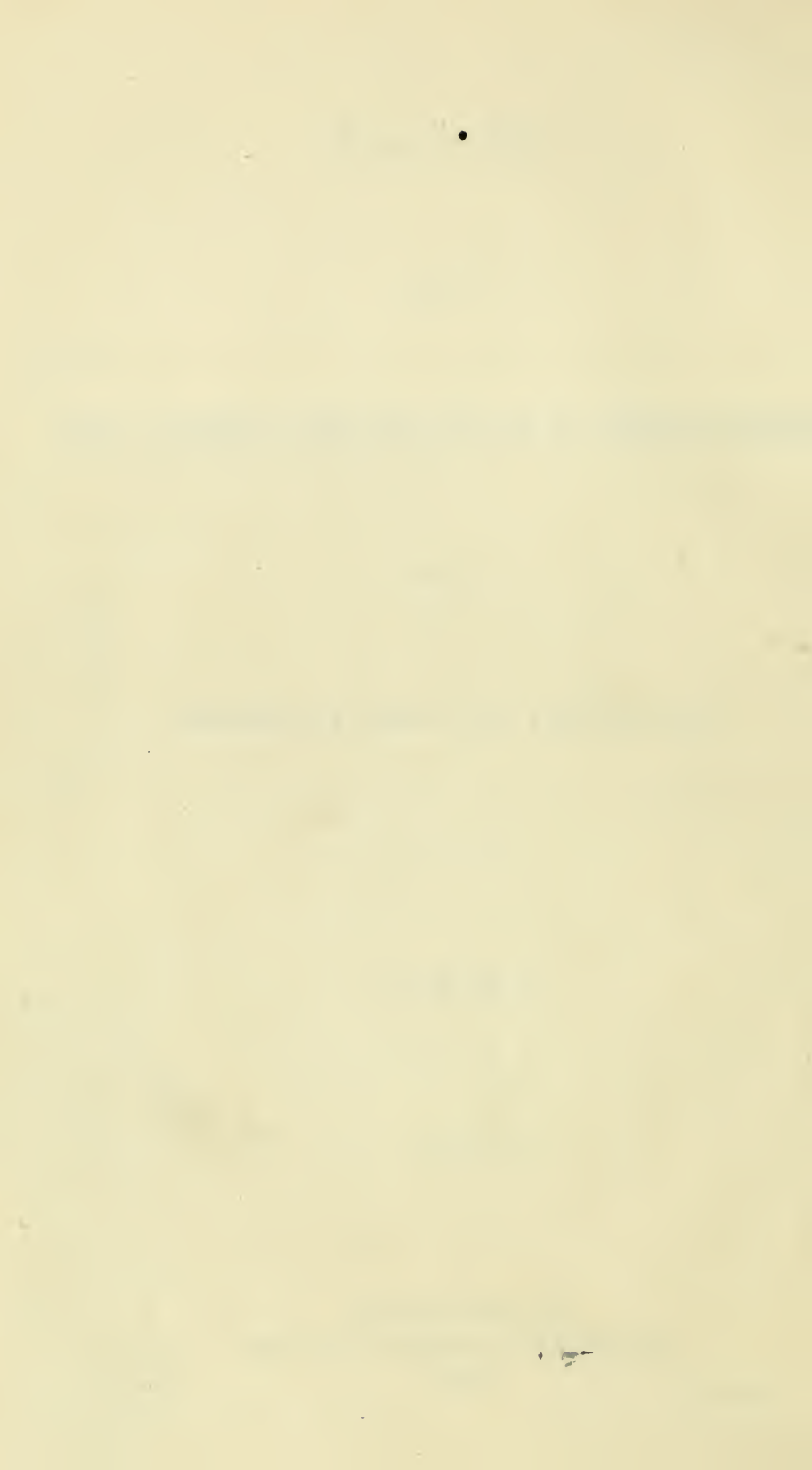
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1887.

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# REPORT

OF THE

## SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

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MAMMOTH HOT SPRINGS, WYOMING, *August 20, 1887.*

SIR: In compliance with your communication of the 30th ultimo, I have the honor to submit the following report of the operations of the office of the Superintendent of the Yellowstone National Park for the fiscal year ended June 30, 1887, and to the present date.

My last report was dated October 4, 1886. The visiting season for tourists was at that time nearly over, all the hotels of the Park Association having closed for the season of 1886 by the 15th of October. A severe snow-storm, which began on the 10th of the month, lasting several days, served to hasten the departure of the summer visitors, and so seriously interfered with the operations of the parties engaged in road-construction that work was suspended for the season and the parties withdrawn about the 20th.

Upon the cessation of tourist travel and the closing of the Park roads by deep snow, the detachments which had been stationed at the different geyser basins for their protection were withdrawn, and the services of the men made available for the important duty of affording protection to the large game which was being driven from the mountains by the early and unusually heavy snowfall. The professional hunters who surround the Park commenced their operations in good season, and great activity and vigilance by scouting parties were requisite to prevent them from operating within the borders of the Park. It is the practice of these hunters to locate camps on the tributaries of the Yellowstone River, just outside the limits of the Park on its northern and eastern borders, and thus to intercept the game when, driven out of the mountains by the deep snow, it seeks the lower valleys and the safety afforded by the Park. The boundary lines of the Park never having been officially surveyed or marked, there is a narrow strip of debatable ground on its border which encourages hunters to encroach upon its limits. All parties found near the borders of the Park were warned off, and were so well watched by scouting parties that it is believed little or no game was killed within the Park. Several arrests were made under circumstances which seemed to require investigation, but in no case was the evidence sufficient to warrant action. In one or two instances where the fact was established that the game had been killed outside of the Park and it was impracticable to get the meat to market without taking it through the Park, permission to do so was granted. This concession, however, gave rise to injurious reports and the transportation through the Park of any portion of the carcasses of game animals will hereafter be discouraged by every legitimate method.

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The open season, during which it is lawful to kill game in the Territories of Wyoming and Montana, terminating on the 1st day of January, and the great depth of the snow also interfering with the transportation of meat through the mountains, the active operations of the hunters ceased and a period of comparative quiet and freedom from annoyance was experienced.

After the close of the tourist season the trains of the Northern Pacific Railroad on the branch line from Livingston to Cinnabar were run weekly until about the 20th of January, when, in consequence of severe gales and deep snows, they were discontinued, only resuming their weekly trips in the middle of March. Fortunately the stage line from Livingston to Mammoth Hot Springs was operated with skill and energy, the mail being regularly received every day in the week, except Sunday, the entire winter.

A party of travelers under the leadership of Mr. Frederick Schwatka, of Arctic fame, arrived in the Park in the latter part of December for the purpose of seeing the Park in its winter aspect; but owing to the illness of Mr. Schwatka and the difficulties developed by the light and soft character of the snow, the expedition was only partially successful. Mr. F. Jay Haynes, however, the photographer of the party, with three companions, succeeded in surmounting all obstacles and made a complete tour of the Park, securing many fine views peculiar to its winter aspect. The difficulties of snow-shoe travel in the Park are such, however, that it is not to be recommended as a winter diversion.

Although an unusually large quantity of snow fell throughout the elevated area of the Park, the quantity at the Mammoth Hot Springs was not excessive, nor could the winter, when the weather and temperature of the surrounding region is considered, be called a severe one, as may be seen by reference to the meteorological record which is appended to the report (marked A).

During the month of April I had occasion to arrest and expel from the Park one William James, who was in the employ of the Yellowstone Park Association, for trapping beaver on the Gibbon River, near the Norris Hotel. My letter to the Department reporting this affair is appended to this report (marked B). The property found in the possession of James is still in my custody awaiting your instructions. Several other employes of the Park Association who were to some extent implicated in the unlawful acts of James were, at my request, discharged from the employ of the company and ceased to make their home in the Park.

During the month of May, as the season for tourist travel approached, instructions were given to the several lease holders in the Park requiring them to thoroughly police the grounds around their buildings and place them in a proper sanitary condition. This work was at once entered upon with vigor and accomplished in a satisfactory manner.

Many unsightly barns, stables, and stacks were destroyed or demolished and removed and the appearance of the surroundings of all of the hotels much improved. On the 23d of May a team left this place for the Lower Geyser Basin, and by free use of shovels and axes succeeded in getting through to that point. Upon the disappearance of the snow, work was commenced on the roads by parties under the direction of Capt. Clinton B. Sears, Corps of Engineers, U. S. Army, the officer charged with the duty of road construction and repair in the Park. By the 15th of June, the date on which the hotels of the Park Association were opened for the reception of guests, the roads were in good condition for travel. Active scouting operations were resumed

upon the disappearance of the snow, and the stations at the different geyser basins and at the Grand Cañon were re-established as soon as the opening of the roads made it practicable to supply them with subsistence for men and animals. Copies of the new rules and regulations of the Park were widely distributed, and have been of great utility not only in affording information to the public, but in fixing and limiting the duties of the troops charged with the protection of the Park.

On the evening of the 4th of July one of the stages of the Park Association was stopped a short distance within the Park limits and the passengers robbed of a small sum of money. My communication reporting this affair is appended (marked C). In the first part of July a large number of professional tramps and hard cases, who had been sent out of the neighboring towns along the Northern Pacific Railroad by the authorities, made their way to the Park. They were promptly taken in charge and warned off, but it is probable that the stage affair was the work of the advance guard of this army of tramps. Since the ejection of this party the Park has been quite free from this species of annoyance.

On the evening of July 14 the hotel of the Park Association at the Norris Geyser Basin was totally destroyed by fire. The fire originated through a defective chimney flue, and in the absence of any appliances for extinguishing fire the building was entirely consumed within two hours. Fortunately no person was injured, and all of the baggage belonging to tourist visitors was saved. A hotel camp was at once established by the Park Association, and having in view the comfort and convenience of the traveling public I permitted the company to begin the erection of a temporary building subject to your approval.

The volume of travel to the Park during the present season has to the present date fallen somewhat short of that of last year for the same period. This may probably be attributed in a great measure to the effect of recent legislation with reference to railroad transportation rather than to any loss of interest in the "wonderland of the world" by the people.

When I assumed my present duties I found, residing at Round Prairie, on the Cook City road, a Mr. Z. R. Sowash, who kept a roadside station or stopping-place for freighters. I was informed by my predecessor in office that doubt existed as to whether Mr. Sowash's place was within the limits of the Park or not; but after investigation I was convinced that he was at least three miles within the boundaries of the Park. As an order for his removal at the beginning of winter would have involved considerable hardship, I gave Mr. Sowash verbal intimation that he would have to move in the spring, and on the 9th of May last served him with a formal notice to remove within thirty days, which order was promptly obeyed.

#### FOREST FIRES.

No forest fires of any magnitude have as yet occurred in the Park during the present year; but as the dry season is not yet over, it is probably too early for congratulations on this subject. Several fires have been discovered and extinguished by the soldiers, and constant vigilance and activity have been enjoined upon all to discover and prevent the spread of such fires by every possible means.

#### LEASES AND BUSINESS PERMITS.

The following are the leases now operative in the Park, as shown by the records of this office, viz: John F. Yancy, 10 acres upon the mail

route from Mammoth Hot Springs to Cook City, to be measured from the building now occupied by said Yancy as a central point; Helen S. Henderson and Walter J. Henderson, 10 acres of land at Mammoth Hot Springs; James A. Clark, 4 acres of land at Mammoth Hot Springs; F. Jay Haynes, 4 acres of land at Mammoth Hot Springs, and 4 acres at the Upper Geyser Basin; Charles Gibson, four different sites in the Yellowstone National Park, containing 7 acres in all: No. 1 at Mammoth Hot Springs, No. 2 at Norris Geyser Basin, No. 3 at the Grand Cañon of the Yellowstone, No. 4 at the Yellowstone Lake.

From a communication dated Department of the Interior, Washington, July 28, 1887, it appears that on the 6th of March, 1885, a lease was granted to Mrs. C. M. Finch, of Bozeman, Mont., of 10 acres of ground "lying about one-half mile from the Lower Falls of the Yellowstone River and on the north side of said river, and about one-half mile from the bridge over Crystal Cascade Creek measured northeast along the Yellowstone trail." No steps have ever been taken by the lessee to comply with the conditions of this lease; no survey of the described ground has ever been made, and no buildings, temporary or otherwise, have ever been erected thereon.

The rights and privileges conferred by the lease to Mr. Gibson are exercised by a corporation known as the Yellowstone Park Association, and this company is also occupying ground and buildings at the Lower and Upper Geyser Basins. The unsatisfactory condition of matters connected with Mr. Gibson's lease and the operations of the Yellowstone Park Association, as related in my last report and as you have since been fully informed by letter, still continues; but pending the action which has been taken by your Department further comment on this subject is thought to be unnecessary. The other lease-holders in the Park have complied with the requirements of their leases in all essential particulars.

The following permits have been granted by your Department for the transaction of business within the Park, viz:

Mr. James E. Stuart, artist, July 26, 1887, permission to exhibit and offer for sale at the Mammoth Hot Springs hotel paintings in oil and water-color of the geysers, cañons, and other curiosities of the Yellowstone National Park, such paintings being his own personal work.

Louis C. Pettitt, M. D., July 26, 1887, to practice medicine in the Park without the privilege of erecting any building.

Bassett Brothers, of Beaver Cañon, July 27, 1887, permission to continue to furnish transportation to visitors within the Park, pending consideration by the Department of the Interior of their application for a lease of ground.

Mr. Elwood Hofer, August 3, 1887, to act as guide and engage in the business of outfitting camping parties, it being understood that he proposes to reside at one of the hotels and to keep his horses, &c., upon ground embraced in one of the existing leases.

Under the authority granted by Rule 7 of the rules and regulations of the Park I have issued licenses as guides to the following-named persons: W. C. Cannon, June 13, 1887, to October 31, 1887; Ole Anderson, July 11, 1887, to October 31, 1887.

#### TRESPASSERS WITHIN THE PARK.

In addition to the before-named persons who have the authority of your Department to transact business within the Park, one J. W. Pousford, in partnership with J. L. Sanborn, have possession of and operate



within the Park a toll-bridge across the Yellowstone River. This bridge, known as "Barronette's Bridge," was constructed in 1880 upon the site of of a former bridge owned by C. J. Barronette and destroyed by the Nez Perce Indians in 1877. I have attempted no interference with the business as conducted by these parties, as it would seem that the long period in which they have been permitted to carry on their business unmolested has given them a certain right of possession which should be settled by investigation and adjudgment. A statement of the fact that free travel through the National Park, the "pleasure ground of the people," is obstructed by a toll-bridge, whether by authority or otherwise, should be sufficient to cause a remedy to be at once applied.

One J. C. McCartney has also several buildings within the northern limit of the Park, one of which is used as a drinking-saloon. I find by the records of this office that a communication was addressed to McCartney by the then superintendent of the Park, R. C. Carpenter, November 17, 1884, requiring him "to remove himself and his personal property out of the Park within thirty days," and that thereupon McCartney made affidavit to the effect that he believed the buildings occupied by him not to be within the Park and protested against the execution of the order of removal. Upon the receipt of McCartney's protest at the Department of the Interior a communication was addressed to the superintendent of the Park stating that "pending examination into the subject, it is deemed proper that you should not insist upon compliance with your order respecting the removal of the buildings." This has been considered by Mr. McCartney and by former superintendents a sufficient authority for McCartney's continued residence within the Park. On the 14th of December last I addressed a communication on this subject to the honorable Secretary of the Interior, to which no reply has been received.

It is the generally expressed opinion of the community that McCartney's buildings are within the Park, and it is the belief that he has the authority of the Department for his continued residence.

It is believed that the before-named comprise all of the persons now doing business in the Park who have not the authority in writing of the Secretary of the Interior, as required by the published rules and regulations of the Park.

#### HOTEL ACCOMMODATIONS.

The hotel accommodations within the Park have thus far during the present season been adequate to the demands of travel, though not in all cases of the most desirable character. A domicile in tents at an altitude of 7,000 or 8,000 feet, where heavy frosts prevail every night, can, by no stretch of the imagination, be made to appear comfortable. It may, as a novelty, be endured for one or two nights, but at the end of that period the average summer visitor prefers to seek a lower altitude and the comforts of a good hotel.

The Cottage Hotel at Mammoth Hot Springs, owned and managed by the lessees, Walter J. and Helen L. Henderson, has been enlarged since last year, and is now a well-appointed hotel with accommodations for about one hundred guests. The rates at this hotel are \$2.50 per day or \$10 per week.

Mr. John F. Yancy keeps at Pleasant Valley, on the Cook City road, a comfortable hotel which is much frequented by lovers of trout-fishing, and, being near the junction of the horse-back trail from the Grand Cañon with the road, is a convenient stopping place. He can accom-

moderate comfortably twenty guests, and his rates are \$2 per day or \$10 per week.

The hotel of the Park Association, at Mammoth Hot Springs, is of ample dimensions, and is well equipped and conducted. Workmen are now engaged in putting in the requisite appliances for electric lights, which will add greatly to security from fire as well as to the convenience of the guests.

The loss of the new hotel of the Park Association at the Norris Geyser Basin, by fire, on the 14th of July, was a serious misfortune not only to its owners but to the visiting public. Since its destruction visitors have been served as well as possible in tents. The temporary structure which was at once commenced is now completed, and will afford sleeping accommodations for about sixty persons.

The Park Association still maintains at the Grand Cañon the temporary hotel structure which was erected in the spring of 1886, supplemented by tents, and can probably accommodate at that point about seventy guests. Appreciating the necessity for some accommodation for visitors at the lake, I have permitted Mr. Gibson's representatives to pitch some tents there upon the condition that they shall be removed at the end of the season, and all camp débris well destroyed.

The hotel at the Lower Geyser Basin, formerly known as Marshall's Hotel, is under the management of the Park Association. Two "cottages," so called, were erected at this place in the spring or summer of 1886, flanking the hotel building on either side. These structures seem to be needlessly ugly in architectural design, resembling nothing so much as the section houses of a railroad. About seventy guests can be taken care of at this point. All of the buildings at this place are of poor and mean construction, and should be replaced by a commodious and well-constructed building capable of accommodating at least one hundred guests.

The hotel at the Upper Geyser Basin is still conducted in the barn-like structure left by the Park Improvement Company. It is in a more dilapidated condition than last year, being considered not worth repairing. It will probably accommodate fifty persons. The location of this building, as stated in my last report, is, contrary to law, within one-fourth of a mile of the Old Faithful Geyser.

It is proper to state that all of the hotels of the Park Association are well conducted. The service is generally excellent, the food is well cooked, and the beds are clean. The rates charged are \$4 per day for a less period than ten days, \$3 per day beyond that time, with special rates for longer periods. When the difficulty of providing supplies and service at these remote points is considered, it is believed that these charges are not excessive.

In closing this subject I urgently invite your attention to the importance of requiring on the part of the lessees a more adequate and suitable provision for the comfortable lodging of visitors.

#### TRANSPORTATION.

The transportation facilities provided by the lessees within the Park have been excellent in character, and amply sufficient for the demands of travel. The drivers employed have been generally skillful in their profession, and sober, intelligent, and reliable men. No serious accidents have occurred, and no complaints of negligence, incivility or extortion have been made. The enforcement of the regulation which forbids "any person to engage in business in the Park without permis-



sion in writing from the Department of the Interior," has had the effect of ridding the Park of a large number of irresponsible persons, who during the summer came in to prey upon the tourists. A considerable business in transportation is done by persons residing without the Park, but no instance of unfair dealing by them has come to my knowledge.

I append to this report (marked D) the rates of transportation as charged by the three lease-holders at this place, approved by me and submitted for the action of the Department July 10, 1887.

#### ROADS OF THE PARK.

The travelled wagon roads in the Park are at this date as follows :

(1) A road from the town of Gardiner, on the northern border of the Park, to the Upper Geyser Basin, a distance of about 50 miles. The graded portions of this road are in extent as follows: From Gardiner, via Mammoth Hot Springs, to near Swan Lake, about 10 miles. From Willow Park to the Norris Geyser Basin, about 10 miles. From Gibbon Meadows to the head of Gibbon Cañon, about 6 miles. From the Lower Geyser Basin to the Upper Geyser Basin,  $9\frac{3}{4}$  miles. The portion of this road not yet graded is in fair condition and perfectly safe for travel, a considerable amount of labor having been expended upon it yearly for repairs.

(2) A road from the Norris Geyser Basin via the Grand Cañon and Falls of the Yellowstone to Lake Outlet, about 27 miles. This road is graded for a distance of about 8 miles from the Norris Basin. The remainder of the road is in fair condition at this date. The portion of the road between the Falls and the lake is not ordinarily in condition for travel before about the middle of July, the altitude being such as to prevent the early melting of the snow.

(3) A road diverging from the road to the Lake in Hayden Valley, about 8 miles from the Falls and extending to the Lower Geyser Basin, via Mary's Lake and Nez Percé Creek. The distance from the Falls of the Yellowstone to the Lower Geyser Basin by this route is about 32 miles. The road is ungraded, but in fair condition, being an excellent natural road with the exception of a somewhat precipitous descent from the plateau between the waters of the Madison and Yellowstone, on its western slope. This road from its altitude is seldom open for travel before the middle of July.

(4) A road from the Lower Geyser Basin to the western border of the Park, about 20 miles. This road extends beyond the Park limits to Beaver Cañon Station, a stage line from that point bringing visitors to the Park at the Lower Geyser Basin. This is a fair mountain road and safe for travel.

(5) A road diverging from the main Park road near Mammoth Hot Springs and extending via the cañon of the East Gardiner River, Barronette's Bridge, and Soda Creek, to the northeastern corner of the Park, about 55 miles, and to Cook City, some 5 miles farther on. This road, over which all supplies for the mining camp of Cook City are freighted, is through a rough and hilly country and throughout the greater portion of its extent is unimproved. Some slight grades have been made where it was absolutely necessary, and a few rude bridges constructed. The road has been chiefly built and kept in repair by private enterprise and is by far the worst road in the Park, being well-nigh impassable a large portion of the year. Toll is very properly charged at Barronette's Bridge, as it could not otherwise be kept in repair by private means. The bridge across Lamar River is in a very di-

lapidated condition and will probably not last more than a year or two longer. It would seem to be eminently proper that this road, within the Park limits, should be taken in charge by the Government, the Baronette's Bridge claim extinguished, and the road kept in proper and safe condition for travel.

Summarizing the above, it will be seen that the total extent of the traveled wagon roads in the Park is about 177 miles. The portion of these roads which has been constructed under the supervision of an officer of the Corps of Engineers, U. S. Army, amounting to about 44 miles, is well built with a grade about 18 feet wide, properly ditched and drained, the streams being crossed by well-constructed bridges.

In addition to these wagon roads there are a number of trails or bridle-paths to different points of interest, which are kept in condition for travel by Government means.

As the roads of the Park are exclusively under the control of an officer of the Corps of Engineers, U. S. Army, and as his estimates for road construction and repair have already been made and submitted for the action of the Chief of his Corps, any recommendations on the subject from me may be superfluous; but nevertheless, following the custom of this office, I will include in my estimate of appropriations the sum which has been considered sufficient by Capt. Clinton B. Sears, Corps of Engineers, U. S. Army, the officer charged with the duty of road construction and repair in the National Park, for the continuation of his work during the next fiscal year, which is \$130,000.

In my last annual report I recommended the construction of a good road from the Upper Geyser Basin, the terminus of the present road, to the Shoshone Geyser Basin; thence around the southern shore of Shoshone Lake and across the continental divide to the west arm of Yellowstone Lake; thence along the western shore of Yellowstone Lake to Lake Outlet, and along the Yellowstone River to the Falls and Grand Cañon. From the Falls the road to be continued down the Yellowstone to a junction with the present road to Cook City, the latter road to be improved from the point of junction to Mammoth Hot Springs. Believing this scheme to be substantially in accord with the views of Captain Sears, I earnestly renew my recommendation that a sufficient amount be appropriated to warrant the beginning of this work.

This National Park having been, in the words of the statute, "reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring ground for the benefit of the people," has become a national trust; and it would seem that the policy which refuses, by a proper appropriation, to open and render accessible this "wonder land" is opposed to the sentiment which created the Park and unworthy a great nation whose treasury overflows with accumulated wealth.

#### BOUNDARIES OF THE PARK.

The following are the present boundaries of the Park as defined by law:

Commencing at the junction of Gardiner's River with the Yellowstone River and running east to the meridian passing 10 miles to the eastward of the most eastern point of Yellowstone Lake; thence south along said meridian to the parallel of latitude passing 10 miles south of the most southern point of Yellowstone Lake; thence west along said parallel to the meridian passing 15 miles west of the most western point of Madison Lake; thence north along said meridian to the latitude of the junction of the Yellowstone and Gardiner's Rivers; thence east to the place of beginning.

It has been proposed to rectify and change these boundaries as follows:

Beginning at a point on the forty-fifth parallel of north latitude where said parallel is intersected by the western boundary of the Territory of Wyoming; thence due east to its point of intersection with the meridian of 110 degrees west longitude; thence due south 5 miles; thence due east to the meridian of 109 degrees and 30 minutes west longitude; thence due south along said meridian to the forty-fourth parallel of north latitude; thence due west along said parallel to its point of intersection with the west boundary of the Territory of Wyoming; thence due north along said boundary line to the place of beginning.

While there are some undoubted advantages to the Park in the proposed changes, there would be a very serious disadvantage in permitting a frontier town, with its saloons, gambling houses, and disreputable resorts, to approach within 2 miles of this place, which is, and will of necessity continue to be, the headquarters of the Park and the principal resort of visitors.

The disorders of the neighboring town of Gardiner, 5 miles distant, which now overflow into the Park, are a constant and serious source of annoyance. Should the town approach to within the distance permitted by the proposed change of boundary, and the present condition of lawlessness, with the unrestricted sale of liquor, continue, it would be well-nigh impossible by the present methods of government in the Park to preserve such a degree of order here as would make the place pleasant and desirable to visitors. The constant agitation of the subject of a change of the boundary lines of the Park has probably the effect of postponing the very important measure of an accurate survey of the present boundaries. I have embraced in my estimate of appropriations an amount sufficient to accomplish this purpose, and cannot too strongly urge its importance. The present uncertainty is a constant invitation to lawless hunters and others to encroach upon the Park, and adds greatly to the annoyance and labors of those charged with its protection.

#### THE PROTECTION OF THE PARK.

The Park has been protected during the past year by means of the employment of the military force under my command in the enforcement of the rules and regulations established by the Secretary of the Interior in accordance with law. The force at my disposal for this purpose has been one troop of cavalry, the maximum strength of which is three commissioned officers and sixty-four enlisted men, but by the casualties of service the ordinary strength of the command is much below this number. For the quartering and subsisting of this force the post of Camp Sheridan has been established at Mammoth Hot Springs, Wyoming.

The buildings of this post are eight in number, as follows:

No. 1. One cottage, officers' quarters, 65 feet long, 28 feet wide, 16 feet high, with a T 22 feet long, 22 feet wide, 10 feet high (weather-boarded).

No. 2. Post hospital, 44 feet long, 24 feet wide, 10 feet high, with an L 20 feet long, 10 feet wide, 10 feet high.

No. 3. Headquarters office, 36 feet long, 26 feet wide, 10 feet high.

No. 4. Men's barracks, 130 feet long, 24 feet wide, 10 feet high, with a back extension, 55 feet long, 18 feet wide, 10 feet high, forming with the main building a T.

No. 5. Storehouse, 100 feet long, 24 feet wide, 10 feet high.

No. 6. Guard-house, 26 feet long, 20 feet wide, 10 feet high.

No. 7. Cavalry stable, 150 feet long, 26 feet wide, 10 feet high.



No. 8. Quartermaster's stable, 50 feet long, 25 feet wide, 10 feet high.

These buildings are somewhat roughly constructed, and are of a temporary character, but afford good and sufficient protection for men, animals, and supplies, and are not unsightly. They are located nearly south of the building known as the superintendent's headquarters, and east of the hot spring terraces.

A military post involves the maintenance of a sufficient garrison for the proper care and protection of buildings and supplies by military methods, which in this instance correspondingly reduces the number of men available for distribution through the Park.

Stations have been established within the Park and are occupied as follows: At Soda Butte during the whole year. At Norris Geyser Basin, the Grand Cañon, Lower Geyser Basin, and Upper Geyser Basin from June 1 to November 1. At Riverside, on the Madison River, from August 1 to November 1.

The men thus stationed make daily excursions in every direction from their several camps, and the protection thus afforded is supplemented by constant scouting operations directed by an experienced scout and mountaineer acquainted with all of the trails, and indeed with every inch of ground within the Park. It is believed that the measures thus taken have been reasonably efficient in protecting the game of the Park, its various objects of wonder and beauty, and its forests. I am, however, convinced that the force at my disposal is inadequate to the proper protection of the Park during the tourist season. If it should be increased by two additional scouts and by one company of infantry from June 1 to October 15, it would probably be sufficient during the next year, but as travel to the Park increases and the game outside of its limits diminishes a much larger force will be necessary to give proper protection.

In my last report I alluded to the necessity which existed for an established form of government for the Park. That necessity still exists. It may be possible to give the Park sufficient protection by the employment of an adequate military force and a number of experienced scouts. But should this method be adopted it will be expedient to request such legislation as shall define the jurisdiction of the Territorial courts within the Park, so as to permit the same powers which they now have with reference to other reservations, and the enactment of a stringent law for the protection of the game.

In connection with the subject of park protection I append to this report copy of an order issued for the guidance of the enlisted men of my command in the discharge of their duties (marked E), and for convenience of reference a copy of the rules and regulations of the Park (marked F).

#### THE GAME AND ITS PROTECTION.

I am gratified to be able to report that the rules for the protection of the game in the Park have been generally well observed and respected.

One or two isolated instances of unlawful killing have occurred, but immense herds of elk have passed the winter along the traveled road from Gardiner to Cook City with the same safety which herds of domestic range cattle enjoy in other localities. Several stacks of hay which had been placed along this road in anticipation of winter freighting, were appropriated and doubtless enjoyed by these animals. It is difficult to form any accurate estimate concerning the number of elk that passed the winter in the Park; certain it is that the number that win-



tered in the valley of Lamar River and on its tributaries have been estimated by all who saw them at several thousands. The elk are accustomed, when driven out of the mountains by the snows of winter, to follow down the course of the mountain streams into the lower valleys. For this reason but little efficient protection can be afforded to this species of large game in the Park except upon the Yellowstone River and its tributaries.

The elk which follow down the outward slopes of the mountains surrounding the Park along the tributaries of the Madison and the Gallatin on the west, or the Snake River on the south, pass beyond the Park limits before the hunting season permitted by the Territorial laws has closed, and fall an easy prey to the hunters who are in wait for them.

A small number of buffalo still remain in the Park, but after as careful and thorough an investigation as is practicable I am unable to state their numbers with any approach to accuracy. My impression is that they have been heretofore somewhat overestimated, and that at the present time they will not exceed one hundred in number. They are divided into three separate herds. One of these ranges between Hell-roaring and Slough Creeks; in summer well up on these streams in the mountains, outside the Park limits, and in the winter lower down on small tributaries of the Yellowstone, within the Park. If the reports made several years ago can be relied on, this herd has rapidly diminished, and it is doubtful if it now exceeds some twenty or thirty in number. Whether or not this decrease has been due to illegal killing by hunters or to other causes I am unable to say, though I do not believe that many have been killed within the past two years. Another herd ranges on Specimen Mountain and the waters of Pelican Creek. The herd was seen by reliable parties several times last winter and was variously estimated at from forty to eighty. A traveler on the Cook City road claimed to have counted fifty-four near the base of Specimen Ridge. A scouting party which I sent out during the month of May found but twenty-seven head of this herd, with four young calves. It is possible that the herd at this time was broken up and that but one portion of it was found. The third herd ranges along the continental divide and is much scattered. A band of nine or ten from this herd was seen several times this spring in the vicinity of the Upper Geyser Basin. It will take close observation for several years to determine with any certainty the number of these animals, or whether or not they are diminishing in numbers. It is practically certain that none have been killed within the Park limits during the past two years, and yet there is an equal certainty that the present numbers do not approach those of past estimates.

Large numbers of antelope are found in the Park. A herd of some two hundred passed the winter within a mile of the town of Gardiner, pasturing on the plain between the Yellowstone and Gardiner Rivers, south of the town. They were unmolested, though it was found necessary to occasionally drive them back towards the hills, that they might not get beyond the Park limits.

The mountain sheep are found in all of the mountain ranges within the Park. A band of seven or eight spent a large portion of the winter in the cliffs along the traveled road between Mammoth Hot Springs and Gardiner, and they became so accustomed to the sight of travelers as to manifest but little more timidity or wildness than sheep of the domestic variety.

I have heard considerable anxiety expressed by those who profess interest in the Park lest the rule which protects equally all animals in the Park should work to the detriment of the game proper by causing an undue increase of the carnivora. But while it is true that there are some noxious animals that are not worthy of protection, chief among which is the skunk, or polecat, yet I am convinced that at the present time more injury would result to the game from the use of fire-arms or traps in the Park than from any ravages which may be feared from carnivorous animals.

#### THE GEYSERS AND HOT SPRINGS.

The United States Geological Survey, to which the National Park is indebted for the only accurate and reliable surveys and maps which have been made, has now in progress, under the direction of Prof. Arnold Hague, the work of mapping topographically the different geyser basins and hot-spring localities throughout the Park. The importance of this work cannot be overestimated.

It will serve to fix and render permanent the established and authorized names of the different objects of interest, and check the tendency which has prevailed of attaching personal, fanciful, or absurd names to nature's most grand and wonderful objects.

The new rules and regulations of the Park, together with increased watchfulness and care, has had the effect of suppressing in a great degree the former vandalism which was rapidly destroying the beauty of the geyser and hot-spring formations. The throwing of foreign substances into the springs and geyser vents has been quite effectually checked. The number of foolish visitors who have found pleasure in defacing the beauties of nature by written inscriptions of their names is less than that of previous years, though I regret to say the practice has not been entirely suppressed. Nothing short of the arrest and expulsion from the Park of a number of these offenders, who have the outward appearance of ladies and gentlemen, will probably be effectual to stop the practice.

I have, as far as practicable with the means at my disposal, caused the grounds and formations in the vicinity of the objects of interest to be cleaned up and all unsightly objects, such as old tin cans, bottles, &c., to be removed.

This has been a labor of love on the part of the soldiers, as it cannot be considered any part of their duty in connection with the Park. I allude to the subject chiefly to emphasize the necessity of providing a certain sum to be expended by the Superintendent of the Park in keeping it in proper order. I advocate no expensive improvements beyond the construction of the necessary roads, bridges, and bridle-paths necessary to make accessible the wonders and beauties of the Park; but the accumulation of unsightly rubbish which is brought into the Park by the numerous camping parties and visitors is such as to very seriously mar the beauty of those objects which are the attractive features of the Park. In my opinion this "wonderland" should for all time be kept as nearly as possible in its natural and primitive condition. No appliances of art and no expenditure of money can improve upon this condition. But the history of all like reservations has shown that where large numbers of visitors came to view nature's wonders, a constant expenditure of labor is essential to preserve those natural conditions which charm and attract the busy workers of the world.

There are now scattered throughout the Park many abandoned and unsightly cabins and shacks, and the débris of a hundred camps. I had hoped to be able to clear up and remove much of this old material, but the press of other duties has forbidden the employment of the soldiers for this work, and I have not had a dollar at my disposal for this or any other purpose connected with the improvement of the Park.

The sign-boards, which have been previously provided under more fortunate circumstances, showing the names of the various objects of interest are becoming obliterated by the action of the weather and should be renovated and replaced, and others should be provided as new objects are discovered and brought to notice. The appearance of neglect throughout the Park, due to the absence of any appropriation for its care and preservation, must be a source of mortification to any right-minded officer performing the duties of Superintendent, and who, by public opinion at least, is held responsible for its condition.

I have included in my estimate of appropriations a modest sum for the "care and preservation of the National Park, to be expended under the direction of the officer charged with its protection," and trust that it may receive your favorable indorsement.

#### APPROPRIATIONS.

I inclose with this report my estimate of appropriations for the fiscal year ending June 30, 1889, for the improvement and preservation of the Yellowstone National Park, and for convenience of reference summarize the items as follows, viz:

For construction of roads and bridges .....	\$130,000
For care and preservation of the Park, the sum to be expended by the officer charged with the protection of the Park .....	3,000
For the settlement of the Barronette's bridge claim (or so much thereof as may be awarded by a duly constituted commission) .....	2,000
For accurately surveying and marking the boundary lines of the Park....	10,000
Total.....	145,000

Before closing my report it is fit and proper that I should acknowledge with thanks the assistance given me in the protection of the Park by Mr. Ed. Wilson, scout and guide, who has always been zealous and untiring in the discharge of his duties; by the officers of my command, whose valuable aid has been cheerfully given; and to the enlisted soldiers, who have shown the value of military discipline and training in the efficient discharge of new and unaccustomed duties requiring patience, intelligence, and discretion.

I am sir, very respectfully, your obedient servant,

MOSES HARRIS,  
*Captain First Cavalry, Acting Superintendent.*

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



A.

Meteorological record kept at Mammoth Hot Springs, Yellowstone National Park, from November 5, 1886, to July 31, 1887.

NOVEMBER, 1886.

Dates.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1886.	°	°	°				
Nov. 5	40	8	24	W.	Light breeze..	Fair .....	
6	46	17	31.50	SW.	Calm.....	do .....	
7	56	20	38	S.	do .....	Clear .....	
8	42	27	34.50	SW.	Light breeze..	Fair .....	
9	35	16	25.50	N.	Gentle breeze..	do .....	Light snowfall during night.
10	32	5	18.50	NW.	Fresh breeze..	do .....	
11	33	7	20	N.	Light breeze..	Clear .....	
12	42	18	30	SW.	Strong wind	Fair .....	
13	45	19	32	S.	Calm .....	do .....	
14	25	5	15	NW.	Gentle breeze..	Cloudy.....	Snow during night.
15	14	—	4.50	NW.	Light breeze..	Clear .....	
16	14	8	11	NW.	High wind ..	Cloudy.....	Snow in the morning.
17	28	12	20	SW.	Light breeze..	Fair .....	
18	30	8	19	SW.	Calm .....	do .....	Snow in the afternoon.
19	21	14	17.50	SE.	Gentle breeze..	do .....	
20	28	13	20.50	W.	Calm .....	Cloudy .....	Light snowfall in the afternoon.
21	16	—17	—0.50	NW.	Gentle breeze..	Fair .....	Snow during night.
22	10	—6	2	NW.	Fresh breeze..	Clear .....	
23	22	5	13.50	SW.	Calm .....	Fair .....	
24	21	10	15.50	SW.	Light breeze..	do .....	
25	32	17	24.50	SW.	Calm .....	do .....	
26	33	16	24.50	SW.	Strong wind.	Entire clear..	
27	35	23	29	S.	Light breeze..	Fair .....	
28	34	28	31	SW.	Calm .....	Cloudy .....	Snow during day.
29	37	27	32	SW.	Light breeze..	Fair .....	
30	39	25	32	SW.	Calm .....	do .....	
Monthly mean.			21.75				

Summary for November, 1886.

An earthquake occurred at Norris and vicinity at 1 a. m., the 7th instant. The hotel was shaken violently, dishes fell from the shelves in the china closets, and lamps were thrown from their brackets. Distinct waves followed during the following few days.

Average cloudiness (scale of ten) .....	4.38
Number of days on which cloudiness averaged 8 or more on a scale of ten .....	4
Number of days of snow .....	9
Depth of snowfall during the month .....	7.5 inches..
Temperature during the month:	°
Highest .....	56
Lowest .....	—17
Mean .....	21.75



*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

DECEMBER, 1886.

Dates.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1886. Dec. 1	40	22	31	SE.	Very light breeze.	Clear .....	
2	36	25	30.50	SE.	Light breeze..	Fair .....	
3	33	26	29.50	SE.	Calm .....	Cloudy .....	Snow during night.
4	40	30	35	W.	do .....	Fair .....	
5	38	29	33.50	S.	do .....	do .....	
6	41	21	31	W.	do .....	do .....	
7	37	28	32.50	S.	Light breeze..	do .....	Light snowfall in the afternoon.
8	41	34	37.50	SE.	Gentle breeze..	do .....	Rain at intervals during day.
9	36	23	29.50	SE.	Calm .....	Cloudy .....	
10	31	11	21	NW.	do .....	Fair .....	
11	25	21	23	SE.	do .....	Clear .....	Snow during night.
12	32	22	27	SW.	Gentle breeze..	Fair .....	
13	36	23	29.50	S.	Calm .....	Clear .....	Light snowfall in the morning.
14	34	18	26	S.	Light breeze..	do .....	
15	31	26	28.50	SE.	Gentle breeze..	Fair .....	
16	35	18	26.50	SW.	Calm .....	Entire clear..	
17	26	19	22.50	NW.	Light breeze..	Clear .....	Snow during night.
18	38	15	26.50	SW.	Calm .....	Entire clear..	
19	44	18	31	S.	Gentle breeze..	Fair .....	Snow at and during night.
20	26	17	21.50	SW.	Calm .....	do .....	
21	24	12	18	E.	Strong wind ..	do .....	
22	25	12	18.50	NW.	Fresh breeze..	do .....	
23	24	16	20	SW.	Strong winds ..	do .....	
24	34	19	26.50	NW.	Strong wind ..	Cloudy .....	Snow.
25	30	10		SE.	Fresh breeze..	Entire cloudy.	Do.
26	18	8	13	W.	Calm .....	Cloudy .....	Do.
27	33	5	19	S.	do .....	Fair .....	Do.
28	41	24	32.50	SE.	Strong wind ..	Cloudy .....	Do.
29	36	26	31	S.	Fresh breeze..	do .....	Do.
30	36	17	26.50	SE.	Calm .....	do .....	Do.
31	32	21	26.50	SE.	do .....	Fair .....	Do.
Monthly mean..			26.27				

*Summary for December, 1886.*

Average cloudiness (on a scale of ten).....	4.77
Number of days on which cloudiness averaged 8 or more on a scale of ten.....	8
Number of days of rain.....	1
Number of days of snow.....	15
Depth of snowfall during the month.....inches..	34.5
Temperature during the month:	o
Highest.....	44
Lowest.....	-10
Mean.....	26.80

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*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

JANUARY, 1887.

Dates.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Jan. 1	38	24	31	W.	Gentle breeze.	Fair	
2	39	21	30	SE.	Strong wind	do	
3	32	20	26	NW.	Calm	Cloudy	Snow.
4	22	13	17.50	SE.	Gentle breeze.	do	Do.
5	24	— 3	10.50	NE.	Light breeze.	Entire cloudy.	Do.
6	38	— 1	18.50	W.	Gentle breeze.	Fair	Rain in the forenoon. Snow in the afternoon.
7	26	—12	7	N.	do	Fair	Snow in the forenoon.
8	6	—21	— 7.50	SW.	Calm	Clear	
9	14	— 3	5.50	SW.	Fresh breeze.	do	
10	27	6	16.50	SE.	Gentle breeze.	Fair	Light snowfall, forenoon.
11	28	10	19	SE.	Fresh breeze.	Cloudy	
12	30	15	22.20	NW.	do	Entire cloudy.	Snow.
13	32	18	25	SE.	Gentle breeze.	Cloudy	Do.
14	38	20	29	S.	Strong wind	Fair	Rain and snow at intervals.
15	39	18	28.50	SW.	do	Entire cloudy.	Snow.
16	20	8	14	SW.	Fresh breeze.	Fair	Do.
17	22	4	13	SE.	Strong wind	do	Do.
18	29	10	19.50	SE.	High wind	do	Do.
19	40	20	30	SE.	Gale	do	Rain forenoon. Snow at night.
20	28	12	20	SE.	Fresh breeze.	Cloudy	Snow.
21	30	16	23	W.	do	Fair	Do.
22	24	12	18	SW.	Light breeze.	do	Do.
23	30	15	22.50	W.	Fresh breeze.	Cloudy	Do.
24	32	12	22	NW.	do	Fair	Do.
25	17	3	10	SE.	do	do	
26	21	10	15.50	SW.	Strong wind	Cloudy	
27	22	11	16.50	NW.	do	Fair	
28	18	10	14	SW.	Gentle breeze.	Cloudy	Snow.
29	28	18	23	S.	Calm	Entire cloudy.	Do.
30	36	22	29	NW.	do	Cloudy	Do.
31	19	5	12	NW.	Light breeze.	Fair	Light snowfall, afternoon.
Monthly mean..			18.99				

*Summary for January, 1887.*

During the 18th heavy snow fell nearly all day, accompanied by high southeasterly wind (Force 5). At 3 10 p. m. on the 19th a northwesterly gale set in, and continued until 5 p. m. Thermometer fell rapidly from 38° at 3 p. m. to 20° at 5 p. m. Telephone wires and poles were blown down in several places between here and Norris.

There was a slight but distinct earthquake shock at Norris during the month. Exact information could not be obtained, because the lines are down.

Solar halos were observed on the 2d, lunar halos on the 2d and 3d.

Average cloudiness (scale of ten)	5.92
Cloudiness averaged 8 or more (scale of ten) on	7 days..
Number of days of rain	3
Number of days of snow	23
Depth of snowfall during the month	77 inches..
Depth of snow on the ground at the close of the month	18 do...
Temperature during the month:	°
Highest	40
Lowest	—21
Mean	18.5

*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

FEBRUARY, 1887.

Date.	Self-registering thermometer.			Wind.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Feb. 1	13	-28	-7.50	NE.	Calm	Cloudy	Snow.
2	-16	-30	-23	NE.	do	Fair	Snow from 9 to 11 o'clock a. m.
3	16	-19	-1.50	NW.	Light breeze	do	Snow at intervals.
4	28	-22	3	SE.	do	Entire cloudy	Heavy snow.
5	31	-2	14.50	SE.	do	Fair	Snow.
6	45	3	24	S.	Fresh breeze	Cloudy	Snow—rain, afternoon.
7	29	16	22.50	S.	do	Fair	Light snowfall at intervals.
8	31	15	23	SE.	Calm	Cloudy	Snow.
9	26	-4	11	NE.	do	Entire cloudy	Heavy snow.
10	10	-15	-2.50	NE.	do	Fair	Snow.
11	25	-7	9	SW.	Light breeze	do	
12	30	18	24	S.	Gentle breeze	do	Snow.
13	29	20	24.50	S.	do	do	Do.
14	19	4	11.50	SW.	Calm	do	Light snowfall at intervals.
15	39	3	21	S.	do	Clear	
16	33	10	21.50	SW.	do	Cloudy	Snow.
17	28	12	20	W.	Light breeze	Fair	
18	29	3	16	NW.	Calm	do	
19	29	7	18	NW.	do	do	Light snowfall at intervals.
20	15	-8	3.5	SE.	do	Entire clear	
21	24	0	12	SE.	do	Fair	Light snowfall, afternoon.
22	24	-3	10.50	SE.	Light breeze	Clear	
23	25	7	16	SW.	Calm	Fair	Snow at night.
24	27	16	21.50	SW.	Fresh breeze; high wind at night	Cloudy	Snow.
25	24	3	13.50	SE.	Gentle breeze	Fair	
26	25	12	18.50	SW.	do	do	Light snowfall at intervals.
27	39	19	29	S.	Calm	do	
28	47	28	37.50	S.	Gentle breeze	Clear	
Monthly mean..			15.2				

*Summary for the month of February, 1887.*

Average cloudiness .....	5.78
Cloudiness averaged 8 or more. (scale of ten) on .....	5
Number of days of rain .....	1
Number of days of snow .....	19
Depth of snowfall during the month .....	46.5
Depth of snow on the ground at the close of the month .....	4
Temperature during the month:	°
Highest .....	47
Lowest .....	-30
Mean temperature .....	16.5

*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

MARCH, 1887. .

Date.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Mar. 1	48	31	39.50	S.	Strong wind..	Fair.....	
2	42	24	33	SE.	Light breeze..	Cloudy.....	Snow.
3	35	3	19	N.	Calm.....	Clear.....	
4	42	2	22	SE.	Gentle breeze..	Cloudy.....	Snow.
5	36	25	30.50	SW.	Fresh breeze..	Fair.....	
6	45	27	36	W.	Gentle breeze..	do.....	Light snowfall.
7	46	30	38	SW.	Calm.....	do.....	
8	44	20	32	SW.	do.....	do.....	
9	46	31	38.50	S.	Light breeze..	Cloudy.....	
10	54	38	46	SW.	do.....	Fair.....	
11	55	36	45.50	SW.	Gentle breeze..	do.....	
12	53	28	40.50	SW.	Calm.....	Clear.....	
13	54	27	40.50	S.	Fresh breeze..	do.....	
14	54	32	43	SE.	Gentle breeze..	Fair.....	
15	49	28	38.50	S.	Light breeze..	Cloudy.....	Sprinkling forenoon.
16	56	38	47	SW.	Calm.....	Clear.....	
17	59	32	45.50	SW.	do.....	Fair.....	Light rain during night.
18	52	28	40	NW.	Gentle breeze..	Cloudy.....	Rain; light rain and snow; sleeting afternoon.
19	44	11	27.50	NW.	Calm.....	Clear.....	
20	52	13	32.50	SW.	do.....	do.....	
21	36	21	28.50	NW.	Fresh breeze..	Fair.....	Snow during night.
22	55	15	35	SW.	Calm.....	Clear.....	
23	50	26	38	S.	Light breeze..	do.....	
24	48	27	37.50	SW.	Calm.....	Fair.....	Light snowfall.
25	45	30	37.50	SW.	Fresh breeze..	do.....	
26	35	20	27.50	NW.	Gentle breeze..	do.....	Sleeting forenoon; light snow afternoon.
27	47	17	32	SW.	Calm.....	Clear.....	Light snow forenoon.
28	58	30	44	S.	do.....	Fair.....	
29	44	28	36	W.	Gentle breeze..	Entire cloudy.	Rain; sleeting afternoon; snow during night.
30	40	22	31	SE.	Calm.....	Fair.....	
31	44	20	32	S.	Light breeze..	do.....	Snow at and during night.
Monthly mean.			36.94				

*Summary for March, 1887.*

Average cloudiness.....	4.77
Cloudiness averaged 8 or more (scale of ten) on.....days..	1
Number of days of rain.....	3
Number of days of sleet.....	3
Number of days of snow.....	9
Depth of snowfall during the month.....inches..	6.5
Depth of snow on the ground at the close of the month.....do.....	.5
Temperature during the month:	°
Highest.....	59
Lowest.....	2
Mean.....	34.6

*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

APRIL, 1887.

Date.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Apr. 1	52	36	44	SW.	Gentle breeze	Fair .....	Heavy snow afternoon; 2.50, high S. wind; 3.40, gale, NW; 6.10, strong gale.
2	54	22	38	SE.	Light breeze	Cloudy .....	
3	38	14	26	NW.	do .....	Fair .....	
4	51	16	33.50	W.	Fresh breeze	do .....	Light rain.
5	53	35	44	SW.	Calm .....	do .....	
6	65	28	46.50	S.	Light breeze	do .....	
7	66	36	51	S.	Gentle breeze	do .....	Light snow; rain afternoon.
8	48	35	41.50	SW.	Calm .....	Cloudy .....	
9	56	28	42	S.	do .....	Entire cloudy.	
10	47	30	38.50	NW.	Fresh breeze	Cloudy .....	Heavy snow 8.40 p.m. and during night.
11	40	29	34.50	SE.	Gentle breeze	Cloudy .....	
12	47	28	37.50	S.	Fresh breeze	Fair .....	
13	52	20	36	NW.	Light breeze	do .....	Light snow and rain.
14	50	30	40	W.	Calm .....	do .....	
15	58	24	41	NW.	Gentle breeze	Cloudy .....	
16	54	31	42.50	NW.	Calm .....	Fair .....	Sleet, followed by heavy snow-fall.
17	53	30	41.50	NW.	Strong wind	Cloudy .....	
18	35	21	28	W.	Fresh breeze	Fair .....	
19	44	13	28.50	S.	Calm .....	do .....	Snow at intervals.
20	42	28	35	W.	Gentle breeze	do .....	
21	31	27	29	NW.	Strong wind	Entire cloudy.	
22	41	22	31.50	NW.	Fresh breeze	Cloudy .....	Light snow and rain.
23	42	23	32.50	W.	Calm .....	Fair .....	
24	40	18	29	SW.	Light breeze	Cloudy .....	
25	49	27	38	SW.	Calm .....	Fair .....	Snow at night.
26	56	32	44	S.	Light breeze	Cloudy .....	
27	62	36	49	S.	Calm .....	Fair .....	
28	67	38	52.50	S.	Light breeze	do .....	4.15 to 4.35 p.m. sprinkling, followed by strong S. gale and heavy rain.
29	70	41	55.50	S.	Gentle breeze	do .....	
30	41	33	37	NW.	Strong wind	Cloudy .....	
Monthly mean.			38.92				

*Summary for April, 1887.*

Average cloudiness .....	6.08
Cloudiness averaged 8 or more on .....	11 days
Number of days of rain .....	5
Number of days of sleet .....	1
Number of days of snow .....	10
Depth of snowfall during the month .....	14 inches
Temperature during the month:	
Highest .....	70
Lowest .....	13
Mean .....	36.9



*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

MAY, 1887.

Dates.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
May 1	46	27	36.50	NW.	Fresh breeze..	Fair .....	
2	57	22	39.50	S.	Light breeze..	do .....	Snows during night.
3	56	37	46.50	SW.	Fresh breeze..	Cloudy .....	Rain.
4	58	39	48.50	S.	Gentle breeze..	Fair .....	
5	60	38	49	S.	High wind ..	do .....	
6	67	40	53.50	S.	Fresh breeze..	Clear .....	
7	48	30	38	SE.	do .....	Fair .....	Light snowfall.
8	63	36	49.50	SW.	Calm .....	do .....	
9	75	39	57	S.	do .....	Entire clear ..	
10	71	42	56.50	W.	do .....	Entire clear ..	
11	46	27	36.50	W.	do .....	Cloudy .....	Snow.
12	38	27	32.50	NW.	do .....	Fair .....	
13	36	24	30	W.	do .....	do .....	
14	54	23	38.50	S.	do .....	do .....	
15	56	28	42	W.	Fresh breeze..	Cloudy .....	Snow.
16	57	30	43.50	SW.	Calm .....	Clear .....	
17	74	30	52	S.	do .....	do .....	
18	76	40	58	S.	do .....	Fair .....	Rain, afternoon.
19	67	38	52.50	SW.	Light breeze..	do .....	
20	74	35	54.50	W.	Gentle breeze..	do .....	
21	55	33	44	SW.	Light breeze..	Clear .....	
22	66	28	47	SW.	Gentle breeze..	Entire clear ..	
23	77	38	57.50	S.	Light breeze..	Clear .....	
24	77	42	59.50	S.	do .....	Fair .....	Sprinkling.
25	67	41	54	NW.	Calm .....	Cloudy .....	Rain.
26	73	37	55	W.	Light breeze..	Clear .....	
27	74	38	56	SE.	do .....	Fair .....	
28	75	38	56.50	W.	Fresh breeze..	Clear .....	
29	76	39	57.50	SW.	Calm .....	Entire clear ..	
30	89	39	64	SE.	Light breeze..	do .....	
31	81	47	64	W.	Calm .....	Cloudy .....	4.15 p. m. heavy rain accompanied by several distinct peals of thunder. 10 p. m., heavy rain and hail. Thunder-storm with strong electrical detonations and numerous lightning.
Monthly mean ..			49.34				

*Summary for May, 1887.*

Average cloudiness .....	3.7
Cloudiness averaged 8 or more on .....	4 days.
Number of days of rain .....	5
Number of days of hail .....	1
Number of days of snow .....	4
Depth of snowfall during the month .....	2.5 inches.
Thunder-storms .....	1
Temperature during the month :	°
Highest .....	89
Lowest .....	22
Mean .....	47

*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

JUNE, 1887.

Dates.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
June 1	68	43	55.50	SE.	Gentle breeze	Fair	High NW. wind set in during night.
2	45	30	37.50	NW.	High wind...	Cloudy	Snow.
3	65	26	45.50	S.	Gentle breeze	Fair	
4	51	39	45	SW.	Calm	do	Rain.
5	59	37	48	SW.	Gentle breeze	Cloudy	Sprinkling.
6	61	38	49.50	S.	Calm	Fair	
7	69	36	52.50	SW.	do	Clear	
8	76	40	58	S.	do	do	
9	82	46	64	SW.	do	do	Rain, thunder-storm in the afternoon
10	72	39	55.50	S.	do	do	
11	74	41	57.50	W.	do	Fair	Light rain.
12	83	44	63.50	SE.	Gentle breeze	Clear	
13	81	40	60.50	S.	Light breeze	Entire clear	
14	76	46	61	S.	Calm	Cloudy	Rain and thunder-storm.
15	65	45	55	SE.	do	Fair	
16	66	44	55	S.	Gentle breeze	do	Rain.
17	75	46	60.50	W.	Fresh breeze	do	
18	78	50	64	NW.	Calm	Clear	
19	78	47	62.50	SW.	Gentle breeze	Fair	
20	71	40	55.50	W.	Light breeze	Entire clear	
21	75	37	56	W.	Calm	do	
22	85	41	63	W.	Light breeze	Fair	
23	76	49	62.50	S.	Calm	do	
24	81	39	60	S.	Light breeze	do	Threatening.
25	87	51	69	S.	Gentle breeze	Cloudy	Rain, strong gale, and heavy rain during night.
26	59	42	50.50	S.	Strong wind	Fair	
27	73	33	53	NW.	Calm	Clear	
28	81	30	55.50	W.	do	Entire clear	
29	82	38	60	SW.	do	Fair	
30	81	42	61.50	W.	do	do	Sprinkling.
Monthly mean		54.84					

*Summary for June, 1887.*

Thunder-storms: 9th, temperature at the beginning of the rain, 2.20 p. m., 76°; during the storm at 5.50 p. m., 70°; at the close of the storm, 4.30 p. m., 74°; 14th, no considerable fluctuation of the thermometer.

Average cloudiness	3.68
Cloudiness averaged 8 or more on	3 days
Number of days of rain	8
Number of days of snow	1
Depth of snowfall	1.5
Temperature during the month:	°
Highest	87
Lowest	26
Mean	57

*Meteorological record kept at Mammoth Hot Springs, &c.—Continued.*

JULY 1887.

Dates.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
July 1	76	39	57.50	S. W.	Light breeze	Fair .....	Rain; thunder-storm.
2	72	40	56	S.	Calm	do .....	
3	83	42	62.50	W.	do .....	Clear .....	
4	89	49	69	SW.	do .....	do .....	
5	90	48	69	W.	do .....	do .....	Thunder-storm; rain and hail. Thunder between 2 and 3 p. m.
6	93	52	72.50	S.	Gentle breeze	Fair .....	
7	84	54	69	NW.	Fresh breeze	Cloudy .....	
8	86	40	63	SW.	Calm	Clear .....	
9	87	48	67.50	SE.	Light breeze	Fair .....	Rain. Heavy rain and thunder-storm during night. Rain at intervals. Rain, 1.15 to 2.20 p. m. Heavy rain and thunder-storm; light rain at night.
10	79	50	64.50	NE.	do .....	Cloudy .....	
11	77	48	62.50	SW.	Gentle breeze	Fair .....	
12	83	39	61	SE.	Light breeze	do .....	
13	82	59	70.50	E.	Gentle breeze	do .....	Light rain; afternoon. Light rain; thunder-storm. Rain; thunder-storm. Rain, hail; thunder-storm.
14	83	52	67.50	SW.	Fresh breeze	do .....	
15	76	46	61	SE.	Calm	Clear .....	
16	81	51	66	W.	do .....	do .....	
17	86	53	69.50	SE.	Gentle breeze	Fair .....	2.50 p. m. Strong westerly gale set in; ended with rain and thunder-storm.
18	82	52	67	NW.	Fresh breeze	do .....	
19	73	47	60	SW.	Calm	Cloudy .....	
20	73	50	61.50	NW.	Gentle breeze	do .....	
21	72	45	58.50	NW.	Light breeze	Fair .....	
22	75	49	62	W.	Calm	Clear .....	
23	84	39	61.50	S.	Gentle breeze	do .....	
24	85	47	66	S.	Calm	Fair .....	
25	82	40	61	SW.	do .....	Clear .....	
26	65	43	54	NW.	Fresh breeze	Fair .....	
27	79	40	59.50	NE.	do .....	Clear .....	
28	81	41	61	W.	High wind	Fair .....	
29	78	39	58.50	SW.	Calm	Clear .....	
30	86	40	63	W.	Gentle breeze	Fair .....	
31	88	51	69.50	NW	do .....	do .....	
Monthly mean.			63.60				

*Summary for July, 1887.*

Thunder-storms: 1st, no considerable fluctuation of thermometer. 6th, thermometer between 12 and 1 o'clock p. m., 93°; fell rapidly during the approach of the storm; at 2 p. m., 70°; 2.20 p. m., 65°; at the close of the storm, 2.50 p. m., 62°. 11th, during night. 14th, thermometer at 12 m., 82°; fell rapidly to 50° at 1 p. m. 19th, accompanied with strong electrical detonations; thermometer fell from 66° at 2.40 p. m., to 53° at the close of the storm at 5.40 p. m. 20th, passed over. 21st, temperature 70°; 12.35 p. m., 57°; at the close of storm, 1.15 p. m., 51°; 2 p. m., 62°. 28th, no considerable fluctuation of thermometer.

Average cloudiness.....	4.38
Cloudiness averaged 8 or more on..... days..	4
Number of days of rain.....	12
Number of days of hail.....	2
Temperature during the month:	°
Highest.....	93
Lowest.....	39
Mean.....	61.1

## B.

DEPARTMENT OF THE INTERIOR,  
YELLOWSTONE NATIONAL PARK, OFFICE OF SUPERINTENDENT,  
*Mammoth Hot Springs, Wyo., April 24, 1887.*

SIR: In the month of January last one William James went to the Norris Geyser Basin with a number of teams, under an alleged contract with the Park Association, to haul lumber between the Grand Cañon and the Norris Basin.

The depth of snow having rendered the hauling of lumber impracticable, he sent back the largest portion of his outfit, but remained himself at Norris.

A few days ago I received information which caused me to believe that James was engaged in trapping beaver on the Gibbon River, near Norris. I accordingly sent a party on the 20th instant, at night, on snow-shoes, to this locality, with instructions to make diligent search, and, in the event of finding any evidence of trapping operations, to arrest Mr. James and any other persons whom they might believe to be implicated in violating the rules of the Park.

The party, with a sergeant of my troop in charge, proceeded to the locality indicated, and, having found three beaver traps set and baited along the Gibbon River, went to the Norris Hotel, and, having searched the premises, found in an out-building, which was used by James as a store-house and granary, five beaver-skins and one lynx-skin.

Having found these evidences of unlawful acts, the sergeant, in obedience to my orders, arrested James, and, having reported to me by telephone, sent him to this place on the 22d instant.

James, when examined by me, admitted that he had trapped and killed the beaver and lynx, and also that he had, in company with one Brown, an employé of the Park Association, killed an elk near the Falls of the Yellowstone, in the month of February last.

There appearing to be no doubt whatever as to the guilt of this man James, I have this day summarily expelled him from the Park.

The property found in the possession of James, which I have taken charge of, consists of the following articles, viz: 1 Martin rifle; 3 beaver traps, number 4; 5 beaver-skins, 1 lynx-skin, 4 horses, 2 sleds, 4 sets of harness, 3 chains, 2 pairs of blankets, 1 A tent, 1 whip, 1 coffee-pot, 1 frying-pan; also a small quantity of bacon, flour, coffee, and sugar, about four days' supply for one man.

James states that the two sleds belong to the Park Association, and that two of the horses belong to Mr. Wakefield, who carried on the business of transportation in the Park last season. This statement is probably correct.

This property is now at the Norris Geyser Basin, in charge of Sergeant John Swan, of my troop, who made the arrest, where it must remain until the melting of the snow shall make it practicable to bring it to this place, which will probably be in about two weeks.

I recommend the confiscation of all of this property which James has acknowledged as belonging to him, and request that I be informed with as little delay as practicable what disposition I shall make of it.

I am, sir, very respectfully, your obedient servant,

MOSES HARRIS,  
*Captain First Cavalry, Acting Superintendent.*

Hon. H. L. MULDROW,  
*Acting Secretary of the Interior.*

## C.

DEPARTMENT OF THE INTERIOR,  
YELLOWSTONE NATIONAL PARK, OFFICE OF THE SUPERINTENDENT,  
*Mammoth Hot Springs, Wyo., July 7, 1887.*

SIR: For the information of the Department, I have the honor to report that on the night of the 4th instant one of the stages of the Yellowstone Park Association was stopped by footpads about 1 mile from the town of Gardiner, and about the same distance within the limits of the Park, and the passengers robbed of money to the amount of \$16. The robbers appeared to be new at the business, were nervous and hurried, took what money was given them without searching the passengers for more, and took no watches or jewelry.

The town of Gardiner, which is located just outside the northern boundary of the Park, is destitute of all means for the preservation of law and order, and is the resort of hard and worthless characters who assemble to prey upon the visitors to the Na-



tional Park, and who have been excluded from the Park by my order. It is believed that this outrage was committed by some of these hard cases from the town of Gardiner.

The affair has no significance with reference to the police condition of the Park, and could not have occurred at any distance within its border.

Stages entering the Park at night will hereafter be provided with a mounted escort in order to prevent the possibility of a repetition of this offense.

All possible efforts are being made to detect and arrest the culprits, and it is hoped that they may be successful.

Very respectfully, your obedient servant,

MOSES HARRIS,

*Captain First Cavalry, Acting Superintendent.*

Hon. H. L. MULDROW,  
*Assistant Secretary of the Interior.*

## D.

### TRANSPORTATION RATES.

#### (1) CHARLES GIBSON YELLOWSTONE PARK ASSOCIATION.

##### STAGE-ROUTE FARES.

##### *Single trips.*

From Mammoth Hot Springs to—	
Cinnabar .....	\$1 50
Norris Geyser Basin .....	4 00
Lower Geyser Basin .....	7 50
Upper Geyser Basin .....	9 00
Grand Cañon .....	7 50
Yellowstone Lake .....	12 00
From Norris Geyser Basin to—	
Upper Geyser Basin .....	5 00
Lower Geyser Basin .....	3 50
Grand Cañon .....	3 50
Yellowstone Lake .....	8 00
From Lower Geyser Basin to—	
Upper Geyser Basin .....	1 50
Norris Geyser Basin .....	3 50
Grand Cañon .....	7 00
Mammoth Hot Springs .....	7 50
From Upper Geyser Basin to—	
Lower Geyser Basin .....	1 50
Norris Geyser Basin .....	5 00
Grand Cañon .....	8 50
Mammoth Hot Springs .....	9 00
From Grand Cañon to—	
Norris Geyser Basin .....	3 50
Lower Geyser Basin .....	7 00
Upper Geyser Basin .....	8 50
Mammoth Hot Springs .....	7 50
Yellowstone Lake .....	5 00

##### *Round trips.*

From Mammoth Hot Springs to Norris Geyser Basin, Lower Geyser Basin, Upper Geyser Basin and return, with stop-over privileges .....	18 00
From Mammoth Hot Springs to Norris Geyser Basin, Lower Geyser Basin, Upper Geyser Basin, Grand Cañon and return, with stop-over privileges ....	25 00
From Mammoth Hot Springs to Norris Geyser Basin, Lower Geyser Basin, Upper Geyser Basin, Grand Cañon, and Yellowstone Lake and return, with stop-over privileges .....	28 00
Carriage, two-horse, and driver:	
Per day .....	10 00
First hour .....	4 00
Each subsequent hour .....	2 00

Saddle-horse or pony :	
Per day .....	\$2 50
First hour .....	1 00
Each subsequent hour .....	50
Pack-horse .....	per day.. 1 50
Guide, with saddle-horse .....	do... 5 00

## (2) WALTER J. AND HELEN L. HENDERSON, COTTAGE HOTEL.

Fare to and from Cinnabar .....	\$1 50
Trip around the park with two or more persons .....	each.. 25 00
Wagon or carriage :	
Two horses and driver .....	per day.. 10 00
Four horses and driver .....	do... 15 00
Single horse and buggy .....	do... 6 00
Saddle horse :	
Per day .....	2 50
For one hour .....	1 00
For each subsequent hour .....	50
Pack animal .....	per day.. 2 00
Guides or cooks for camping parties .....	do... 3 00
Use of a tent .....	do... 50
Board and lodging for camping parties, each .....	do... 4 00
Single horse :	
To hay and grain, one night .....	1 00
To one feed of hay and grain .....	50
Use of corral :	
Per team one night .....	25
Per head .....	15
For trunk to and from Cinnabar .....	each.. 50

## (3) JAMES A. CLARK.

From Cinnabar to Mammoth Hot Springs, in carriage (driver included), per person .....	1 50
From Mammoth Hot Springs to Golden Gate :	
One person in carriage .....	2 50
Three or more persons .....	per person.. 1 00
From Mammoth Hot Springs to East Gardiner Falls :	
One person in carriage .....	4 00
Three or more persons .....	per person.. 1 50
From Mammoth Hot Springs to Norris Geyser Basin .....	each person.. 4 00
From Norris Geyser Basin to Lower Geyser Basin .....	do... 3 00
From Lower Geyser Basin to Upper Geyser Basin .....	do... 2 00
From Norris Geyser Basin to Falls or Grand Cañon .....	do... 3 00
Four-horse team and driver with five passengers' outfit .....	per day.. 15 00
Two-horse team and driver with three passengers' outfit .....	do... 10 00
Regular trip through Park :	
Saddle horse without guide .....	do... 3 00
Guide with saddle horse .....	do... 2 50
Pack horses with saddle and outfit, each .....	do... 1 00
Packers, guides, and cooks, with saddle horse .....	do... 4 00
Team with single-seated carriage .....	do... 8 00
Team, with single-seated carriage and driver .....	do... 10 00
Team, to hay and grain, over night .....	2 00
Use of stall in barn .....	per day.. 50
Use of open corral over night for stock .....	3 00
Single horse to grain .....	50
Stock in herd, night or day .....	each.. 25
Saddle, without horse .....	per day.. 50

## E.

CAMP SHERIDAN, WYOMING, June 2, 1887.

## ORDERS No. 37.]

1. Orders No. 5, dated Camp Sheridan, Wyo., August 21, 1886, is hereby revoked.
2. The enlisted men of this command, when on duty within the limits of the Yellowstone National Park, are charged with its protection, and will under all circumstances enforce a strict compliance with the established rules and regulations.

The soldiers occupying the detached stations for the protection of the Park will not only enforce the rules and regulations, but will exert themselves to discover and prevent the spread of forest fires, to protect visitors to the Park from any abuse or extortion by stage drivers or other persons, and generally to preserve respect for law and order.

In the enforcement of the regulations of the Park and the foregoing instructions soldiers will conduct themselves in a courteous and polite but firm and decided manner.

They will not hesitate to make arrests when necessary, reporting without delay to the commanding officer by telephone or otherwise.

By order of Captain Harris.

GEO. W. GOODE,  
*Second Lieutenant First Cavalry, Post Adjutant.*

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## F.

### RULES AND REGULATIONS, OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR, *Washington, April 4, 1887.*

(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, any of the mineral deposits, 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.

(5) Hunting, capturing, injuring, or killing any bird or animal within the Park is prohibited. The outfits of persons found hunting or in possession of game killed in the Park will be subject to seizure and confiscation.

(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.

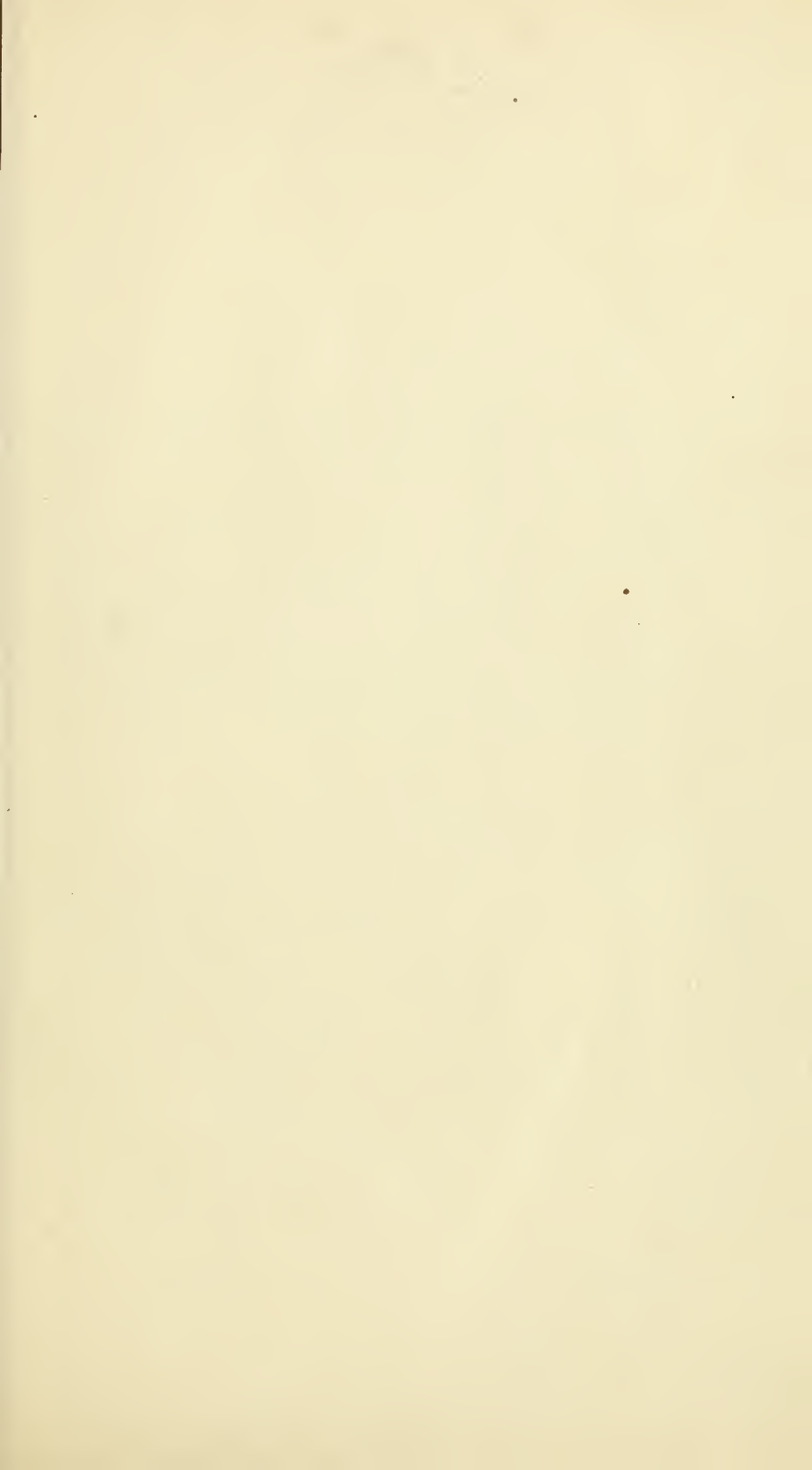
(7) No person shall be permitted to reside permanently or to engage in any business in the Park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion.

(8) No drinking saloon or bar room will be permitted within the limits of the Park.

(9) 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.

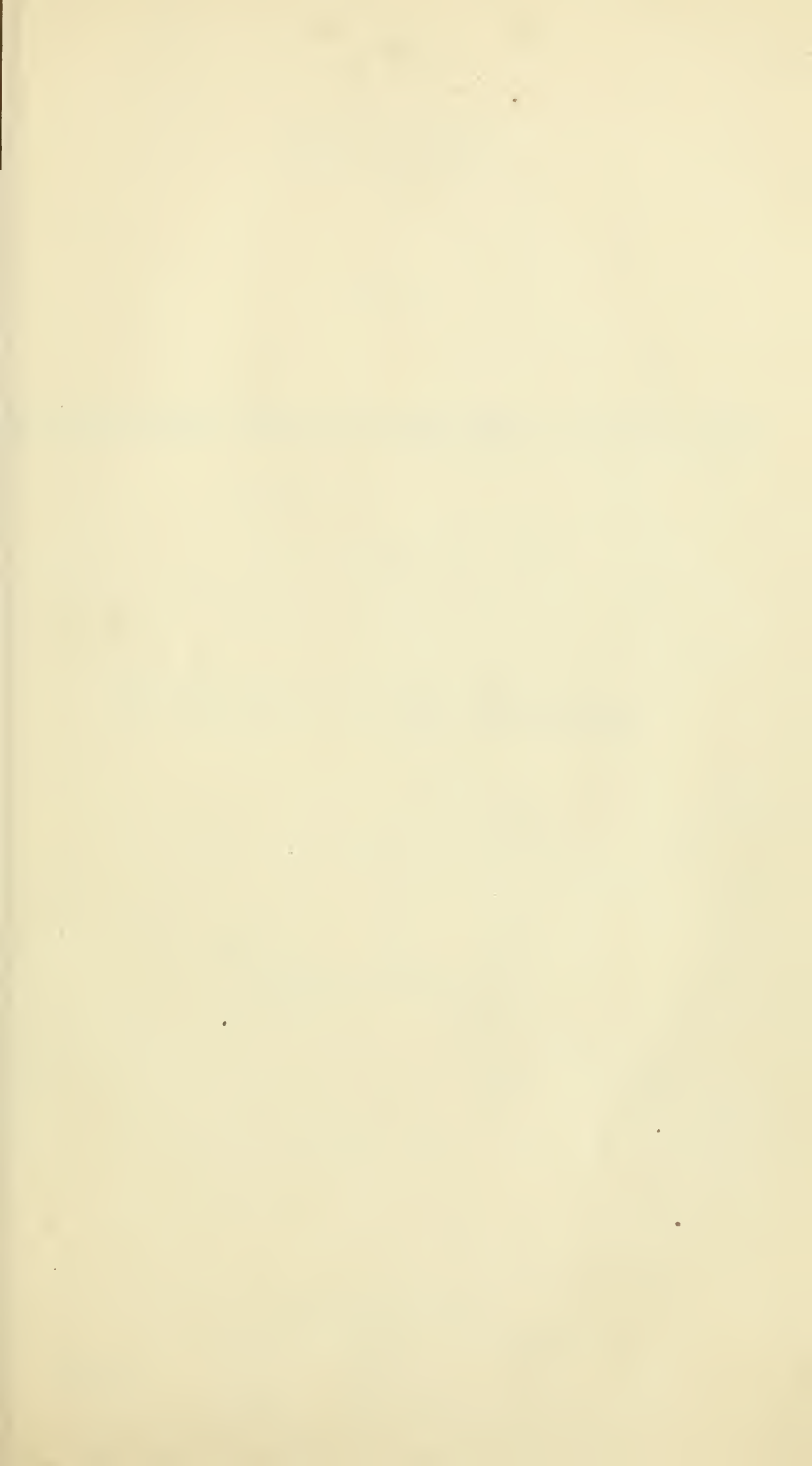
(10) Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the Park under authority of the statute setting apart the Park "as a pleasuring ground for the people," and providing that it "shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be to make and publish such rules and regulations as he shall deem necessary or proper," and who "generally shall be authorized to take all such measures as shall be necessary or proper to fully carry out the object and purposes of this act."

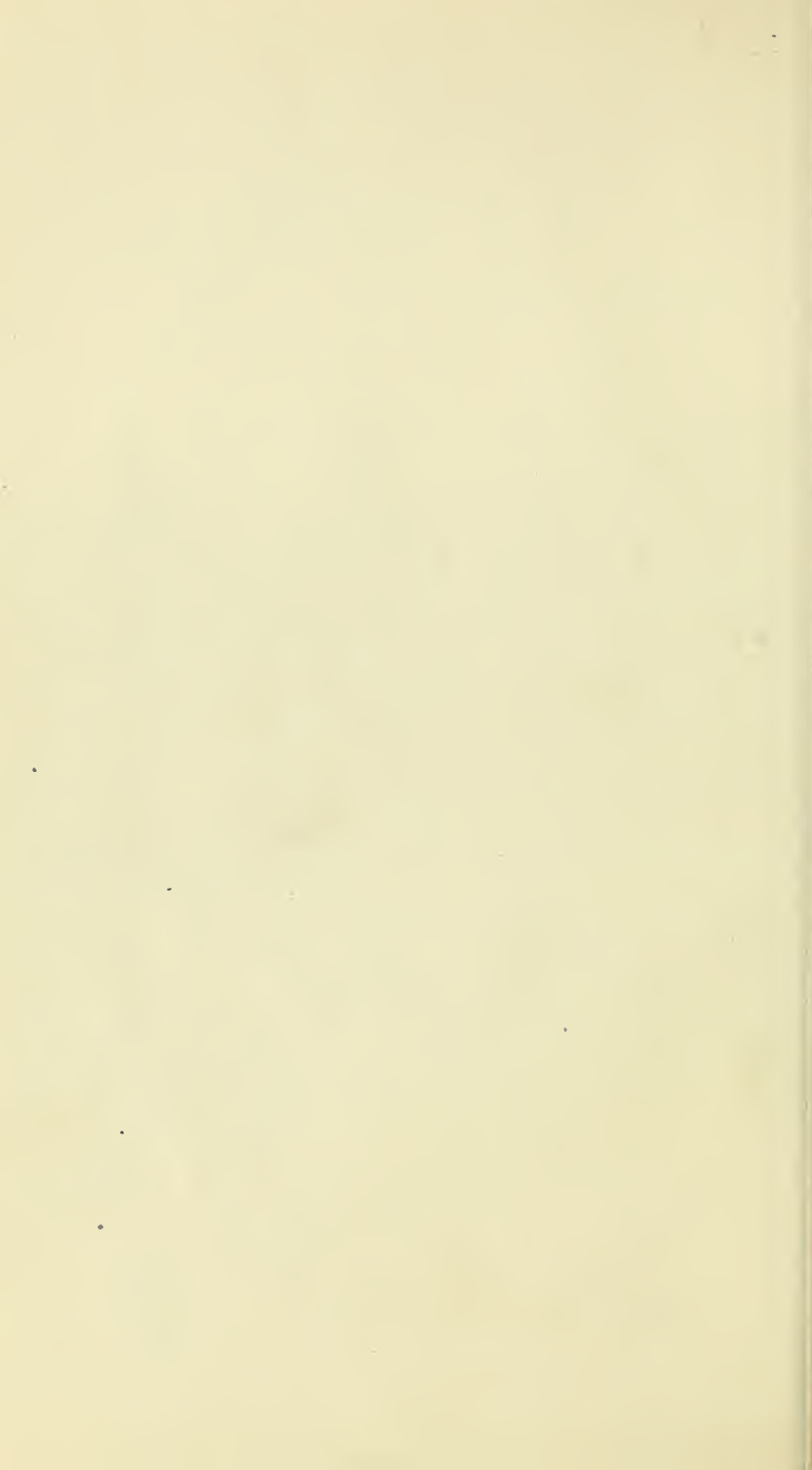
L. Q. C. LAMAR,  
*Secretary of the Interior.*











# REPORT

OF THE

SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

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TO THE

SECRETARY OF THE INTERIOR.

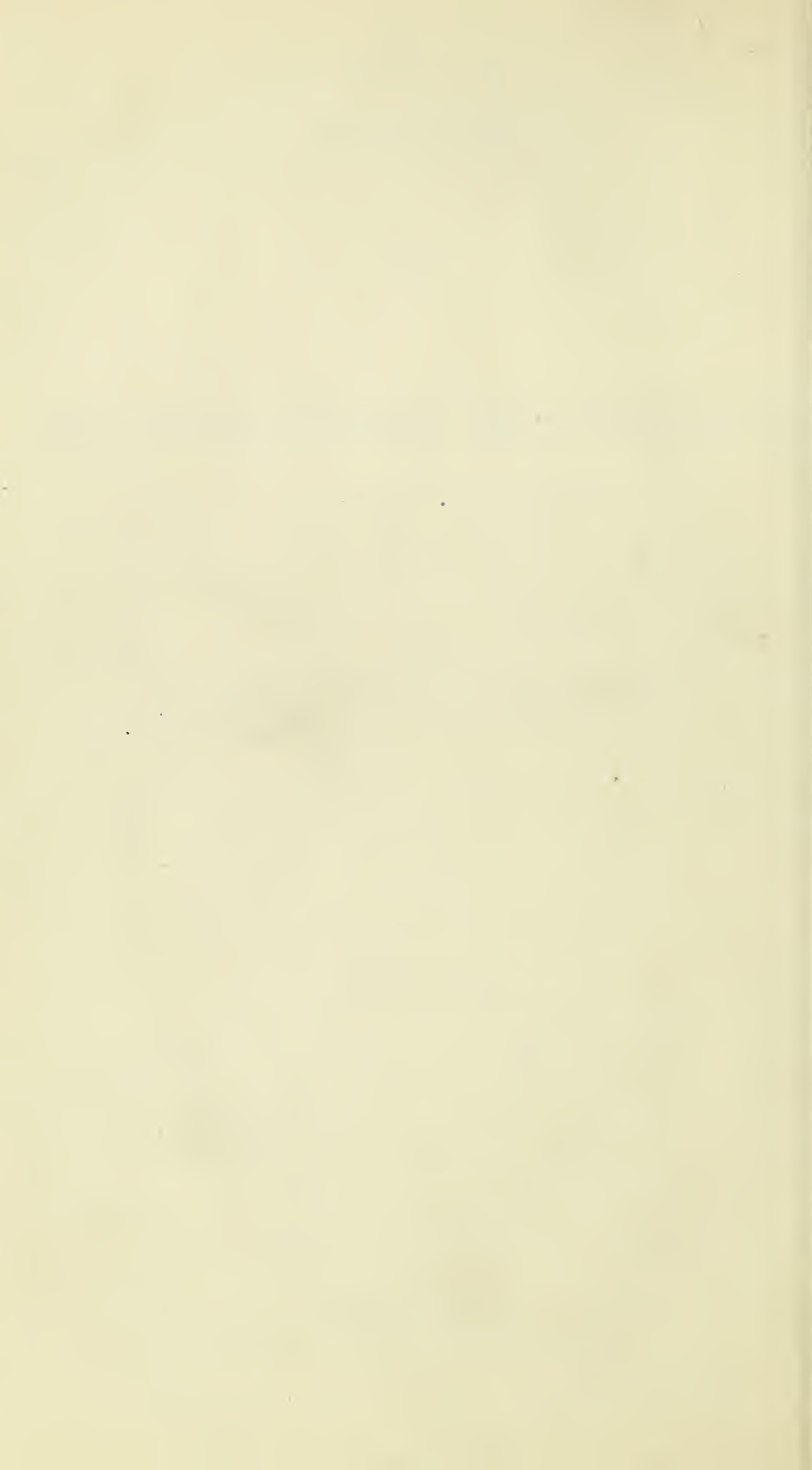
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1888.

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WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1888.





REPORT  
OF THE  
SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

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OFFICE OF THE SUPERINTENDENT  
YELLOWSTONE NATIONAL PARK,  
*Mammoth Hot Springs, Wyo., August 15, 1888.*

SIR: I have the honor to submit for your information the following report of the operations of the office of the Superintendent of the Yellowstone National Park for the fiscal year ended June 30, 1888, and to the present date.

When my last report was rendered, August 20, 1887, the hotels of the Park were filled with tourist visitors, and many camping parties, with every description of outfit, were scattered throughout the Park. All possible efforts were made to see that these numerous visitors were made acquainted with the rules and regulations established for their guidance in the Park, and that they were observed and respected. In the enforcement of these regulations several arrests were made, and in one or two instances, where the offenses were flagrant, the offenders were summarily expelled from the Park. In the exercise of the authority which is devolved upon the office of the Superintendent of this National Park great care has been taken to keep strictly within the limits sanctioned by law and to avoid all appearance of a harsh and arbitrary exercise of authority. No person has ever been expelled from the Park who had not admitted the commission of the offense for which the penalty was enforced; and whenever there has been reason to believe that the offenses were committed without intention or through thoughtlessness, or when a sincere regret was perceived, the persons have been permitted to go unmolested, after suitable instruction and admonition. This explanation is made in view of the unwarranted and unjust comments of the Montana newspapers, which, copied by Eastern exchanges, have tended to disseminate the idea that the National Park is subjected to harsh and arbitrary military rule, and that visitors are liable to humiliation and annoyance from a capricious exercise of power.

While these strictures of the press were generally expressed in vague and indefinite terms, they appeared to be founded chiefly upon the two following cases: John Noack, who was arrested at the Upper Geyser Basin, September 18, 1887, for writing upon the geyser formation, in violation of the rules and regulations; and Frank Chatfield, who was arrested near Heart Lake, October, 2, 1887, for killing an elk. In the case of Noack, he was arrested by the soldier on duty at the Upper Geyser

Basin, pursuant to his general instructions to enforce the rules of the Park, in the act of writing his name on the formation. Both he and his companion having offered the soldier money, the latter to clear himself of the suspicion of being improperly influenced, thought best to send the young man to the office of the Superintendent. For this purpose he was permitted to proceed by the regular stage, a soldier following on horseback. When Noack came to my office, he admitted his offense, stated that he had been treated by the soldiers in a courteous and considerate manner, but instead of manifesting any regret for his misconduct professed to consider himself ill-treated in having his pleasure trip interrupted for so slight a cause, and threatened to have the affair published in the newspapers. As it was apparent, in this case, that the rules of the Park had been willfully violated, and as the young man's speech and manner evinced a contempt for authority, it was thought that the provisions of Rule X of the rules and regulations of the Park would properly apply to his case. But as it was not desired to subject him to the unnecessary humiliation of being escorted out of the Park by a military guard, he was given twenty-four hours in which to leave the Park, and was informed that at the expiration of that time he would be liable to arrest and expulsion. He was subjected to no physical restraint at any time, and left the Park on the morning following his interview with the Superintendent by the usual stage to Cinnabar.

The case of Chatfield has been fully reported to the Department by letter, a copy of which is appended to this report (marked A). In this case there were absolutely no extenuating circumstances, and no leniency could have been shown without bringing into contempt the authority exercised by your Department over the National Park.

In my last report it was stated that the volume of travel to the Park at the date of the rendition of the report had fallen somewhat short of that of the previous year. Visitors continued to arrive, however, in considerable numbers, until the last part of September, when travel became so light as to warrant the closing of the hotels of the Park Association and placing them in charge of their winter keepers. Visitors who arrived after the 1st of October were accommodated at this place at the Cottage Hotel, under the management of the lessees, Helen L. and Walter J. Henderson, and through the Park were cared for by the winter keepers of the hotels as well as their limited facilities permitted.

The efforts to discover and bring to justice the perpetrators of the stage robbery within the Park, on the evening of July 4, 1887, which were initiated immediately upon the occurrence of the robbery, and continued unremittingly, were finally successful, and I append to this report two letters, marked respectively B and C, which were addressed to your Department, reporting fully the incidents connected with the arrest and conviction of the guilty parties. Although the punishment decreed in these cases appears to be entirely inadequate to the gravity of the offense, yet in view of the uncertainty which seems to exist relative to the administration of justice by the established courts within this reservation, it is perhaps a subject for congratulation that the perpetrators of the robbery were not permitted to escape all punishment.

On the 15th of October the work on the roads, which had been diligently prosecuted during the summer months by Capt. Clinton B. Sears, Corps of Engineers, U. S. Army, was discontinued and the various working parties discharged.

Although but little snow fell in the Park during the fall and early winter the temperature was at times quite low, the climatic conditions being very dissimilar to those of the previous season, as may be seen

by reference to the meteorological record which is hereto appended and marked D.

This record has been kept pursuant to Army regulations, under the direction of the medical officer at Camp Sheridan, Acting Assistant Surgeon G. L. Cline, U. S. Army, and may be accepted with confidence as being accurate and correct.

The first snows of the season indicated favorable conditions for the hunters' work; and at this time scouting operations were vigorously conducted for the protection of all game within the Park limits. Fortunately the efforts of the troops were seconded and furthered by other causes. The snow-fall being light the game tarried in the inaccessible mountain regions, safe from ordinary hunters, much later than usual, and the excellent law passed at the last session of the legislature of Montana, prohibiting the killing of any of the large game animals "for the purpose of procuring the head or hide only, or for speculative purposes, or for market, or for sale," although not always strictly enforced by the local authorities, served to exercise a discouraging effect upon the class of professional hunters, so that many of them quit the business in disgust.

As a result of these several causes the game of the Park has been free from molestation, and I am confident in the belief that little if any has been killed since the arrest and expulsion of Chatfield in the month of October last.

Upon the closing of the Park hotels and cessation of tourist travel, the daily trains of the Northern Pacific Railroad from Livingston to Cinnabar were discontinued. Trains were, however, run once each week until interrupted in January of the present year by severe storms. Subsequently, upon the opening of certain coal mines near Cinnabar, Mont., a tri-weekly service was established, and continued through a large portion of the spring.

During the early part of the winter it had occurred to me as extremely desirable, if possible, to secure some accurate information concerning the winter haunts of the buffalo which were known to be in the Park. I accordingly consulted with my scout, Mr. Edward Wilson, as to the practicability of a snow-shoe trip into the regions where it was believed they would be found. As Mr. Wilson felt confident that such a journey could be successfully made, I secured the willing services of Sergeant Charles Schroeckler, Troop M. First Cavalry, as a companion for Mr. Wilson, and these two men left Camp Sheridan on the 13th of February, 1888, taking with them a pack of provisions and one blanket each. They proceeded the first day to Yancey's Hotel, in Pleasant Valley, and from there struck into the wilderness, scouting the whole length of Specimen Ridge; from there, via Amethyst Mountain, to Pelican Creek; down this stream to the lake; across the lake and down the Yellowstone, via Hayden's Valley, to the Park Association Hotel at the Grand Cañon. After a day's rest at that point, the party returned to this post via Norris, on the 23d of the same month, after an absence of ten days. The hardships of an expedition of this character can only be realized by those who are acquainted with the winter aspect of the mountain solitudes into which these brave and hardy men ventured. The snow at this altitude being very soft and light, the use of sledges, such as are used in Arctic explorations, is impracticable, and the traveler is confined to such quantity of provisions and appliances for comfort as he may find it possible to carry on his person. Snow shoeing through the Park between the different hotels, where comfortable helter can be procured every night, is comparatively easy, but where



rest is forbidden by the absence of warmth and shelter, the difficulties are such as can only be overcome by hardy and resolute men.

In its principal object, that of gaining accurate information concerning the numbers and location of the buffalo in the Park, this expedition was not entirely successful. The herd of buffalo which had passed a portion of the previous winter along Specimen Ridge was not encountered, and the only buffalo found on the trip were three which were seen in Hayden Valley. Valuable information was, however, obtained relative to the winter ranges, habits, and condition of the large game of the Park, so that the results could not be considered inadequate to the toil and labor expended. Immense bands of elk were encountered in every portion of the Park visited, and both men expressed themselves as being loth to make an estimate as to numbers, fearing that they might be suspected of exaggeration. From the testimony of these men and other reliable information, there can be no doubt that many thousands of elk, deer, and mountain sheep winter in the Park every year, and that their numbers are constantly increasing. But few carnivorous animals were encountered on this trip, and the tracks of but two mountain lions were seen on the whole expedition, so that the fears of those who think the game animals may be exterminated by the carnivora may be considered as without present foundation. Early in April it was discovered that a band of buffalo were located in Hayden Valley and along Alum Creek. A second snow shoe trip by Mr. Wilson, accompanied by Mr. Edward Hofer, an enterprising correspondent of the Forest and Stream, was fruitful in result, eliciting the fact that a herd of buffalo numbering at least one hundred had passed the winter on the divide between the waters of the Madison and Yellowstone Rivers and in the adjacent valleys. Numbers of these animals have been seen during the spring along the Fire Hole River and its tributaries, and extended investigations have shown that they range in considerable numbers from Alum Creek, in Hayden Valley, across the divide between the waters of the Yellowstone and Madison Rivers and the Continental Divide to Fall River Basin, in the southwestern part of the Park. From the numbers seen and from the quantity of "sign" observed over an extended area, the number of these animals that range in this portion of the Park can be estimated at not less than two hundred. This conclusion is not in accordance with an opinion expressed in my last report, but it has been reached after careful investigation, and is believed to be correct. The large number of young calves and yearlings which have been seen leads to the belief that a natural increase is in progress, and that if proper protection is afforded the species will not, as has been feared, become extinct.

Early in May last information was received here that the Excelsior Geyser in the Midway Geyser Basin, which had been quiescent since 1882, was again active. This geyser was discovered in eruption on the 30th day of April last by one of the winter keepers of the hotel at the Upper Geyser Basin. It continued to give exhibitions of its power with great regularity at intervals of about 60 minutes until the latter part of July, since which time its periods have been more irregular—a possible premonition of another long period of quiescence. If the accounts of the previous wonderful performances of this geyser can be relied on, its character has somewhat changed in the lapse of years. The duration of its eruptive energy this year has not been observed to exceed 2 minutes, and the height of its column of water has seldom reached 200 feet.

The winter snow-fall through the Park being lighter than usual, it

was possible to travel the roads with vehicles as early as the middle of May; and by the 1st of June, numbers of tourists, probably attracted by the reported activity of the Excelsior Geyser, were daily visiting the Park. Early in June the hotels of the Park Association were put in operation, and by the 15th of that month the season was fairly opened, the volume of travel showing a marked increase over that of the previous year, an increase which has been sustained up to the date of this report.

During the month of April, Capt. Clinton B. Sears, Corps of Engineers, U. S. Army, was relieved of his duties in connection with the construction of roads in the Yellowstone National Park, by Maj. Charles J. Allen, of the same Corps. Major Allen visited the Park during the month of June, but the appropriation for the fiscal year ending June 30, 1888, having been exhausted, and the new appropriation not being available, no work, except necessary repairs, was practicable.

#### FOREST FIRES.

It was stated in my last report that at that date no forest fires of any magnitude had occurred in the Park during the year. It is with gratification that I now add that the forests of the Park have continued to the present time safe from the destructive effects of fire. The immunity from this evil which was enjoyed during the summer of 1887 may be attributed in some degree to the abundant showers which prevailed, but it is believed also that it was in a great measure due to the care and vigilance exercised by the troops charged with the protection of the Park. This care and vigilance will be constantly exercised in the future, but it would be presumptuous to infer that it will always be effective to prevent the occurrence and spread of fires.

#### LEASES AND BUSINESS PERMITS.

The following are the changes which may be noted under this head since my last report:

On the 6th day of December, 1887, your Department approved the sale and assignment of the lease of ground at this place which had been granted to James A. Clark February 17, 1885, as modified by an agreement dated March 4, 1886, to the firm of White, Friant & Letellier, of Grand Rapids, Mich. This firm, subsequently, on the 14th day of June, 1888, executed an agreement, subject to the approval of the Department of the Interior, transferring their rights in this lease to George W. Wakefield, of Bozeman, Mont. This last agreement has not as yet received the approval of your Department, but, pending action in the case, Mr. Wakefield has been permitted to take possession of the property. Mr. George W. Wakefield has also made application to the Department for the lease of certain pieces of ground in the Park, and while awaiting action upon his application has been permitted to continue his transportation business as the agent of the Yellowstone Park Association.

The short-comings and derelictions of Mr. Charles Gibson in matters pertaining to his lease in the National Park, and the unsatisfactory condition of affairs connected with the operations of the Yellowstone Park Association, has been the subject of frequent communications to your Department, and it is probable that no further information from this office is needed to guide intelligent action. But it seems proper that the subject should not be avoided in this report, and I accordingly

present in connected form, and as briefly as possible, the principal features of the case.

On the 9th day of March, 1883, the Department of the Interior granted to Carroll T. Hobart, Henry F. Douglass, and Rufus Hatch, a lease of land in the Yellowstone National Park, in seven different lots, amounting in all to 10 acres. These lessees agreed to build on the piece of ground leased at Mammoth Hot Springs a hotel to cost not less than \$150,000, and at other points covered by their lease such buildings as might be approved by the Secretary of the Interior.

These lessees carried on their business under the title of the Yellowstone Park Improvement Company, Rufus Hatch president, and Carroll T. Hobart vice-president and general manager. A large hotel was built at this place, which may have cost the amount agreed upon, but it was poorly constructed upon a slight and insecure foundation, and the money it cost was badly invested. This hotel, with its out-buildings, which were all located on ground not leased, comprise all of the improvements made by this company in the Park. In the spring of 1885 the Park Improvement Company became insolvent, a receiver was appointed by a court of Wyoming Territory, and the property was subsequently sold. In November, 1884, Mr. Carroll T. Hobart entered into an agreement with one Charles F. Hobart for the construction of a hotel building at the Upper Geyser Basin upon the grounds leased to the Park Improvement Company. A building was erected under this agreement during the spring and summer of 1885, but instead of being placed upon the leased ground of Messrs. Hobart, Douglass & Hatch, was located on the lease of F. Jay Haynes, and, contrary to law, within one-fourth of a mile of Old Faithful Geyser.

On the 20th day of March, 1886, a lease was granted by the Department to Mr. Charles Gibson embracing 7 acres of land in the National Park, located as follows:

No. 1.—At the Mammoth Hot Springs, commencing at a stake about 1,500 feet east from the summit of the Hot Spring Terraces, and from which the flag-pole on the Government headquarters building bears N.  $35^{\circ}$  W. distant 1,860 feet, as calculated. Thence running S.  $14^{\circ} 30'$  E. for a distance of 511 feet; thence S.  $75^{\circ} 30'$  W. for a distance of 170 feet; thence running N.  $14^{\circ} 30'$  W. for a distance of 511 feet; thence running N.  $75^{\circ} 30'$  E. for a distance of 170 feet to the point of beginning, comprising an area of 2 acres more or less.

No. 2.—At Norris Geyser Basin, commencing at the northeast corner of the Government building, and running N.  $67^{\circ}$  E. by the magnetic needle for a distance of 425 feet to the point of beginning; thence running N.  $37^{\circ} 30'$  W. for a distance of 164 feet to a stake; thence running N.  $52^{\circ} 30'$  E. for a distance of 208 feet to a stake; thence running south  $37^{\circ} 30'$  E. for a distance of 208 feet to a stake; thence running S.  $52^{\circ} 30'$  W. for a distance of 208 feet to a stake; thence running N.  $37^{\circ} 30'$  W. for a distance of 44 feet to the point of beginning and comprising an area of 1 acre more or less.

No. 3.—At Grand Cañon of the Yellowstone Falls, commencing at Point Lookout and running due north by the magnetic needle a distance of 1,400 feet; thence due west a distance of 600 feet; thence due south a distance of 160 feet; thence S.  $53^{\circ} 45'$  W. a distance of 511 feet; thence N.  $81^{\circ}$  W. a distance of  $315\frac{1}{2}$  feet to point of beginning; thence running N.  $7^{\circ}$  W. a distance of 170 feet; thence running S.  $83^{\circ}$  W. a distance of 511 feet; thence running S.  $7^{\circ}$  E. a distance of 170 feet; thence running N.  $83^{\circ}$  E. a distance of 511 feet to the point of beginning, comprising an area of 2 acres, more or less.

No. 4.—And 2 acres at the Yellowstone Lake, to be definitely located hereafter as may be agreed upon by the parties hereto. The lessee shall cause the site agreed upon to be accurately surveyed and marked, and submit for the approval of the lessor a plat and description of the same, together with plans of the building to be erected thereon, it being understood that this lease, so far as it relates to the site at the Yellowstone Lake, shall not take effect in law or equity until such site has been definitely located and the plans of buildings approved as above provided.

After this lease was granted it appears that a joint stock company was organized, under the style of the "Yellowstone Park Association,"



to carry on the business of hotel-keeping under the privileges granted by Mr. Gibson's lease. The records of this office afford no information as to who the stockholders of this company are, further than that Charles Gibson is president and L. R. Casey vice-president of the association. It is understood, however, that a majority of the stockholders are gentlemen connected with the Northern Pacific Railroad, and the intimate business relations existing between the two companies lends color to this belief.

Article 2 of Mr. Gibson's lease provides that—

The lessee shall erect on each of the said sites a hotel of such character and dimensions, as will adequately and properly accommodate all visitors to the Park, and will from time to time increase the same as the travel increases, upon plans and descriptions which shall have been approved by the Secretary of the Interior, and the buildings thereon, except the one at Mammoth Hot Springs, shall be finished by October 1, 1886. The buildings at Mammoth Hot Springs to be finished by the first day of January, 1887. In addition thereto the lessee shall pay annually to the Secretary of the Interior, at his office in Washington, \$500 per annum as rent for said premises, payable on the first day of January of each year at the Department of the Interior.

The Yellowstone Park Association appear to have begun operations with great vigor in the spring of 1886. The construction of a substantial hotel building at the Norris Geyser Basin was undertaken and carried well on to completion during the summer. A large quantity of material was also accumulated at that point to be used in the construction of a hotel at the Grand Cañon of the Yellowstone. The Park Association also, through an agreement with the Northern Pacific Railroad, came into possession of the hotel at this place which had been built by the Park Improvement Company and which was purchased by the Northern Pacific Railroad when that company had become insolvent. The Association also acquired by purchase or bargain the hotel at the Upper Geyser Basin which had been erected the year previous by C. F. Hobart, and the establishment at the Lower Geyser Basin, known as Marshal's Hotel. This establishment was located upon a lease granted by the Department to George W. Marshal, January 29, 1884.

Upon the urgent solicitation of Mr. Gibson authority was granted by the Department May 25, 1886, for the erection of a temporary hotel building at the Grand Cañon, with the understanding that work upon the permanent hotel at that place should be continued as fast as possible, and that the temporary building should be removed before the 1st day of August following.

Before the hotel building at Norris was constructed permission for a change of site at that place was granted by the Department, subject to approval upon formal application by the lessee with description of the new site selected. There is no record in this office that such application has ever been made. The hotel at Norris, which was the only building in the Park constructed in conformity with the obligations of Mr. Gibson's lease, was destroyed by fire, as previously reported, July 14, 1887.

A temporary structure was erected at that place near the site of the former hotel by my permission, subject to your approval, such a course being deemed necessary to prevent the inconvenience and discomfort to visitors which must have resulted from the absence of shelter at that point. This temporary structure is still in use as a hotel.

Mr. Charles Gibson has failed completely to comply with the obligations of his agreement to build on the sites leased to him hotels of such character and dimensions as will adequately and properly accommodate all visitors to the Park, upon plans approved by the Secretary of the Interior. He has failed to build any hotels at the Mammoth Hot Springs, at the Grand Cañon of the Yellowstone, or at the Yellowstone



Lake, and there is no present indication that he or the parties to whom he has, without authority, transferred his privileges in the Park intend to erect the required buildings. But Mr. Gibson has made use of his lease to gain a foot-hold in the Park for a company which has no recognition by your Department, and which has, by unauthorized methods, obtained possession of cheap and unsuitable buildings at different points in the Park, some of them badly located with reference to the convenience of visitors, in which it is now carrying on the business of hotel keeping without any direct sanction or authority from the Department of the Interior.

To correct this unsatisfactory condition of affairs I have the honor to recommend that the sixty days' notice provided for by article 10 of Charles Gibson's lease be given without delay, and that at the expiration of that period the lease be declared forfeited; that the parties who have gained possession of buildings in the Park without proper authority be required to either vacate the same or to take out proper leases, with the sites properly surveyed, plotted, and described, under a proper guaranty that the unsuitable and unsightly buildings shall be replaced by suitable buildings constructed on approved plans, by a fixed date to be agreed upon.

The permission granted by the Department to James E. Stuart, artist, July 26, 1887, to exhibit and offer for sale, at the Mammoth Hot Springs Hotel, paintings in oil and water colors of the geysers, cañons, and other curiosities of the National Park, has not been taken advantage of during the present season. Louis C. Pettitt, M. D., has also failed to avail himself of the privilege of practicing medicine in the Park.

On the 14th of March last permission was granted to Mrs. M. A. Baronett, postmistress at Mammoth Hot Springs, to keep for sale to tourists and others, during her term of office, or at the pleasure of the Secretary of the Interior, photographic views, stationery, and other small articles, subject to the approval of the Acting Superintendent of the Park. Mrs. Baronett has procured a stock of the class of goods indicated and has to the present time conducted her business in a satisfactory manner.

#### TRESPASSERS IN THE PARK.

In my last report I called attention to the fact that a toll bridge across the Yellowstone River, known as Baronett's Bridge, was operated in the Park without the authority of the Department, and included in my estimate of appropriations an amount which was deemed sufficient to extinguish the claim to that property. I again invite your attention to the importance of causing the removal of this obstruction to free travel in the National Park, and have again placed in my estimate a sufficient amount to accomplish that object. I also reported in detail the circumstances connected with the trespass of J. C. McCartney, who has located within the northern border of the Park contrary to law. This case has been presented for the consideration and action of your Department upon various occasions and still calls for your attention.

No trespass within the Park has occurred during the past year.

#### HOTEL ACCOMMODATIONS.

But little change has been made in the character of the hotel accommodations in the Park since my last report. The project of lighting

the hotel of the Park Association at this place by electricity was not carried out, the work being abandoned after the wires and lamps had been placed in the building. This is to be regretted, as danger from fire in a wooden building of such dimensions, lighted by kerosene oil, is always imminent.

The two hotels at this place, that of the Park Association and the Cottage Hotel, conducted by the lessees, Helen L. and Walter J. Henderson, afford ample and excellent accommodations for all visitors. All of the hotels in the Park south of the Mammoth Hot Springs, except that of Mr. Yancey's, at Pleasant Valley, are managed by the Yellowstone Park Association. The buildings are all of a temporary character, of cheap and poor construction, and a shame and discredit to the National Park. The accommodations they afford are entirely inadequate to the demands of travel, and are a cause of frequent and bitter complaint by patrons who, while paying first-class hotel rates, are crowded into cold and leaky buildings, totally devoid of all appliances for comfort.

The building at the Norris Geyser Basin is a long and narrow one-story building built of 1 inch pine boards. It has some twenty small sleeping-rooms, is cold and open, with no appliance for heating beyond a sheet iron stove in the common hall.

At the Grand Cañon there is a similar structure, heated in the same manner, but the roof, which is of some patent material, is leaky. The building is located in thick timber where the sun seldom penetrates, and is always cold and damp. Visitors who pass the night at this place are fortunate if they escape sickness from severe colds.

At the Lower Geyser Basin the old Marshal Hotel, a two-story log building, has been supplemented by two cheap wooden structures, two stories high and each divided into four rooms on each floor by partitions at right angles, the staircases being on the outside of the building. The partitions, both in the main building and the "cottages," are so thin as to afford but little privacy for guests. It is believed that all of the buildings at this place have been erected without the approval of the Department.

The building at the Upper Geyser Basin was pronounced by Mr. Charles Gibson, in a letter to the Department dated August 2, 1887, "a cheat from beginning to end." He also states in the same letter that "the architects and carpenters condemned it as unsafe and liable to fall down," but that "it was made tenantable by props and braces." In my opinion the building is still in an unsafe condition, and its faults of construction are such as to render it improbable that they can be remedied without the demolition of the building.

The increase of travel to the Park this season beyond that of previous years indicates that the number of visitors will become larger year by year, as the advantages of its climate, the curative properties of its thermal springs, and its many beauties and wonders are made known.

The necessity of providing suitable and adequate accommodations in the Park for all conditions of people is daily becoming more pressing, and I urgently request your early consideration of this important subject. I stated in my last report that the hotels of the Park Association were well conducted, that the service was excellent, the food well cooked, and the beds clean. The management during the present season has continued excellent, but the character of the buildings has rendered it impossible to provide properly for the comfort of the numerous visitors.

## TRANSPORTATION.

The only change in the transportation facilities of the Park during the past year has been the withdrawal of James A. Clark from the business through the transfer of his lease, as heretofore reported. Ample facilities of excellent character are furnished at Mammoth Hot Springs by the Park Association, through its agent, Mr. George W. Wakefield, and by the Cottage Hotel under the management of Mr. G. L. Henderson. The daily trains of the Northern Pacific Railroad have this season left Livingston at 8.30 a. m. and arrived at Cinnabar at 11 a. m. The passengers have there been met by comfortable carriages from the hotels arriving at this place about 1 p. m., a much better arrangement than that of last year, when the travelers did not reach the hotels until late in the evening. Passengers of the Union Pacific and Utah Northern Railroad reach the Park at the Lower Geyser Basin, after a stage ride of two days, at which point the transportation facilities afforded by the Park Association become available.

Mr. Edward Hofer, under the authority of the Department of the Interior, furnishes at this place outfits and reliable guides for camping parties. I append to this report (marked E) a schedule of rates submitted by Mr. Hofer for the approval of the Department.

During the past year no complaints of extortionate or unjust charges by any of the transportation managers have been made. The drivers and other employes have been attentive to their duties, civil and courteous in their intercourse with visitors, and no accidents have occurred which could be attributed to their unskillfulness or want of attention.

## ROADS.

During the past year a new road has been built from the hotel at the Norris Geyser Basin across the Gibbon Meadows, connecting with the graded road at the entrance of Gibbon Cañon, a distance of about 5 miles. The graded road from the vicinity of the Obsidian Cliffs has been extended north about 7 miles, and the position of the road from Norris to the Grand Cañon, which was left incomplected in the fall of 1886, has been finished to within a short distance of the present Falls Road. In order to complete the connection between the present system of hotels by suitable and substantially built roads, there remains to be constructed about 10 miles of road from the head of Gibbon Cañon to the Lower Geyser Basin, about 2 miles from Swan Lake to Indian Creek, and about 2 miles in the vicinity of the Grand Cañon.

It was expected last year that this work would have been carried to completion during the present season, but no appropriation has been available.

The lateness of the season and the uncertainty attending the action of Congress afford but little encouragement to expect much effective work this summer.

The estimates and reports relating to the roads of the Park are made by the engineer officer charged with this work, to the chief of his corps; and in this report I have only designed to note for your information the result of my personal observations. I will venture, however, to suggest that as work on the roads of the Park can only be carried on with economy during about four months of the year, it would seem desirable that a definite scheme of road construction should be decided upon and a sufficient appropriation made to carry the work to completion.

## THE BOUNDARIES OF THE PARK.

Among the many needs and wants of the Park no more important or pressing necessity exists than that of an official and accurate survey of its boundaries.

The act setting aside and dedicating the National Park described the area reserved in loose and indefinite language, and made no provision for a survey of its lines.

I am informed that a bill is now pending in Congress which provides for a change and enlargement in the area of the Park, and a survey of its boundaries, but nevertheless, in view of the importance of the subject, I have deemed it proper to include in my estimate of appropriations a sufficient sum for a survey of its present limits, and for which I ask your approval.

## THE PROTECTION OF THE PARK.

In my last report I expressed the opinion that the force then at my disposal was inadequate to the proper protection of the Park during the tourist season. I accordingly, at the opening of the present season, made application to the commanding general of the Department of Dakota for an additional force of one commissioned officer and fifteen enlisted men, for duty in the Park until the 1st of October next.

With the approval of the Secretary of War, my application was favorably considered. The detachment, under the command of Second Lieut. T. M. Moody, Twenty-second Infantry, arrived at Camp Sheridan on the 22d of last month, and was immediately ordered on duty in the vicinity of the Lower and Upper Geyser Basins. This additional force gives much needed protection to various objects of interest that were previously unguarded, and the presence of a commissioned officer in this portion of the Park, before whom all complaints and controversies can be taken, will greatly facilitate the enforcement of the established rules and regulations.

During the season of travel detachments from my command cover every portion of the Park accessible to wheeled vehicles, and constant scouting operations are conducted into the more remote regions. The rules of the Park have been generally observed, and good order and a respect for the rights of property have prevailed. All obnoxious and disorderly characters have been rigorously excluded from the Park, and by this means the necessity for violent arrests has been avoided.

As stated elsewhere in this report, the volume of travel during the present season indicates a steady increase from year to year. As the number of visitors becomes larger, and new points are rendered accessible to tourist visitors by the extension of the system of roads, a much larger force than that at present employed will be required to render efficient protection. The present arrangement, however effective it may be as a temporary expedient, can not be considered as a settlement of the difficult question of Park government, or in any way to obviate the necessity of wise and well-considered legislation on this subject.

Frequent reference having been made to the rules and regulations of the Park, I append, in connection with this subject, a copy of the same to this report (marked F).

## THE GAME AND ITS PROTECTION.

This subject having been dwelt upon elsewhere in this report, but little remains to be added here. During the past two years, in which



the Park has been intrusted to the care of the troops under my command, but little game has been killed within its limits.

It is also believed that the protection afforded in the previous year, under the administration of my predecessor, was reasonably effective. It would seem, therefore, that at this date the results of this protection should be visible through a natural increase in the numbers of game animals in the Park. The fact of such an increase is, I believe, well established by the testimony of well informed and disinterested parties, who have visited the portions of the Park remote from the ordinary lines of travel, and by the observation of the many scouting parties from my command.

Certainly, in the absence of any barriers, the elk and the deer will not be confined to the Park, and any increase will doubtless, to some extent, overflow into the surrounding country. But as long as a secure refuge and breeding place is afforded by this reservation, and the Territorial laws restricting the killing of game to certain seasons, and by sportsmanlike methods are observed, there will be but little danger of a total extinction of the species. The buffalo or bison have so narrowly escaped extinction, and the number which now find a refuge in this Park is so limited, that they should be protected by every possible method. Hunters, stimulated by the high prices offered by taxidermists for specimens, are now lying in wait beyond the borders of the Park ready to pounce upon any unfortunate animal which may stray beyond its limits.

It is unfortunate that the legislative bodies of the surrounding Territories have not as yet provided laws for the absolute protection, at all seasons, for this now nearly extinct species.

#### THE GEYSER AND HOT SPRINGS.

There has been apparently considerable decrease of activity in most of the geysers in the Upper Basin during the present year. Old Faithful still maintains its reputation for regularity, but nearly all of the other large geysers have increased the length of their periods of inaction. It has been surmised that the activity of the Excelsior Geyser has had the effect of decreasing the energy of action in this adjacent basin, but long continued scientific investigation can alone determine whether such a speculation has any value.

Constant and unremitting care has been exercised to prevent the defacement of the beautiful geyser formations by the foolish and shallow-minded visitors who delight to publish their ignorance and want of appreciation of the beautiful by writing thereon their names and places of residence. This practice has been quite effectually checked, and it is hoped that the additional precaution recently adopted will serve to entirely suppress it.

#### THE CARE AND PRESERVATION OF THE PARK.

In my last report I requested in strenuous and urgent terms the appropriation of a small sum to be used by the acting superintendent of the Park in providing sign boards to warn the numerous visitors of dangerous places, to display the names of the different geysers and other objects of interest, to clean up and dispose of the débris of abandoned camps, and generally to keep in order and in a decent condition this large reservation, which has been by law declared "a pleasuring ground for the benefit and enjoyment of the people."

No other public pleasuring ground, of ever so humble a character, is maintained without the expenditure of a dollar for decency's sake. Eminent men from all parts of the civilized world, scholars, law makers, divines, and soldiers come here, attracted by the fame of this land of wonders, and by the invitation implied in its dedication as a National Park, to have their senses offended and their enjoyment of nature's most wonderful and beautiful gifts destroyed by the presence of unsightly filth and rubbish.

I again include in my estimate of appropriations a modest sum for this purpose and again appeal to you for your favorable indorsement and recommendation.

#### APPROPRIATIONS.

I inclose with this report my estimate of appropriations for the improvement and preservation of the Yellowstone National Park for the fiscal year ending June 30, 1890, and here summarize the items as follows, viz:

For the care and preservation of the Park and the protection of visitors from danger.....	\$3,000
For the settlement of the Barronett Bridge claim, or so much thereof as may be awarded by a duly constituted commission .....	2,000
For accurately surveying and marking the boundary lines of the Park.....	10,000
Total.....	15,000

In closing this report, it again gives me pleasure to acknowledge, with thanks, and to commend to your appreciation, the services rendered in the protection of this National Park by Mr. Ed. Wilson, scout and guide, whose energy and interest has been untiring; and by the officers and enlisted men of my command, who have discharged their duties with interest and zeal, and who have accepted cheerfully the discomforts and deprivations of an isolated and dreary station.

I am, sir, very respectfully, your obedient servant,

MOSES HARRIS.

*Captain First Cavalry,*

*Acting Superintendent Yellowstone National Park.*

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

## APPENDIX A.

DEPARTMENT OF THE INTERIOR,  
OFFICE OF SUPERINTENDENT YELLOWSTONE NATIONAL PARK,  
*Mammoth Hot Springs Wyo., October 7, 1887.*

SIR: I have the honor to report that on the 2d instant a scouting party from my command arrested one Frank A. Chatfield near the western shore of Heart Lake for killing an elk at that place, which is within the Park. The hunter had killed the animal—a bull elk—and after taking the scalp or skin of the head and neck, which is used for taxidermist purposes, had abandoned the remainder of the carcass.

The shots fired at the animal were heard by the scouting party, and the hunter was found near the carcass with the freshly removed scalp tied to his saddle. Upon examination Chatfield admitted that he killed the elk, but alleged that he thought he was outside the limits of the Park. This defense was without weight, as a few days previously he had been shown a map of the Park in my office, and had had carefully pointed out and explained to him the boundaries of the Park with special reference to the locality of Heart Lake.

I accordingly took possession of his hunting outfit, and yesterday, the 6th instant, caused him to be summarily expelled from the Park.

The articles found in his possession, which I hold subject to your instructions, are as follows, viz:

- One horse (pony).
- One saddle and bridle.
- One Ballard rifle, caliber .50.
- One field-glass (U. S. Signal Service).
- Two steel traps (No. 4 Newhouse).
- One belt of ammunition, with knife and steel.

I am, sir, very respectfully, your obedient servant,

MOSES HARRIS,  
*Captain First Cavalry, Acting Superintendent.*

Hon. H. L. MULBROW,  
*Acting Secretary of the Interior.*

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## APPENDIX B.

DEPARTMENT OF THE INTERIOR,  
OFFICE OF SUPERINTENDENT YELLOWSTONE NATIONAL PARK,  
*Mammoth Hot Springs, Wyo., November 7, 1887.*

SIR: In pursuing the investigation for the detection of the persons who robbed the stage in the National Park on the 4th day of last July, suspicion was finally attracted to William James, the man who was expelled from the Park in April last for violating the rules.

It was stated that a foreign coin had been seen in his possession, the description of which corresponded with that of a pocket-piece taken from one of the passengers when the stage was robbed. Two men were found who stated that James had boasted in their presence that he was one of the parties who had robbed the stage. The robbery having been committed within the territorial limits of Montana I, on the 12th of October, addressed a communication to the United States attorney for Montana, giving him all the information in my possession relative to the affair, and requesting him to take prompt action looking to the arrest and examination of the suspected persons, who, together with the witnesses against them, were at that time in the Madison Valley just beyond the Park limits, but in the Territory of Montana.

I, at the same time, instructed my scouting parties to be vigilant to discover and arrest James if found within the Park. No reply was received to my communication and no action was taken by the civil authorities in the matter.

Mr. G. W. Wakefield, the owner of the stage which was robbed, and who had a transportation contract with Mr. Charles Gibson, endeavored to induce action by the civil authorities of Montana, but without success, the reply being made, "that as the crime was committed in the National Park, the officers of the Territory have no jurisdiction."

On the 21st day of October James was arrested within the Park limits by a sergeant of my troop, and was brought to this place on the 23d ultimo. On the same day two citizens, H. C. Henkley and Frank Moor, came before me and made statements to the effect that James had stated to them that he was one of the men who had robbed the stage, relating to them minutely the circumstances of the affair. He also showed them a piece of gold money of French coinage of the time of Napoleon I, and bearing date of 1811. The description of the piece agreed with the description of a piece of money taken from one of the passengers, Mr. John F. Lacy, of Oskaloosa, La., and described by him to me on the night of the robbery, and the circumstances of the robbery, as stated, agreed in all essential particulars with the facts as narrated by the passengers at the time of the robbery.

I accordingly placed James in confinement, and again wrote to Hon. Robert B. Smith, United States attorney, informing him that I held James subject to his requisition and requesting him to take prompt action in the case. On the 27th ultimo, having received no reply, I made a full statement of the case to the governor of Montana and requested that I be informed what action, if any, would be taken by the authorities of Montana.

In the evening of the same day I received a telegram from the United States attorney requesting me to keep James until an officer could be sent for him.

James was accordingly held in custody until this morning, when he was taken into the portion of the Park which lies within the territorial limits of Montana and there turned over to a deputy United States marshal, who served upon him a warrant duly issued by the commissioner of the district court of Montana for the third judicial district.

While James was in confinement at this place he made a full admission of his participation in the robbery to Mr. G. W. Wakefield, and gave the name of his principal confederate, one Higginbottom, formerly employed as a stage-driver by Mr. Wakefield, who has also been arrested and held for trial.

It would seem that there is now reason to believe that these offenders will be convicted and punished.

I am, sir, very respectfully, your obedient servant,

MOSES HARRIS,  
*Captain First Cavalry, Acting Superintendent.*

Hon. H. L. MULDROW,  
*Acting Secretary of the Interior.*

## APPENDIX C.

DEPARTMENT OF THE INTERIOR,  
OFFICE SUPERINTENDENT YELLOWSTONE NATIONAL PARK,  
*Mammoth Hot Springs, Wyo., December 9, 1887.*

SIR: Referring to the subject of my letter of November 7 last, I have now the honor to inform you that William James and one Higginbottom were indicted by the United States grand jury, which sat at Bozeman, Mont., for highway robbery in stopping the stage in the National Park on the 4th of July last, were brought to trial in the district court of Montana for the third judicial district, were permitted to plead guilty to a charge of larceny, and were sentenced to one year's imprisonment in the penitentiary and fined \$1,000 each.

I am, sir, very respectfully, your obedient servant,

MOSES HARRIS,  
*Captain First Cavalry, Acting Superintendent Yellowstone National Park.*

Hon. H. L. MULDROW,  
*Acting Secretary of the Interior.*



## APPENDIX D.

*Meteorological record kept at Mammoth Hot Springs, Wyo., Yellowstone National Park, from August 1, 1887, to July 31, 1888.*

AUGUST, 1887.

Dates.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Aug. 1	79	50	64.50	N.E.	Light breeze..	Cloudy .....	Light rain; thunder-storm.
2	85	46	65.50	N.W.	Calm .....	Fair .....	Rain and thunder-storm.
3	86	39	62.50	S.W.	Gentle breeze.	Cloudy .....	
4	69	38	53.50	N.W.	do .....	Fair .....	
5	84	41	62.50	W.	Light breeze..	Clear .....	
6	82	43	62.50	S.W.	do .....	Fair .....	
7	77	42	59.50	N.W.	Fresh breeze..	Cloudy .....	Do.
8	76	43	59.50	N.W.	High wind .....	do .....	Do.
9	84	39	61.50	S.	Strong wind..	Fair .....	3.10 p. m., wind changed from S. strong wind to N.W. gale.
10	87	40	63.50	S.W.	Gentle breeze	Clear .....	
11	85	38	61.50	S.E.	Light breeze..	do .....	
12	85	52	68.50	N.W.	High wind...	Fair .....	Thunder-storm; heavy rain; 7.05 p. m., strong northwesterly gale.
13	78	38	58	S.	Fresh breeze..	Clear .....	
14	81	40	60.50	W.	Gentle breeze	Fair .....	
15	82	48	65	N.W.	Fresh breeze..	do .....	Thunder-storm passed at a distance.
16	84	43	63.50	S.W.	Light breeze..	Clear .....	
17	86	43	64.50	W.	do .....	Fair .....	From 1.10 to 1.25 p. m., hail; thunder-storm.
18	90	44	67	N.W.	Fresh breeze..	Clear .....	
19	91	44	67.50	S.W.	Calm .....	Entire clear..	
20	86	47	66.50	E.	do .....	Clear .....	Sprinkling; between 11 and 12, thunder.
21	75	44	59.50	N.W.	Strong wind..	Fair .....	
22	73	44	58.50	E.	Fresh breeze..	Cloudy .....	
23	64	47	55.50	N.W.	High wind...	do .....	Light rain; 10 p. m., distinct peals of thunder at a distance.
24	58	44	51	W.	do .....	Fair .....	Rain.
25	75	38	56.50	N.E.	Light breeze..	Clear .....	Sprinkling in the forenoon; rain and hail between 3 and 4 o'clock p. m.; thunder at a distance.
26	76	39	57.50	N.W.	Calm .....	Clear .....	
27	83	41	62	S.W.	do .....	do .....	
28	84	48	66	S.W.	Gentle breeze.	Entire clear..	
29	82	49	65.50	W.	do .....	Cloudy .....	Rain in the afternoon; rain and thunder-storm during night.
30	71	40	55.50	N.W.	Light breeze..	Fair .....	Heavy rain and hail from 5 to 6.40 p. m.
31	59	37	48	W.	Very l't breeze	do .....	Rain at night.
Monthly mean..			61.06				

*Summary for August, 1887.*

Thunder-storms: 1st, passed at a distance; 2d, between 4.50 and 5.40 p. m., accompanied by heavy rain, strong N.W. winds; temperature at 4.50, 75°—at the end of the storm, 5.40 p. m., 49°; 7th, temperature fell during storm from 75° at 12.10 p. m. to 54° at 12.55 p. m.; 8th, passed at a distance from S.W. in S.E. direction; numerous lightning; 12th, heavy rain during storm; no considerable fluctuation of thermometers; 17th, accompanied by hail; temperature fell from 84° to 61° between 1.10 and 1.50 p. m.; 20th, thunder at a distance; temperature fell from 82° to 62° between 11 and 12 a. m.; raised again after 12; 28th, during night.

Temperature during the month:

Highest.....	degrees..	91
Lowest.....	do.....	37
Mean.....	do.....	58.33
Average cloudiness.....		3.8

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

SEPTEMBER, 1887.

Dates.	Self registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Sept. 1	58	30	44	SW.	Gentle breeze.	Cloudy .....	Hail, rain, and thunder-storm.
2	64	37	50.50	S.	Fresh breeze..	do .....	
3	79	40	59.50	S.	do .....	Clear .....	
4	76	44	60	S.	do .....	Fair .....	Rain during night.
5	84	42	63	SW.	Calm .....	Entire clear..	
6	86	39	62.50	SW.	Fresh breeze..	do .....	
7	88	42	65	NW.	High wind....	Fair .....	Rain and thunder-storm during night.
8	72	46	59	SE.	do .....	do .....	Light rain between 1 and 2 p. m.
9	68	40	54	W.	Calm .....	do .....	
10	76	35	55.50	S.	Light breeze..	Clear .....	
11	76	42	59	NW.	High wind....	Fair .....	Rain turned into snow-fall during night.
12	42	32	37	S.	do .....	Entire cloudy.	Light snow; melted as it fell after 7 a. m.
13	56	30	43	SW.	Gentle breeze.	Cloudy .....	
14	76	42	59	SW.	do .....	Clear .....	
15	76	38	57	S.	Fresh breeze..	Entire clear..	
16	79	43	61	SW.	do .....	Clear .....	
17	78	42	60	S.	do .....	Fair .....	
18	72	43	57.50	S.	High wind....	do .....	
19	65	48	56.50	S.	Strong wind..	Clear .....	
20	76	29	52.50	S.	Light breeze..	do .....	
21	75	34	54.50	SW.	High wind....	do .....	
22	79	30	54.50	SW.	Calm .....	Entire clear..	
23	63	40	51.50	S.	Gentle breeze.	Fair .....	Rain and hail from 1 to 5 p. m.
24	76	40	58	S.	Fresh breeze..	Clear .....	Sprinkling from 3.10 to 3.40.
25	77	43	60	W.	Calm .....	do .....	Thunder at a distance; double rainbow.
26	69	34	51.50	SW.	do .....	Clear .....	
27	82	33	57.50	S.	Gentle breeze.	do .....	
28	85	37	61	SW.	Calm .....	do .....	
29	85	40	62.50	SE.	Light breeze..	do .....	
30	73	45	59	S.	High wind....	Entire cloudy.	
Monthly mean.			56.18				

*Summary for September, 1887.*

Thunder storms, dates of: 1st, 7th, 24th.	Double rainbow on the 25th.	
Average cloudiness (scale of ten) .....		3.49
Number of days on which cloudiness averaged 8 or more on scale of ten .....		2
Number of days of rain .....		7
Number of days of hail .....		1
Number of days of snow .....		1
Temperature during the month:		
Highest .....	degrees..	88
Lowest .....	do .....	29
Mean .....	do .....	53.05

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

OCTOBER, 1887.

Dates.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Oct. 1	70	44	55	NW.	High wind ..	Fair .....	Rain.
2	68	24	46	SE.	Light breeze..	Clear .....	
3	73	36	54.50	S.	Gentle breeze..	do .....	
4	78	45	61.50	SW.	High wind...	Cloudy .....	
5	70	47	58.50	SW.	Calm .....	Fair .....	
6	53	28	70.50	SW.	Fresh breeze..	Entire cloudy.	Rain. Snow in the afternoon; melted as it fell.
7	35	25	30	NW.	High wind...	Fair .....	
8	49	12	30.50	NW.	Fresh breeze..	Entire clear ..	
9	52	24	38	NW.	Strong wind ..	Cloudy .....	Snow; sleet from 11 to 11.45 a. m.
10	53	25	39	NW.	Gentle breeze..	Clear .....	
11	74	27	50.50	SW.	do .....	Entire clear ..	
12	73	28	50.50	SE.	Calm .....	do .....	
13	72	26	49	SE.	Very light breeze.	do .....	
14	70	33	51.50	SW.	Strong wind ..	Fair .....	
15	44	31	37.50	NW.	Fresh breeze..	Cloudy .....	Snow.
16	55	20	37.50	SW.	do .....	Fair .....	
17	53	28	40.50	SE.	Calm .....	do .....	
18	52	28	40	SW.	Strong wind ..	Clear .....	Snow at night.
19	46	30	38	NW.	Gentle breeze..	Cloudy .....	
20	57	18	37.50	SW.	Light breeze..	do .....	
21	50	37	43.50	SW.	do .....	Fair .....	
22	42	25	33.50	NW.	Gentle breeze..	do .....	Snow from 8.45 to 10.30 a. m.
23	29	5	17	NW.	do .....	Entire cloudy.	
24	33	-20	6.50	NW.	do .....	Cloudy .....	
25	41	7	24	NW.	Light breeze..	Clear .....	
26	40	16	28	SW.	Gentle breeze..	do .....	
27	57	32	41.50	SW.	Light breeze..	do .....	
28	69	34	51.50	SE.	Calm .....	Fair .....	
29	67	31	49	SE.	do .....	Clear .....	
30	73	31	52	S.	do .....	do .....	
31	71	31	51	S.	Gentle breeze..	do .....	
Monthly mean..	41.40						

*Summary for October, 1887.*

Average cloudiness (scale of ten) .....	4.28
Number of days on which cloudiness averaged 8 or more on scale of ten .....	5
Number of days of rain .....	2
Number of days of sleet .....	1
Number of days of snow .....	6
Depth of snow-fall during the month .....	2 inches.
Temperature during the month:	
Highest .....	74 degrees..
Lowest .....	do .....
Mean .....	39.1 do...

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

NOVEMBER, 1887.

Date.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Nov. 1	68	28	48	S.	Light breeze..	Clear .....	
2	67	29	48	SW.	Gentle breeze..	...do .....	
3	65	25	45	NW.	Very light breeze.	Entire clear ..	
4	64	26	45	SE.	Fresh breeze .	Clear .....	
5	61	33	47	SW.	High wind ...	Fair .....	
6	55	31	43	SW.	Gentle breeze	...do .....	7-9 a. m.; light snow-fall.
7	52	21	36.50	NW.	Very light breeze.	Clear .....	
8	36	26	31	SE.	...do .....	Fair .....	
9	53	28	40.50	SW.	Gentle breeze.	...do .....	
10	59	33	46	S.	Light breeze..	Clear .....	
11	64	30	47	SW.	Strong wind ...	...do .....	
12	60	30	45	NW.	...do .....	Cloudy .....	
13	55	29	42	SW.	High wind....	Clear .....	
14	52	34	43	SE.	...do .....	...do .....	
15	44	29	36.50	SW.	Gentle breeze	Cloudy .....	Snow melted as it fell.
16	48	19	31	SW.	Calm .....	Clear .....	
17	44	8	26	SE.	Light breeze..	...do .....	
18	45	23	34	W.	Fresh breeze..	Fair .....	
19	56	26	41	SW.	Calm .....	...do .....	
20	47	23	35	S.	Light breeze..	Cloudy .....	
21	45	22	33.50	SE.	Fresh breeze..	Entire cloudy.	Light snow-fall; ground covered.
22	27	0	13.50	SE.	Calm .....	Fair .....	
23	41	— 3	19	SW.	...do .....	...do .....	
24	44	6	25	NE.	...do .....	...do .....	
25	26	— 2	12	W.	...do .....	...do .....	Light snow at night.
26	24	—19	2.50	SE.	Very light breeze.	Clear .....	
27	20	— 4	8	SE.	Fresh breeze..	Entire cloudy.	Snow in the forenoon.
28	38	11	24.50	S.	Calm .....	Fair .....	
29	48	18	33	SW.	Light breeze..	...do .....	
30	34	18	26	SE.	Gentle breeze	...do .....	Do.
Monthly mean ..			33.58				

*Summary for November, 1887.*

Average cloudiness (scale of ten) .....	4.01
Number of days on which cloudiness averaged 8 or more (scale of ten) .....	2
Number of days of snow .....	6
Depth of snow-fall during the month "inappreciable."	
Temperature during the month:	
Highest .....	degrees.. 68
Lowest .....	do... —19
Mean .....	do... 31.05



*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

DECEMBER, 1887.

Date.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1887.	°	°	°				
Dec. 1	31	14	22.50	SW.	Light breeze..	Entire cloudy.	Snow.
2	30	20	25	S.	Calm .....	do .....	Do.
3	41	16	28.50	SW.	do .....	Fair .....	
4	23	15	19	SE.	Fresh breeze..	Cloudy .....	Do.
5	31	22	26.50	S.	High wind ..	do .....	Do.
6	27	21	24	S.	Strong wind ..	Entire cloudy.	Do.
7	39	26	32.50	S.	Fresh breeze..	Fair .....	
8	42	25	33.50	SE.	Light breeze..	do .....	Snow during night.
9	33	24	28.50	S.	Strong wind ..	Cloudy .....	
10	46	16	31	W.	Light breeze..	Clear .....	Light snow-fall 2 to 6 p. m.
11	26	20	23	SE.	Gale .....	Entire cloudy.	Snow.
12	34	18	26	SE.	Very light breeze.	Fair .....	Do.
13	34	6	20	SE.	Calm .....	Clear .....	
14	26	0	13	E.	Light breeze..	do .....	
15	43	6	24.50	S.	do .....	do .....	
16	30	12	21	SW.	Calm .....	Fair .....	
17	30	17	23.50	S.	Light breeze..	Cloudy .....	Do.
18	29	18	23.50	W.	Calm .....	Fair .....	Snow in the forenoon.
19	20	2	9	NW.	Light breeze..	do .....	Snow.
20	17	8	4.50	NW.	Gale .....	Clear .....	
21	10	-16	-3	E.	Light breeze..	Cloudy .....	Do.
22	35	9	22	SE.	Calm .....	Clear .....	
23	32	5	18.50	SE.	Light breeze..	Fair .....	
24	21	10	15.50	S.	Gentle breeze	do .....	Snow in the forenoon.
25	29	11	20	SW.	Fresh breeze..	Cloudy .....	Snow.
26	30	8	19	S.	Calm .....	Fair .....	Snow, ended 2.30 p. m.
27	26	-1	12.50	SE.	Light breeze..	do .....	
28	42	13	27.50	SE.	Fresh breeze..	do .....	Snow.
29	31	22	26.50	S.	Strong wind ..	Entire cloudy	Do.
30	27	5	16	SE.	Calm .....	Cloudy .....	Do.
31	24	6	15	E.	do .....	Fair .....	
Monthly mean..	21.02						

*Summary for December, 1887.*

Average cloudiness (scale of ten) .....	5.80
Number of days on which cloudiness averaged 8 or more (scale of ten) .....	10
Number of days of snow .....	19
Depth of snow-fall during the month .....	24.1 inches..
Depth of snow on the ground at the close of the month .....	8.6 do...
Temperature during the month:	
Highest .....	46 degrees..
Lowest .....	-16 do...
Mean .....	19.2 do...

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

JANUARY, 1888.

Dates.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Jan. 1	17	2	9.50	SE.	Light breeze..	Fair .....	
2	19	12	15.50	E.	do .....	Cloudy.....	Snow.
3	16	8	12	N.	Calm .....	do .....	Do.
4	5	-14	-4.50	NE.	do .....	Entire cloudy.	Do.
5	-2	-24	-13	E.	do .....	Fair .....	Do.
6	-5	-28	-16.50	NE.	do .....	Entire clear..	Snow ended during night.
7	12	-23		SE.	do .....	Fair .....	
8	7	-18	-5.50	SE.	do .....	do .....	
9	6	-18	-6	SE.	do .....	do .....	Snow, afternoon.
10	14	-1	6.50	S.	Fresh breeze..	Cloudy.....	
11	26	10	18	E.	Light breeze..	do .....	Snow.
12	22	9	15.50	NW.	do .....	do .....	Do.
13	-29	-31	-30	0	Calm .....	Fair .....	Snow ended 11 a. m.
14	-25	-41	-33		do .....	Clear .....	
15	-5	-35	-20	SW.	Very light breeze.	Cloudy.....	
16	3	-28	-12.50	SE.	Strong wind..	Clear .....	
17	10	-15	-2.50	SW.	Fresh breeze..	Fair .....	
18	18	2	10	SE.	Strong wind..	Cloudy.....	
19	24	-12	6	SW.	Fresh breeze..	do .....	Snow at intervals.
20	20	-14	3	S.	Light breeze..	do .....	Do.
21	31	20	25.50	E.	Strong wind..	do .....	
22	38	28	33	S.	Fresh breeze..	do .....	Snow at intervals; melted as it fell.
23	35	29	32	SE.	Gentle breeze..	do .....	Snow.
24	31	21	26	SE.	High wind....	do .....	Snow during night.
25	36	22	29	SE.	do .....	Entire cloudy	Snow ended 12.15 p.m.
26	44	36	40	SW.	Light breeze..	Fair .....	
27	49	24	36.50	SW.	do .....	Clear .....	
28	44	26	35	S.	Gentle breeze..	do .....	
29	46	32	39	S.	do .....	Fair .....	
30	46	33	39.50	SW.	Calm .....	Clear .....	
31	47	26	36.50	S.	Very light breeze.	Entire clear..	
Monthly mean ...			10.33				

*Summary for January, 1888.*

Average cloudiness (scale of ten) .....	5.57
Number of days on which cloudiness averaged 8 or more (scale of ten) .....	11
Number of days of snow .....	15
Depth of snow-fall during the month .....	39.3 inches.
Temperature during the month:	
Highest .....	49 degrees.
Lowest .....	41 do.
Mean .....	10.24 do.
Barometer during the month:	
Highest .....	24.054 inches.
Lowest .....	23.372 do.

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

FEBRUARY, 1888.

Dates.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Feb. 1	39	18	28.50	W.	Calm .....	Clear .....	
2	30	24	27	SW.	do .....	Entire cloudy.	
3	34	18	26	W.	Gentle breeze.	Fair .....	
4	31	17	24	W.	Calm .....	do .....	
5	20	9	19.50	SW.	Light breeze.	do .....	
6	27	15	21	SW.	Fresh breeze.	do .....	
7	30	19	24.50	SW.	do .....	Cloudy .....	
8	40	30	35	S.	Very light breeze.	Fair .....	
9	35	29	32	S.	do .....	Cloudy .....	
10	31	23	27	SE.	do .....	do .....	
11	43	27	35	S.	do .....	do .....	
12	44	32	38		Calm .....	do .....	Rain.
13	39	25	32		do .....	Fair .....	
14	27	18	22.50	SE.	do .....	Clear .....	
15	45	10	27.50	SE.	Very light breeze.	do .....	
16	46	17	31.50	SE.	Light breeze.	do .....	
17	47	21	34	SE.	do .....	do .....	
18	38	19	28.50	SW.	Calm .....	Cloudy .....	
19	33	10	21.50	W.	do .....	Fair .....	
20	32	19	25.50	SE.	Light breeze.	Clear .....	
21	34	18	26	S.	do .....	Fair .....	Snow; ground covered.
22	37	12	24.50	NE.	do .....	Entire clear	Do.
23	34	16	25	S.	do .....	Cloudy .....	Snow at intervals.
24	36	17	26.50	NE.	Gentle breeze.	Fair .....	
25	31	18	24.50	SW.	do .....	Cloudy .....	Snow.
26	40	22	31	SW.	do .....	Fair .....	
27	41	27	34	S.	do .....	Cloudy .....	Do.
28	37	7	22	NE.	Calm .....	Entire cloudy.	Do.
29	7	-5	1		do .....	do .....	Do.
Monthly mean.			26.72				

*Summary for February, 1888.*

Average cloudiness (scale of ten) .....	5.29
Number of days on which cloudiness averaged 8 or more (scale of ten) .....	7
Number of days of rain .....	1
Number of days of snow .....	7
Depth of snow-fall during the month .....	20.2
Temperature during the month:	
Highest .....	47
Lowest .....	-5
Mean .....	25.78
Barometer during the month:	
Highest .....	24.120
Lowest .....	23.324

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

MARCH, 1888.

Dates.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Mar. 1	1	-12	-5.50	N.	Light breeze..	Clear .....	Snow at intervals.
2	22	-13	4.50	0	Calm .....	Fair .....	Do.
3	28	3	15.50	.....	do .....	Cloudy .....	Snow.
4	16	-4	6	.....	do .....	do .....	Do.
5	29	-3	13	NW.	do .....	Fair .....	Snow at intervals.
6	34	16	25	S.	Gentle breeze..	do .....	Do.
7	27	4	15.50	SE.	Calm .....	Entire cloudy.	Snow.
8	11	-2	4.50	.....	do .....	Cloudy .....	Do.
9	24	0	12	S.	Light breeze..	Fair .....	Do.
10	25	6	15.50	W.	Fresh breeze..	Clear .....	Snow ended in the morning.
11	33	14	23.50	S.	Strong wind ..	Fair .....	
12	44	28	36	SW.	Gentle breeze..	do .....	
13	51	25	38	SW.	do .....	do .....	
14	49	31	40	SW.	do .....	do .....	Snow at night.
15	46	20	33	.....	Calm .....	Clear .....	
16	48	23	35.50	S.	Light breeze..	Fair .....	
17	47	30	38.50	SW.	Strong wind ..	Cloudy .....	Snow during night.
18	40	19	29.50	N.	High wind ..	do .....	Snow at intervals during forenoon.
19	34	7	20.50	SE.	Light breeze..	Fair .....	
20	31	15	23	NW.	High wind ..	Cloudy .....	Snow.
21	35	6	20.50	SW.	Fresh breeze..	Entire clear..	
22	43	22	32.50	S.	do .....	Fair .....	
23	48	29	38.50	SW.	Strong wind ..	Cloudy .....	Light snow from 3.10 p. m.
24	37	10	23.50	N.	Gale .....	do .....	Light snow at intervals.
25	25	4	14.50	NW.	High wind ..	Clear .....	
26	19	2	10.50	N.	do .....	do .....	
27	22	0	11	SW.	Fresh breeze..	Cloudy .....	Light snow.
28	39	19	29	SW.	do .....	do .....	
29	41	25	33	NW.	Strong wind ..	do .....	
30	38	25	31.50	SE.	Light breeze..	do .....	Snow melted as it fell; 2 to 3 o'clock p. m. NW gale.
31	45	32	38.50	SE.	Gentle breeze..	do .....	Snow.
Monthly mean..			22.79				Snow, rain, sleet, alternately.

*Summary for March, 1888.*

Average cloudiness (scale of ten).....	5.39
Number of days on which cloudiness averaged 8 or more (scale of ten).....	9
Number of days of rain .....	1
Number of days of snow .....	17
Depth of snow-fall during the month .....	31.2 inches
Depth of snow on the ground at the end of the month .....	4.5 do
Temperature during the month:	
Highest .....	51 degrees
Lowest .....	13 do
Mean .....	21.88 do
Barometer during the month:	
Highest .....	24.088 inches
Lowest .....	23.292 do



*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

APRIL, 1888.

Dates.	Self-regi-tering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Apr. 1	40	28	34	NW.	Calm .....	Fair .....	Snow and sleet at intervals.
2	44	27	35.50	S.	Light breeze..	do .....	
3	47	24	35	S.	do .....	do .....	
4	44	30	37	SW.	Calm .....	Cloudy .....	Snow.
5	40	22	31	SW.	Light breeze..	Clear .....	
6	47	23	35	SW.	Fresh breeze..	do .....	
7	54	29	41.50	S.	Calm .....	do .....	7.35 to 8.20 p. m., light snow, accompanied by westerly gale.
8	52	29	40.10	S.	Light breeze..	do .....	
9	43	20	31.50	S.	Gentle breeze..	do .....	
10	49	32	40.50	SW.	do .....	Fair .....	
11	53	33	43	---	Calm .....	Entire clear ..	
12	60	31	45.50	W.	Gentle breeze..	do .....	
13	63	33	48	S.	do .....	Clear .....	
14	64	40	52	W.	do .....	Entire clear ..	
15	64	35	49.50	SW.	Calm .....	Clear .....	
16	48	35	41.50	NW.	Strong wind ..	Fair .....	Rain, 7.30 to 8.50 a. m.; sleet at intervals.
17	55	24	34.50	S.	Fresh breeze..	Clear .....	
18	65	38	51.50	S.	Light breeze..	Fair .....	
19	66	36	51	---	Calm .....	Clear .....	
20	70	35	52.50	S.	Gentle breeze..	do .....	
21	70	37	53.50	S.	Fresh breeze..	Fair .....	
22	72	37	54.50	SW.	Gentle breeze..	do .....	Sprinkling, 9.50 to 10.30 p. m. Sprinkling, 8.50 to 8.40 a. m.; hail 1.10 to 1.35 p. m.
23	75	37	56	W.	Light breeze..	Cloudy .....	
24	61	40	50.50	NW.	Calm .....	do .....	
25	42	31	36.50	NW.	Strong wind ..	Fair .....	Rain during night. Snow during night. Snow.
26	47	30	38.50	SE.	Gentle breeze..	do .....	
27	42	27	34.50	N.	do .....	Cloudy .....	
28	47	22	34.50	NW.	Light breeze..	Clear .....	Rain, 5.10 to 7.40 p. m. Rain at intervals.
29	58	28	43	---	Calm .....	do .....	
30	58	33	45.50	NW.	Gentle breeze..	Cloudy .....	
Monthly mean	42.58						

*Summary for April, 1888.*

Average cloudiness (scale of ten) .....	3.5
Number of days on which cloudiness averaged 8 or more (scale of ten) .....	3
Number of days of rain .....	6
Number of days of hail .....	1
Number of days of snow .....	5
Depth of snow-fall during the month .....	4
Number days sleeting (1st and 16th) .....	2
Temperature during the month:	
Highest .....	75
Lowest .....	20
Mean .....	41.77
Barometer during the month:	
Highest .....	24.128
Lowest .....	23.386

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

MAY, 1888.

Dates.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
May 1	48	37	42.50	S.	Strong wind	Cloudy	Rain and thunder-storm during night. Rain, hail, and snow, alternately during day.
2	46	30	38	NW.	Gentle breeze	Fair	Snow.
3	52	29	40.50	S.	do	do	Threatening.
4	56	37	46.50	S.	Fresh breeze	do	
5	53	37	45	W.	do	Cloudy	Rain at intervals.
6	53	32	42.50	NW.	do	Fair	
7	64	29	46.50	N.	Calm	Clear	
8	64	33	48.50	S.	Strong wind	Fair	Rain.
9	52	35	43.50	NW.	do	Cloudy	
10	44	30	37	NW.	Fresh breeze	Fair	8.10 a. m., light snow. 10.40 a. m. to 1.45 p. m., heavy snow and hail. Snow during night.
11	50	27	38.50	NW.	Calm	Clear	
12	67	37	52	S.	do	do	
13	75	34	54.50	NW.	Gentle breeze	Entire clear	
14	76	37	56.50	NW.	Strong wind	do	
15	56	40	48	NW.	High wind	Cloudy	
16	39	30	34.50	NW.	Gentle breeze	do	Snow melted as it fell.
17	52	31	41.50	S.	do	Fair	
18	60	31	45.50	S.	do	Clear	
19	58	33	45.50	N.	Strong wind	Cloudy	Rain.
20	53	36	44.50	NW.	Fresh breeze	do	Rain and thunder-storm.
21	50	32	41	W.	do	Clear	12.30 to 1.10 p. m., heavy rain and hail.
22	52	34	43	N.	Strong wind	Cloudy	Thunder and lightning between 1 and 2 p. m. Rain at night.
23	51	33	42	N.	Light breeze	do	1 to 3, thunder-storm; rain mixed with snow.
24	59	28	43.50	E.	do	Clear	
25	63	33	48	NW.	Strong wind	Fair	Rain at night.
26	54	40	47	NW.	do	Cloudy	
27	57	33	45	NW.	Fresh breeze	Clear	
28	66	32	49	NW.	do	do	
29	69	35	52	NW.	Light breeze	do	
30	72	37	54.50	W.	do	do	
31	72	42	57		Calm	Fair	Sprinkling, thunder-storm passed at a distance 1 to 2 p. m.
Monthly mean..			45.60				

*Summary for May, 1888.*

Thunder-storms, dates of: 1st, 20th, 22d, 23d, and 31st.	
Average cloudiness (scale of ten).....	4.33
Number of days on which cloudiness averaged 8 or more (scale of ten).....	2
Number of days of rain.....	10
Number of days of hail.....	3
Number of days of snow.....	5
Depth of snow-fall during the month, "inappreciable."	
Temperature during the month:	
Highest.....degrees..	76
Lowest.....do.....	27
Mean.....do.....	44.31
Barometer during the month:	
Highest.....inches..	24.004
Lowest.....do.....	23.444

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

JUNE, 1888.

Dates.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888. June 1	69	39	54	NW.	Light breeze..	Fair .....	Thunder, rain, and hail, 2.45 to 3.30 p. m.
2	70	44	57	SW.	Gentle breeze..	do .....	Rain and hail, 6 to 6.45 p. m.
3	67	44	55.50	W.	do .....	Cloudy .....	Rain at night.
4	48	42	45	N.	Calm .....	Entire cloudy.	Rain at intervals.
5	60	37	48.50	W.	do .....	Cloudy .....	Rain in the afternoon.
6	69	39	54	SE.	Gentle breeze..	do .....	4 to 5 p. m., thunder, lightning, heavy shower of rain.
7	63	34	48.50	S.	Calm .....	Fair .....	10.30 to 2 p. m., thunder; rain at intervals.
8	56	38	47	NW.	do .....	Cloudy .....	Sprinkling, forenoon.
9	71	36	53.50	SW.	Light breeze..	Clear .....	
10	74	42	58	S.	do .....	Cloudy .....	Rain.
11	68	40	54	SW.	Calm .....	Clear .....	
12	75	39	57	W.	Light breeze..	Fair .....	Sprinkling, 1.30 to 2 p. m.
13	71	47	59	S.	Gentle breeze..	do .....	
14	75	46	60.50	S.	do .....	do .....	
15	72	48	60	SW.	do .....	do .....	Rain during night.
16	75	43	59	S.	do .....	do .....	
17	83	45	64	S.	Calm .....	Clear .....	
18	82	49	65.50	E.	do .....	Fair .....	Do.
19	67	47	57	S.	Fresh breeze..	Cloudy .....	
20	55	38	46.50	W.	Gentle breeze..	do .....	
21	53	37	45	W.	Calm .....	do .....	
22	55	39	47	NW.	Gentle breeze..	do .....	
23	65	37	51	NW.	Light breeze..	Fair .....	
24	68	39	53.50	SE.	do .....	Cloudy .....	Rain in the afternoon; thunder and lightning at night.
25	59	43	51	W.	Calm .....	do .....	Rain; thunder 2.45 to 3.15 p. m.
26	71	38	54.50	W.	Light breeze..	do .....	Rain during night.
27	71	49	60	SW.	Gale .....	Fair .....	Rain in the afternoon; hail and thunder from 3.45 to 4.30 p. m.
28	72	44	58	E.	Gentle breeze..	do .....	
29	76	45	60.50	SW.	do .....	Clear .....	Sprinkling at night.
30	76	46	59	SW.	do .....	Fair .....	
Monthly mean ..			54.77				

*Summary for June, 1888.*

Thunder and thunder-storms, dates of: 1st, 6th, 7th, 24th, 25th, and 27th.	
Average cloudiness (scale of ten) .....	5.91
Number of days on which cloudiness averaged 8 or more (scale of ten) .....	6
Number of days of rain .....	17
Number of days of hail .....	3
Temperature during the month:	
Highest .....	degrees.. 83
Lowest .....	do... 37
Mean .....	do... 54.64
Barometer during the month:	
Highest .....	inches.. 23.950
Lowest .....	do... 23.544

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

JULY, 1888.

Date.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
July 1	71	46	58.50	S.	Fresh breeze.	Fair	
2	67	41	54	W.	Gentle breeze.	do.	Rain during night.
3	73	49	61	SE.	Strong wind.	do.	
4	80	45	62.50	S.	High wind.	Clear	
5	77	47	62	NW.	Light breeze.	Cloudy	Rain at night; thunder and lightning during night.
6	80	47	63.50	E.	Calm.	do.	
7	85	51	68	W.	Light breeze.	Clear	10 to 10.20 a. m. rain.
8	81	54	67.50	S.	do.	Fair	Thunder-storm and rain during night.
9	91	49	70	W.	Gentle breeze.	Clear	
10	91	51	71	S.	Light breeze.	do.	
11	95	54	74.50	W.	Gentle breeze.	Fair	Rain at intervals.
12	72	57	64.50	S.	Light breeze.	do.	Do.
13	71	41	56	SW.	Gentle breeze.	Clear	
14	78	44	61	S.	do.	do.	
15	73	45	59	SW.	do.	do.	
16	73	40	56.50	NW.	Light breeze.	do.	
17	74	38	56	NW.	do.	Entire clear	
18	86	38	62	do.	Calm.	do.	
19	90	47	68.50	SW.	Gentle breeze.	Clear	
20	87	53	70	NW.	do.	do.	
21	83	54	68.50	NW.	Light breeze.	do.	
22	87	47	67	NE.	do.	Fair	
23	81	55	68	do.	Calm.	Cloudy	Rain in the afternoon.
24	81	48	64.50	NW.	Gentle breeze.	do.	
25	82	52	67	SW.	do.	do.	3.30 to 7.30 p. m. thunder-storm, rain, and hail.
26	85	48	56.50	SW.	Gentle breeze.	Fair	Rain; thunder-storms in the afternoon.
27	84	46	65	S.	Light breeze.	do.	Rain and hail; thunder-storm passed at a distance 8 p. m.
28	85	49	67	NE.	Calm.	do.	Thunder and lightning during night.
29	80	51	69	SW.	Light breeze.	Clear	
30	87	47	63.50	N.	do.	Fair	
31	66	53	59.50	NW.	do.	Entire cloudy.	Rain from 11.20 a. m. to 2 p. m.
Monthly mean...			64.24				

*Summary for the month of July, 1888.*

Thunder-storms: dates of 5, 8, 25, 26, 27, 28. On the 26th, 3.30 p. m., distinct peals of thunder at a distance; temperature 85°; 4.50 p. m. thunder-storm from westerly direction approaching; wind changed from SW. light breeze to W. gale; heavy rain; strong electrical detonations and numerous lightning; thermometer fell from 76° to 56° in twenty minutes; double rainbow observed SE; 5.50 p. m., wind changed from W. gale to SE. fresh breeze with approach of thunder-storm; heavy rain ended at 6.30 p. m.

average cloudiness (scale of ten)..... 3.98  
 number of days on which cloudiness averaged 8 or more (scale of ten)..... 2  
 number of days of rain..... 11  
 number of days of hail..... 1

temperature during the month:

Highest..... degrees.. 95  
 Lowest..... do.. 38  
 Mean..... do.. 64.07

barometer during the month:

Highest..... inches.. 24.172  
 Lowest..... do.. 23.802



## APPENDIX E.

Schedule of rates for camping outfits submitted by Mr. Elwood Hofer:

For gnide and horse per day.....	\$5.00
For packer and horse per day.....	4.00
For cook and horse per day.....	4.50
For saddle horses each per day.....	2.00
For pack animals each per day.....	1.00

Tents and camp equipage are furnished without additional charge.

## APPENDIX F.

*Rules and regulations of the Yellowstone National Park.*

DEPARTMENT OF THE INTERIOR.

*Washington July 1, 1888.*

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 any of the mineral deposits, natural curiosities, or wonders within the Park.

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

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

4. Fires shall be lighted only when necessary and completely extinguished when no longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting, capturing, injuring, or killing any bird or animal within the Park is prohibited. The outfits of persons found hunting or in possession of game killed in the Park will be subject to seizure and confiscation.

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.

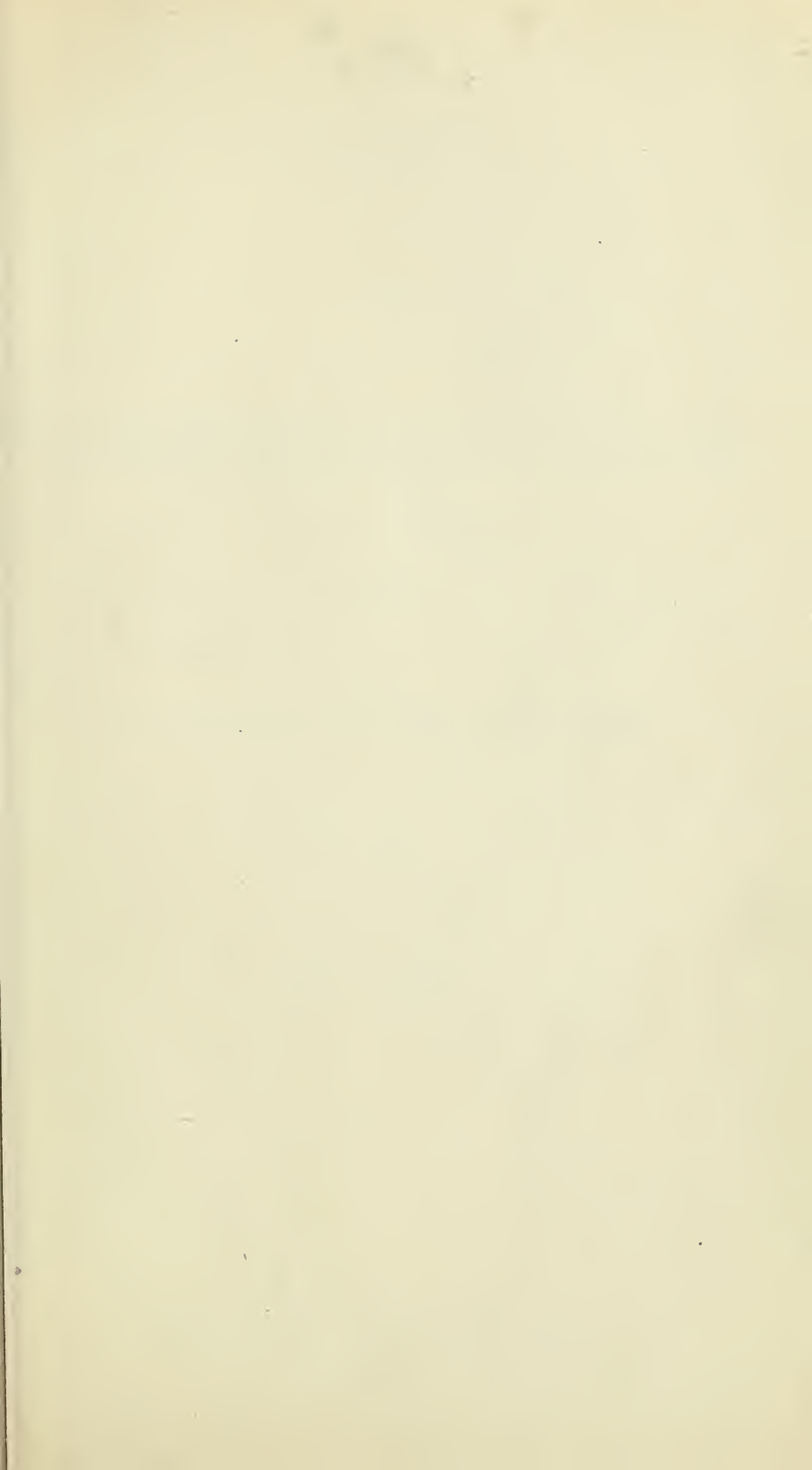
7. No person will be permitted to reside permanently or to engage in any business in the Park without permission, in writing, from the Department of the Interior. The Superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion.

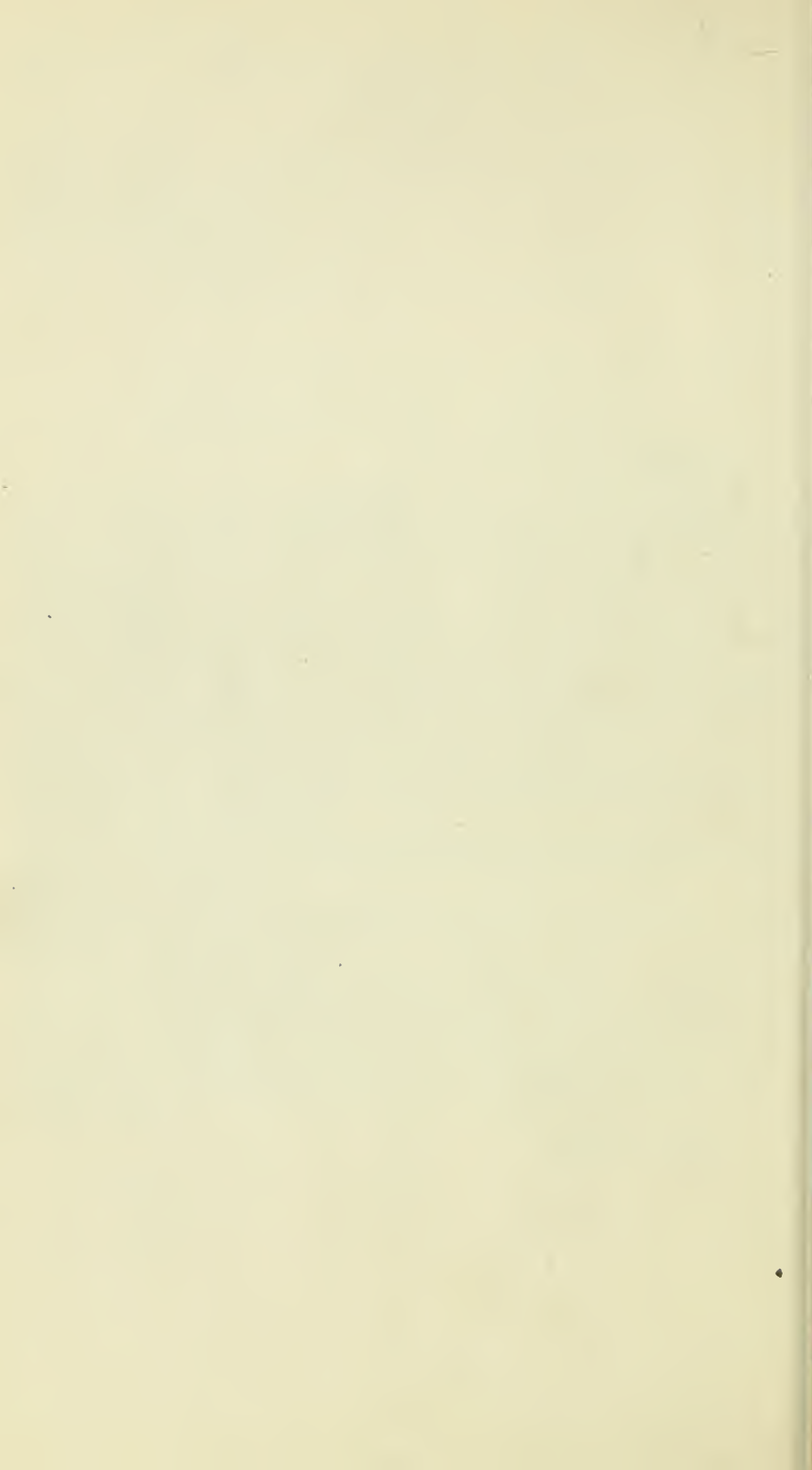
8. No drinking saloon or bar-room will be permitted within the limits of the Park.

9. 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.

10. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the Park under authority of the statute setting apart the Park "as a pleasuring ground for the people," and providing that it "shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be to make and publish such rules and regulations as he shall deem necessary or proper," and who "generally shall be authorized to take all such measures as shall be necessary or proper to fully carry out the object and purposes of this act."

WM. F. VILAS,  
*Secretary of the Interior.*





REPORT  
OF THE  
SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK  
TO THE  
SECRETARY OF THE INTERIOR.

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1889.

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WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1889.





REPORT  
OF THE  
SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

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DEPARTMENT OF THE INTERIOR,  
YELLOWSTONE NATIONAL PARK,  
OFFICE OF SUPERINTENDENT,  
*Mammoth Hot Springs, Wyo., June 1, 1889.*

SIR: Having been relieved from duty, with my command, in this National Park, I have the honor to submit for your information this report of the operations of the office of the Superintendent of the Yellowstone National Park for the period from August 15, 1888, to the present date.

During the season of travel to the Park, which closed October 31, 1888, probably a larger number of people visited the Park than in any previous year. By a careful estimate from the various hotel-registers, and registers of camping parties, kept at this place and the Lower Geyser Basin, the number was placed at about six thousand.

No disorder of any magnitude occurred during the season, and no complaints of extortion or of unfair treatment, except such as were incident to the crowded condition of the hotels and the insufficient accommodations which they afforded, were received.

On the 19th of August, 1888, a man was arrested by one of my scouting parties near the southern border of the Park, having in his possession the outfit of a hunter and trapper, and to all appearances engaged in trapping beaver. He was brought to this place, and upon examination gave his name as Andrew S. Page, but was identified as a person who was arrested in June, 1887, under suspicious circumstances near the Upper Geyser Basin, and who then gave his name as John Andrews. He at that time made his escape from his captors, leaving his outfit in their possession. He finally admitted that he was the same person. He was then told that if he would produce any evidence of his honesty of purpose, or would find anybody who would vouch for his future good behavior, his property would be restored to him. This he stated he would do, and was permitted to take one of his horses to go in search of the required evidence. He has not since been heard of, and the property which was taken from him still remains in custody at this place.

September 11, 1888, one William Moore, an employé of the Yellowstone Park Association, was expelled from the Park for repeated acts of drunkenness and disorder.

On the 12th of September, 1888, Thomas Garfield was arrested by a scouting party from my command, on Willow Creek, within the Park, at the act of trapping beaver. He had in his possession several green beaver-skins and the freshly-killed carcass of a beaver. He was ex-

pelled from the Park and his outfit held subject to the orders of your Department.

A report of this case was made to the Department September 13, 1888, and instructions asked concerning the disposition of the property seized, to which no reply has been received. This man at the time of his expulsion made threats that he would get even with the Park. It was subsequently ascertained that he came back into the Park during the night of the 14th, and efforts were made to apprehend him, but without success.

On the 17th of the same month the non-commissioned officer of my command, in charge of a detachment stationed at the Norris Geyser Basin, discovered a fire in thick timber about 4 miles from Norris in the direction of Mount Holmes. He, with his detachment, started at once for the scene of the fire, and by hard work succeeded in extinguishing it. He found near the place at which the fire was started the tracks of a man, which, from the character of the imprint, was believed to be Garfield. This belief was confirmed by the arrest of Garfield on the trail leading from Mount Holmes by one of my sergeants stationed at Riverside, on the west side of the Park. He was again put out, and after hanging around the western border of the Park for a few days disappeared, and has not since been heard of.

On the 10th of February Mr. Edward Wilson, scout and guide, accompanied by Corporal William L. Boyce, of my troop, started on a snow-shoe scout through the Park. They were overtaken by stormy weather and a heavy fall of light snow, which made snow-shoe travel very difficult, and after visiting the different geyser basins returned, having been absent ten days.

On the 10th of March the same two men started again to carry out the object of their previous expedition, which was to visit the warm-spring basins on the east side of Yellowstone Lake, for the purpose of ascertaining whether or not they were the winter resorts of the buffalo. These basins, being surrounded by a net-work of fallen timber and swampy ground, are well-nigh unapproachable, except when the ground is frozen and covered with deep snow, so as to make snow-shoe travel possible. The men took with them ten days' rations on their backs, but were absent twenty days. They encountered unexpected difficulties, owing to the soft character of the snow, and some anxiety for their safety was felt after their absence had been prolonged. This expedition was successful in locating the buffalo in their haunts of the previous winter near the hot-spring basins on the divide between the waters of the Yellowstone and Madison Rivers. Although no buffalo were seen east of the Yellowstone, it was evident from the abundant signs that they habitually frequented the hot-spring basins in this locality, some of the signs being quite fresh.

The past winter having been unusually mild, with a light snow-fall, was favorable to the game, which has been seen in all parts of the Park in undiminished numbers. Bands of elk approached within sight from this place several mornings in succession, and a large herd of antelope could be seen from the town of Gardiner during a large portion of the winter. The early disappearance of the snow, consequent upon the light snow-fall of the previous winter, and an early spring, was taken advantage of by the officer in charge of road construction and repair in the Park, and work was begun upon the roads in this vicinity about the middle of March. Working parties were sent into the Park on 15th of April.

Visitors to the Park began to arrive as early as the 1st of May.

The hotels of the Yellowstone Park Association were opened to visitors on the 15th of May, and at this date there is a fair volume of travel to the Park.

#### FOREST FIRES.

I report with great satisfaction, that although last season was an exceptionally dry one and the conditions all favorable to the spread of forest fires, no destructive fires within the limits of the Park occurred. In this connection great credit is due to Lieut. T. M. Moody, Twenty-second Infantry, and the detachment under his charge, as well as to the enlisted men of Troop M, First Cavalry, for the energy and devotion to duty displayed in their efforts to extinguish and keep under control the many fires which were started by the carelessness of camping parties, and from other causes. Many fires were extinguished which would otherwise have wrought great destruction.

#### LEASES AND BUSINESS PERMITS.

On the 22d day of March, 1889, the Yellowstone Park Association, having surrendered all rights which it had acquired under a lease which had been granted on the 9th day of March, 1883, to Carroll T. Hobart *et al.*, and by the said lessees assigned to the Yellowstone Park Improvement Company, and which had been sold under a decree of the United States court for the Territory of Wyoming, and by virtue of which sale the Yellowstone Park Association claimed title; and also all rights under a lease granted on the 29th day of January, 1884, to George W. Marshall for a certain piece of land in the Park, and which had been assigned to the Yellowstone Park Association; and the Yellowstone Park Association, by Charles Gibson, its president, and Charles Gibson individually, having delivered up the lease made by the Department to Charles Gibson March 20th, 1886, for certain lands in the Park, and the said lease having been declared canceled, the Department, on the 20th day of March, 1889, granted to the Yellowstone Park Association six leases of ground in the Yellowstone National Park, as follows: At Mammoth Hot Springs, 3 acres; at Norris Geyser Basin, 1 acre; at Lower Geyser Basin, 2 acres; at the Grand Cañon, 2 acres; at Yellowstone Lake, 1 acre, and at the Thumb (so called) of the Yellowstone Lake, or on Shoshone Lake, 1 acre.

The Department also, on the 5th day of April, 1889, granted permission, subject to certain conditions, to the Yellowstone Park Association to place a naphtha launch on the Yellowstone Lake, the said launch to conform to certain specifications.

February 14, 1889, the Secretary of the Interior granted permission to Ole Anderson, subject to certain conditions, to engage in the business within the Park of placing small articles in the waters of the hot springs, to be incrustated with the deposit left by the water, and of selling such coated articles to tourists, the privilege being personal and non-assignable. On the same date the Department granted to Mrs. Jennie Henderson Dewing, postmaster at Mammoth Hot Springs, the privilege of keeping for sale in the post-office at this place photographic views, stationery, etc., the privilege to continue only during Mrs. Dewing's term of office as postmaster.

On the 3d of April, 1889, permission by the Department was granted to the medical officer attached to the military force to practice medicine in the Park, with the understanding that such practice will not conflict with any Army regulations.



## TRESPASSERS IN THE PARK.

Attention is invited to remarks under this head contained in my two previous reports. No trespass has occurred since my last report.

## HOTEL ACCOMMODATIONS.

On this subject attention is also invited to my report for the year 1888. At the date of this report no improvement has been made in the character of the accommodations provided for visitors.

## TRANSPORTATION.

During the rush of travel to the Park in the months of August and September last the transportation facilities provided by the Yellowstone Park Association, through its agent, George W. Wakefield, were inadequate to the requirements of travel. The surrounding country was scoured, and animals and vehicles of every description were brought into requisition. Many visitors were forced to ride through the Park in uncomfortable and unsuitable conveyances, or otherwise to forego the object of their visit. Fortunately no serious accidents occurred. This immunity, when the character of the outfits and drivers employed is considered, may rather be ascribed to good fortune than to any proper precautions on the part of the Yellowstone Park Association or its agents.

## ROADS.

There being no appropriation available, no road work was done in the Park during the year 1888, except some very slight repairs in the spring of that year to open the roads for travel. The appropriation for the fiscal year ending June 30, 1889, having finally become available, work was commenced as early as the 18th of March last, and has been vigorously prosecuted to date.

The road from the northern border of the Park to Gibbon Cañon has been put in a perfect state of repair. The approach to the hotel plateau from the Gardiner River has been greatly improved by the construction of a new piece of road about one-half mile in extent. The gap in the existing system of roads, of about 3 miles, between Swan Lake and Indian Creek, has been filled, and a substantial bridge placed across Indian Creek.

Work is now in progress on the new road through the cañon of the Gibbon River, with a prospect of its completion to a point beyond the cañon before the end of the fiscal year. Work is also in progress upon the extension of the road to the Grand Cañon, across Cascade Creek, and down the cañon as far as Lookout Point.

## PROTECTION AND GOVERNMENT OF THE PARK.

The legislation by which this National Park was brought into existence was unfortunately defective, in that it failed to provide any effective method for its government or protection.

Section 2 of the act approved March 1, 1872, provides:

That said public park shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be, as soon as practicable, to make and publish such rules and regulations as he may deem necessary or proper for the care and management of the



same. Such regulations shall provide for the preservation from injury or spoliation of all timber, mineral deposits, natural curiosities, or wonders within said Park, and their retention in their natural condition.

The Secretary may in his discretion grant leases for building purposes for terms not exceeding ten years of small parcels of ground at such places in said Park as shall require the erection of buildings for the accommodation of visitors. All of the proceeds of said leases, and all other revenues that may be derived from any source connected with said Park, to be expended under his direction in the management of the same, and the construction of roads and bridle paths therein. He shall provide against the wanton destruction of the fish and game found within said Park, and against their capture or destruction for the purpose of merchandise or profit. He shall also cause all persons trespassing upon the same, after the passage of this act, to be removed therefrom, and generally shall be authorized to take all such measures as shall be necessary or proper to fully carry out the objects and purposes of this act.

The inadequacy of mere rules and regulations, unsupported by any appearance of force or penalties for their infraction, soon become apparent, and there has been hardly a report rendered relating to the Park during the eighteen years of its existence in which the necessity of some further provision of law for its preservation and government has not been urged.

A full account of all the various methods and expedients which have been resorted to since the establishment of the Park in the endeavor to protect it would exceed the limits of this report, but brief allusion to some of them may serve to illustrate the difficulties and uncertainties which have surrounded the subject, and to emphasize the necessity which exists for the adoption of some definite and well-considered scheme of government. In the summer of 1882 the unchecked vandalism of visitors and the destruction wrought by forest fires had reached such a point, that the application of some remedy appeared absolutely necessary, if any portion of the Park was to be preserved, and the Department, in despair, it would seem, of any Congressional action, determined, under the authority contained in the act of dedication, to lease considerable portions of the Park to persons believed to be responsible, in the hope that they would, through self-interest, give it that care and protection which the Government had failed to give. This action of the Department seemed to invite attention to the deplorable condition of the Park, and it may be believed induced more liberal appropriations, thereby permitting the employment of a larger number of assistant superintendents, and at least an attempt at better protection. It was also provided by the act approved March 3, 1883, that—

The Secretary of War, upon the request of the Secretary of the Interior, is hereby authorized and directed to make the necessary details of troops to prevent trespassers or intruders from entering the Park for the purpose of destroying the game or objects of curiosity therein, or for any other purpose prohibited by law, and to remove such persons from the Park if found therein.

Under this authority a troop of cavalry passed a portion of the summer of 1883 in the Park, but it does not appear that it was called upon to engage actively in its protection.

The weakness of a government unprovided with any means for the enforcement of its established rules continuing to be apparent, the legislature of Wyoming, in the winter of 1884, passed "An act to render operative and effectual the laws of the Territory of Wyoming within that portion of the Yellowstone National Park lying within said Territory, and to protect and preserve the timber, game, fish, and natural objects and curiosities of the Park, and to assist in preserving the rights of the United States therein." This act, which was approved March 6,

1884, made the portion of the Park lying within Wyoming Territory a part of Uintah County; provided for voting precincts and for the election of justices of the peace and constables; extended the laws of Wyoming Territory over the portion of the Park within that Territory, and provided that the rules and regulations of the Secretary of the Interior for the government of the Park should have the same force in the Park as the laws of Wyoming Territory. Section 7 of this act provided—

That it shall be unlawful for any person, whether resident or visitor, to deface, injure, or remove any part, portion, or particle of the natural curiosities or objects of interest, or anything whatever, within the Yellowstone National Park, whether tree, rock, stone, shrubbery, earth, geyser formation, grass, or anything whatever, except that it may be permissible to use timber or any other thing not objects of curiosity or of interest or adding to the scenic attractions of the said Park, for the necessary purposes of fuel or house-building or any domestic, useful, or necessary purpose not prohibited by the laws of the United States or the rules and regulations of the Secretary of the Interior, and any person so offending shall be guilty of a misdemeanor, and shall, on conviction thereof, be punished by a fine not exceeding \$100 or by imprisonment in the county jail not exceeding six months.

Section 8 provided for the protection of the game of the Park, and fixed pains and penalties. The act further provided that a jail should be established in the Park; that the expenses of all criminal prosecutions and the salaries of the justices of the peace and constables should be paid by the Territory of Wyoming; and that one-half of the fines assessed against offenders under the provisions of the act should be paid to the informers.

Judged by the stringency of its provisions, this act should have afforded to the Park all needed protection, and yet it completely failed in its object. Vexatious arrests were made under the sweeping provisions of section 7 of the act, and it soon became evident that its tendency was to defeat the principal object for which the National Park was established. Instead of a "pleasure ground for the benefit and enjoyment of the people," it seemed likely to become a place where visitors would be subject to arbitrary arrest and serious annoyances for the most ordinary and innocent actions.

The indignation aroused by certain arrests, which appeared to have been made without sufficient cause or justification, together with the uncertainty which existed as to the authority of Wyoming Territory to exercise judicial powers within a national reservation which had been placed by law under the exclusive control of the Secretary of the Interior, caused the repeal of the obnoxious act March 10, 1886.

The repeal of this ill-considered and unwarranted act was a necessity, but as it was the first and only law under which judicial authority had been exercised in the Park, the first effect of its abrogation was to leave the Park in a worse plight than ever before. It became generally known that the superintendents had no support beyond the rules and regulations of the Department and their own personal force, and as a result the rules and regulations were ignored, while outlaws and vagabonds from the surrounding region made the nation's pleasure ground a place of refuge. The hotels were frequented by gamblers and adventurers who preyed upon the unwary tourist, while forest fires, originating mysteriously in remote and inaccessible places, raged unchecked. During the summer of 1885 a committee of Congress visited the Park for the purpose of inquiring "into the expenditure of public money for the Yellowstone Park and the administration of the laws applicable to said Park, whether any change should be made in said laws or the boundary of the Park, and what steps, if any, can be taken to make of practical benefit and utility that portion of the public domain."

This committee remained in the Park five days and took a quantity of testimony bearing upon the subject of inquiry.

The Park was at this time under the government provided by the Wyoming statute. The following extracts, taken from the majority report of this committee, signed by two members who visited the Park and one absent member, are of special interest in connection with this subject:

The magnificent mountain scenery of this Park, as well as the wonderful display of the forces of nature in foaming fountains, boiling lakes, marvelous and awe-inspiring geysers, great mountain sheets of water, and the great falls of the Yellowstone seem to have fully justified the policy of setting apart this marvelous region as a national park.

Hotels are established, or are being established, in the vicinity of each of the most interesting objects, and the persons to whom special privileges have been given for this purpose have a special object in protecting them from wanton injury by inconsiderate travelers and curious tourists, even if such protection was necessary.

None of these natural curiosities, however, are of a nature which exposes them to material injury; and if they were so exposed to deterioration and injury, a much larger force than has ever been contemplated would be necessary to protect them, as they are not only numerous, but scattered over a vast extent of country.

Nor is the police force, superintendent, and assistants, eleven in all, of special value for this purpose. A favorite purpose has been the protection of the wild animals—buffalo, elk, deer, bear, etc.—of the Park, animals which are so rapidly disappearing from all parts of the Great West. But in so extended a mountain region it is scarcely possible, even with every reasonable precaution, that these animals can be protected from the cupidity of the hunter and the wanton and more than savage barbarism that has exterminated the herds of buffalo that a few years ago pastured in countless numbers on the great prairies. It will be seen from the testimony in the appendix how improbable it is that any of these animals will for any considerable period remain, even in imagination, an interesting feature of this Park.

But on the subject of "utility," mentioned in the provision of law under which this committee was appointed, connected with the real interests of the Park for the enjoyment of all the people of the United States, the preservation of the forests, which clothe with verdure the valleys, rugged declivities, and mountain peaks of the whole region, are of special moment.

These magnificent forests, while adding beauty to the rugged grandeur of these mountain ranges, are of the highest value to extended regions of country.

In the Park are found the sources of the great rivers west of the Mississippi—the Yellowstone, and Snake Rivers; the one, traversing an immense region of fertile land, swells the waters of the Missouri, while the other is a main branch of the Columbia.

It is made very clear by the practical and scientific views presented of this subject in the testimony already presented that the regular flow of water in these rivers is greatly dependent on these forests. These mountain regions are of no value for agriculture, while their wealth of forests is of the highest economic value, besides the beneficent influence they probably exert over the rain-fall, temperature, and climate of a vast region of country.

The irrigation of the magnificent valleys of the Yellowstone is believed greatly to depend on the gradual and regular flow of water in that beautiful river, greatly dependent on these protecting forests. It is believed that the rapid flow of water from these mountain regions, from barren range of peaks and declivities, would produce wide-spread disaster in valleys even remote from the mountains.

It is therefore, in the judgment of the committee, of the highest moment that these forests should be protected from destruction either by fire or the axe. To this extent, having in view at once the beauty of the Park as a delightful resort for the people and the value of the great streams of water that issue from the mountains, as well as the benign influence of the forests on climate and health, this Park should receive the special care of the Government.

The committee further submit, for reasons above named, that the region of country to the width of 30 miles on the east side of the Park and 8 miles on the south—a mountainous region of the same general character with the Park, barren ranges covered with forest—should be reserved forever from sale and the forests protected from destruction.

Beyond the dedication of this "tract of land" as a "public park or pleasure ground for the benefit and enjoyment of the people," and placing the same under the control of the Secretary of the Interior and appropriating of late years \$40,000 a year for the improvement of its roads and providing a police force for its protection, Congress up to this time has done nothing in relation to the Park; and yet, except in extortionate charges of those permitted to build hotels and carry on business in the Park



for the public convenience, there is no cause for complaint. The roads now reach every object of special interest. The Park should, as far as possible, be spared the vandalism of improvement. Its great and only charms are in the display of the wonderful forces of nature, the ever-varying beauty of the rugged landscape, and the sublimity of the scenery. Art can not embellish these.

The sum of money heretofore of late years annually appropriated of \$40,000 is more than ample to continue the construction of roads, the salaries of the police force, and contingencies, but the appropriations to each purpose should be specific. In the opinion of the committee the only important duty of a police force—superintendent and assistants—in the Park is to protect the forests from fire and ax.

This report recommended—

That the boundary line dividing Montana and Wyoming on the north of Wyoming be changed so that the strip of land on the north end of the Park now in Montana shall be made a part of Wyoming, and that the western line of the Park be the western line of Wyoming as now established, and that the strip of land 8 miles wide immediately south of the Park and the strip of land immediately on the east side of the Park to the width of 30 miles be reserved from sale, and a stringent law enacted against the destruction of the forests thereon.

A report of the minority of this committee, signed by two members who visited the Park, states as follows:

While agreeing generally in the conclusions of the committee as to the Yellowstone Park, we do not agree that sufficient roads have been constructed in the Park. On the contrary, new roads should be constructed to many places of interest in the Park, and much of the road built at an early day, and not under the direction of an engineer officer of the Army, needs to be relocated and reconstructed; and while we agree that the most important duty of the superintendent and assistants in the Park "is to protect the forests from fire and the ax," yet we are of opinion that it is important to protect the objects of interest from injury, especially at the hands of the relic hunter and the professional collector of specimens, and the game from injury or destruction.

It may be presumed that the failure of Congress to make any appropriation for payment of the salaries of the superintendent of the Park and his assistants for the fiscal year ending June 30, 1887, was due to the influence of this report. The effect of this failure was to abolish these offices, and the only method remaining for the protection of the Park was that provided by the act of March 3, 1883. Under this authority a troop of cavalry, under my command, was ordered into the Park, arriving at this place August 17, 1886.

All of the circumstances connected with my administration of affairs in the Park having been previously reported, it will suffice to state here that the general method of Park government pursued since the date above mentioned has been that of a military reservation, re-enforced and guided by the rules and regulations established by your Department and the authority of the statute law.

During the first year recourse was had with considerable frequency to the authority which permits offenders to be removed from the Park, but since it has become known that the National Park can not be made a resort for vagabonds and outcasts and that any serious or intentional violation of the established rules is quite certain to result in arrest and expulsion, with possible pecuniary loss, comparatively little difficulty has been experienced. The penalties for violation of the rules not being severe, it has been considered important to make it generally understood that they could not be violated without reasonable certainty that detection with some punishment, or at least inconvenience, would follow. By a liberal distribution and posting of the published rules and regulations and by timely admonition and warning it has been the endeavor to prevent the commission of offenses rather than to seek opportunities to inflict penalties.

The people residing in the vicinity of the Park have seen that their interest lies in supporting the authorities and in encouraging an observ-



ance of the reasonable and just regulations which have been established.

Hunters and trappers have not been permitted to operate within the limits of the Park, and the game animals under the protection afforded have visibly increased and multiplied. Good order, peace, and quietness have generally prevailed. Life and property has been secure, and many thousands of visitors from every part of the civilized globe have been permitted to enjoy the wonders of nature undisturbed by fears of molestation or uncalled for espionage.

These statements as to the satisfactory condition of the Park with respect to law and order are not made for the purpose of vaunting the superiority of present methods of government and protection over all others, but to show that by the use of an organized and disciplined force, respect for the established rules and regulations and the rights of life and property can be maintained. And it is believed that to the extent in which the present method of government and protection is an improvement upon former methods it is due to the visible power and force of the National Government as represented by the military garrison in the Park.

It is not to be inferred that the claim is made that a military government is the only one practicable for the Park, or even that it is the best adapted or most suitable. It is believed, however, that no efficient protection can be given to the Park without the support of a well-organized and disciplined police force of some description.

In my report to your Department for the year 1886 I recommended the following appropriations for the protection of the Park :

For pay of one superintendent.....	\$3,000
For pay of one chief game-keeper.....	1,200
For pay of ten assistant game-keepers.....	9,000
For pay of one chief of police.....	1,200
For pay of twenty policemen.....	18,000
For pay of one clerk.....	900
Total.....	33,300

I am now of the opinion that on account of the extension of the system of roads and the increase of summer travel the number of policemen should be increased to thirty, thus making the total to be paid for salaries \$42,300. The equipment of this force would probably cost \$6,500 additional, making the cost of protection, not counting the subsistence of necessary animals, \$48,800.

In view of previous appropriations made for this purpose this estimate may appear somewhat excessive, and yet from my acquaintance with the subject I am convinced that any attempt to accomplish the object sought with a less force of civilians or with decreased salaries must result in failure. This sum would also appear moderate when compared with the annual amount expended in the support of the military force which now performs the duty of protection in the Park.

The present status of this subject with reference to the employment of a military force for the protection of the Park is in a very unsatisfactory condition. The uncertainty which surrounds it may be presumed to preclude the establishment of a military post in the Park of sufficient capacity for a garrison large enough to perform the duties of Park protection well and efficiently without risking any impairment of military efficiency in the force so employed, and necessitates the employment of temporary and less-effective means with a maximum of discomfort to the troops so employed.

The officer in command of the troop has during the past three years performed, in addition to the duties of his position, those civil duties which pertain to the office of the superintendent of the Yellowstone National Park without compensation other than such recognition of his services as has been accorded by your Department. In alluding to this subject there is no intention of complaining. The duties to which reference has been made have been cheerfully and willingly performed, as they will doubtless be by other officers of the Army under like circumstances. But it is an exceedingly anomalous condition of affairs which ought not to prevail indefinitely and as a matter of course.

The time would seem to be fully ripe for a definite settlement of the question as to the means to be employed in the protection and government of the National Park, and as my connection with the Park ceases with the rendition of this report, I deem it a suitable time to urgently invite your attention to the importance of this subject.

The annoyance experienced by the hunting operations of bands of Bannock Indians from the Fort Hall and Lemhi Agencies in Idaho has been the subject of frequent communications to the Department of the Interior during the past two years. In the month of January last copies of certain reports rendered by Peter Gallagher, Indian agent at the Fort Hall Agency, and J. M. Needham, of the Lemhi Agency, to the honorable Commissioner of Indian Affairs, having been furnished me for my information, and in the reports a general denial that the Indians referred to had hunted in the vicinity of the Park having been made, I, on the 12th of February last, submitted to the Department a report on the subject supported by a number of affidavits. The receipt of this report not having been at this date acknowledged, and as the subject appears to be of sufficient importance to require your attention, I append it to this report, marked A.

In my experience in connection with this National Park I have been very forcibly impressed with the danger to which it is subjected by the greed of private enterprise. All local influence centers in schemes where y the Park can be used for pecuniary advantage. In the unsurpassed grandeur of its natural condition it is the pride and glory of the nation; but if under the guise of improvement selfish interests are permitted to make merchandise of its wonders and beauties it will inevitably become a by-word and a reproach.

In the last two annual reports which I have submitted to your Department I have had great pleasure in acknowledging the services rendered in the protection of this National Park by Mr. Edward Wilson, the scout and guide employed at this station under the authority of the War Department. In taking leave of the National Park I deem it my duty to again bear witness to his faithful, zealous, and courageous performance of the difficult duties with which he has been charged.

I have this day transferred to Capt. F. A. Boutelle, First Cavalry, the records of the office of the superintendent of the Yellowstone Park, the public property pertaining to the Department of the Interior for which I am accountable, and certain property which has been taken from persons violating rule 5 of the Rules and Regulations of the Yellowstone National Park, together with your instructions of the 24th ultimo for the disposition of the same which were received yesterday.

I am, sir, very respectfully, your obedient servant,

MOSES HARRIS,  
*Captain First Cavalry.*

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

## A.

DEPARTMENT OF THE INTERIOR,  
YELLOWSTONE NATIONAL PARK, OFFICE OF SUPERINTENDENT,  
*Mammoth Hot Springs, Wyo., February 12, 1889.*

SIR: I have the honor to acknowledge the receipt of your communication of the 22d ultimo, by indorsement upon copy of letter from the Commissioner of Indian Affairs, dated January 19, 1889, referring to me the said letter and accompanying inclosures for my information, and, in connection therewith, to submit the following: The letter of the Commissioner of Indian Affairs and the correspondence transmitted therewith have reference to two communications from this office to the Department, dated respectively May 4, 1888, and August 24, 1888. In that of May 4 attention was invited to the annoyance occasioned in previous years by the hunting operations in the vicinity of this National Park of parties of Bannock Indians from the Fort Hall and Lemhi Reservations, and requesting that such timely instructions might be given as would prevent these Indians from approaching the Park boundaries. With reference to this letter a communication was received, dated Office of Indian Affairs, May 23, 1888, and signed by the Acting Commissioner, A. B. Upshaw, in which it was stated that letters had been addressed "to the United States Indian agent at Fort Hall and Lemhi Agencies, instructing each to adopt adequate measures to keep their respective Indians from entering the Park or going into the vicinity of the same."

On the 24th of August, 1888, having received reliable information that a party of Bannock Indians, supposed to number about one hundred, men, women, and children, were hunting in the country just south of the Park, and that an Indian and his squaw had come into the Park as far as the Grand Cañon of the Yellowstone, I addressed a communication to the Department, reporting the facts, and stating that it was evident that the instructions to the Indian agents at the Fort Hall and Lemhi Agencies "to adopt adequate measures to keep their Indians from entering the Park or going into the vicinity of the same," had not been complied with.

In this communication I also stated that during the summer of 1886, as a result of telegraphing the Department that Indians from Fort Hall and Lemhi were approaching the Park, the two agents came into the Park, and after having visited the various objects of interest, returned without seeing their Indians; also that upon a similar occasion in the summer of 1887 the agent from Lemhi came into the Park, and making the regular tour, returned to the agency, paying no attention whatever to his Indians, who were in the mountains near the Park line.

The United States Indian agents at the Fort Hall and Lemhi Agencies having each been instructed to report concerning the correctness of the allegations contained in the before-named letter submitted reports to the Office of Indian Affairs, that of the agent at Lemhi being dated September 25, 1888, and that of the agent at Fort Hall December 12, 1888. In both of these reports denial was made in more or less explicit terms to all statements in my letter which implied any neglect of duty on the part of these Indian agents, and in both of them strong doubt was expressed as to the correctness of the report that Indians from their agencies were hunting in the vicinity of the National Park. These reports appear to have been accepted by the Indian Bureau as satisfactory, and it would appear that no further action in the matter is considered necessary by that office. I have no desire to enter into a controversy on the subject. My letter of August 24, 1888, was written with the sole object of discharging my duty of protecting this National Park. I had at this time no acquaintance whatever with the Indian agents at the Fort Hall and Lemhi Agencies, their names even being unknown to me, and my only object in alluding to their failure to gather in their Indians on previous occasions was to induce such instructions as would tend to the employment of more efficient methods for the restraint and control of their Indians.

I am persuaded, however, that all the statements contained in my letters to the Department dated May 4, 1888, and August 24, 1888, respectively, are substantially correct and irrefutable.

The essential and important part of this matter is to determine whether or not Indians from the Fort Hall and Lemhi Agencies did camp and hunt in the vicinity of the Yellowstone National Park during the months of August and September, 1888, and in this connection I invite attention to the affidavits submitted.

The affidavit of Mr. Elwood Hofer, marked A, alleges that a large party of Bannock Indians were camped on Pacific Creek in the month of August, 1888, about 10 miles south of the National Park, and engaged in hunting in the direction of the Park; and further, that on the 24th day of October, 1888, on the Snake River, about 9 miles south of the southern boundary of the Park, he found a camp of seven lodges of Bannock Indians, who stated that they were from the Fort Hall and Lemhi Agencies; that these Indians had been engaged in hunting, and had in their possession a large quantity of dried meat and hides; that they started back to their agencies with a large number of animals packed with dried meat, and that they went towards the



southwest corner of the Park, saying they were going to hunt on Fall River, which is within the Park; and that at this time a forest fire was raging in the country immediately south of the Park line, which had destroyed a large extent of forest; and that in his opinion this fire had been started by Indian hunting parties for the purpose of facilitating their hunting operations, or through the careless use of fire.

The band of fourteen lodges of Bannocks which were found by Mr. Hofer on Pacific Creek, in the month of August, were also reported to me by Nelson Garnell, who is employed as a Government scout at Fort Washakie, Wyoming. He estimated the band at about one hundred, men, women, and children.

About the time this report reached me two Indians were seen near the Yellowstone Falls who said they were from Beaver Cañon, but their trail was followed in a southerly direction to near the border of the Park, and there is little doubt that they belonged to the band which camped on Pacific Creek.

The presence of these Indians in the Park is vouched for by the affidavit of Private James J. Pearson, a soldier of Troop M, First Cavalry, marked B. These Indians were also seen by a large number of tourists, and their presence in the Park gave rise to much alarm and uneasiness among the tourist visitors.

The affidavit of Mr. Edward Wilson, my scout, and Saddler Joseph M. Loyns, of my troop, marked respectively C and D, established the fact that seven lodges of Bannock Indians, who said they were from the Fort Hall and Lemhi Agencies, were in camp on Snake River from 4 to 6 miles south of the Park line on the 7th of September, and that they said they had been there about ten days; that they were engaged in hunting, and that they had in their possession large quantities of elk meat, and that two destructive forest fires were raging in the vicinity of this camp. Mr. Wilson states that from his knowledge of the habits of these Indians he thinks it probable that these fires were either intentionally started by these Indians or that they originated through their careless use of fire.

The affidavit of Mr. Charles H. Stuart, marked E, doubtless relates to this same band of Indians. They stated to him that they had been hunting on Huckleberry Mountain, which is near the edge of the Park, its northern slope being within the Park. Mr. Stuart also saw the forest fires alluded to in other affidavits. It may be inferred that this is the same party which was seen near this place by Mr. Hofer as late as the 24th of October.

More evidence can easily be obtained on this subject, but I have accepted that which is at hand, which is believed to be perfectly reliable, and sufficiently conclusive as establishing the fact that Indians from the Fort Hall and Lemhi Agencies were engaged in hunting in the immediate vicinity of the National Park during the months of August, September, and October, 1888; and that therefore the inference expressed in my letter of August 24, 1888, that the United States Indian agents at the Fort Hall and Lemhi Agencies had failed to obey their instructions to "adopt adequate measures to keep their respective Indians from entering the Park, or going in the vicinity of the same," was correct and warranted by the facts of the case. It not unfrequently happens that well-taken measures fail to accomplish the object to which they are directed, but the correspondence connected with this case fails to show that any measures whatever were taken by these agents to prevent their Indians from hunting in the vicinity of the National Park, except indefinite verbal cautions and warnings.

The agent at Fort Hall, Mr. P. Gallagher, wrote me under date of September 27, 1888, saying that he had cautioned his Indians "time and time again about the Yellowstone and Lost River countries, and insisting that under no circumstances must they go to the places mentioned." This well illustrates the indefinite and vague instructions which these Indians may be presumed to have received. The Lost River is in Idaho, several hundred miles west of the Yellowstone National Park, and the Yellowstone country is generally understood as embracing the valleys of the Yellowstone River and its tributaries. Now, it has never been charged that the Bannock Indians visited the Yellowstone country, nor do I believe that any of them have done so during the past three years. The hunting operations of these Indians, which have injured the National Park and which have been complained of, have been carried on in the tributaries of the Madison, on the west of the Park, and on those of the Snake River to the south, and all of my communications to the Department have so indicated.

Agent Gallagher telegraphed the Commissioner of Indian Affairs September 24, 1888, that many of the Indians were off their reservations, hunting without passes. He was instructed by the Commissioner of Indian Affairs by telegraph the same day "to ascertain by correspondence with the superintendent of the Park, or otherwise, whether any of his Indians were in the vicinity of the same, and if so to carry out the instructions of the 17th instant," which were "in the event of any of his Indians being near the Park to go immediately after them and take them back to their reservation." On the 26th of September I telegraphed Agent Gallagher:

"Twenty-five Indians from Fort Hall Reservation were 4 miles south of Park on Snake River September 7th: have no later information."



To which he replied by letter on the 27th "that so much time had elapsed that he presumed it was hard telling where they then were." These Indians were permitted by him to remain 4 miles from the Park line and secure many pack-loads of meat from game protected in the Park a month after he had been informed of their location, and in defiance of the instructions which he had received from the Indian Bureau. This agent puts forward the excuse that his Indian police are inefficient, and that the Indians are very hard to manage, and intimates that there is danger of war if an attempt is made to confine them to their reservation. With this condition of affairs I have nothing to do, and can only express my regret that the efforts which are being made to protect the remnant of the large game of this country and the growing timber in the National Park and adjacent regions are to be thwarted for no better purpose than to afford summer amusement and winter sustenance to a band of savage Indians, who might better be engaged in cultivating the arts of peace and civilization. With reference to the personalities contained in the report of Mr. Gallagher, as they can have no bearing upon the merits of this controversy, I have no remarks to make. I have no reason to doubt the correctness of Mr. Gallagher's statement that when he visited the Park in the summer of 1886 he remained only from Saturday to Monday, and visited only two of the geyser basins, but I think that he should not have been disappointed at his failure to find his Indians at these places. They are well known not to be good hunting grounds during the tourist season.

The agent at the Lemhi Reservation, Mr. J. M. Needham, in a communication to the Commissioner of Indian Affairs, dated May 31, 1888, with reference to his instructions "to adopt effective measures to keep the Indians of his agency away from the Park or its vicinity," says very plainly that he is unable to control his Indians; "that they are of a roving disposition, and have gone when and where they pleased in spite of all he had been able to do to prevent them from so doing." In view of this, his assertion in his letter to the Commissioner of Indian Affairs of September 25, 1888, as to the entire falsity of the matter contained in my letter of August 24, 1888, and his confident expression of belief "that there is not a single Indian from his reservation at or in the vicinity of the Park" is somewhat surprising.

He seems to rest his assertion concerning the falseness of the statement made in my letter upon the evidence contained in the letter itself. Upon re-reading this letter I find that it was stated that the Indians who were reported as near the Park were believed to be from the Fort Hall Agency.

The Indians from these two agencies on their hunting trips generally travel and camp together, and it is not always easy to ascertain which agency they are from, and the failure to associate the Lemhi Agency with Fort Hall in my letter was an omission.

I am unable, however, to see that this proves the statements contained in the letter to be false, and trust that the evidence as to the presence of Indians from the Lemhi Agency in the vicinity of the National Park last summer, submitted with this report, may fully supply the omission referred to.

The statement of this agent that he can make a report in detail "which will not show the captain up to any advantage" obliges me to request that he be at once required to make the report to which he refers, and that such portion of it as may have personal reference to myself be transmitted to me.

With reference to Mr. Needham's visit to the Park in August, 1887, I invite attention to the statement of Lieut. G. W. Goode, First Cavalry, U. S. Army, inclosed and marked F. The register of the hotel at Mammoth Hot Springs shows that J. M. Needham, of Lemhi Agency, Idaho, arrived August 31, 1887, and departed the following day. The register of the other Park hotels are not at this time accessible, but can be referred to in the future should the necessity arise. It is certain that the agent was in the Park several days, and that he failed to make himself known to the acting superintendent of the Park. Certainly, if he was bent on pleasure, there was no reason why he should have done so, but if his business was on duty connected with the incursion of his Indians on the western border of this Park, and in accordance with the message which he states he received from the Department dated August 22, 1887, it appears, to say the least, somewhat singular that he should not have considered it worth his while to consult in any way with the officer charged with the care of the Park.

But I have no desire to dwell on the personal features of this controversy further than may be necessary to justify fully the statements contained in my letter which have been pronounced false, and which, as before explained, were made for the sole object of suggesting such instructions from the Indian Bureau to its agents as would more effectually meet the requirements of the situation.

This subject has a significance far beyond any personal considerations. The summer raids of these Indians into the regions adjacent to the Park are an unmitigated evil. Destructive forest fires invariably follow in their track, which is the result of the traditional custom which incites these Indians to fire the grass at the close of every summer. The wasteful and improvident methods employed by them in their

hunting operations, and the large number of game animals killed in their protracted hunts of several months' duration, is such a drain upon the protected game of the Park as to tend, in a large measure, to defeat all the efforts which are being made for its protection.

The overflow of the Park game into the adjacent regions renders the vicinity of the Park a favorite hunting ground, not only for these Indians, but for gentlemen sportsmen from all parts of the world. As long as the restrictive laws of the surrounding Territories are observed the Park suffers but little detriment; but these Indians have no knowledge of the law, and submit to no restrictions; and it is believed that a single one of these hunting parties works more destruction during a summer's hunt than all of the gentlemen sportsmen put together who annually visit this region.

In conclusion, I most earnestly urge that this subject may continue to receive the attention of the Department until some method shall be found which will be effective for the correction of the evils which I have endeavored to set forth.

I am, sir, very very respectfully, your obedient servant,

MOSES HARRIS,  
*Captain First Cavalry, Acting Superintendent Yellowstone National Park.*

A true copy.

WILLIAM CANNON RIVERS,  
*Second Lieutenant First Cavalry, Post Adjutant.*

Hon. H. L. MULDROW,  
*First Assistant Secretary of the Interior.*

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EXHIBIT A.—*Affidavit of Elwood Hofer.*

COUNTY OF PARK, *Territory of Montana:*

Personally appeared before me, R. T. Smith, a notary public, one Elwood Hofer, who, being duly sworn according to law, deposes and says: That for the past ten years he has been engaged in the business of outfitting hunting and tourist parties, at and in the vicinity of the Yellowstone National Park; that he is well acquainted with the country surrounding said Park, and the boundaries of the same as far as determined; that during the month of August, 1888, he was in the region of country immediately south of the Yellowstone Park, in company with Mr. W. Hallett Phillips, of Washington, D. C., and that while in camp on Pacific Creek, some Indians came into his camp and stated that fourteen lodges of Bannock Indians were then in camp on the same creek, about ten miles south of the park line, and engaged in hunting in a direction toward the National Park; and that subsequently, during the month of September, 1888, he being then in company with Mr. Lewis A. Eldridge, of Brooklyn, New York, he visited the locality where these Indians had been in camp and saw by the remains of camp fires and other evidences that a large number of Indians had been in camp at that place, and had been engaged in drying meat. And further, that about the 24th of October, 1888, he was with the before-named Mr. Lewis A. Eldridge, on Snake River, about nine miles south of the southern boundary of the Yellowstone National Park, and at that place he found a camp of Bannock Indians consisting of seven lodges, numbering probably fifty people; that these Indians stated that they were from the Fort Hall and Lemhi agencies, and that they were then about to return to their agencies, having had a successful hunt; that they had a large quantity of dried meat and hides in their possession; and that upon the following day they started upon their return with a large number of animals packed with dried meat, going toward the southwest corner of the Yellowstone National Park, saying that they were going to hunt on Fall River which is within the park limits.

The deponent further swears that at this time a forest fire was raging in the county immediately south of the Park line, which had destroyed the forest over an extent of many miles, and that in his opinion this fire had been started by Indian hunting parties for the purpose of facilitating their hunting operations, or through the careless use of fire.

And further the deponent sayeth not.

ELWOOD HOFER.

Subscribed and sworn to before me this 2d day of February, 1889.  
[SEAL.]

R. T. SMITH,  
*Notary Public.*

EXHIBIT B.—*Affidavit of James J. Pearson.*COUNTY OF PARK, *Territory of Montana :*

Personally appeared before me, R. T. Smith, a notary public in and for said county, one James J. Pearson, who being duly sworn according to law, deposes and says that he is a soldier in the service of the United States, stationed at Camp Sheridan, Mammoth Hot Springs, Wyoming Territory; that on or about the 13th day of August, 1888, being at that time on duty at the Grand Cañon of the Yellowstone, for the purpose of enforcing the rules and regulations of the Yellowstone National Park, he met and conversed with two Indians, a buck and a squaw, near the Grand Cañon; that these Indians said that they were Bannock Indians and that they came from Beaver Cañon, which is a station on the Utah Northern Railroad west of the Yellowstone National Park; that they were both mounted and had with them a pack animal, the buck being armed with a rifle; and further the deponent sayeth not.

JAMES J. PEARSON.

Subscribed and sworn to before me this 4th day of February, 1889.

[SEAL.]

R. T. SMITH,  
Notary Public.EXHIBIT C.—*Affidavit of Edward Wilson.*COUNTY OF PARK, *Territory of Wyoming :*

Personally appeared before me, R. T. Smith, a notary public in and for said county, one Edward Wilson, who, being duly sworn according to law, deposes and says that since the month of May, 1887, he has been employed in the military service of the United States as a scout and guide for the protection of the Yellowstone National Park, and that for several years previous he had been employed under the Department of the Interior as a gamekeeper and assistant superintendent in the Yellowstone National Park; that he is well acquainted with all of the region of country adjacent to the said park and with the boundaries of the same as far as determined.

The deponent further swears that, on or about the 7th day of September, 1888, he was in company with Saddler Joseph M. Laynes, Troop M, First United States Cavalry, on Snake River, Wyoming Territory, about four miles south of the Park line, and at that point he saw a camp of Indians, consisting of three lodges and numbering, as estimated, about twenty-five people, men, women, and children; that these Indians stated that they were Bannock Indians from Salmon City, and that there were four lodges of Bannock Indians from Fort Hall, about two and one-half miles further down on the west side of the river; that he went near enough to the last-named camp to see the lodges, but did not enter it; that these Indians had large quantities of elk-meat in their camp, and stated that they had been in that vicinity about ten days, and were engaged in hunting; that at this time two large forest fires were raging in the adjacent country, one some distance south of the camp of these Indians and one to the north and west of their camp, near the edge of the park; and that, from his knowledge of the habits of these Indians, he thinks it probable that these fires were either intentionally started by them or that they originated through their careless use of fire; and further the deponent sayeth not.

EDWARD WILSON.

Subscribed and sworn to before me this 4th day of February, 1889.

[SEAL.]

R. T. SMITH,  
Notary Public.EXHIBIT D.—*Affidavit of Joseph M. Loyns.*COUNTY OF PARK, *Territory of Montana :*

Personally appeared before me, R. T. Smith, notary public in and for said county, one Joseph M. Loyns, who, being duly sworn according to law, deposes and says that he is a soldier in the service of the United States, holding the rank of saddler, in Troop M, First Cavalry, stationed at Camp Sheridan, Mammoth Hot Springs, Wyoming Territory; and that on or about the 7th day of September, 1888, he then being on a scout for the purpose of enforcing the rules and regulations of the Yellowstone National Park, in company with Mr. Edward Wilson, a scout and guide in the employ of the Government, found a party of Indians in camp on Snake River, in Wyoming Territory, the party being divided into two bands, one, of three lodges, being camped on



the east bank of the river, about four miles south of the Yellowstone Park, and the other, of four lodges, some two miles or more down the river, on the opposite bank; that these Indians said that they were Bannocks, from Lemhi and Fort Hall, and that they had been in that vicinity ten days; that they stated that they were engaged in hunting, and that he saw a large quantity of elk meat in their camp.

The deponent further swears that at this time two forest fires were raging in the vicinity of these Indian camps, one very large one some distance to the south, and one less extensive to the north and west and near the south line of the Park; and further the deponent sayeth not.

JOSEPH M. LOYNS.

Subscribed and sworn to before me this 6th day of February, 1889.

[SEAL.]

R. T. SMITH,  
Notary Public.

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EXHIBIT E.—*Affidavit of Charles H. Stuart.*

COUNTY OF PARK, *Territory of Montana:*

Personally appeared before me, R. T. Smith, notary public in and for said county, one Charles H. Stuart, who being duly sworn according to law, deposes and says that he is a resident of Mammoth Hot Spring, Wyoming Territory, and that he is associated with the lessees Helen L. and Walter J. Henderson of that place in the Yellowstone National Park, in the business of hotel keeping and the outfitting of tourist and hunting parties; that he was for several years employed with the division of the U. S. Geological Survey in the Yellowstone National Park under Mr. Arnold Hague, and that he is well acquainted with the country in and adjacent to the Yellowstone National Park, and the boundaries of said Park as far as they are determined; that on or about the 15th day of September, 1888, being at the time in company with Mr. Frank C. Crocker, of Portland, Maine, he saw a party of Indians in camp on Snake River, there being two separate camps. One of these lodges on the east bank of the river about four miles from the Park line, and one of four lodges farther down the river on the opposite bank; that he camped near these Indians and conversed with them both in their camps and in his own; that they stated that they were Bannocks and that one band was from Fort Hall and that the other was from Salmon City, and that they were engaged in hunting on Huckleberry Mountain which is near the Park line; that in conversation they stated that they had been instructed not to go near the Park, and asked where the Park line was; and that upon being told expressed surprise that it was so near to them; that he saw a large quantity of elk meat and some hides in their camps. The deponent further swears that at this time two forest fires were raging in this vicinity. One in the country south of the Indian camps and one to the west near the south line of the Yellowstone National Park; and further the deponent sayeth not.

CHARLES H. STUART.

Subscribed and sworn to before me this 5th day of February, 1889.

[SEAL.]

R. T. SMITH,  
Notary Public.

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EXHIBIT F.—*Statement of Lieut. G. W. Goode, First Cavalry, U. S. Army*

About the 21st of August, 1887, under orders from Capt. Moses Harris, First Cavalry, commanding Camp Sheridan, Wyoming, I made a reconnaissance of the country just outlying the Yellowstone Park, at the northern portion of the western boundary. In accordance with my instructions, the object of this scout was to discover the presence of hunting parties of Indians (Bannock), reported to have been seen in that locality, or en route there, and return them to their reservation. After three days I found the party from the Lemhi Agency encamped about three or four miles from the western boundary line, near the headwaters of the Gallatin River.

They had been one day in camp and had killed quite a number of elk. With good rifles and ammunition, over a hundred fine looking ponies; within such easy access of the Park—and judging from the amount of elk meat already in camp—their facilities for slaughtering game within the Park limits seemed the best possible.

I ordered these Indians back to their reservation, and told them they would not be allowed to hunt in the vicinity of the Park. They promised to return, and started the following morning; in the morning I also started back to the Lower Basin to report my action to Captain Harris. I had no confidence, however, that these Indians would return to the reservation; believing that they would only change the locality of their



camp, and continue to hunt in the vicinity of the Park line, where on one side or the other, they were certain to find abundance of game.

On my way back to the lower basin, I passed on the road a man traveling in a covered wagon; he hailed me, said he was the agent at the Lemhi Agency, and asked if I had seen any of his Indians hunting in that locality. He also said he had made inquiry of some men living on the road, at Henry's Lake, and could get no information.

I told him that I had been sent out by Captain Harris to intercept Indians who were coming to hunt in the park, and I found a party of about fourteen (bucks and squaws) just outside of the park limits; that they had killed quite a number of elk; and that, although they had promised to return at once to the agency, I believed they had no such intention, but would continue to hunt in the vicinity, and would in all probability go into the park, where the elk were most plentiful.

In answer to his inquiries, I gave him directions for finding these Indians, telling him it would be necessary to proceed most of the way mounted, but the trail was fresh and very plain. He said he was unaccustomed to riding and could not possibly make such a journey; that a ride of 10 miles (I think that is the distance) would wear him out completely. He said he would proceed on to the hotel and confer with Captain Harris.

At the hotel, Lower Basin, I reported by telephone to Captain Harris, relating all the circumstances, as nearly as possible over a badly working wire, and he ordered me to return to the post.

Whether or not this agent communicated with Captain Harris from the Lower Basin, I do not know. I got the impression that he was not at all concerned about his Indians. At that time, and subsequently, he appeared to me like a tourist and pleasure-seeker, but not like a government official in the discharge of his duties.

According to my recollection this man made the regular tour of the Park, and took his departure thence without having spoken to Captain Harris of the business which was the ostensible cause of his presence there. I can not assert this positively at the present time, but I do remember distinctly that his conduct was discussed; and that Captain Harris and myself both pronounced him guilty of neglect of duty, because he had made no effort, and shown no desire, to control the actions of these Indians for whom he was responsible.

GEO. W. GOODE,  
*Second Lieutenant, First Cavalry.*

FORT MAGINNIS, MONT.,  
*February 5, 1889.*



# SUPPLEMENTAL REPORT

## OF THE

### SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

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THE HON. SECRETARY OF THE INTERIOR,  
*Washington, D. C.:*

Having assumed the duties of Superintendent of the Yellowstone National Park only one month ago, my report for a part of the fiscal year ending June 30, 1889, will naturally be very brief.

I have been favored by Capt. Moses Harris, First Cavalry, my predecessor, with a perusal of his report closing his administration of Affairs of the Park May 31, 1889. It will be found very comprehensive and interesting. His management has left matters in the Park in so healthy a condition that little trouble is apprehended in its government.

I have not had an opportunity for making a thorough inspection of the Park, but while making a tour with Senators Hoar, Allison, Hale, Tamm, and Dolph I was impressed with the danger that exists of its utter ruin as a Park by forest fires. There is no equipment for fighting fires, and I am sure that without proper appliances a fire well under way in any part of the Park would be uncontrollable, and, besides destroying its beauty, would be of incalculable injury to the countries receiving their water supply from this great reservoir.

A great deal of damage has already been done to the Park by fires, but there are still thousands of acres of dense, low-grade pine timber which protects the snow from the sun's rays, and retards the melting until late in the season. A rapid melting of the snows of this region would certainly be attended by freshets on both sides of the continental divide. The unruly character of Snake and Missouri Rivers in high water are too well known to deserve comment.

If this wonderland is considered worth preservation a liberal appropriation should at once be made to be used in clearing away the down timber for 100 yards on each side of the roads and trails. Many parties pass through the Park camping, and many of the fires which occur are traced to them. I do not believe they are, as a rule, willfully careless, but they often leave their fires believing them out, when in fact they are not, and the winds soon fan the embers into flames. It may become necessary to establish regular camping grounds, at intervals of a few miles, when the camps can be examined every morning by persons charged with the duty, and all remaining fires extinguished. As fires often occur at a distance from water, there should be supplied two or more water wagons, drawn by four mules, a number of folding rubber buckets, axes, and shovels. The rubber buckets could be carried on horses. The tanks could be filled at the nearest streams and hauled to the fires. It very often happens that fires get into the dead roots of

trees, where they can not be reached by shovels and axes, and such fires have to be watched for days, or until they are burned out, while a few buckets of water would put them out at once.

Except at the Mammoth Hot Springs there are no suitable hotels in the Park. I believe the Yellowstone Park Association intend erecting good buildings as fast as possible. The work on their buildings has been greatly impeded by the regulations prohibiting the cutting of live timber in the Park. Your recently received authority for the cutting of the necessary timber for the erection of hotels will greatly facilitate matters.

The Park is so far from the supply of both labor and material that the work is slow. The breaking of a single piece of the saw-mill, for instance, or the sickness or incapacity of a workman brought out from St. Paul, will stop the work until they can be replaced.

The hotel at the Grand Cañon will be completed this season, and the one at the lake is so far under way that mechanics can work on it this winter and have it ready for next season.

That portion of the statute which prescribes that no hotel shall be erected within 440 yards of any object of interest is very embarrassing, and I think should be modified to read 220 yards. A special case in point is the hotel at Upper Geyser Basin; it is about 250 yards from "Old Faithful" geyser and is situated on the only good site for a hotel building in that basin. From its porch every active geyser in the basin can be seen. To enforce the 440-yards proviso would be to push the hotel back out of sight of many.

The work on the roads through the Park is being pushed vigorously by the engineer corps under the immediate direction of Lieut. William P. Craighill, Engineer Corps, and by the close of the season travel will be greatly improved.

There is much down timber on the trails. This, with promised assistance from the engineer party, I hope to have removed very soon.

The game seen in the Park appears so remarkably tame that I believe with time many varieties will become so gentle that they will have little greater fear of man than the animals seen in eastern parks.

With a small appropriation I believe an inclosure on the roadside could be made and stocked with elk and deer and antelope, so as to be seen by all tourists passing. The only expense attending their support would be a little hay for winter.

From what I can learn, the Park until recent years was considered by many living in the neighborhood little else than a fine hunting-ground. I think most of those who were in the habit of hunting in the Park have now a feeling of proprietary interest and recognize that the protection afforded the game makes it a safe breeding-ground, and that there will be more game in the adjacent country if the animals while in the Park are not disturbed.

The carnivora of the Park have, in common with other animals, increased until, I believe, something should be done for their extermination. This will be made the subject of a special letter. If the proposition is favorably considered the work should be done by persons under my control.

In passing through the Park I noticed with surprise the barrenness of most of the water of the Park. Besides the beautiful Shoshone and other smaller lakes there are hundreds of miles of as fine streams as any in existence without a fish of any kind. I have written Col. Marshall McDonald, U. S. Fish Commission, upon the subject, and have received letters from him manifesting a great interest. I hope through



him to see all of these waters so stocked that the pleasure-seeker in the Park can enjoy fine fishing within a few rods of any hotel or camp. There are other reasons, too, to be considered in this connection. The stocking of these waters will add vastly to the breeding-grounds of the tributaries of the Missouri and Snake Rivers and add immeasurably to the food supply obtained from those waters.

The attention of the Secretary is earnestly asked to the fact that the boundary of the Park is not marked, and only known by the description contained in the statute. I believe persons have hunted and trapped within the Park, and may again do so, through ignorance of its boundaries. A survey, a small slashing through the timber, and the piling of a few rocks in the open country is all that is necessary, and should cost very little.

If the guarding of the Park is to remain a military duty it should be settled by law as soon as possible and this station recognized as a military post. It is now considered a cantonment and the troops in cantonment. The temporary buildings are insufficient and not as comfortable as at other posts. Estimates for additional quarters are disapproved upon the grounds that the station of troops in the Park is temporary.

A suitable residence for the Superintendent is necessary, and if an appropriation could be obtained for such a building it would greatly relieve the pressure now felt by officers on duty in the Park.

The most embarrassing features of Park administration appear to be the want of any law except such as is vested in the Secretary of the Interior in establishing rules and regulations.

So far as the Superintendent is concerned he can make no distinction between the offense of breaking a small piece off a formation or breaking a tourist's head, carrying away a bit of incrustation or carrying away a tourist's trunk. I know little of civil law, and have no remedy to propose. I only suggest that something should be done, leaving the system to others of experience.

I have reasons to believe that schemes are on foot looking to the cutting off of a portion of the northeastern corner of the Park. If the preservation of the game of the Park is worthy of consideration this should be strongly opposed, as some of the principal winter ranges of elk and buffalo are in the part proposed to be cut off.

Inclosed herewith is a meteorological record of the post, kept at the post hospital; also an estimate of the cost of care and preservation of the Park under civil administration for fiscal year ending June 30, 1891. It will appear large, but I am confident a lesser number of employés can not, with the probable increase of travel, perform the duties to your satisfaction.

F. A. BOUTELLE,  
*Captain, First Cavalry,*  
*Acting Superintendent Yellowstone National Park.*

*Meteorological record kept at Mammoth Hot Springs, Yellowstone National Park, from July 1, 1888, to June 30, 1889.*

[Latitude, 44° 58'; longitude, 110° 41' 8"; altitude of barometer above sea, 6,370 feet.]

JULY, 1888.

Date.	Self-registering thermometer.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
July 1	71	46	58.50	S.	Fresh breeze	Fair	
2	67	41	54	W.	Gentle breeze	do	Rain during night.
3	73	49	61	SE.	Strong wind	do	
4	80	45	62.50	S.	High wind	Clear	
5	77	47	62	NW.	Light breeze	Cloudy	Rain at night, thunder and lightning during night.
6	80	47	63.50	E.	Calm	do	
7	85	51	68	W.	Light breeze	Clear	10 to 10.20 a. m. rain
8	81	54	67.50	S.	do	Fair	Thunder-storm and rain during night.
9	91	49	70	W.	Gentle breeze	Clear	
10	91	51	71	S.	Light breeze	do	
11	95	54	74.50	W.	Gentle breeze	Fair	Rain at intervals.
12	72	57	64.50	S.	Light breeze	do	Do.
13	71	41	56	SW.	Gentle breeze	Clear	
14	78	44	61	S.	do	do	
15	73	45	59	SW.	do	do	
16	73	40	56.50	NW.	Light breeze	do	
17	74	38	56	NW.	do	Entire clear	
18	86	38	62		Calm	do	
19	90	47	68.50	SW.	Gentle breeze	Clear	
20	87	53	70	NW.	do	do	
21	83	54	68.50	NW.	Light breeze	do	
22	87	47	67	NE.	do	Fair	
23	81	55	68		Calm	Cloudy	Rain in the afternoon.
24	81	48	64.50	NW.	Gentle breeze	do	
25	82	52	67	SW.	do	do	3.30 to 7.30 p. m. thunder-storm, rain and hail.
26	85	48	56.50	SW.	do	Fair	Rain; thunder-storms in the afternoon.
27	84	46	65	S.	Light breeze	do	Rain and hail; thunder-storm passed at a distance 8 p. m.
28	85	49	67	NE.	Calm	do	Thunder and lightning during night.
29	87	51	69	SW.	Light breeze	Clear	
30	80	47	63.50	N.	do	Fair	
31	66	53	59.50	NW.	do	Entire cloudy	Rain from 11.20 a. m. to 2 p. m.

*Summary for the month of July, 1888.*

Thunder-storms, dates of, 5th, 8th, 25th, 26th, 27th, 28th. On the 26th, 3.30 p. m., distinct peals of thunder at a distance; temperature, 85°; 4.50 p. m., thunder-storm from westerly direction approaching; wind changed from southwest; light breeze to west gale; heavy rain; strong electrical detonations and numerous lightning; thermometer fell from 76° to 56° in twenty minutes; double rainbow observed southeast; 5.50 p. m. wind changed from west gale to southeast fresh breeze, with approach of thunder-storm; heavy rain ended at 6.30 p. m.

Average cloudiness (scale of ten)	3.98
Number of days on which cloudiness averaged eight or more	2
Number of days of rain	11
Number of days of hail	1

Temperature during the month: Highest, 95°, on the 11th; lowest, 38°, on the 17th and 18th; mean, 64.07°.

Barometer during the month: Highest, 24.172 inches, on the 21st; lowest, 23.802 inches, on the 1st.

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

AUGUST, 1888.

Date.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Aug. 1	79	48	63.50	S.	Gentle breeze.	Cloudy .....	Rain; thunder-storm.
2	75	46	60.50	S.	Fresh breeze.	Fair .....	Do.
3	71	41	56	SW.	Light breeze.	Cloudy .....	Sprinkling rain.
4	64	48	56	S.	Gentle breeze.	Entire cloudy.	Rain; thunder-storm.
5	64	43	53.50	NW.	do .....	Fair .....	Rain.
6	57	41	49	SE.	do .....	do .....	Rain at intervals; rainbow east 5.30 p. m., southeast 6.30 p. m.
7	65	38	51.50	NW.	do .....	do .....	
8	78	38	58	S.	Fresh breeze.	Clear .....	
9	77	41	59	N.	do .....	Fair .....	Rain; thunder-storm.
10	79	43	61	W.	Gentle breeze.	Clear .....	Rain 1 p. m. to 1.45 p. m.
11	86	46	66	NW.	Light breeze.	do .....	
12	79	51	65	NW.	Gentle breeze.	Fair .....	
13	84	49	66.50	S.	Fresh breeze.	Clear .....	
14	66	53	59.50	NW.	High wind.	Cloudy .....	
15	63	43	53	NW.	Brisk .....	Fair .....	Rain; thunder-storm 5.30 to 6.30 p. m.
16	72	35	53.50	NW.	Light .....	Clear .....	
17	75	39	57	SE.	Fresh .....	Fair .....	Rain; thunder-storm.
18	65	46	55.50	E.	Gentle .....	do .....	Do.
19	75	41	58	NW.	do .....	Clear .....	
20	81	42	61.50	N.	Light .....	do .....	
21	84	45	64.50	N.	do .....	do .....	
22	86	45	65.50	SE.	Gentle .....	do .....	
23	84	48	66	E.	Light .....	do .....	Thunder-storm.
24	89	48	68.50	SE.	Gentle .....	do .....	
25	90	49	69.50	N.	Light .....	do .....	
26	88	51	69.50	NW.	Gentle .....	Fair .....	Sprinkling rain; thunder-storm.
27	84	53	68.50	W.	Fresh .....	do .....	Rain; thunder-storm.
28	86	47	66.50	S.	Light .....	Clear .....	
29	85	46	65.50	NW.	do .....	do .....	
30	85	43	64	NW.	Calm .....	do .....	
31	82	45	63.50	W.	do .....	Entire clear ..	

*Summary for the month of August, 1888.*

Thunder-storms, dates of: 1st, 2d, 4th, 9th, 15th, 17th, 18th, 23d, 26th, 27th.

On the 1st, 2.30 p. m., wind changed from southerly gentle to westerly gale; 3 p. m., rain, thunder-storm with loud peals of thunder; rain ended during night. On the 2d, 1.30 p. m., thunder-storm passed at a distance; wind changed from southerly to southwesterly brisk; thunder-storm approaching from southwest accompanied by a heavy shower of rain; 4.56 p. m. wind changed from southwesterly to northwesterly high; thunder-storm with strong electrical detonations and numerous lightning. Heavy shower of rain; thermometer fell rapidly from 64° to 52°. On the 4th, thunder-storm passed at a distance from west to east; heavy shower of rain. On the 9th, thunder-storm passed at a distance from southwest to east. On the 15th, thunder-storm from southwest in easterly direction at a distance between 1 and 2 p. m. On the 17th, thunder-storm from west to northeast at a distance. On the 27th thunder-storm at a distance in easterly direction with numerous lightning.

Average cloudiness (scale of ten) ..... 3.91  
 Number of days of rain and hail ..... 11

Temperature during the month: Highest, 90°, on the 25th; lowest, 38°, on the 7th; mean, 59°.19.

Barometer during the month: Highest, 24.130 inches, on the 11th; lowest 23.826 inches, on the 4th.

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

SEPTEMBER, 1888.

Date.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Sept. 1	82	43	62.50	NW.	Gentle	Entire clear	Sprinkling rain; thunder-storm passed at a distance from west to east.
2	83	41	62	NW.	do	Clear	
3	82	44	63	NE.	Light	Fair	
4	86	46	66	NW.	Brisk	do	
5	74	51	62.50	S.	High	do	
6	71	37	54	S.	Gentle	Clear	Sprinkling rain.
7	79	39	59	N.	do	Entire clear	
8	84	40	62	SE.	Light	do	
9	81	47	64	SW.	Brisk	Clear	
10	74	42	58	NW.	do	do	
11	82	37	59.50	NE.	Calm	Entire clear	Rain at intervals.
12	85	43	64	S.	High	Clear	
13	78	54	66	S.	Light	do	
14	75	33	54	NW.	Fresh	Entire clear	
15	85	34	59.50	SE.	Calm	Clear	
16	85	40	62.50	S.	Light	do	Rain.
17	83	47	65	S.	Fresh	do	
18	60	50	55	S.	Light	Cloudy	
19	67	43	55	NW.	do	Fair	
20	72	38	55	S.	do	Clear	
21	76	43	59.50	S.	Gentle	do	Sprinkling rain.
22	77	40	58.50	SE.	Calm	do	
23	78	38	58	NW.	Fresh	Clear	
24	70	35	52.50	NW.	Brisk	Entire clear	
25	77	33	55	NW.	Gentle	do	
26	68	35	51.50	NW.	Brisk	Clear	Sprinkling rain.
27	72	34	53	NW.	Calm	do	
28	69	35	52	NW.	Fresh	Entire clear	
29	72	34	53	NW.	Light	Clear	
30	74	40	57	NW.	Fresh	do	

*Summary for the month of September.*

Average cloudiness (scale of ten)..... 1.62  
 Number of days of rain ..... 5

Temperature during the month: Highest, 86°, on the 4th; lowest, 33°, on the 14th and 25th; mean, 57.83.

Highest barometer, 24.212 inches, on the 24th; lowest barometer, 23.772 inches, on the 18th.



*Meteorological record kept at Mammoth, Hot Springs, etc.—Continued.*

OCTOBER, 1888.

Date.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Oct. 1	74	38	56	NW.	Light.....	Clear.....	
2	73	35	54	NW.	Gentle.....	do.....	
3	69	33	51	NW.	Brisk.....	Fair.....	
4	64	41	52.50	NW.	Gentle.....	do.....	Rain during night.
5	63	30	46.50	N.	Light.....	Entire clear..	
6	68	30	48	N.	Calm.....	do.....	
7	62	28	45	SW.	Gale.....	Fair.....	
8	52	38	45	S.	Fresh.....	do.....	Rain, hail; thunder-storm; at a distance 4.45 p. m to 8.30 p. m.
9	56	35	45.50	N.	Brisk.....	Clear.....	Rain; afternoon.
10	56	27	41.50	SW.	Gentle.....	Cloudy.....	
11	52	42	47	SW.	do.....	do.....	
12	62	39	50.50	S.	Light.....	do.....	Rain; double rainbow east at 5 p. m.
13	51	39	45	W.	Fresh.....	Fair.....	
14	49	28	38.50	S.	Brisk.....	Cloudy.....	
15	51	38	44.50	S.	do.....	Entire cloudy	Sprinkling rain and hail.
16	58	34	46	S.	Gentle.....	Cloudy.....	Snow at intervals.
17	54	33	43.50	SE.	Light.....	Fair.....	
18	41	24	32.50	NW.	Fresh.....	Clear.....	Rain; thunder-storm from westerly direction.
19	57	21	38	S.	Light.....	Fair.....	Snow.
20	46	31	38.50	NW.	Brisk.....	Clear.....	
21	42	23	32.50	NW.	Fresh.....	Cloudy.....	Snow at intervals.
22	48	27	37.50	SW.	Gentle.....	Entire cloudy	Snow.
23	47	34	40.50	S.	Gale.....	do.....	Do.
24	48	31	39.50	S.	Fresh.....	Cloudy.....	Snow at intervals.
25	36	24	30	S.	High.....	do.....	Snow.
26	35	22	28.50	N.	Calm.....	Fair.....	Do.
27	37	13	25	S.	Gentle.....	do.....	
28	53	31	42	S.	Brisk.....	do.....	
29	62	37	49.50	SE.	Fresh.....	do.....	
30	56	34	45	S.	High.....	Entire cloudy	Rain.
31	41	30	35.50		Calm.....	do.....	Snow.

*Summary for the month of October.*

Thunder-storms, dates of: 7th, 17th.

Average cloudiness (scale of ten).....	5.44
Number of days of rain and hail.....	7
Number of days of snow.....	1

The snow-fall was inappreciable on 8 days. Depth of snow-fall during the month, 2.7 inches.

Temperature during the month: Highest, 74°, on the 1st; lowest, 13°, on the 27th; mean, 40.97.

Barometer during the month: Highest barometer, 23.978 inches, on the 10th; lowest barometer, 23.420 inches, on the 25th.

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

NOVEMBER, 1888.

Date.	Self-registering thermometers.			Winds.		State of weather.	Remarks.
	Maximum.	Minimum.	Mean.	Direction.	Force.		
1888.	°	°	°				
Nov. 1	34	20	27	SE.	Brisk .....	Cloudy .....	Snow at intervals.
2	39	28	33.50	SE.	High .....	Entire cloudy.	Snow at intervals; rain in the afternoon.
3	41	30	35.50	NW.	do .....	do .....	Snow.
4	36	23	29.50	SE.	Calm .....	Fair .....	
5	30	13	21.50	S.	Fresh .....	do .....	Snow at night.
6	34	20	27	S.	High .....	Cloudy .....	Snow at intervals
7	33	20	26.50	NW.	Gentle .....	Fair .....	Do.
8	32	10	21		Calm .....	Clear .....	
9	38	17	27.50	S.	Gentle .....	do .....	
10	39	13	26	SE.	Light .....	do .....	
11	42	17	29.50	SE.	do .....	do .....	
12	42	22	32	S.	Brisk .....	Fair .....	
13	38	25	31.50	S.	Light .....	Entire cloudy	Snow.
14	27	13	20		do .....	do .....	Do.
15	17	-4	6.50		Calm .....	Entire clear	
16	17	-4	6.50		do .....	Fair .....	
17	36	17	26.50	SE.	Light .....	Cloudy .....	Do.
18	42	22	32		Calm .....	Clear .....	
19	44	23	33.50		do .....	do .....	
20	36	25	30.50	SE.	Gentle .....	Fair .....	
21	38	20	29		Light .....	Clear .....	
22	39	22	30.50	SE.	do .....	Cloudy .....	
23	43	28	35.50	SE.	do .....	Fair .....	
24	43	18	30.50	SE.	Calm .....	Entire clear	
25	43	24	33.50	SE.	Light .....	Fair .....	
26	38	31	34.50	NW.	Calm .....	Entire cloudy	Do.
27	36	22	29	NW.	Brisk .....	Fair .....	Snow forenoon.
28	29	11	20		Calm .....	do .....	
29	28	1	14.50		do .....	Clear .....	
30	31	10	20.50	SE.	Light .....	do .....	

*Summary for the month of November.*

Average cloudiness (scale of ten) .....	4.83
Number of days of rain .....	1
Number of days of snow .....	11

Snow-fall on three days inappreciable; depth of snow-fall during the month, 10.8 inches.

Temperature during the month: Highest, 44°, on the 19th; lowest, -4°, on the 15th and 16th; mean temperature, 25°.45.

Barometer during the month: Highest, 24.032, on the 19th; lowest, 23.526, on the 6th.

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

DECEMBER, 1888.

Day of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.*	Depth of snow-fall.	
1888.	°	°	°			<i>Inches.</i>	<i>Inches.</i>	
Dec. 1	32	18	14	6.30 a. m.....	During night.	.19	2.10	W.
2	32	13	19					
3	38	17	21					S.
4	46	29	17					S.
5	43	16	27					S.
6	40	21	19					SW.
7	39	21	18					S.
8	40	26	14	7.15 a. m.....	8.45 a. m.....	.01	0.15	SE.
9	39	31	8					S.
10	35	23	12	12.30 p. m.....	8.15 p. m.....	.06	0.60	S.
11	35	22	13	6.30 a. m.....	9.30 a. m.....	.05	0.55	SE.
12	40	27	13	During night.	11 a. m.....	.10	1.05	S.
13	39	19	20					SE.
14	36	24	12	7.30 a. m.....		.20	2.10	S.
15	36	24	12			.45	4.05	SE.
16	34	22	12		During night.	.25	2.60	S.
17	34	17	17					S.
18	27	14	13					SE.
19	40	13	27					SE.
20	38	15	23					S.
21	42	18	24					S.
22	39	23	16	9.30 a. m; 5 p. m.	3 p. m.; during night.	.05; rain inappreciable.	0.70	S.
23	35	16	19	9.30 a. m.....		.15	1.15	N.
24	18	1	17		1.30 p. m.....	.06	0.80	
25	6	-11	17					
26	8	-13	21					S.
27	11	-9	20					
28	16	-6	22					SE.
29	16	-3	19					S.
30	14	-6	20					
31	26	-3	29					SE.

\* Total precipitation, rain, melted snow, and hail.

*Summary for the month of December.*

Average cloudiness (scale of ten).....	4.27
Number of days of rain.....	1
Number of days of snow.....	11
Depth of snow-fall during the month.....	inches 15.85
Total precipitation.....	do. 1.57

Temperature during the month: Highest, 46°, on the 4th; lowest, -13°, on the 26th; mean, 22°.1.

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

JANUARY, 1889.

Day of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.	Depth of snow fall.	
1889.	°	°	°			<i>Inch.</i>	<i>Inches.</i>	
Jan. 1	20	1	19					
2	20	-3	23					
3	21	-4	25					
4	30	10	20					S.
5	33	11	22					S.
6	29	20	9					S.
7	26	10	16					W.
8	15	-7	22					
9	25	5	20	During night.	11 a. m.	0.15	2.25	SE.
10	23	12	11	1.10 p. m.	During night.	0.2	1.75	S.
11	31	16	15	10.30 a. m.	11.20 a. m.	Inappreciable.	Inappreciable.	NW.
12	25	10	15					E.
13	18	2	16	During night.	7.20 p. m.	0.45	4	
14	12	-5	17					
15	13	-4	17	7.30 a. m.	6.10 p. m.	0.2	2	S.
16	16	2	14					SE.
17	16	6	10					SE.
18	18	3	15					SE.
19	21	3	18					S.
20	23	11	12					SE.
21	24	9	15					SW.
22	22	2	20	11.				NW.
23	38	16	22	11.30 a. m.	12.10 p. m.	0.0†	0.4	SE.
24	38	16	22					W.
25	31	11	20					NW.
26	24	-2	26					SW.
27	30	7	23					
28	33	10	23					SE.
29	35	7	28					SE.
30	31	3	28					
31	29	6	23					SW.

*Summary for the month of January.*

Number of days of snow..... 6  
 Total precipitation..... inches.. 1.05  
 Depth of snow-fall..... do.... 9.04

Temperature during month: highest, 38°, on the 24th; lowest, -7°, on the 8th; mean, 14° 7;  
 mean range, 24° 9.



*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

FEBRUARY, 1889.

Day of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.	Depth of snow-fall.	
1889.	°	°	°			<i>Inch.</i>	<i>Inches.</i>	
Feb. 1	29	15	14					S.
2	31	17	14	8.50 a. m.	11 a. m.		Inappreciable.	S.
3	36	16	20					S.
4	38	18	20					SW.
5	36	11	25					S.
6	37	9	28					SE.
7	33	10	23	2.50 p. m.	3.35 p. m.		Inappreciable.	SE.
8	30	11	19					
9	23	13	10	8.50 a. m.	5.50 p. m.	0.15	1.6	
10	29	16	13	8.35 a. m.	3 p. m.	0.05	0.5	
11	35	22	13	During night	10.30 a. m.	0.3	3.2	NW.
12	34	19	15	7.25 a. m.	4.30 p. m.	0.2	0.7	SE.
13	32	19	13	6.30 a. m.		0.6	5.9	NW.
14	19	7	12		8.30 a. m.	0.22	2	NW.
15	10	— 9	19	9.50 a. m.	10.30 a. m.		Inappreciable.	NW.
16	4	—15	19	3.55 p. m.	4.20 p. m.		do.	
17	12	—13	25					
18	16	— 2	18	2.45 p. m.	During night	0.1	0.8	SE.
19	17	— 6	23					SE.
20	20	3	17	9.30 a. m.	4.20 p. m.	0.2	1.9	S.
21	31	19	12	7.35 a. m.	5.55 p. m.	0.06	0.5	SW.
22	32	— 8	40	During night.	During night.		Inappreciable.	N.
23	37	—11	48	12.30 p. m.	5.35 p. m.		do.	S.
24	36	17	19	During night	During night.	0.05	0.4	
25	40	17	23	11.50 a. m.	12.35 p. m.		Inappreciable.	S.
26	42	24	18					SW.
27	45	19	26					S.
28	47	23	24					
29								

*Summary for the month of February.*

Number of days of snow..... 18  
 Total precipitation..... inches.. 1.93  
 Depth of snow-fall..... do.... 17.5

Temperature during the month: highest, 47°, on the 28th; lowest, —15°, on the 16th; mean, 19.5°;  
 mean range, 20.36°.

*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

MARCH, 1889.

Day of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.	Depth of snow-fall.	
1889.	°	°	°			<i>Inch.</i>	<i>Inch.</i>	
Mar. 1	47	12	35					
2	46	14	32					
3	42	15	27					SE.
4	46	13	33					SE.
5	53	16	37					
6	54	20	34					
7	49	20	29					
8	45	19	26					N.
9	49	19	30					SW.
10	49	28	21	During night	During night	0.05	0.6	E.
11	48	25	23	5.20 p. m.	6.25 p. m.	0.03		N.
12	45	30	15	3.50 p. m.	During night	0.04		S.
13	45	30	15	7.25 a. m.	8.45 a. m.	Sprinkling		S.
14	48	22	26	5.25 p. m.	8 p. m.	0.05		S.
15	43	33	10	3.20 p. m.	5.15 p. m.	0.04	Melted as it fell	S.
16	50	30	20	4.35 p. m.	5.10 p. m.		Inappreciable.	SE.
17	43	30	13	7.25 a. m.	7.50 a. m.		do	S.
18	46	35	11	4.35 p. m.	5.15 p. m.	Inappreciable.		S.
19	39	29	10					NW.
20	44	17	27	During night	7.45 a. m.	0.06	0.9	SE.
				12.05 p. m.	5.30 p. m.			
21	44	16	28					NW.
22	52	18	34					SE.
23	54	23	31					S.
24	54	23	31					NW.
25	52	33	19					NW.
26	55	26	29					S.
27	57	28	29					S.
28	56	32	24					NW.
29	55	31	24					S.
30	42	29	13	2.40 p. m.	3.50 p. m.	0.04		NW.
				6.10 p. m.	During night			
31	43	29	14	12.45 p. m.	1.40 p. m.	0.22	0.3	S.
				4.30 p. m.	5.15 p. m.			

*Summary for the month of March.*

Number of days of snow..... 6  
 Number of days of rain..... 6  
 Total precipitation..... inches.. 0.53  
 Depth of snow-fall..... do.... 1.8

Temperature during the month: Highest, 57°, on the 27th; lowest, 12°, on the 1st; mean, 36°.13;  
 mean range, 24°.19.

Meteorological record kept at Mammoth Hot Springs, etc.—Continued.

APRIL, 1889.

Day of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.	Depth of snow-fall.	
1889.	°	°	°			<i>Inch.</i>	<i>Inches.</i>	
Apr. 1	58	39	19	8.50 p.m.	During night.	0.03		S.
2	55	40	15					NW.
3	60	26	34					S.
4	69	33	36					SW.
5	49	35	14	11.15 a.m.	2.45 p.m.	0.09		S.
6	50	33	17	8.40 p.m.	During night.	0.02		NW.
7	56	32	24					NW.
8	53	25	28					N.
9	55	25	30					NW.
10	57	25	32					NW.
11	61	26	35					NE.
12	55	34	21					SE.
13	49	36	13	During night 12.30 p.m.	7.25 a.m.	0.1		SE.
14	47	25	22	6.10 p.m.	8.25 a.m.	0.29	2.2	SE.
15	43	26	17	1 p.m.	During night.	0.04	0.2	NW.
16	43	25	18	During night	5.15 p.m.	0.01	0.3	S.
17	40	29	11	do	10.05 a.m.	0.1	0.7	NW.
18	46	19	27					E.
19	52	28	24					S.
20	64	34	30					S.
21	63	34	29					S.
22	57	38	19	12.25 p.m.	5.15 p.m.	.18		W.
23	56	32	30	6.45 p.m.	During night.	.05	.3	N.
24	62	32	30	11.50 a.m.	2.25 p.m.	Inappreciable.		S.
25	63	42	21					NW.
26	64	29	35					S.
27	64	31	33					S.
28	54	34	20	During night.				NW.
29	49	29	20		7.30 a.m.	0.1	.1	NW.
30	51	29	22	2.15 p.m.	2.30 p.m.	Sprinkling.		NW.

*Summary for the month of April.*

Number of days of snow	6
Number of days of rain	7
Total precipitation	inches.. 0.92
Depth of snow-fall	do. 3.8
Temperature during month: Highest, 69°, on the 4th; lowest, 19°, on the 18th; mean, 42°.83; mean range, 24°.	

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*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

MAY, 1889.

Day of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.	Depth of snow-fall.	
1889.	°	°	°			Inches.	Inches.	
May 1	54	26	28					NW.
2	63	27	36	During night				SE.
3	54	37	17		8.50 a. m.	.04		S.
4	44	33	11	7.35 a. m.	7.15 p. m.	.33	.2	S.
5	51	33	18	During night	12.15 p. m.	.08	.1	SE.
6	49	33	16	At intervals	At intervals	.07	.1	SE.
7	43	31	12	8.30 a. m.	11.10 a. m.	.02		NW.
8	43	31	12	3 p. m.	4.55 p. m.	.03		NW.
9	45	32	13	During night	9.40 a. m.	.11		NW.
10	56	32	24					NW.
11	61	29	32					NW.
12	68	31	37					S.
13	69	40	29	4.15 p. m.	6.20 p. m.	.03		SE.
14	57	39	18	During night	6.15 a. m.	.15		NW.
15	43	30	13	9.35 a. m.		.07	.1	N.
16	41	26	15		During night	.05	.2	NW.
17	49	21	28	8.25 p. m.				S.
18	53	32	21		During night	.04		SE.
19	60	39	30					NW.
20	70	31	39					S.
21	77	41	36					S.
22	72	38	34					S.
23	64	37	27					NW.
24	65	40	25					NW.
25	70	38	32					NW.
26	74	37	37					SE.
27	64	46	18	10.35 a. m.	3.10 p. m.	.15		SE.
28	63	42	21	During night	During night	.06		NW.
29	77	41	36					S.
30	70	49	21	During night	During night	.17		SW.
31	65	34	31	12.35 p. m.	3.10 p. m.			S.

*Summary for the month of May.*

Number of days of snow	5
Number of days of rain	10
Total precipitation	inches. 1.40
Depth of snow-fall	inch. .7

Temperature during month: Highest, 77°, on the 21st; lowest, 21°, on the 17th; mean, 46°.79; mean range, 24°.74.



*Meteorological record kept at Mammoth Hot Springs, etc.—Continued.*

JUNE, 1889.

Day of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.	Depth of snow-fall.	
1889.	°	°	°			<i>Inches.</i>	<i>Inches.</i>	
June 1	59	38	21					S.
2	65	33	32					NW.
3	65	36	29					NW.
4	80	37	42					E.
5	74	48	26	1.15 p. m.	3.50 p. m.	.22		SE.
6	70	42	28	During night	During night	.01		S.
7	68	45	23	4.35 p. m.	4.50 p. m.	Inappreciable.		NW.
8	50	34	16	7.30 a. m. } 7.15 p. m. }	11.15 a. m.	.02		NW.
9	56	35	21		During night	.08		NW.
10	73	35	38					NW.
11	78	42	36					S.
12	82	45	37	1.25 p. m.	2.10 p. m.	Inappreciable.		W.
13	80	47	33	3.05 p. m.	3.30 p. m.	.01		NW.
14	79	43	36					SE.
15	65	42	23	10.15 a. m.	10.35 a. m.	Inappreciable.		SE.
16	65	45	20	11.50 a. m.	4.15 p. m.	.12		E.
17	75	42	33					SE.
18	71	49	22	During night	During night	.01		W.
19	64	39	25	4.40 p. m.	5.15 p. m.	.09		SE.
20	70	34	36					NW.
21	81	37	44					S.
22	79	44	35	1.35 p. m.	1.55 p. m.	.01		S.
23	78	53	25					S.
24	77	41	36					S.
25	86	42	44					SE.
26	87	53	34					S.
27	82	50	32					S.
28	63	45	18	12.15 p. m.	3.15 p. m.	.08		S.
29	74	45	29	1.40 p. m.	3.35 p. m.	.01		SE.
30	81	47	34					S.

*Summary for the month of June.*

Number of days of rain ..... 14  
 Total precipitation ..... inch.. .66

Temperature during month: Highest, 87°, on the 26th; lowest, 33°, on the 2d; mean, 57°.43; mean range, 30°.27.



# REPORT

OF THE

SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

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1890.

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WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1890.





# R E P O R T

OF THE

## SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

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DEPARTMENT OF THE INTERIOR,  
OFFICE OF THE SUPERINTENDENT  
YELLOWSTONE NATIONAL PARK,  
*Mammoth Hot Springs, Wyo., June 30, 1890.*

SIR: I have the honor to submit the following report of my administration of affairs in the Yellowstone National Park during the fiscal year ending June 30, 1890.

I assumed charge June 1, 1889, in the midst of the travel season, and was at once so busily engaged that I did not keep any systematic record of events, and I shall be obliged to rely principally upon memory of incidents referred to.

### PROTECTION OF FORESTS.

Probably the most important subject I have to report upon is the protection of the Park from forest fires. Last season was probably the most dry known in the history of Montana and Wyoming. Forest fires raged uncontrolled on every side of the Park and destroyed millions of acres of valuable timber. Commencing about the middle of July, the troops under my command were employed almost constantly and at times worked harder than I ever before saw men work, except perhaps after some disaster. Many times they were required to ride all night and fight fire all the following day.

Seventy fires are known to have occurred in the Park, all of which except three, were extinguished. One of these was between the Yellowstone and Shoshone Lakes, and before it was discovered had gained such headway that it was impossible for any force to do anything with it. It was off all routes of travel and the burnt district will seldom be seen.

The area was large and to be deplored. It was probably started by lightning as no person was believed to have been in that neighborhood; as it was not in the hunting or trapping season there were no inducements for people to penetrate that locality.

Another fire was started by some squatters just south of the Park boundary, which burned into the Park and did a great amount of damage. The other uncontrolled fire was the result of the grossest carelessness on the part of the lumbermen engaged in cutting lumber for the Lake Hotel. The fire spread from their camp fire and was three times under control and allowed to escape. It ran to the bank of the Yellowstone River and jumped it where it was 300 yards wide. This

fire crossed the road between the cañon and the lake and has left a very unsightly mark.

At the time the two latter fires were burning, every available man was engaged on a fire in the Madison Cañon, doing work which approached the heroic. For three weeks officers (Capt. P. S. Bonus and Lient. P. E. Traub) and men struggled with this fire, and in the end controlled it. If it had not been controlled it would have reached the Gibbon Cañon, and burned over one of the most beautiful drives in the Park.

An instance will illustrate the character of the work. A detachment of Troop K, First Cavalry, left this post at half past 1 o'clock one morning in August and by 6 o'clock was at a point in Gibbon Cañon 28 miles away, where it joined a detachment of Troop A, First Cavalry, which had been at work all the previous day on a fire on the top of one of the sides of the Gibbon Cañon. The climb to the work was so difficult that two men had epileptic fits from the effort. The fire was in the timber and the ground covered with fallen dry trees.

It took me just an hour to walk around it in making an examination with a view to determining whether it was possible to do anything with it. Concluding that it was worth the trial, I called up all available men—twenty-nine in number—and by night a clearing was made entirely around the fire. All combustible matter was scraped away to the earth. The fire was surrounded and controlled. There was no water on the height, and the only way to do anything was to keep the fire within bounds and let the interior burn out. High winds prevailed almost every afternoon while this fire was burning, and at times the flames would jump the cut-off and get beyond control, but as soon as the wind subsided another cut was made, and at the end of three weeks the fire was out.

If this fire had not been controlled the prevailing westerly wind would have swept it across Hayden Valley and destroyed the feed on the greatest winter range of the buffalo and elk.

Many times during the season the camps were so stripped of men that those remaining were obliged to do guard duty upon alternate days.

Up to a late date last season there was no fire equipment in the Park. The few axes and shovels supplied the troops for garrison purposes were the only tools available. Application was made for funds for the purchase of axes, shovels, and folding rubber buckets, but through some misunderstanding the authority was not promptly received, and the work was doubly hard from want of proper tools.

While at the hotel communicating with a fire party by telephone, an incident occurred which I think should be mentioned in this report. I was greatly troubled that I had not what was needed, and mentioned to a party of gentlemen that I did not know what I should do. I had exhausted all men and implements under my control and was afraid that the Park would burn in spite of every possible effort. I remarked that I had applied for rubber buckets and had failed to get them; that I supposed the Secretary had no funds, etc.; whereupon Mr. J. Lewis, of Mauch Chunk, Pa., exclaimed that "if this great United States Government or the Secretary of the Interior has not money to buy you a few rubber buckets for the protection of this wonderful and beautiful country I have." He handed me \$40 from his purse. In three days I was supplied with two dozen buckets, which were of incalculable service during the remainder of the season. Would that Congress would take such an interest in the protection of the Park before it is too late.

It is proper to state here, that on the 27th of July I telegraphed to the Interior Department for permission to purchase buckets and axes for use in extinguishing fires. Prior to that time I had asked permission to expend not exceeding \$50 in extending a telephone line from the hotel at Mammoth Hot Springs to my office, and in putting up signs and placards marking routes of travel and objects of interest. On the 30th of July the Department directed me to expend not exceeding \$200, which was considerably more than the specific sums asked for, "for the matters referred to, towards telephone connection, signs, and placards, buckets, axes, and other incidentals necessary to the good management of the Park."

It is probably generally understood that the troops in the Park are engaged in the protection of the curiosities. They are so employed, but the amount of such work performed cuts so small a figure compared with the work on fires as not to be worth mentioning.

The work is probably not a military duty and certainly not desirable, but none other than thoroughly organized and disciplined men could be called upon to ride all night and fight fire all the next day, as has been done and done cheerfully.

Your authority for the establishment of regular camping grounds, where all camp fires can be examined as soon as abandoned, will, I think, do much to lessen the number of fires. Fires are generally traceable to camping parties. I do not charge much willful carelessness to them, but many have had no previous experience in camping, and leave their camps believing they have taken all necessary precautions. They may have left a brand, which in the morning was perfectly harmless, but in the afternoon, under the influence of high wind, becomes an incendiary of the worst character. The country has been so moist this season that I have not found it necessary to place any restrictions on camping. I shall, however, establish camps as soon as it becomes advisable.

I repeat my recommendation of last year, that there be supplied at least two tanks and the necessary number of draught animals for the transportation of water. It very often happens that fire gets into the dead roots of trees, where it can not be reached by shovels or axes. Such fires have to be watched for days or until burned out, while a few buckets of water would extinguish them at once. Special reference is of course made to fire at too great a distance from streams for the water to be carried by hand.

So much has been ably said and written upon the subject of the preservation of the Yellowstone Park that it seems hardly worth while for me to trouble you with any recital of the many reasons why Congress should deal generously with it. Language and art have so far failed to properly paint the beauty of the Grand Cañon; a single fire would seriously mar its grandeur by destroying its fringe of forest. The shores of the Yellowstone Lake have already been disfigured by fires. A single fire would entirely destroy the beauty of what bids fair to be one of the most delightful summer-hotel sites in the world.

I am so concerned for the safety of the banks of the Yellowstone Cañon that I do not permit any camping below the upper falls.

#### WATER STORAGE.

Visitors to the Park invariably leave it with the impression that no reasonable expense should be spared in protecting its beauties and objects of interest, but beyond all these, which can only be enjoyed by



persons of means, should be considered the protection of the forest as a water-storage system. The irrigation of the arid regions of the country is attracting a great deal of attention, and vast sums will probably in the next few years be expended in some system of water storage. The time and talent of Congress is being exhausted in devising schemes for the benefit of the countries receiving their waters from this neighborhood. Yet this great natural reservoir seems to pass unnoticed. We have here about 3,400 square miles of territory, 83 per cent. of which is timbered. The altitude is great and the snow-fall enormous. The whole area is indented with natural reservoirs of from a few feet in dimension to the extent of the Yellowstone Lake. The snow in the timber clad mountains, protected as it is, melts slowly, and late in the season, after the spring rains have ceased, furnish water for irrigating purposes. The disastrous results of denuding the mountains of timber in China and other countries are too well known to require comment.

We have here the headwaters and water supply of two of the greatest mountain streams on the continent—the Yellowstone and the Snake. The freshets of the Missouri, which receives the waters of the Yellowstone, are now something terrible. The same may be said of the Snake, which has its early and later or June rise. What would be the result of only an early rise in the Snake? Simply destruction along its whole valley course. Later, when the water would be required for irrigation? Ruin to all those dependent upon a generous flow of the streams after the cessation of the spring rains. These results seem certain to follow the destruction of the forests of the Yellowstone National Park.

#### WILD ANIMALS.

I have every reason to believe that the protection of the wild animals in the Park has been perfect. I have no reason to believe that a single animal has been destroyed. The protection of the past few years has resulted in a great increase in all of the game animals. First in importance, on account of its almost extinction, comes the buffalo. As soon as the fires of the Park would allow me to leave the traveled routes I started out in an attempt to make something of an enumeration, but was not on their range two days before I became convinced that it was impossible. The animal, driven for safety, as he has been, to the mountain forests, seems to have entirely changed in his habits. In the summer season they are broken up into small bands and scattered over a wide area of timber-covered mountains. This I believe to be the result of the accidents of their lives. Probably when they first took to the forest they lost sight of each other, and in years adopted the habit of breaking up into families. In the winter the deep snows drive them to the open country for food. They are then found in large herds. This habit of dispersion and assembly seems to be very like the antelope.

The number of elk in the Park is something wonderful.

In the neighborhood of Soda Butte herds were seen last winter estimated at from 2,000 to 3,000. The whole open country of the Park seems stocked to its capacity for feeding. Other varieties of game animals are thought to be increasing rapidly.

As reported last year the herds of buffalo and elk do not seem to have enough calves. I am more than ever convinced that the bear and puma do a great deal of mischief and ought to be reduced in numbers. While they may be something of a curiosity to visitors to the Park, I hardly think them an agreeable surprise. Very few who come here "have lost any bear."



Visitors are sometimes a little incredulous as to the great number of large game animals in the Park and complain that they have seen nothing.

It is the habit of all animals which shed their antlers to seek the high points during the fly season, and while hundreds of elk and deer may be seen between the cañon and the lake in the first week of June, there are more at the end of the month. Very little expense would attend the inclosing of a band of elk at some point in Swan Lake Basin and of buffalo in Hayden Valley. I am sure they can be caught without any great trouble and inclosed so that all may at least see a sample.

The Park was visired last summer by Governor Francis E. Warren, of Wyoming, who manifested so lively an interest in the preservation of the game that after his departure I ventured to address him the following letter:

CAMP SHERIDAN, WYO., *November 25, 1889.*

DEAR SIR: We have, as you know, what is probably the last of the buffalo or bison left in the country. While in the Park they are comparatively safe from destruction, but, unfortunately, at certain seasons of the year they sometimes drift down into Wyoming and become a prey to the taxidermist hunter, who kills for the head.

The legislature of Montana at its last session enacted a law which will probably protect those which drift into Montana, as some occasionally do.

If you think well of it will you be good enough to ask your legislature for a similar bill? I believe the penalty should, however, be not less than \$500 or six months' imprisonment, and when a fine can be collected one-half should go to the agent of the Territory or the informer.

Unless everything possible is done this last remnant of our greatest American game will certainly be obliterated.

I have addressed a letter upon this subject to the secretary of Idaho.

If both Territories will take action the Park will be as well protected by laws of the States and Territories surrounding it as by the authorities stationed within.

I am, sir, very respectfully, your obedient servant,

F. A. BOUTELLE,  
*Captain First Cavalry, Acting Superintendent.*

Governor FRANCIS E. WARREN.

Governor Warren took prompt action on my recommendation and the legislature of Wyoming at its last session enacted a law which, if enforced, as I believe it will be, will protect all buffalo straying off the reservation in that direction.

A similar communication was addressed to the secretary of Idaho and a reply received saying that the governor would lay the matter before the legislature, but I have not learned that any action was taken.

#### FISH.

Reference was made in my last report to the barrenness of many streams and lakes in the Park, and the hope expressed that through Col. Marshall McDonald, United States Fish Commissioner, these streams might be stocked. I take great pleasure in reporting that that efficient officer visited the Park last season and at once decided to commence the stocking of its waters. He sent out 7,000 young trout which were planted in the west and middle forks of the Gardiner River above the falls, the Gibbon River above Virginia Cascade, and the Fire-hole River above Keppler's Cascade. He has now hatched and ready for shipment as soon as I telegraph him that the mountains are passable 150,000 trout and salmon for the lakes and rivers of the Park. This great work will probably be accomplished by the middle of July.

It will probably be the greatest feat in moving large bodies of young fish ever attempted and will reflect a world of credit upon Colonel Mc-

Donald, through whose efforts in another direction the price of the laborers' pound of shad has been reduced from 10 to 3 cents.

Colonel McDonald while here though not in very robust health, was not willing to take anything on faith and made the trip on horse-back over a very rough mountain trail to the Shoshone and Lewis Lakes and the outlet into Snake River, making examination of all the waters he proposed to stock.

It may not appear to all that the stocking of these waters is a matter of great importance, but, being an enthusiastic angler, it appears to me very desirable that all waters of this pleasuring ground for the people should be so filled with fish that all who come may enjoy the sport. The streams are full of fish-food and there can be no reasonable doubt of the success of the enterprise. Once stocked and protected, as they can readily be, until they begin to multiply, it will be impossible, in the short season the Park is accessible, to fish them out.

#### THE NATIONAL ZOOLOGICAL PARK.

During my visit to Washington last winter I had many conversations with Mr. W. T. Hornaday, at that time connected with the National Zoological Park, and had agreed to send to that institution living specimens of all of our wild animals. I told Mr. Hornaday that the energies of all under my command were at the disposal of any public enterprise or institution, but that some expense would attend the capture, care, and feeding of what I should be able to send. Mr. Hornaday thought that he would be able to place a small sum at my disposal to cover the expense of traps, food, etc. I have heard nothing from Mr. Hornaday's successor and conclude that he does not think well of the idea or that it has not been mentioned to him.

#### RIVERS AND BRIDGES.

The work done during the past year by the Engineer Corps under the immediate direction of Lieut. W. E. Craighill, Corps of Engineers, was of a very expensive character, it being principally in Gibbon Cañon and on a grade from the old to the new site of the hotel at Grand Cañon. Both works required retaining walls and many bridges.

About 16 miles of new road were constructed.

Some very groundless complaints have been made that more new roads were not opened by Lieutenant Craighill last season with the amount of money at his disposal. I believe he is following the proper system in building roads of a lasting character as he goes and that it would be bad policy to open any roads through the timber until all roots are removed and the road made smooth and comfortable. The journey through the Park is long and at best fatiguing. A large percentage of visitors are beyond the meridian of life and unable to endure any other than good roads. The appropriation bill for the next fiscal year, as prepared, requires all work to be done by contract. I am sure the person who advocated that proviso must have done so very thoughtlessly, or have been ignorant of the situation. Of course before any work can be done by contract, surveys must be made, specifications prepared, etc. The roads in the Park are in the spring crossed by many mountain torrents and many breaks occur. Some of these are of considerable extent, others too small to be considered in contract. The crust of the roads is soft and often broken through, requiring immediate

attention. Some drifts cross the roads which can only be removed by shoveling, etc.

As suggested in my telegram upon this subject, if the contract system is insisted upon, for the bulk of the work upon the roads and bridges a portion of the sum appropriated should be expended in repairs by day labor under the direction of the engineer officer in charge of the work.

About a month, with several engineers would have been necessary to make surveys and prepare contracts for repairs this spring. In the mean time the roads would have been closed, even to supplies for the hotels, and travel impossible. Visitors could not have made the tour of the Park before July 1.

The Park is a long way from the supply of labor and working material and equipment; consequently the competition on road work will be confined to a few who are now equipped. A ring will probably be formed and the work cost very much more than as now conducted.

In connection with appropriations for roads and bridges your attention is invited to the fact that preparations are being made for a great celebration in Chicago in 1893, which will probably bring to the United States more foreigners than any event in the history of the country. Liberal appropriations should be made in order that the roads through this National Park may be as nearly perfect as possible.

#### TRANSPORTATION.

The transportation in the Park, under the direction of Mr. George W. Wakefield, has been increased and carried nearly to perfection.

The coaches are as fine as human ingenuity can invent. In order that there may be perfect safety to passengers only perfectly gentle horses are purchased and used. They are obtained principally in Iowa, and cost about twice as much as the native horse of the country.

In the seven years Mr. Wakefield has been engaged in this business no passenger has ever received any injury.

Last year there was considerable complaint that passengers were not allowed stop-over privileges. I called Mr. Wakefield's attention to the matter and this year, besides the coaches, which make the regular trips, a daily stage leaves all the hotels for the accommodation of such as choose to stop over.

#### HOTELS.

I am sorry not to be able to report a better condition of affairs and progress in the matter of hotels.

The hotel at the Mammoth Hot Springs is about in character as when previous reports of superintendents were made.

The temporary shelter erected at Norris Basin after the destruction by fire of the hotel at that place in 1887 still represents a hotel with suitable first-class accommodations. Nothing has been done in the way of improvements. Not even common decencies have been provided.

Nothing has been done at either the Lower or Upper Basin hotels. At the latter point there is a very reasonable excuse for delay, as the law prohibits building upon the only suitable site in that basin. A bill now before Congress will, if it becomes a law, open this site to lease.

The two cottages at Lower Basin are very comfortable, but they will only accommodate comfortably 16 persons. When a greater number of visitors assemble at this point, all who can not be accommodated in



the cottages are lodged in the old hotel, where the partitions between the sleeping apartments are so thin that any conversation in one room is distinctly heard in all others in the immediate neighborhood. As an instance of this agreeable lodging, a few nights ago, two ladies occupied one of these rooms. Two gentlemen occupied an adjoining room, and amused each other with bawdy stories until midnight. No complaint was made, and it so happened that the manager knew nothing of it until morning, or he would have ejected the loafers from the building.

The association has thrown enough money in the direction of the Grand Cañon to erect and complete a fine hotel building, but through very bad management it is still in an unfinished condition, and through bad taste will, when completed, be an unsightly affair. When a new foundation is placed under it, it will, however, be a very comfortable and commodious house.

A good hotel is in course of erection at the Yellowstone Lake.

No adequate fire-escapes have been provided at the Mammoth Hot Springs hotel and none whatever at the Cañon hotel. A fire at either of these hotels would in all probability be attended by a loss of life.

Mr. T. B. Casey, acting president of the Yellowstone Park Association, has recently visited the Park and thoroughly examined all of the hotel buildings. He spoke very freely of the bad condition of affairs and will, I think, take active measures in the direction of reform and better hotel accommodations. I have recommended to him that the association complete the hotels at the cañon and the lake, provide common decencies at Norris and the Upper Basin, which will for the present and near future be dinner stations, and bend every energy upon a good hotel at Lower Basin in the neighborhood of the Fountain Geyser. This being done tourists will have good hotel accommodations at Mammoth Hot Springs, Lower Basin, the Grand Cañon, and the Lake, and not from necessity be obliged to spend any night at either Norris or Upper Basin hotels. Visitors spend two of the four nights usually spent in the Park at Lower Basin, and are, as before explained, very uncomfortable.

Mr. Casey's visit appears to be of great importance to all interested in the management. His attention was called to all imperfections in equipment and management; also, to the necessity for increased accommodations. I am not willing to believe that the gentlemen who form the Yellowstone Park Association are or have been indifferent to the comfort of the visitors, but they have other important business and have not known the necessity for giving the hotel business personal attention. It has been delegated to managers in the park and purchasing agents in the larger cities, some of whom have been unfortunate selections.

#### ELEVATOR AT GRAND CAÑON.

In compliance with your instructions of September 6, 1889, in company with Mr. Arnold Hague I made an examination of the Grand Cañon with a view to reporting upon the propriety of granting Mr. D. B. May, of Billings, Mont., a lease of ground with permission to erect an elevator or incline at the lower falls for the accommodation of visitors.

At the time the examination was made it was understood that the incline should follow the first gulch south of Point Lookout. If this had been required and no building permitted at the bottom of the cañon



the elevator would not have been so objectionable, but a lease has been granted permitting Mr. May to run in a direct line as near as may be and his plans indicate a straight line. The gulch has several turns, and, to run in a direct line from the top to the bottom of the cañon, it will be necessary to rear into view a very unsightly structure.

I regret that my report was not more full or that the lease was not referred to me before approval. Of course when I made my report I thought I had made a very thorough examination, but a further examination made this spring has convinced me that it was a mistake to approve of any elevator at the site mentioned, for it is impossible to put in an elevator to reach the bottom of the cañon without its coming in full sight and destroying the view from the head of the great falls. This is one of the grandest views on earth and doubly grand that the hand of man is nowhere visible.

Mr. May has had no proper examination made and was not prepared to make application for a lease at the time he received it. He was instructed that before any lease was granted he must have a careful survey made and furnish plans and drawings of everything.

I recommend that the lease be either canceled or that the incline be made to conform to the changes of direction of the gulch, and that no building of any kind be required or permitted at the bottom of the cañon.

#### DEPREDACTIONS.

There have been no depredations upon game in the Park so far as known during the past year.

A scheme was on foot to do some work last winter at the Lake hotel site, in which all of the principal employés of the Yellowstone Park Association were implicated. Guns, traps, and poison were to have been used, but the arrangement was well known in time and their plans came to naught. The matter has been fully reported in a special letter.

During the latter part of September there occurred one of the most outrageous acts of vandalism in the history of the Park. A man by the name of Rowley, who had been employed on the lake boat, visited the Upper Geyser Basin, and leaving the hotel at the dawn of day, before any other person was awake, he broke and carried away specimens from many of the geysers. The most material damage was done to the Sponge. Two pieces, half as large as a hand, were chipped from the inside of this formation. Generations will pass in repairing the damage done by this miscreant.

This is a strong illustration of the result of there being no law in the Park. If the scoundrel had not known that there was almost immunity he would never have thought of doing this mischief. As it was, he was on his way out of the Park, and the most that could be done to him was to hasten his departure a couple of hours and deprive him of his specimens.

I sincerely hope that Congress will soon provide a civil commissioner, before whom such law-breakers may be brought and properly punished.

The boundary of the Park is still unmarked and only known by the description contained in the organic act setting it aside. This is a very embarrassing situation. Hunters are liable at any time to get inside of the line through ignorance of its location. A survey, a small cut through the timber, and the piling of a few rocks in the open country is

all that is necessary and should not cost more than \$10,000 or \$12,000. Inclosed herewith please find a meteorological record of the station, kept by Hospital Steward Heinrich Vennemann, U. S. Army, stationed at Camp Sheridan, Wyoming.

As soon as suitable quarters are provided I shall ask General Greely, Chief Signal Officer, to order a member of the Signal Corps to duty in the Park.

Very respectfully, your obedient servant,

F. A. BOUTELLE,  
Captain First Cavalry, Acting Superintendent.

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

*Meteorological record, Mammoth Hot Springs (Wyoming), Yellowstone National Park, from July 1, 1889, to June 30, 1890.*

JULY, 1889.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	69	45	24	NW.	During night	During night	.....	.....	Rain.
2	67	32	35	NW.	.....	.....	.02	.....	
3	82	34	48	S.	.....	.....	.....	.....	
4	86	45	41	SW.	.....	.....	.....	.....	
5	84	49	35	S.	.....	.....	.....	.....	
6	76	52	34	S.	.....	.....	.....	.....	
7	70	38	32	NW.	.....	.....	.....	.....	
8	65	39	26	SW.	.....	.....	.....	.....	
9	76	36	40	NW.	.....	.....	.....	.....	
10	83	45	38	S.	.....	.....	.....	.....	
11	82	45	37	W.	.....	.....	.....	.....	Sprinkling.
12	79	43	36	NW.	.....	.....	.....	.....	
13	81	52	29	W.	5 p. m. ....	5.20 p. m. ....	(*)	.....	
14	87	47	40	W.	.....	.....	.....	.....	
15	87	48	39	SE.	7.40 a. m. ....	8.10 a. m. ....	.01	.....	
16	87	54	33	SW.	.....	.....	.....	.....	
17	84	52	32	NW.	{ During night	{ During night	.....	.....	
					{ 5.40 p. m. ....	{ 5.55 p. m. ....	.01	.....	
					{ 2.25 p. m. ....	{ 2.45 p. m. ....	.25	.....	
					{ 5.10 p. m. ....	{ 6.30 p. m. ....	.....	.....	
18	74	44	30	SW.	1.10 p. m. ....	1.55 p. m. ....	.19	.....	Do.
19	73	43	30	SW.	12.50 p. m. ....	1.10 p. m. ....	.01	.....	Do.
20	80	42	38	S.	.....	.....	.....	.....	Do.
21	73	49	24	W.	During night.	During night	.07	.....	Do.
22	76	46	30	NW.	.....	.....	.....	.....	
23	80	45	35	W.	.....	.....	.....	.....	
24	81	45	36	S.	.....	.....	.....	.....	
25	84	42	42	SE.	.....	.....	.....	.....	
26	87	44	43	W.	.....	.....	.....	.....	
27	85	50	35	SE.	.....	.....	.....	.....	
28	79	49	30	NW.	.....	.....	.....	.....	
29	81	44	37	SE.	.....	.....	.....	.....	
30	91	49	42	S.	.....	.....	.....	.....	
31	78	63	15	W.	.....	.....	.....	.....	

\* Inappreciable.

*Summary for the month of July.*

Highest temperature, 91°, on the 30th; lowest temperature, 32°, on the 2d; mean temperature 62.55°; mean range 34.06°; total precipitation, 0.56 inches; number of days of rain, 7.

*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

AUGUST, 1889.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	79	43	36	NW.	.....	.....	.....	.....	
2	79	44	35	NW.	.....	.....	.....	.....	
3	81	45	36	NW.	.....	.....	.....	.....	
4	89	46	43	W.	.....	.....	.....	.....	
5	87	48	39	SE.	.....	.....	.....	.....	
6	80	48	32	S.	.....	.....	.....	.....	
7	84	44	40	S.	.....	.....	.....	.....	
8	80	51	29	W.	.....	.....	.....	.....	
9	82	54	28	S.	.....	.....	.....	.....	
10	83	51	32	NW.	.....	.....	.....	.....	
11	87	52	35	S.	{ During night 4.15 p. m. .... 6.35 p. m. .... }	{ During night 5.35 p. m. .... 6.55 p. m. .... }	.09	.....	Thunder-storm.
12	83	44	39	NW.	.....	.....	.....	.....	
13	81	50	31	NW.	.....	.....	.....	.....	
14	87	46	41	NW.	.....	.....	.....	.....	
15	91	49	42	S.	.....	.....	.....	.....	
16	84	57	27	SE.	.....	.....	.....	.....	
17	87	53	34	S.	.....	.....	.....	.....	
18	77	56	21	S.	1.05 p. m. ....	1.35 p. m. ....	.01	.....	Do.
19	62	41	21	SE.	{ 6.20 a. m. .... 7.55 a. m. .... }	{ 6.50 a. m. .... 1.40 p. m. .... }	.51	.....	Rain.
20	62	37	25	S.	.....	.....	.....	.....	
21	77	36	41	S.	.....	.....	.....	.....	
22	83	40	43	N.	.....	.....	.....	.....	
23	84	48	36	S.	.....	.....	.....	.....	
24	77	44	33	S.	.....	.....	.....	.....	
25	81	39	42	S.	.....	.....	.....	.....	
26	81	47	34	S.	.....	.....	.....	.....	
27	80	47	33	S.	.....	.....	.....	.....	
28	78	50	28	S.	.....	.....	.....	.....	
29	85	44	41	W.	.....	.....	.....	.....	
30	82	47	35	S.	.....	.....	.....	.....	
31	83	52	31	S.	.....	.....	.....	.....	

*Summary for the month of August.*

Highest temperature, 91°, on the 15th; lowest temperature, 36°, on the 21st; mean temperature, 64.01°; mean range, 34.29°; total precipitation, 0.64 inch; number of days of rain. 4.

*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

SEPTEMBER, 1889.

Date.	Self-register- ing ther- mometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	53	33	20	N.	{ During night 7.55 a. m. ....	{ During night 8.25 a. m. ....	.13	(*)	Snow melted as it fell.
2	73	36	37	S.	.....	.....	.....	.....	
3	63	36	27	NW.	.....	.....	.....	.....	Heavy snow-fall on Bear Gulch Mountains, N. direction.
4	57	24	33	N.	.....	.....	.....	.....	
5	69	28	41	NW.	.....	.....	.....	.....	
6	74	42	32	NW.	.....	.....	.....	.....	
7	74	33	41	W.	.....	.....	.....	.....	
8	72	42	30	W.	.....	.....	.....	.....	
9	71	36	35	SE.	.....	.....	.....	.....	
10	62	47	15	SE.	.....	.....	.....	.....	
11	52	23	29	NW.	.....	.....	.....	.....	
12	61	27	34	NW.	.....	.....	.....	.....	
13	55	24	31	NW.	.....	.....	.....	.....	
14	52	30	22	N.	.....	.....	.....	.....	
15	64	37	27	S.	.....	.....	.....	.....	
16	63	35	28	NW.	.....	.....	.....	.....	
17	71	31	40	S.	.....	.....	.....	.....	
18	79	39	40	NW.	.....	.....	.....	.....	
19	78	42	36	NE.	.....	.....	.....	.....	
20	79	35	44	SW.	.....	.....	.....	.....	
21	69	50	19	S.	{ During night 7.40 a. m. ....	{ During night 9.10 a. m. ....	.01	.....	
22	46	36	10	NW.	{ 11.35 a. m. .... During night 8.15 a. m. ....	{ 12.40 p. m. .... During night 9.40 a. m. ....	.35	(*)	Snow melted as it fell.
23	42	31	11	NW.	{ 2.05 p. m. .... During night 9.25 a. m. ....	{ 3.40 p. m. .... During night 12.10 p. m. ....	.05	.1	
24	42	28	14	NW.	.....	.....	.05	.1	
25	55	32	23	N.	.....	.....	.....	.....	
26	68	32	36	SE.	.....	.....	.....	.....	
27	74	36	38	S.	.....	.....	.....	.....	
28	69	37	32	S.	.....	.....	.....	.....	
29	62	42	20	S.	.....	.....	.....	.....	
30	69	51	18	S.	.....	.....	.....	.....	

\* Inappreciable.

*Summary for month of September.*

Highest temperature, 79°, on the 19th; lowest temperature, 23°, on the 11th; mean temperature, 49.55°; mean range, 28.77°; total precipitation, .59 inch.; number of days of rain, 5; number of days of snow, 4; depth of snow-fall, 0.2 inch.



*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

OCTOBER, 1889.

Date.	Self-register- ing ther- mometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	73	44	29	S.	.....	.....	.....	.....	
2	70	41	29	S.	.....	.....	.....	.....	
3	72	40	32	SE.	.....	.....	.....	.....	
4	78	37	41	S.	.....	.....	.....	.....	
5	79	36	43	S.	.....	.....	.....	.....	
6	78	36	42	SE.	.....	.....	.....	.....	
7	72	42	30	S.	.....	.....	.....	.....	
8	71	43	28	SE.	.....	.....	.....	.....	
9	47	38	9	E.	10.45 a. m.	11.05 a. m.	(*)	.....	Sprinkling.
10	46	31	15	SE.	7.35 p. m.	7.55 p. m.	(*)	.....	Do.
11	50	30	20	S.	.....	.....	.....	.....	
12	49	39	10	SE.	11.45 a. m.	1.10 p. m.	.01	.....	
13	57	21	36	E.	.....	.....	.....	.....	
14	55	25	30	SW.	.....	.....	.....	.....	
15	57	31	26	W.	.....	.....	.....	.....	
16	64	26	38	SE.	.....	.....	.....	.....	
17	50	31	19	SW.	.....	.....	.....	.....	
18	60	30	30	W.	6.35 p. m.	During night.	.48	.....	
19	49	30	19	SE.	.....	.....	.....	.....	
20	54	32	22	SE.	.....	.....	.....	.....	
21	51	38	13	SE.	7.30 p. m.	During night.	.19	.....	
22	52	35	17	SW.	{ During night { at intervals.	During night { at intervals.	.32	.....	
23	50	40	10	SE.	.....	.....	.....	.....	
24	49	36	13	SW.	.....	.....	.....	.....	
25	48	29	19	SE.	.....	.....	.....	.....	
26	55	33	22	S.	.....	.....	.....	.....	
27	47	26	11	SE.	.....	.....	.....	.....	
28	45	31	14	NW.	10.05 a. m.	10.55 a. m.	(*)	.....	
29	37	18	19	SE.	{ During night { 1.10 p. m.	6.35 a. m. { 1.35 p. m. {	.06	.....	
30	36	23	13	SE.	{ During night { 3.10 p. m.	9.55 a. m. { 4.25 p. m. {	.06	.6	
31	32	26	6	N.	6.05 p. m.	7.05 a. m.	.2	3.1	

\* Inappreciable.

*Summary for the month of October.*

Highest temperature, 79°, on the 5th; lowest temperature, 18°, on the 29th; mean temperature, 44.53°; mean range, 22.74°; total precipitation, 1.32 inches; number of days of rain, 9; number of days of snow, 2; depth of snow-fall, 3.7 inches.

*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

NOVEMBER, 1889.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	38	12	26						
2	36	26	10	S.	{ 10.40 a. m. . .	1.20 p. m. . . . }	.04		Snow melted as it fell.
3	29	16	13	NW.	{ 3.35 p. m. . . .	4.40 p. m. . . . }	.01	.1	Do.
4	33	8	25	N.	5.55 p. m. . . .	During night.	.07	.7	Do.
5	42	16	26	SE.					
6	48	19	29	S.					
7	50	22	28	S.					
8	43	25	18	SE.					
9	33	21	12	SW.					
10	27	10	17	NW.	During night	8.20 p. m. . . .	.78	7.5	Do.
11	32	21	11	NW.					
12	26	12	14	S.	{ During night	During night }	.07	.7	Do.
13	27	9	18	SE.	{ 1.50 p. m. . . .	3.10 p. m. . . . }			
14	28	6	22	SE.					
15	39	8	31	SE.					
16	46	20	26	S.					
17	42	22	20	S.					
18	37	30	7	S.	{ During night	8.15 a. m. . . . }	.04	.4	Do.
19	39	24	15	SE.	{ 12.20 p. m. . . .	3.05 p. m. . . . }			
20	29	15	14	S.	5.55 p. m. . . .	During night.			
21	29	13	16	S.	12.45 p. m. . . .	1.20 p. m. . . .	(*)	(*)	Do.
22	30	4	26	S.	{ During night	{ 8.40 a. m. . . . }	.63	1.8	Do.
23	33	21	12	SE.	{ 9.50 a. m. . . .	During night.	.13	.5	Do.
24	35	19	16	SE.					
25	41	19	22	SE.					
26	44	23	21	S.					
27	49	29	20	SE.					
28	35	22	13	SE.					
29	39	24	15	S.					
30	41	21	20	S.					

\* Inappreciable.

*Summary for the month of November.*

Highest temperature, 50°, on the 8th; lowest temperature, 4°, on the 25th; mean temperature, 27.13°; mean range, 19.07°; total precipitation, 2.14 inches; number of days of rain, 0; number of days of snow, 10; depth of snow-fall, 12.3 inches.

*Meteorological record, Mammoth Hot Springs, Wyo. — Continued.*

DECEMBER, 1889.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	42	34	8	SE.	During day...	During day...	.04	...	Sprinkling.
2	40	33	7	S.	9 a. m. ....	4 p. m. ....	.03	.1	Snowing at night.
3	38	32	6	SE.	.....	.....	.....	.....	.....
4	36	28	8	SW.	.....	.....	.....	.....	.....
5	42	32	10	SE.	.....	.....	.....	.....	.....
6	39	27	12	SE.	6.45 p. m. ....	During night	.39	.4	Snow melted during night.
7	34	23	11	S.	.....	.....	.....	.....	.....
8	34	25	9	SE.	During night	7.15 a. m. ....	.57	6.2	.....
9	34	17	17	SW.	9.30 a. m. ....	4.20 p. m. ....	.12	1.4	.....
10	29	19	10	SE.	At intervals during day.	At intervals during day.	.18	2.2	.....
11	39	27	12	SE.	... do ...	... do ...	.93	4.6	Rain and snow mixed.
12	34	26	8	+	During night	During night	1.05	10.4	Snow melted partly during night; measured on platform.
13	37	27	10	NW.	During day...	During day...	.06	3.2	.....
14	38	26	12	S.	{ 8.15 a. m. ....	{ 10.10 a. m. ....	.06	.....	Rain.
15	38	22	16	S.	{ 2 p. m. ....	{ 4.50 p. m. ....	.....	.....	.....
16	33	11	22	S.	During night	9.20 a. m. ....	.3	3.4	.....
17	29	11	18	S.	12.40 p. m. ....	8.10 p. m. ....	.18	2.2	The heat of the ground, caused by the subterranean hot springs of the vicinity, melts the snow to some extent by a temperature of below freezing; consequently, the snow in the gauge becomes moist and is partly melted before measuring; hence precipitation larger than on the assumption that 10 inches of snow are equal to 1 inch of water.
18	26	17	9	+	During night	During night	.04	.4	.....
19	25	15	10	SE.	8.20 a. m. ....	During night	.75	3.2	.....
20	26	12	14	N.	11.10 a. m. ....	4.40 p. m. ....	.45	2.3	.....
21	18	7	11	SE.	8.20 a. m. ....	6 p. m. ....	.9	3.6	.....
22	26	14	12	S.	During night	2.50 p. m. ....	.7	2.8	.....
23	26	15	11	+	... do ...	During night	.5	4.6	.....
24	30	17	13	SE.	12.40 p. m. ....	... do ...	.75	6.2	.....
25	34	24	20	S.	During night	... do ...	.35	3.4	.....
26	31	15	16	S.	At intervals ..	At intervals ..	.....	(*)	.....
27	35	18	17	S.	.....	.....	.....	.....	.....
28	29	10	19	N.	8.15 a. m. ....	11.10 a. m. ....	.....	(†)	.....
29	16	—	5	SW.	.....	.....	.....	.....	.....
30	19	8	11	SE.	4.10 p. m. ....	6.20 p. m. ....	.....	(*)	.....
31	18	9	9	SE.	2.20 p. m. ....	3.10 p. m. ....	.....	(*)	.....

\* Inappreciable.

† Ground covered.

*Summary for the month of December.*

Highest temperature, 42°, on the 1st and 6th; lowest temperature, — 5°, on the 29th; mean temperature, 25.17°; mean range, 12.5°; total precipitation, 8.89 inches; number of days of rain, 4; number of days of snow, 21; depth of snow-fall, 60.6 inches.

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## YELLOWSTONE NATIONAL PARK.

*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

JANUARY, 1890.

Date.	Self-register- ing ther- mometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	— 5	—16	11	N.	During night				
2	— 2	—18	16	N.		1.40 p. m	.2	2	
3	—13	—19	6	N.	During night	2.10 p. m	.6	6.4	
4	—11	—18	7	+	do	4.40 p. m	.45	4.4	
5	17	—15	32	SW.					
6	13	— 3	16	SE.	During night	During night	.2	2.2	
7	17	— 9	26	S.					
8	26	— 1	27	S.					
9	22	14	8	S.					
10	18	7	11	SW.					
11	9	— 7	16	SE.	During night	During night	.5	4.7	
12	6	— 9	15	SE.	do	do	.15	.9	
13	13	1	12	SW.					
14	11	— 8	19	SE.					
15	14	— 2	16	E.					
16	22	11	11	SW.	During night	During night	.8	3.5	
17	25	51	10	SE.	do	do	.6	2.4	
18	23	11	12	S.	do	do	.25	2.5	
19	12	— 5	17	SE.					
20	16	4	12	E.					
21	18	1	17	SE.					
22	17	4	13	SE.					
23	22	11	11	S.					
24	25	21	4	S.	8.50 a. m		.7	6.8	
25	31	24	7	SE.			1.2	9.4	
26	26	18	8	E.		7.40 p. m	.75	4.5	
27	31	4	27	SE.					
28	31	25	6	SE.					
29	32	21	11	NE.					
30	35	20	15	NE.	During night	4.20 p. m	.03	2.8	
31	27	12	15	SE.					

*Summary for the month of January.*

Highest temperature, 35°, on the 30th; lowest temperature, 19°, on the 3d; mean temperature, 10.03°  
 mean range, 14°; total precipitation, 6.7 inches; number of days of rain, —; number of days of snow  
 13; depth of snow-fall, 52.5 inches.



*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

FEBRUARY, 1890.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	31	21	10	SE.	During night.	During night.	1.2	9.5	
2	38	31	7	SW.	{ ..do .....	{ ..do .....	.7	—	.7 Rain since a. m.
3	40	34	6	S.	{ Rain .....	Rain .....	.2	1.5	
4	39	30	9	NW.	7.30 a. m .....	6.50 p. m .....	1.3	—	
5	36	22	14	SE.	.....	.....	{ .46	5.6	Rain.
6	37	19	18	SE.	.....	.....	.55	—	Do.
7	32	23	9	SE.	.....	.....	.....	.....	Snow.
8	36	23	13	SE.	.....	.....	.....	.....	The precipitation from 1st to 4th, inclusive, was continuous. On the 2d, in the morning, snow turned into rain; changed into snow during night. Snow turned into rain on the 3d, and rain turned into snow again 7.30 a. m. on the 4th.
9	35	27	8	SE.	.....	.....	.....	.....	
10	29	16	13	+	8.10 a. m .....	8.30 p. m .....	.55	5.2	
11	29	— 3	32	SE.	.....	.....	.....	.....	
12	28	12	16	W.	.....	.....	.....	.....	
13	30	17	13	SE.	.....	.....	.....	.....	
14	23	12	11	SE.	8.20 a. m .....	11.10 p. m .....	(*)	(*)	
15	29	18	11	S.	12.50 p. m .....	7.30 p. m .....	.25	2.5	
16	34	22	12	SE.	.....	.....	.....	.....	
17	24	17	7	SE.	.....	.....	.....	.....	
18	21	— 2	23	N.	8.20 a. m .....	During night.	.37	3.8	
19	22	—10	32	NE.	.....	.....	.....	.....	
20	31	— 5	36	SE.	.....	.....	.....	.....	
21	26	8	18	SE.	.....	.....	.....	.....	
22	38	10	28	SW.	.....	.....	.....	.....	
23	29	15	14	SE.	During night.	.....	.....	.....	
24	29	—15	44	N.	.....	During night.	.72	6.4	
25	—14	—26	12	N.	.....	.....	.35	2	
26	— 9	—30	21	SE.	.....	.....	.....	.....	
27	3	—26	29	SE.	.....	.....	.....	.....	
28	14	—11	25	S.	.....	.....	.....	.....	

\* Inappreciable.

*Summary for the month of February.*

Highest temperature, 40°, on the 3d; lowest temperature, 30°, on the 26th; mean temperature, 17.66°; mean range, 16.44°; total precipitation, 6.65 inches; number of days of rain, 3; number of days of snow, 9; depth of snow-fall, 36.5 inches.

## YELLOWSTONE NATIONAL PARK.

Meteorological record, Mammoth Hot Springs, Wyo.—Continued.

MARCH, 1890.

Date.	Self-register- ing ther- mometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	21	5	26	SW.					
2	29	12	17	SE.					
3	30	14	16	S.					
4	32	23	9	SE.					
5	45	29	16	SE.					
6	38	18	20	S.	During night	During night	.48	3.	
7	42	15	27	SE.	7 a. m.	9.40 a. m.	.1	.6	
8	46	22	24	SE.	During night	2.20	.46	2.4	
9	24	17	7	SE.	do		.75	5.4	
10		8		SE.		During night	.25	1.6	
11		4		S.	11.10 a. m.	11.50 a. m.	(*)	(*)	
12		14		SW.					
13		13		S.					
14		20		S.					
15		19		SE.					
16		31		SE.	2.20 p. m.		.4	1.2	
17		30		E.		11.10 a. m.	.45	2.8	
18		33		SE.	8.30 a. m.	7.20 p. m.	.14		Snow melted as it fell.
19		31		N.	During night	11 a. m.	.02		Do.
20		22		SE.	{ 6 p. m.	8 p. m.	.05	.3	Do.
21		29		SE.	{ During night	During night	.07	.7	
22		33		S.	{ 12.35 p. m.	2.20	.04		
23		26		SW.	During night		.07	.5	
24		15		SW.		During night	.07	.6	
25		12		NW.					
26		31		NW.	During night	During night	.12	1.1	
27		22		SE.	do	do	.06	.6	
28	38	24	14	S.	do	do	.04	.35	
29	37	20	17	N.	{ 9.30 a. m.	11.20 a. m.	(*)	(*)	Do.
30	21	12	9	NW.	{ 1.50 p. m.		.25		
31	38	5	23	SE.		5.20 p. m.	1.1	7.6	

\* Inappreciable.

## Summary for the month of March.

Highest temperature, 46° on the 8th; lowest temperature, -5° on the 1st; mean temperature 24.50° (13 days); mean range, 17.31° (13 days); total precipitation, 4.92 inches; number of days of rain, 10; number of days of snow, 18; depth of snowfall, 28.75 inches.

*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

APRIL, 1890.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	48	5	43	SE.					
2	59	19	40	S.					
3	52	30	22	SW.	8 p. m.				} Snow melted as it fell.
4	51	31	20	NW.		During night.	.04		
5	50	33	17	NW.	11.10 a. m.		.11		
6	50	35	15	E.	12.20 p. m.	During night.	.41		
7	34	28	6	NW.		7.40 p. m.	.2	1.4	
8	37	17	20	SE.					
9	47	24	23	SE.					
10	50	33	17	SE.					
11	51	30	21	NW.	1.20 p. m.	2.10 p. m.	(*)	(*)	Snow.
12	37	10	27	N.					
13	36	14	22	NW.					
14	42	13	29	NW.					
15	44	11	33	NW.					
16	50	24	26	W.					
17	56	28	28	NW.					
18	67	33	34	NW.					
19	55	35	20	N.	7.10 a. m.	7.40 a. m.	(*)	(*)	Sprinkling.
20	55	22	33	S.					
21	48	31	17	SW.	During night.	9.20 a. m.	.11	.3	Snow melted after falling.
22	57	29	28	SE.	do				
23	34	30	4	NW.		10.10 a. m.	.52	2.2	23d, 7 a. m. The platform contained 2.2 inches of snow, while the contents of the snow gauge measured 0.52 inches. At 10 a. m there was no snow visible on the ground, temperature being 32°, while the surrounding trees carried the same quantity of snow as early in the morning.
24	46	26	20	SE.					
25	60	25	35	S.					
26	61	28	33	SE.					
27	64	33	31	SE.					
28	65	34	31	S.					
29	70	39	31	÷					
30	77	34	43	S.	3.40 p. m.	3.50 p. m.	(*)	(*)	

\* Inappreciable.

*Summary for the month of April.*

Highest temperature, 77° on the 30th; lowest temperature, 5° on the 1st; mean temperature, 38.95°; mean range, 25.60°; total precipitation, 1.39 inches; number of days of rain, 4; number of days of snow, 5; depth of snow-fall, 3.9 inches.

*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

MAY, 1890.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	74	32	42	NW.	.....	.....	.....	.....	
2	64	41	23	NW.	{ During night . 12.35 p. m. .... 4.20 p. m. ....	{ During night . 1.10 p. m. .... 4.40 p. m. ....	{ .04 .16 .03	.....	{ 12.35 to 1.10 p. m., thunder-storm passing at a distance; temperature fell from 52° to 48° during storm; 4.20 to 4.40 p. m., thunder-storm at a distance.
3	57	38	19	NW.	During night .	During night .	.03	.....	Thunder.
4	55	34	21	W.	{ 8.50 a. m. .... 1.55 p. m. ....	{ 10.25 a. m. .... 3.45 p. m. ....	{ .07 .....	.....	
5	62	35	27	SE.	{ During night . During night .	{ During night . During night .	{ .05 .04	(*)	Snow; melted as it fell.
6	72	32	40	W.	.....	.....	.....	.....	
7	77	36	41	SW.	.....	.....	.....	.....	
8	66	41	25	NW.	{ 9.50 a. m. .... At intervals..	{ 3.40 p. m. .... At intervals..	{ .05 .....	.....	
9	53	40	13	NW.	{ 10.20 a. m. .... 2.10 p. m. .... At intervals..	{ 11.40 a. m. .... 5 p. m. .... At intervals..	{ .14 .16 .35	.....	
10	60	35	25	NW.	During night .	During night .	.12	.....	
11	47	32	15	N.	1 p. m. ....	{ 12.20 p. m. .... 8.50 p. m. ....	{ .44 .....	2.1	{ 11th, 5 p. m., rain turned into hail; 5.35 p. m., hail turned into snow; snow measured at 7 a.m. (12th); had partly melted during night; lowest temperature, 26°; total precipitation, .44; melted snow in gauge; depth of snow on platform, 2.1 inches.
12	45	26	19	SW.	Intervals of short duration.	Intervals of short duration.	.02	(*)	Snow; melted as it fell.
13	62	32	30	SW.	.....	.....	.....	.....	
14	58	34	24	NW.	12.15 p. m. ....	5.20 p. m. ....	.02	.....	Sprinkling.
15	57	30	27	W.	During night .	During night .	.01	.....	
16	65	37	28	W.	4.50 p. m. ....	5.30 p. m. ....	.01	.....	Thunder-storm passed at a distance.
17	63	43	20	NW.	.....	.....	.....	.....	
18	63	36	27	NW.	.....	.....	.....	.....	
19	69	34	35	SE.	.....	.....	.....	.....	
20	64	36	28	SE.	.....	.....	.....	.....	
21	58	35	23	SW.	{ 1.30 p. m. .... 3.20 p. m. ....	{ 3.20 p. m. .... 3.35 p. m. ....	{ .11 .....	(*)	{ 1.30 to 3.20 p. m., rain; 3.20 to 3.35 p. m., snow; melted as it fell.
22	68	30	38	SE.	.....	.....	.....	.....	
23	66	43	23	S.	.....	.....	.....	.....	
24	70	40	30	SW.	.....	.....	.....	.....	
25	72	48	24	SE.	.....	.....	.....	.....	
26	74	34	40	S.	.....	.....	.....	.....	
27	71	46	25	W.	11.30 a. m. ....	11.45 a. m. ....	.....	(*)	
28	64	29	35	NW.	.....	.....	.....	.....	
29	59	26	33	SE.	.....	.....	.....	.....	
30	61	30	31	E.	During night .	During night .	.12	.....	
31	72	40	32	S.	During day at intervals.	During day at intervals.	.03	.....	

\* Inappreciable.

*Summary for the month of May.*

Highest temperature, 77°, on the 7th; lowest temperature, 26°, on the 12th; mean temperature, 49.59°; mean range, 27.84°; total precipitation, 2 inches; number of days of rain, 16; depth of snow-fall, 2.1 inches; number of days of snow, 4.



*Meteorological record, Mammoth Hot Springs, Wyo.—Continued.*

JUNE, 1890.

Date.	Self-registering thermometer.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	70	37	33	S. E.					
2	68	28	30	S. W.	During night	During night	.30		Rain and snow mixed.
3	54	32	22	N. W.	{ 6 a. m.	6 p. m.	.16		{ Melted snow in gauge.
4	49	31	18	S. E.	{ During night	During night	.10		
5	57	30	27	W.					
6	69	30	39	S.					
7	75	39	36	S.					
8	80	43	37	S. E.					
9	82	45	37	S. W.	7 p. m.	8.30 p. m.	.20		Thunder-storm from 7 to 8.30 p. m.
10	78	43	35	S. E.					
11	79	41	38	S. E.					
12	73	39	34	N. W.					
13	58	31	27	N. W.					Sidewalks are covered with frost.
14	62	29	33	S. W.					Sidewalks and fences are covered with frost.
15	59	37	22	S. E.	{ During night	During night	.10		{ Sun-shower; rainbow observed in southeasterly direction.
16	66	34	32	S.	{ 4.50 p. m.	6 p. m.	.04		
17	71	41	30	S. E.					
18	73	45	28	S.					
19	72	44	28	W.	At short intervals.	At short intervals.	.04		Sprinkling.
20	68	42	26	S.					
21	63	41	22	S. E.					
22	71	40	31	E.					
23	73	41	32	S. E.					
24	80	39	41	E.					
25	78	47	31	S.					
26	70	44	26	S. E.					
27	65	40	25	S. E.					
28	69	41	28	S. E.					
29	80	42	38	S.					
30	87	43	44	S. E.					

*Summary for the month of June.*

Highest temperature, 87°, on the 30th; lowest temperature, 29°, on the 14th; mean temperature 57.97°; mean range, 31°; total precipitation, 0.64 inches; number of days of rain, 4; number of days of snow, 2; depth of snow-fall, 0.26 inches of melted snow.

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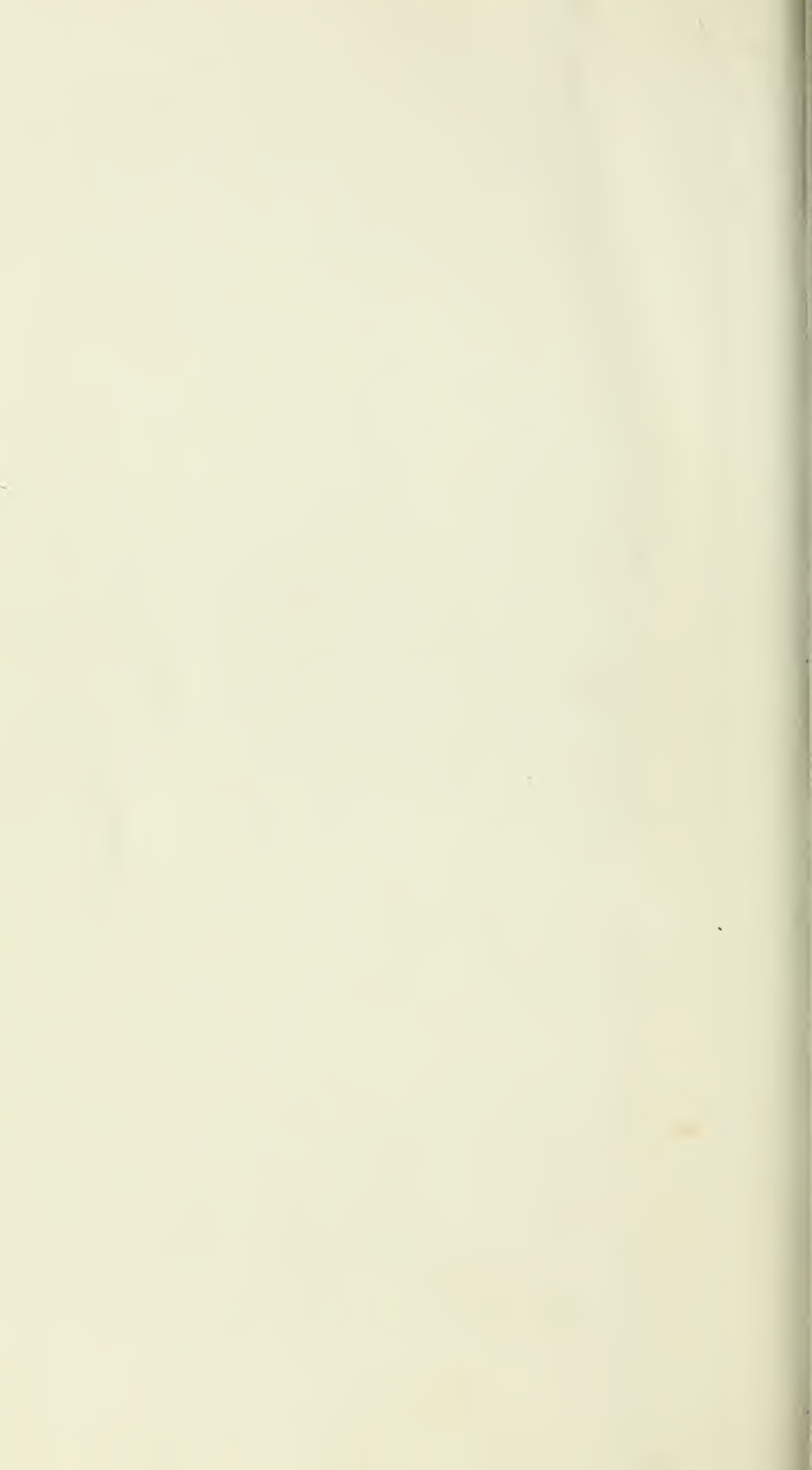








Exhibit 5 - 1867

Fire at H. Gay's Basin

Hotel destroyed July 14, 1867

