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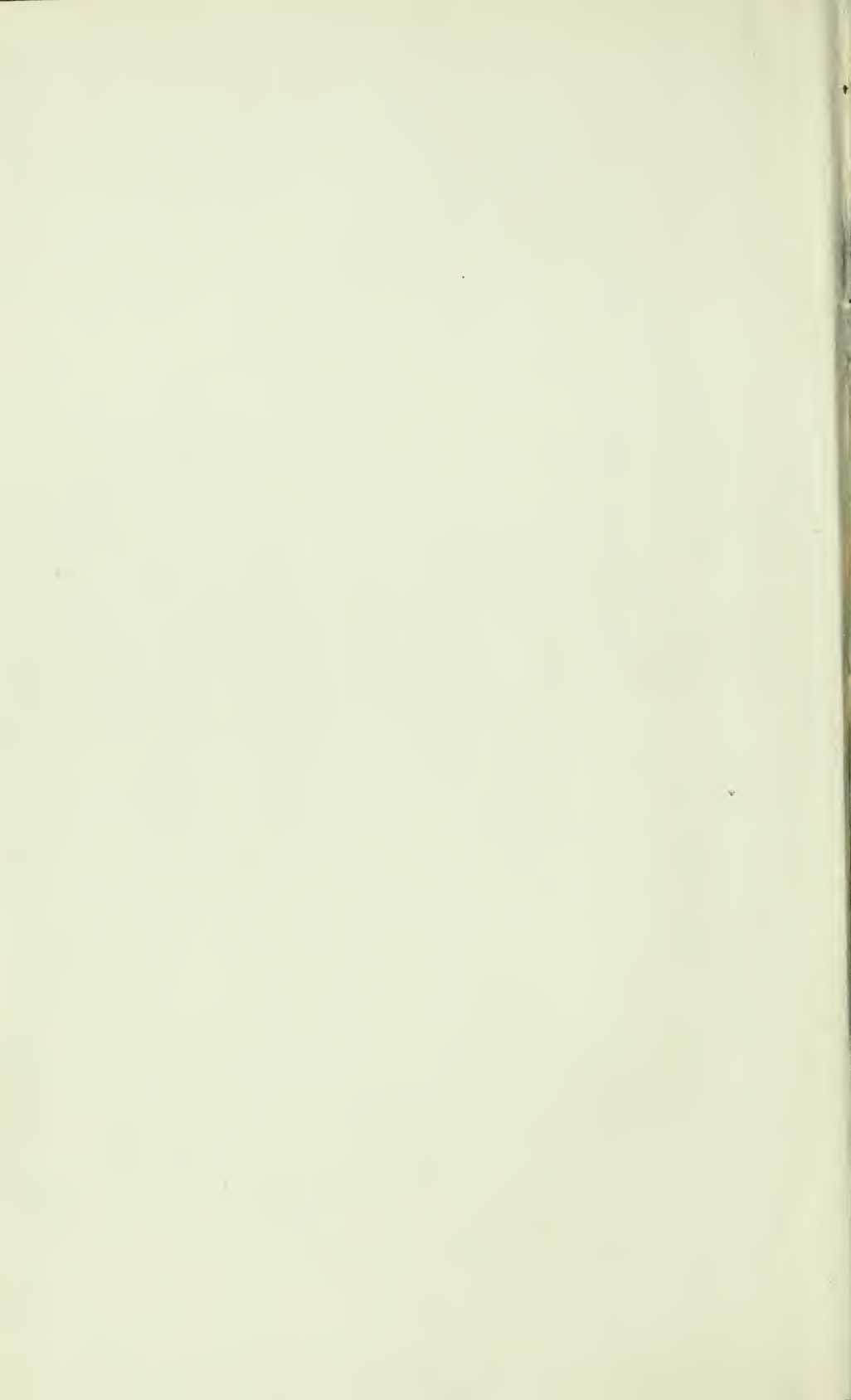
BY

Captain Christman

National Park Service,
Yellowstone Park,
Wyoming.



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REPORT

OF THE

SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR

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REPORT OF SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF
YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., August 15, 1891.

SIR: Agreeably to your request under date of the 27th ultimo I have the honor to submit the following report of operations and events in the Yellowstone National Park since I assumed control:

Complying with Special Order, No. 17, c. s., Adjutant-General's Office, I reported in person to the Secretary of the Interior in January last for instructions, and a few days thereafter started for my post of duty, stopping en route at St. Paul for consultation with General Ruger, then commanding the Department of Dakota.

I arrived here on the 14th of February, and the next morning relieved Capt. F. A. Boutelle, First Cavalry, of the charge of the Park and at the same time assumed command of the troops stationed within its limits.

I presume Captain Boutelle will render a report of operations prior to this date.

Up to the date of my arrival but little snow had fallen, and the winter had been exceptionally mild and open; storms soon set in and within the next 6 weeks near 7 feet of snow fell. This comprised nearly the entire fall for the winter as against more than 17 feet for the previous season. The ground became bare early in April, and on May 1st I started on my first trip through the Park. As I rose to the higher levels I found plenty of snow remaining, but the roads were easily passable at least a month earlier than usual. The season thus began early and promised well, but June turned out a cold, wet, disagreeable month and travel received a check from which it has only recently recovered.

EXTENSION OF THE PARK.

On 30th March the President, under authority contained in the act for the repeal of the timber-culture laws, set apart as a timber reservation a tract of land bordering the Park on the east and south.

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Under date of 14th of April this reserve was placed under my charge, "to assume control thereof and do any and all things as to this accession as you do in the Park itself;" there was thus added a strip 25 miles wide to the eastern and one about 8 miles wide to the southern side of the Park.

It has long been a matter of conjecture that there is a good deal of mineral wealth on and near the head of the Stinking Water, eastward of the Park. Last year these conjectures bore fruit in inducing a rush of mining men to that section; this year a steady stream of them has poured into the region, with what success is not yet known. Those best acquainted with the locality say there is no doubt that a part, at least, of the new district is within the limits reserved by the President's proclamation.

I have not as yet been in the country referred to, but hope to go there soon. Nothing, however, can safely be done to protect the place until it is definitely decided that it is within these limits.

As soon as the added district was placed under my charge I wrote requesting a careful and complete survey of the boundaries, and that they be plainly marked. This has now been ordered, and I hope will soon be accomplished. It is most important that the east line be run to definitely settle the position of these new mines; it is also important that the south line be run, and marked, for the protection of the large game that ranges in that part of the Park.

The west line is nearly coincident with the Wyoming-Idaho line, and its exact location must always be a matter of some doubt. I therefore recommend that the State line be marked instead. The question of cutting off a portion of the north end of the Park has often arisen, but I trust will never receive favorable consideration. The present line runs over the crest of a range of very high mountains and settlement on or near it is impossible.

One proposition is to make the north line the same as the Wyoming-Montana line; this would result in moving a collection of groggeries 2 miles nearer this place, which is most undesirable. The second proposition is to cut off all that part of the Park north of the Yellowstone, Lamar, and Soda Butte Rivers. This would throw out an extensive game country, especially the home of the mountain sheep, and permit settlements in dangerous proximity to a favorite winter range of all the larger animals.

PROTECTION OF FORESTS.

Thus far the season has been extremely wet and we have had very little trouble with forest fires; the few that have appeared have been extinguished by the patrols without calling out the troops for assistance. I sincerely trust the same good fortune will attend us to the end of the season, but it is scarcely probable. There are more camping parties than usual in the Park this year, and it requires ceaseless vigilance to compel them to *thoroughly* extinguish their fires. Other

sources of fires are carelessly thrown cigars and cigarettes, lightning, and probably even the rubbing together of partially fallen dead trees as they are swayed by the wind.

The serious consequences of a fire here can only be understood by those who have observed the almost impenetrable thickness of the pine forests with their dense masses of fallen and decaying trees.

OUTPOSTS IN THE PARK.

Up to the present time there has never been an outpost near the south line of the Park. As settlements are rapidly springing up near Jackson's and Henry's Lakes, and these regions are becoming the famed resorts of hunters and hunting parties, a permanent station somewhere near the junction of the Lewis and Snake Rivers will become a necessity.

It is too late to accomplish it this year, but I hope to send a small party there early in the spring with orders to build a hut for themselves and a stable for their horses, and arrange to put up a winter's supply of hay; they will then be in condition to spend the winter of 1892-3 there, and render needed protection to the immense herds of game in that vicinity. Unless I provide for a winter station at Riverside to watch the poachers from that region I do not see any necessity for further change in the arrangement of outposts; patrols continued late into the autumn will serve the purpose quite as effectually.

MILITARY QUARTERS.

Soon after my arrival here I was directed to report upon a selection of a site for new buildings for use of the troops. This site is on the plain southeast of the Mammoth Hot Springs Hotel, and quite near it. After approval the site was adopted, and the new buildings are now well under way, with a prospect of occupancy by 1st November at the latest.

At present provision is only being made for a single troop, but the plans are drawn for two, and I hope the second will be provided for next year. For several years past a second troop has been sent here from some neighboring post for temporary duty during the summer. This always involves no inconsiderable expense for transportation and a depletion of the garrison drawn upon. Since the extension of the Park demands increased detached service, especially in the hunting season late in the fall, I call your attention to the urgency of having this second troop made a part of the permanent garrison.

ROADS, ETC.

In 1890 the bill for improvement of the roads, etc., in the Park did not become a law until 30th August. This gave very little time for work before the winter set in, and most of the \$75,000 appropriated was left unexpended.

The act for the present year—3d March, 1891—carries with it \$75,000 and "the unexpended balance" of previous years.

The season opened early, but for some reason work on the roads was begun very late. During May and June great numbers of laboring men gathered in this vicinity, claiming to be waiting for work. They soon got out of provisions and money, and many of them were reduced to the last straits. As a protective measure I was finally forced to order them to leave the Park. Some left the country entirely, while others only went as far as Gardiner or Cinnabar, and there continued to wait. During this period my haystack was burned, undoubtedly by some one of this class who had sought a bed there for the night. Work finally started up some time in July, and the "tramp nuisance" was abated.

A location for a new road, according to the terms of the act of March 3, 1891, has been made between the "Fountain and the West Thumb of the lake." This road turns off the road to Shoshone Lake a short distance north of the Lone Star Geyser and runs, by easy grades, over the divide to the Thumb. There is a strong force at work on it, with good prospect of its being opened before winter sets in.

The road from the cañon to the Thumb, via the Lake Hotel, is also under construction, and is being rapidly pushed. I expect to be able to drive over the entire circuit within the next 30 days.

Lieutenant Chittenden, U. S. Engineers in charge of the work, is zealous, untiring, and remarkably efficient in its prosecution, and will certainly make a fine showing by the end of the year.

The roads already built have been kept in good repair, and the journey through the Park need no longer be contemplated with dread. When this large number of laborers is paid off and discharged at the end of the season there is some cause for fear of fires and various forms of disorders. These shall, however, receive my careful attention.

HOTELS.

I am glad to be able to report a most satisfactory state of affairs in so much as concerns hotel accommodations. The building at this point is in the same state it has been in for many years past. It is excellently managed and gives satisfaction in every particular. The lunch station at Norris is also excellently kept, and comfortable lodgings are provided for such tourists as elect to spend a night there; a few improvements have been made in the matter of wash rooms, closets, etc.—perhaps all that the use of the place will warrant.

The hotel at the Cañon is completed; is well and comfortably kept, but is a most unsightly edifice.

The Lake House has one wing completed, and this is all that will be needed until the tide of travel sets more in that direction. It is one of the pleasantest, best kept hotels in the Park, and deserves better

patronage than it has yet received. I regard it as the most desirable place in the Park for a prolonged stay.

The old hotel at the Lower Basin was vacated about the middle of June, and the new building at the Fountain was then occupied. It is the largest, best built, and in every way the finest building in the Park, and I doubt not is destined to become one of the most popular. It is not yet entirely completed, but I learn that the management expects to have the workman out of it by the end of this month.

It is very satisfactorily kept and I hear no complaints of it. There are no changes to report in the hotel at the Upper Basin; so long as the law prevents a valid lease for the site so long will the old shed remain rickety and unsatisfactory. The Trout Creek lunch station, under canvas, is quite the same as last year. On the whole I can report a very great improvement in hotel accommodations, with a most satisfactory state of management. Mr. W. G. Johnson, manager for the Yellowstone Park Association, is working hard and intelligently to remove from it the odium that has heretofore attached to it, and with a large measure of success. The complaints that have reached me have been few and trivial.

TRANSPORTATION.

Transportation in the Park has been carried on under the leases granted the Yellowstone Park Association. Mr. George Wakefield has managed it for a number of years, and he has as fine transportation as there is anywhere in the world; stages and harness are new, clean, and well kept; horses are gentle and in good condition; drivers sober, accommodating, and competent; there have been very few complaints of them, although perfection in this class of public servants is not always easy of attainment. A complaint has been made that stop-over privileges have not been freely accorded, but on representation to the manager the evil received prompt correction.

On the 1st of April last I was notified that the right of the Park Association to conduct transportation was revoked, to date from 1st November next, and that this right was, from that date, given to Mr. Huntley, of Helena, Mont.

Mr. Huntley came into the Park in June and remained a considerable time looking over the field. He has not in any way communicated with me, and I have no knowledge as to what preparations he is making for the conduct of affairs next season, but I trust the present high standard will be maintained.

BOAT ON THE LAKE.

The proposition to put a small steamer on the lake for the accommodation of tourists has been agitated for a good many years, but was only recently accomplished. Early in July an inspector came and gave the boat a license to carry 125 passengers. It is a smooth-running,

seaworthy little vessel and will add much to the attractiveness of the lake as a resort. I hope to see it made a part of the Park transportation, and used in ferrying tourists from the Lake Hotel to the West Thumb in their journey around the circuit.

In July the Engineer Corps, U. S. Army, put on a small boat which they use in supplying their road camps with forage and provisions and in hauling lumber from the mill to the various points where it is to be used. On invitation of Lieutenant Chittenden I accompanied him on a trip of exploration on the Upper Yellowstone, but for lack of sufficient depth of water we were only able to ascend the river a few miles.

TOURISTS.

The most ceaseless vigilance is needed to prevent tourists from mutilating the beautiful formations in the Park. I do not believe 10,000 men could *entirely* accomplish it. Ladies are the greatest specimen hunters, and often they do not carry their trophies farther than the hotels. By a careful supervision of the guides I have managed to keep this form of vandalism at a minimum. Another source of great annoyance is the persistence with which men will write their unlovely names on everything that is beautiful within their reach. This form of barbarism is confined almost entirely to *men*, and, if we may judge from the writing, to the boorish and illiterate.

About a week ago a stage coming into the Park from Beaver Cañon was held up and robbed about 20 miles beyond Park limits. I gave immediate orders for a careful search by all the patrols in that direction, but so far have got no trace of the thieves.

There is an unusually large number of people entering the Park with guns of various kinds. From those who are simply making a tour of the Park, with the purpose of returning this way, I take the arms and restore them to the owners on their exit. A great many parties, however, come this way with intention of going out by Riverside or Jackson's Lake. For such parties I can only seal the guns, with admonitions not to break seals within Park limits. This is only a measure of security with such people as would not hunt inside the Park in any event. If others get in unfrequented localities I fear temptation would prove too much for them.

I am constrained to recommend that sufficient notice be given that from a fixed date, say June 1, all carrying of guns within the Park will be strictly prohibited. Exceptions can then be made, and special permits granted by the Superintendent to people of undoubted reliability.

FISH.

For the most part the lakes and rivers of the Park are literally filled with trout; I have never seen so many fish elsewhere as there are in the shoal waters near the borders of the Yellowstone Lake. Two years ago the Fish Commission began stocking the streams that were desti-

tute of fish, and the work was continued last year. At the present time some members of the Commission are in the Park, making an examination of these plants. I hope they may yet stock some of the smaller lakes with black bass, and thus afford a variety of sport to the angler.

WORK DONE IN PARK.

The numerous camping parties that have gone through the Park, as well as the many teams employed in hauling supplies into the interior, have left unsightly groups of empty cans, bottles, and other débris. With the approval of the Secretary of the Interior I employed a team, driver, and two men to go over the routes of tourist travel and clean up these littered places.

The season is now so far advanced that I shall not undertake to go over it again before spring. The sign boards that have been placed to designate the various objects of interest, as well as those conveying warning notices, have become much obliterated by time. At the close of the season I shall have them taken down and repainted, and replaced before the opening of travel in the spring.

POACHERS.

So long as there is no law within the Park for the prevention of hunting and trapping, it will be a most difficult matter to break them up. Cook City, just off the northeast corner of the Park, is fed entirely on elk meat, and I doubt not a large proportion of it has been killed within the Park limits.

On my arrival here I was told that one Van Dyck was the principal hunter for that place, and that his hunting grounds were near Soda Butte. I sent out three separate expeditions for him before he was finally taken, in his camp near Lamar River, with beaver traps and other evidences of his trade in his possession. I kept him in custody for over a month awaiting the Secretary's orders, and then turned him loose after confiscating all his property. He is now in Cook City once more, but I hear that he is conducting his expeditions outside the Park. As the killing of elk in Montana is absolutely prohibited by law for a term of years, it seems strange that this traffic at Cook can not be broken up.

I am satisfied that both hunting and trapping are carried on within the limits of the Park from over the western border. I shall make an endeavor to "encourage" the majority of these trespassers by bringing a few of them to justice this fall.

Mr. Ed. M. Wilson, who has been a most invaluable man as a scout, guide, and hunter, mysteriously disappeared on 27th July and left no trace behind. It will be quite impossible to replace him, for there is no man in the region who at once has the intimate knowledge of the country, and of the hunters and their methods, that he had.

I learn of three or four buffalo heads that have been mounted in Bozeman, Livingston, and other neighboring towns within the past year. I doubt not all of these were killed within the Park, or very close to the line without it. Such specimens are become very rare, and fine ones are held at \$400 to \$1,000. Such prices tempt the cupidity of the border pirates who live near, and with small equipment they can enter the Park on foot and take their chances of capture and the confiscation of their small stock in trade.

The most effectual way to break up this business would be the prosecution of the taxidermists who purchase the specimens—possession of which is prohibited by the laws of all the adjoining States. I have abundant evidence, however, that the buffalo are contented and quiet in the park and that they are on the increase. Some tourists who went through the park in May saw a herd of about 30, with several small calves, near the Trout Creek lunch station. About the same time some employés of the Yellowstone Park Association saw what was probably the same herd, and I saw there an abundance of fresh signs the first week in June.

In July I sent Wilson out to observe the herd that ranges near the west line of the Park. He found two small bands of about 30 each, one with 12 or 15 calves; in addition he saw several single ones and small bunches. I do not think it is exaggeration to say there are 200, and probably there are 400, within the Park, and that they are thriving and increasing.

The elk have increased enormously, and most conservative estimates place their numbers at 25,000, and I have no doubts of the presence of that many. Their continuance in the Park is assured, and their overflow into adjoining territory will furnish abundant sport for the hunter. //

Mountain sheep, deer, and antelope are tame, numerous, and on the increase; as they are hunted but little, if at all, they are certain to be preserved. There are a few moose in the extreme southern part of the Park, whose numbers I shall endeavor to approximate during a trip that I hope to make to that country in October.

I presume trapping of the fur-bearing animals is carried on across the Park lines, but careful watching and one or two arrests have reduced it to a minimum. One or two more examples like that of Van Dyck will put an end to it.

CAPTURE OF ANIMALS.

On my arrival here I found authority to capture animals for the National Zoological Gardens at Washington, D. C. The appointment as hunter was given to Mr. Elwood Hofer, the most competent man in the country. Owing to scarcity of funds with which to pay him he resigned his appointment after two months, but continued to collect specimens. He has caught and turned over to me, and I hold awaiting shipment, two black bear cubs, three young foxes, two elk, and a black-tailed deer.

I also had two antelope, but one night about two weeks since some carnivorous animal broke into their inclosure and killed and ate them. When the time for shipment comes I can readily trap and add to the collection a number of the smaller animals, like wolverines, wolves, lynxes, martins, badgers, porcupines, beavers, etc. All can be shipped in one car, which should go under charge of an attendant.

Bears have become very troublesome at all the hotels, camps, slaughter-houses, and other places in the Park where there is anything for them to eat. They have not proved at all dangerous, but it is impossible to keep provisions anywhere within their reach.

I authorized the capture of one at the Fountain Hotel, but he died of a rupture of the heart in his struggles to escape. I had another caught in a trap there and he is now in the Washington gardens.

I have had 4 small bears caught; two I have still, one broke his chain and escaped, and one was eaten up by an old bear while he was chained in front of the house at Yancey's. As winter approaches I may find it necessary to kill an occasional one, especially if they become destructive of the game, or beef and mutton herds. By another season I hope to be able to supply specimens of all the animals native to the Park; their retention here during the season has proven very interesting to the tourists.

The Park is almost entirely within the State of Wyoming, and yet it is absolutely inaccessible from that State. If a part of the Government appropriation should be expended in making a road down the Snake River as far Jackson's Lake, I have no doubt connection would soon be made with it from some point on the Union Pacific Railroad, and thus a new and desirable route to the Park be opened. It is but a little more than a year before the opening of the World's Fair in Chicago. This will bring visitors here in numbers heretofore unknown.

No expenditure can be made of the revenues of the Government that will bring more satisfactory return than liberal, generous appropriations for the improvement of the Park. I venture to recommend an appropriation of at least \$100,000 for construction and repair of roads, with a suggestion that it be made available as early in the year as possible, that it may be expended while work on the roads is yet possible in the autumn. The amount of money at the disposal of the Superintendent is ridiculously inadequate. In place of the few hundreds that he has annually, he should have at least \$10,000 to be expended in policing camps, clearing up fallen timber, renewing sign boards, and the many objects properly under his care.

LAW IN THE PARK.

It seems hardly necessary to call your attention to the need of laws for the government of the Park. Senate bill 491, first session Fifty-first Congress, as amended and referred to the House Calendar, has much to commend it, and with a few modifications would effect all that can

be desired. For convenience the jurisdiction of the court should be on the Montana side, and the railroad charter (section 11) should by all means be omitted. Otherwise the bill is as nearly perfect as may be, and I trust the passage of it, or one similar to it, may be pressed and accomplished.

My thanks are due to Capt. F. A. Edwards, First Cavalry, for the earnest and intelligent support he has given me in the conduct of affairs near his camp.

I accompany this report with a transcript of the meteorological record of the post, kept under direction of the post surgeon.

I am, sir, yours, most respectfully,

GEO. S. ANDERSON,
Captain Sixth Cavalry,
Act'g Supt. Y. N. P.

The SECRETARY OF THE INTERIOR.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891.

JULY, 1890.

[Mean temperature 65°.9.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	83	47	36	S.	During night.....		Inches. .10	Inches.	Rain.
2	75	45	30	E.	12.45 p. m. 1.40 p. m.		.24		Thunderstorm, rain, and hail.
3	85	47	38	SE.	.....		.....
4	88	45	43	S.	.....		.....
5	80	57	23	SE.	.....		.....
6	72	57	15	SW.	At intervals.....		(*)		Sprinkling.
7	79	41	38	SE.	.....		.....
8	83	43	40	W.	.....		.....
9	86	53	33	SE.	At intervals.....		(*)		Sprinkling.
10	80	51	29	SW.	.....		.....
11	77	44	33	SE.	.....		.....
12	82	52	30	W.	.....		.....
13	79	44	35	E.	.....		.....
14	84	44	40	SE.	.....		.....
15	83	52	31	SE.	.....		.....
16	86	46	40	SE.	.....		.....
17	89	53	36	SW.	.....		.....
18	86	50	36	SE.	At intervals.....		.02		Sprinkling.
19	89	54	35	SE.	.....		.....
20	79	54	25	S.	{ During night. } { 1.30 p. m. 2.30 p. m. }		.45		Thunderstorm; rain.
21	79	55	24	E.	During night.....		.16		
22	88	45	43	SE.	.....		.....
23	86	51	35	SE.	.....		.....
24	89	50	39	S.	1 p. m. . . . 1.30 p. m. . . .		(*)		Sprinkling.
25	90	54	36	W.	12.40 p. m. 12.55 p. m. }		.02		Strong wind and thunder storm tearing down flagstaff and trees.
26	91	50	41	NW.	2.15 p. m. 2.35 p. m. }				
27	87	49	38	NE.	.....		.....
28	83	44	39	SE.	.....		.....
29	81	47	34	W.	.....		.....
30	80	41	39	SW.	.....		.....
31	84	39	45	SE.	.....		.....
Mean.	83	48.50	35						

* Inappreciable.

AUGUST, 1890.

[Mean temperature 60°.59.]

1	82	52	30	SW.	.....		.....
2	77	44	33	W.	.....		.....
3	79	39	40	SE.	.....		.....
4	81	45	36	S.	.....		.....
5	88	48	40	SE.	.....		.....
6	87	46	41	E.	.....		.....
7	80	47	33	NW.	.....		.....
8	84	39	45	SE.	.....		.....
9	84	50	34	NW.	7 p. m. . . . During night.		.12		Rain.
10	70	52	18	E.	7.30 a. m. 10 a. m. . . .		.04		Sprinkling.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891—Continued.

AUGUST, 1890—Continued.

[Mean temperature 60°.59.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
11	74	50	24	SE.	{ 1.25 p.m. 8.30 p.m.	2.15 p.m. During night.	.14 .24		Thunderstorm passing. Rain.
12	72	40	32	SW.					
13	78	42	36						
14	84	41	43	NW.	5.00 p. m.	6.00 p. m.	0.02		
15	74	48	26	NW. {	6.00 p. m.	8.20 p. m.	0.21		Rain.
16	74	45	29	SE.	5.00 p. m.	6.00 p. m.	0.04		Rain.
17	74	41	33	SW. {	10.15 a. m. 1.30 p. m.	11.00 a. m. 2.45 p. m.	(*) 0.23		{ Thunder storm; temperature fell rapidly from 70° to 47°; high wind, rain and hail. Thunder at a distance.
18	64	43	21	W.	11.50 a. m. During night.	12.20 p. m. 7.30 a. m.	0.02 0.29		
19	64	36	28	SW.	{ 7.30 a. m. During night	9.00 a. m.	0.04 0.02		Rain.
20	74	37	37	SE.					
21	83	41	42	S.					
22	80	52	28	E.					
23	73	39	34	SE.					
24	65	37	28	W.					
25	70	37	33						
26	80	37	43						
27	81	40	41						
28	80	51	29		2:50 p. m.	3:10 p. m.	(*)		Sprinkling; thunderstorm passing in southwest direction.
29	85	43	42						
30	78	49	29		During night.		0.04		Rain.
31	75	50	25		During night.		0.23		Thunderstorm; rain.
Mean.	77.25	43.9	33.35						

SEPTEMBER, 1890.

[Mean temperature, 52°.58.]

1	74	47	27	SE.	During night.		.02		Rain.
2	69	37	32	NW.					
3	71	31	40	SW.					Frost; sidewalks and fences covered.
4	75	36	39	SE.					
5	70	42	28	SW.	During night.		0.17		Rain.
6	45	28	17	SW.	4.30 p. m.	5.30 p. m.	(*)	(*)	Snow; ground covered.
7	57	22	35	S.					
8	68	35	33	SE.					
9	71	30	41	S.					
10	72	30	42	SW.					
11	65	31	34	SE.	5.30 p. m.	6.20 p. m.	(*)	(*)	Snow.
12	65	20	45	SE.					
13	69	28	41						
14	70	43	27	S.					
15	76	37	39	SE.					
16	77	41	36	W.					
17	79	41	38	SE.					
18	64	38	26	E.					
19	72	34	38	S.					
20	71	36	35	SW.					
21	72	31	41	W.					
22	71	33	38	SE.					
23	75	34	41	SE.					
24	75	34	41	S.					
25	71	35	36	E.					

* Inappreciable.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891—Continued.

SEPTEMBER, 1890—Continued.

[Mean temperature 52°.58.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
26	72	34	38	SW.	2 p. m.	2.20 p. m.	Inches. (*)	Sprinkling.
27	76	36	40	.....	.....	.....	.....	.....
28	79	38	41	S.	.....	.....	.....	.....
29	73	39	34	SE.	.....	.....	.....	.....
30	64	46	18	SE.	.....	.....	.....	.....
Mean..	70.26	34.90	35.36						

OCTOBER, 1890.

[Mean temperature, 38°.45.]

1	56	41	15	SE.	{ During night . . . . .	.04	.....	} Rain.
2	45	34	11	NW.	{ 3.25 p. m. 4.50 p. m. .05	.....	.....
3	44	24	20	NW.	7 p. m. 5 p. m. . . . .	.30	.....	Rain.
4	42	19	23	E.	6.20 p. m. During night.	.15	1.5	Snow.	
5	44	30	14	SE.	† 11.30 a. m. † 2.30 p. m.	(*)	(*)	Snow.	
6	46	30	16	SE.	During night . . . . .	.04	.....	Rain.
7	44	36	8	SW.	During night . . . . .	.06	(*)	Snow; melted as it fell.
8	40	25	15	SE.	9 a. m. 6 p. m. . . . .	.04	(*)	Snow at intervals; melted as it fell.
9	33	20	13	E.	During night . . . . .	.....	.....	.....
10	31	23	8	W.	3.30 p. m.	.3	4.	Snow.
11	45	22	23	SW.4	(*)	Snow; melted as it fell.
12	34	28	6	SE.	8 a. m. During night.	.....	.....	.....
13	42	19	23	NW.	.....	.....	.....	.....
14	35	28	7	SE.	12 m. 1.30 p. m.	.15	1.00	Snow.	
15	33	16	17	E.	During night	(*)	(*)	Snow.	
16	45	24	21	S.	.....	.....	.....	.....
17	42	29	13	SW.	.....	.....	.....	.....
18	57	28	29	S.	.....	.....	.....	.....
19	50	38	12	SE.	11.30 a. m. 5.20 p. m.	.07	.....	Rain.
20	42	26	16	NE.	During night . . . . .	.08	.....	
21	52	33	19	SE.	.....	.....	.....
22	48	35	13	SE.	.....	.....	.....
23	49	35	14	S.	.....	.....	.....
24	56	33	23	SW.	.....	.....	.....
25	59	26	33	S.	.....	.....	.....
26	58	32	26	SE.	.....	.....	.....
27	50	32	28	SE.	.....	.....	.....
28	65	31	34	SW.	.....	.....	.....
29	63	29	34	SE.	.....	.....	.....
30	62	28	34	E.	.....	.....	.....
31	60	28	32	W.	.....	.....	.....
Mean.	47.8	20.1	19.35						

* Inappreciable.

† At intervals.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891—Continued.

NOVEMBER, 1890.

[Mean temperature 32°.75.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maxi-mum.	Mini-mum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
							<i>Inches.</i>	<i>Inches.</i>	
1	56	25	31	SE.	.....	.....	.....	.....
2	54	24	30	SW.	.....	.....	.....	.....
3	58	28	30	S.	.....	.....	.....	.....
4	56	38	18	SE.	.....	.....	.....	.....
5	34	24	10	NE.	8 a. m. ...	4.30 p. m. ...	.08	.75	Snow.
6	23	14	9	E.	.....	.....	.....	.....
7	24	2	22	SE.	.....	.....	.....	.....
8	31	8	23	NW.	3.15 p. m. ...	5.30 p. m. ...	(*)	(*)	Snow.
9	32	22	12	SW.	9 a. m. ...	11 a. m. ...	} .05	(*)	Snow; melted as it fell.
					11.45 a. m. ...	4 p. m. ...			
10	32	14	18	SE.	.....	.....	.....	.....
11	33	24	9	E.	10.30 a. m. ...	4.15 p. m. ...	.12	1.02	Snow.
12	31	8	23	SE.	.....	.....	.....	.....
13	30	20	10	SW.	4.15 p. m. ...	6 p. m. ...	.12	.9	Snow.
14	30	15	15	SE.	During night. ...	.....	.12	1.0	Snow.
15	32	10	22	W.	.....	.....	.....	.....
16	42	14	28	S.	.....	.....	.....	.....
17	38	25	13	SW.	.....	.....	.....	.....
18	40	25	15	SE.	.....	.....	.....	.....
19	49	20	29	S.	.....	.....	.....	.....
20	50	24	26	SE.	.....	.....	.....	.....
21	44	18	26	E.	.....	.....	.....	.....
22	49	23	26	S.	.....	.....	.....	.....
23	45	23	22	SW.	.....	.....	.....	.....
24	48	24	24	SE.	.....	.....	.....	.....
25	47	17	30	SW.	.....	.....	.....	.....
26	49	20	29	W.	.....	.....	.....	.....
27	50	21	29	SE.	.....	.....	.....	.....
28	48	19	29	E.	.....	.....	.....	.....
29	47	25	22	SW.	.....	.....	.....	.....
30	50	26	24	SW.	.....	.....	.....	.....
Mean ..	48.50	20	27.15						

DECEMBER, 1890.

[Mean temperature 27°.72.]

1	45	24	21	SE.	.....	.....	.....	.....
2	39	29	10	E.	During night. ...	4 p. m. ...	(*)	(*)	Snow.
3	32	20	12	NE.	9 a. m. ...	5.30 p. m. ...	.10	.50	Snow.
4	30	18	12	SE.	During night. ...	.....	.18	2.50	Snow.
5	27	9	18	SW.	.....	.....	.....	.....
6	30	6	24	W.	.....	.....	.....	.....
7	25	2	23	SE.	.....	.....	.....	.....
8	29	6	23	E.	.....	.....	.....	.....
9	35	18	17	SW.	.....	.....	.....	.....
10	37	23	14	SE.	.....	.....	.....	.....
11	40	28	12	S.	.....	.....	.....	.....
12	47	23	24	SE.	.....	.....	.....	.....
13	37	28	9	E.	.....	.....	.....	.....
14	37	26	11	SE.	During night. ...	.....	.06	(*)	Snow.
15	33	22	11	SE.	During night, 11 a. m. ...	.....	.05	(*)	Snow.
16	35	20	15	SW.	.....	.....	.....	.....
17	37	13	24	W.	.....	.....	.....	.....
18	42	15	27	SE.	.....	.....	.....	.....
19	37	27	10	E.	During night. ...	.....	.2	(*)	Snow, melted as it fell.
20	34	21	13	SE.	.....	.....	.....	.....
21	28	18	10	S.	8.20 a. m. ...	2.10 p. m. ...	.05	0.2	

* Inappreciable.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890 to June 30, 1891—Continued.

DECEMBER, 1890—Continued.

[Mean temperature, 27°.72.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
							<i>Inches.</i>	<i>Inches.</i>	
22	35	24	11	S.					
23	37	22	15	SW.					
24	35	24	11	SW.					
25	35	27	8	E.					
26	36	24	12	SE.					
27	37	16	21	SE.					
28	40	20	20	SW.					
29	41	20	21	SE.					
30	36	23	13	NW.	10.20 a. m.	7.20 p. m.	.25	2.8	Snow.
31	32	23	9	W.					
Mean .	35.48	19.97	15.52						

JANUARY, 1891.

[Mean temperature, 20°.43.]

1	25	7	18	NW.					
2	27	18	9	SE.					
3	30	20	10	SE.	8.40 a. m.	4.20 p. m.	(*)	(*)	Snow.
4	32	18	14	E.					
5	37	16	21	E.					
6	39	21	18	SE.	4.10 p. m.	During night.	.06	.6	Snow.
7	25	9	16	SE.					
8	19	5	24	E.					
9	24	4	28	0					
10	19	4	23	E.					
11	21	1	22	SE.	During night.		(*)	Trace	Snow.
12	26	3	23	E.					
13	32	10	22	SE.					
14	31	12	19	SE.					
15	25	10	15	NW.					
16	29	20	9	SE.					
17	37	14	23	SE.					
18	33	19	14	SE.					
19	37	23	14	SW.					
20	45	25	20	SW.	During night		.04	.4	Snow.
21	31	15	16	SE.					
22	33	15	18	SE.	4.50 p. m.	During night.	.02	.2	Snow.
23	33	8	25	NW.					
24	36	16	20	SE.					
25	27	21	6	SE.	At intervals		.04	0.6	Snow.
26	31	22	9	S.	9.20 a. m.	3.00 p. m.	.05	0.8	Snow.
27	30	15	15	SE.					
28	23	0	23		During night		.03	0.7	Snow.
29	26	9	17		do		.02	0.5	Snow.
30	25	15	10	SE.	do		.02	0.2	Snow.
31	11	1	10	SE.	9.20 a. m.	6.00 p. m.	.20	3.3	Snow.
Mean ..	29	11.87	17.13						

* Inappreciable.

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YELLOWSTONE NATIONAL PARK LIBRARY

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891—Continued.

FEBRUARY, 1891.

[Mean temperature 14°.25.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maxi-mum.	Mini-mum.	Range.		Began.	Ended.	Quan-tity.	Depth of snow-fall.	
1	7	-16	23	SE.	During night.	2.20 p.m.	.19	3.4	Snow.
2	11	-22	33	SE.	.....	.....	.....	.....	.....
3	20	-2	22	N.	.....	.....	.....	.....	.....
4	27	4	23	NW.	.....	.....	.....	.....	.....
5	28	15	13	S.	.....	.....	.....	.....	.....
6	27	17	10	S.	.....	.....	.....	.....	.....
7	14	-2	16	SE.	During night.	9 a. m. . . .	.08	1.2	Snow.
8	15	-12	27	E.	7 p. m. . . .	.....	.....	.....	.....
9	12	-1	13	SE.	.....	During night.	.12	1.8	Snow.
10	19	7	12	SE.	.....	.....	.....	.....	.....
11	20	3	17	SW.	.....	.....	.....	.....	.....
12	23	16	7	W.	7 a. m. . . .	5.10 p. m. . .	.12	1.2	Snow.
13	39	22	17	SW.	.....	.....	.....	.....	.....
14	35	28	7	SE.	At intervals. . . .	.....	.11	*1.1	Snow.
15	30	12	18	SE.	During night. . . .	.....	.06	9. -	Snow.
16	22	0	22	SE.	During night. . . .	.....	.55	9.6	Snow.
17	19	-9	28	W.	9 a. m. . . .	4 p. m. . . .	.26	3.5	Snow.
18	23	6	17	SE.	.....	.....	.....	.....	.....
19	25	-4	29	E.	10 a. m. . . .	2 p. m. . . .	(*)	(*)	Inappreciable.
20	22	8	14	SW.	.....	.....	.....	.....	.....
21	25	5	20	SE.	.....	.....	.....	.....	.....
22	33	18	15	E.	During night.	2.40 p.m.	.12	4. -	Snow.
23	40	33	7	W.	During night, at intervals.	.....	.09	*9.0	Snow; melted as it fell.
24	33	1	32	SE.	During night.	11 a. m. . . .	.02	4.0	Snow.
25	22	-3	25	SE.	.....	.....	.....	.....	.....
26	25	9	16	S.	.....	.....	.....	.....	.....
27	17	-5	22	SE.	During night.	8.20 a. m. . .	.35	4.3	Snow.
28	27	10	17	NE.	.....	.....	.....	.....	.....
Mean . .	23.57	4.93	18.64						

MARCH, 1891.

[Mean temperature, 22°.17.]

1	33	4	29	NW.	At intervals . . . .	.....	.25	3.2	Snow.
2	7	-7	14	SE.	.....	.....	.....	.....	.....
3	27	-10	37	SE.	.....	.....	.....	.....	.....
4	26	10	16	W.	9 a. m. . . .	.....	.22	2.4	Snow.
5	17	-9	26	E.	.....	During night.	.01	1.6	Snow.
6	16	-15	31	SE.	.....	.....	.....	.....	.....
7	22	-3	25	SE.	During night. . . .	.....	.12	1.4	Snow.
8	25	6	19	SE.	At intervals. . . .	.....	.02	2.7	Snow.
9	32	20	12	NW.	.....	.....	.....	.....	.....
10	30	10	20	NE.	.....	.....	.....	.....	.....
11	22	-9	31	E.	.....	.....	.....	.....	.....
12	30	6	24	SW.	.....	.....	.....	.....	.....
13	41	5	36	S.	.....	.....	.....	.....	.....
14	39	18	21	SW.	.....	.....	.....	.....	.....
15	46	24	22	SW.	.....	.....	.....	.....	.....
16	40	28	12	SE.	4 p. m. . . .	During night.	.22	1.5	Snow.
17	37	21	16	SE.	.....	.....	.....	.....	.....
18	49	14	35	E.	8 a. m. . . .	5 p. m. . . .	.20	1. -	Hail and snow.

* Approximated.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891—Continued.

MARCH, 1891—Continued.

[Mean temperature, 22°.17.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
19	35	18	17	W.			Inches.	Inches.	
20	41	19	22	NW.	At intervals.....		.25	1.5	
21	40	27	13	SE.	10 a. m.	4 p. m. . . . .	.30	1.5	
22	40	10	30	E.					
23	30	19	11	N.E.					
24	38	10	28	SE.					
25	44	9	35	E.	4 p. m.				
26	45	23	22	SE.	During night . . . . .		.2	1.	
27	43	30	13	SE.	2.30 p. m.	4 p. m. . . . .	.1	(*)	Snow melted as it fell.
28	37	21	16	N.	At intervals.....		.15	.5	Snow.
29	35	22	13	SW.					
30	38	16	22	SE.	During night . . . . .		.10	.5	Snow.
31	29	6	23	SE.					
Mean..	33.35	11	22.30						

APRIL, 1891.

[Mean temperature 41°.]

1	32	6	26	SW.					
2	43	6	27	S.					
3	41	19	22	W.					
4	45	8	37	SE.					
5	54	18	36	SE.					
6	60	26	34	S.					
7	49	32	17	W.					
8	41	26	15	SE.					
9	43	20	23	SW.					
10	58	25	33	SE.					
11	60	30	30	SE.					
12	52	32	20	SW.					
13	57	27	30	E.					
14	59	29	30	S.	2 p. m.	4.50 p. m. . . . .	.02		Rain.
15	52	33	19	SE.	4 p. m.	5 p. m. . . . .	.06	(*)	{Snow and hail mixed; melted as it fell.
16	56	30	26	SW.	During night . . . . .		.05		Rain.
17	60	26	34	SW.					
18	55	28	27	SE.					
19	52	36	16	W.					
20	57	32	19	E.					
21	54	28	26	SW.					
22	62	31	31	SE.					
23	69	38	31	S.					
24	65	43	22	SE.					
25	59	32	27	SE.	{ At intervals dur-		.03	(*)	Snow and rain mixed. Snow.
26	52	21	31	NE.	ing night. . . . .		.02	Trace	
27	66	32	34	SE.					
28	68	38	30	SW.					
29	59	41	18	W.					
30	51	29	22	SE.					
Mean	54.6	27.4	26.73						

*Inappreciable.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891—Continued.

MAY, 1891.

[Mean temperature, 49°. 80.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
1	57	37	20	SE.	At intervals		.08		Rain.
2	60	25	35	S.					
3	67	22	45	SW.					
4	73	33	40	S.					
5	78	43	35	S.					
6	78	45	33	SE.					
7	70	44	26	SW.	4 p. m.	4.30 p. m.	.06		Rain; thunderstorm passing.
8	49	34	15	NW.	During night		.04		Rain.
9	53	26	27	W.	11.50 a. m.	1 p. m.	.04		Rain.
10	63	25	38	SE.					
11	61	23	38	SE.					
12	70	30	40	SE.					
13	78	35	43	S.	During night		.03		
14	69	37	32	SW.					
15	68	39	29	SE.					
16	74	35	39	SE.	During night		.02		
					11 a. m.	11.30 a. m.	.02		
17	72	44	28	W.	1 p. m.	2.15 p. m.	.08		Thunderstorm.
					During night		.17		
18	65	37	28	SE.	8.30 a. m.	9 a. m.	(*)		
19	52	32	20	W.	8 a. m.	11 a. m.	.50	†.5	Snow; melted as it fell.
20	59	30	29	SE.	During night		.10	.1	Do.
21	54	30	24	SE.					
22	62	29	23	E.	During night		.08		Rain and hail.
23	59	39	20	NE.					
24	67	34	33	SE.	3.50 p. m.	5 p. m.	.14		Rain.
25	70	32	38	W.					
26	70	39	31	SW.					
27	70	40	30	SE.	5 p. m.	During night	.10		Thunderstorm.
28	69	39	30	SW.	12.30 p. m.	6 p. m.	.41		
29	62	40	22	SE.	During night at intervals.		.17		
							.08		
30	56	37	19	E.					
31	63	35	28	SE.					
Mean..	65.10	34.50	30.60						

JUNE, 1891.

[Mean temperature 51°. 20.]

1	56	38	18	SE.	{12.40 p. m. 6.50 p. m.	1 20 p. m. During night.	.11 .55		
2	53	37	16	E.	At intervals		.13		Rain.
3	54	39	15	NW.	{During night. 10.20 a. m.		.21		
4	61	41	20	SW.	{2.10 p. m. 2.10 p. m.	4.20 p. m. 3 p. m.	.12 .08		Rain and hail
5	70	39	31	SW.					
6	70	41	29	SE.	6.25 p. m.				
7	64	46	18	W.		During night.	.21		Rain.
8	69	32	37	E.	7.10 p. m.		.20		Rain turned into snow during night, which melted as it fell.
9	45	31	14	W.		1.20 p. m.	.08		Snow.
10	64	30	34	SW.	4.20 p. m.	5.10 p. m.	.02		
11	64	41	23	SE.	2.15 p. m.	3 p. m.	.04		
12	68	42	26	NW.	At intervals		.08		

* Inappreciable.

† At intervals.

Meteorological record Fort Yellowstone, Yellowstone National Park, Wyo., from July 1, 1890, to June 30, 1891—Continued.

JUNE, 1891—Continued.

[Mean temperature, 51°.20.]

Date.	Self-registering thermometers.			General direction of the wind.	Precipitation.				Remarks.
	Maximum.	Minimum.	Range.		Began.	Ended.	Quantity.	Depth of snow-fall.	
13	62	38	24	W.	{ During night.....		<i>Inches.</i> .49	<i>Inches.</i>	Rain and hail at intervals. Snow and rain mixed. Rain. Rain. Rain.
14	58	37	21	NW.	{ 7 a. m. 3 p. m.* ..		.01	.....
15	59	37	22	SE.	1.20 p. m. 7 p. m. . . . .		.19	.....
16	70	37	33	SE.	2.10 p. m. 4 p. m. . . . .		.01	.....
17	78	40	38	SE.	During night, 2.30 p. m. . . . .		.07	.....
18	62	48	14	SE.	During night at intervals.		.....	.....
19	60	40	20	SE.	..... During night.		.08	.....
20	56	38	18	SE.	At intervals . . . . .		.02	.....
21	67	37	30	E.	.....		.....	.....
22	63	40	23	NW.	.....		.....	.....
23	58	36	22	SW.	.....		.....	.....
24	66	30	36	SE.	.....		.....	.....
25	76	44	32	SE.	At intervals . . . . .		.08	.....
26	62	44	18	E.	11 a. m. 3 p. m. . . . .		.15	.....
27	66	41	25	S.	At intervals . . . . .		.12	.....
28	64	38	26	SE.	.....		.....	.....
29	71	34	37	SW.	.....		.....	.....
30	85	45	40	SE.	.....		.....	.....
Mean ..	63.70	38.70	25.00						

* At intervals.



REPORT

OF THE

SUPERINTENDENT

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1892.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.



REPORT

OF THE

SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF
YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., August 15, 1892.

SIR: Complying with your request of the 21st ultimo, I respectfully submit the following report of operations and events in the Yellowstone National Park during the past year.

The tourist season, that opened so well in June, 1891, fell off greatly in July, probably owing to the long continued wet weather. Rains occurred almost daily until July 15, and many people were deterred from entering the park by cold and wet and the condition of the roads incident thereto. In August the records show an increase of travel again, but this was partly due to several large excursion parties. The season continued good until about the 20th of September, when an early fall of snow abruptly terminated travel.

The winter was very severe and much snow fell; a backward spring made it almost impossible to open the park at the advertised time—June 1.

The roads were very bad from washouts and mud, and several coaches were overturned, but fortunately with no serious results. All the new road from the Canyon to the Upper Basin, via the lake, was impassable, and I was obliged to put on a large force to open it.

That road was completed last autumn, about the close of the season, and was not well settled when the snow fell. In consequence it washed badly and became very boggy when the snow melted. It is one of the most picturesque drives in the park and will become very popular. By its use all doubling of route is avoided, except between here and Norris. To derive from it the fullest and greatest advantage a new hotel on the site of the present one at the Upper Basin is an essential. As the law stands that site is forbidden, and were it not so I don't believe the necessary capital can be obtained to erect it under existing conditions.

This spring the June travel was good, with a slight falling off in

July, and an upward tendency again in August. I doubt not many people are waiting to make this trip in conjunction with a visit to the World's Fair in 1893.

BOUNDARY LINES OF THE PARK.

The subject of park boundaries has long been in agitation. As now fixed by the President's proclamation of last year, they seem to be thoroughly satisfactory. There is little or no wealth, vegetable or mineral, within the park limits, and nothing that should tempt man's cupidity. On the west, the boundary should be made coincident with the Wyoming line. On the south, the new addition takes in one of the best game preserves in the world, and it should be permanently retained and protected.

On the east the addition may include mineral deposits on the head of the Stinking Water. If so, a modification of this line might be made, so as to throw the mineral belt outside the park. The more recent reports, however, indicate very little wealth in this section.

Continued observation has convinced me that the north line should remain exactly where it is. To cut off all down to the Wyoming line would allow very undesirable settlements in the valley of the Gardiner within 2 miles of this place, and destroy the great mountain sheep, elk, and antelope range on Mount Everts. To make the Yellowstone, Lamar, and Soda Butte rivers the line would be to destroy 25 and perhaps 50 per cent of the game in the park, as this valley is their most extended winter range.

If access to Cooke City by rail is imperative, I believe it will be had from the east or north, without crossing or interfering with the park. If a line through the park is essential, then a right of way confined to the *north* bank of the streams is unquestionably preferable to a cut-off. Should liberal appropriations be made for the construction of roads in the park, I advise that enough of it be used on the Cooke City road to put it in the condition of a first-class commercial thoroughfare. This, I believe, will quiet the agitation that has been going on for so many years.

PROTECTION OF FORESTS.

Since my last report there have been a great many fires started within the park, but by great good fortune all have been extinguished before any damage has been done. A ceaseless and numerous system of patrols has found men ever present to extinguish fires before they have obtained headway. One south of Shoshone Lake this present month assumed greater proportions than any previous one, and was extinguished with difficulty, but it was kept confined to fallen, dead timber, and really did no damage.

Many of these fires are set by lightning, but some are the work of careless campers. In these cases I exact a rigid enforcement of the regulations, and expulsion inevitably follows detection.

OUTPOSTS IN THE PARK.

I have continued the same system of outposts that proved effective last year, and added to it one at the Thumb, and have established one near the south boundary, on Polecat Creek, that I shall occupy when the hunting season opens. This one I shall keep garrisoned by a dismounted party, with snowshoes, all winter. I fully realize that poaching in that vicinity needs increased attention, and I shall look to it the coming fall.

MILITARY QUARTERS.

The new post, on the plateau facing the Mammoth Hot Springs Hotel, was occupied last autumn after the close of the season. A system of water supply and sewerage has just been completed, and small works of improvement are constantly going forward. The post makes a slightly and attractive addition to the place. Another company in garrison is much needed. The single cavalry troop here is kept constantly occupied with its patrol work. A company of infantry should be added, from which details could be made to watch the "formations" and occupy the outposts in winter with snowshoe parties.

I asked of the War Department an allotment sufficient to add accommodations for another company, and it was disapproved on the ground that there was not money enough available. In view of the great necessity for this extra company, I venture to suggest that barracks, kitchen, and outhouses for an infantry company, and stables for quartermaster's animals be added now, and the balance of the buildings be added afterwards. I can manage to accommodate the officers elsewhere for a season.

ROADS.

Last spring found nearly the entire appropriation for two years, amounting to about \$120,000, available for road work. All the existing roads were put in condition, and an excellent new road opened from the canyon to the Upper Basin, via the lake. This 52 miles of road is destined to become one of the most popular, as it is one of the most beautiful, drives in the park.

There are places where it is not entirely completed, but I assume such will not long be the case. A road that urgently needs rebuilding is the one from below the Gibbon Falls to the Lower Basin; at present this is the worst, most tedious, and least interesting drive in the park. I also renew and emphasize my recommendation of last year, that a road be opened from the Upper Basin to the south line of the park, on Snake River. A road over Mount Washburn from the Canyon to Yancey's is very desirable, but with existing appropriations, I can see no immediate chance for it. Short driveways should also be opened to the Great Fountain Geyser, the Biscuit Basin, the Black Sand Basin, the Lone Star Geyser, Inspiration Point, and several other at present inaccessible points of interest.

I urgently recommend that the disbursement of this money be put under the control of the superintendent of the park instead of under a nonresident engineer, the work to be planned and superintended by an officer of the Corps of Engineers, ordered to report to the park superintendent for this purpose. At the opening of travel this spring it was found that the entire appropriation had been expended and absolutely nothing left for the repairs that such roads always need after a severe winter. From his more limited horizon the park superintendent can far better judge of such matters and will be present to execute that judgment.

I wish again to mention the zeal, ability, and conscientious devotion to duty of Lieut. Chittenden, United States Engineers, in charge of the work. It is safe to say that no greater amount of work was ever accomplished within the park with the same amount of money.

HOTELS.

As a rule the hotels were very satisfactorily conducted last year, and I believe there is an improvement this summer. There have been no changes, except that the old Trout Creek station has been abandoned, because there is no longer any travel over that route, and the same establishment is satisfactorily conducted at the Thumb. The old Norris lunch station was burned in May, and is now being conducted under canvas. The management aims to give satisfaction, and I hear a great deal in its praise and very little complaint. Mr. J. H. Dean, manager in charge, is courteous and efficient, and very deservedly popular. A good hotel should be built at the Upper Basin; the Norris lunch station should be rebuilt, and have a few rooms for the accommodation of such parties as desire to spend the night there. A similar building should be erected at the Thumb, and when Yancey's present lease expires a more suitable establishment should be opened and operated at that point. For the great number of travelers that are expected next year, the present accommodations will, I fear, prove inadequate, but it is too late now to remedy the defect.

TRANSPORTATION.

Last year the transportation business of the park was successfully and satisfactorily conducted by the Yellowstone Park Association under the management of Mr. Wakefield. Their right to carry passengers expired, by orders from you, on the closing of the season last fall. A new transportation company, with Mr. S. S. Huntley as head and manager, has been conducting the business since the beginning of the present season. The plant is in every way adequate and excellent. The main complaint that comes to me is lack of stop-over privileges. There is much to be said on both sides of this question. In the first place it is desirable that all tourists should have all the time they desire in which to make the trip; but it is equally due the transportation company that,

except in unusual cases, they should know at the beginning of a tour how long the party expected to be in making it; otherwise it will be almost impossible to properly provide against crowding and unsatisfactory service. Perhaps, for many people with plenty of time, the most satisfactory way of seeing the park is with a camping party. These parties often give a good deal of trouble from the rubbish they leave behind in their camps, and the number of fires they start and do not extinguish; however, it is proper that these parties be given the greatest latitude consistent with proper park management. The question of their transportation then comes up for consideration. I do not think such established institutions as the Wiley tours should be permitted. It is true that they originate and advertise their business outside the park, but the conduct of the business is wholly within it. They establish permanent or semipermanent camps, and to the greatest extent possible conduct their business outside of the control or supervision of the superintendent of the park. The instructions recently received on this subject will have my careful attention.

BOAT ON THE LAKE.

The steamer on the lake has been running successfully for a year or more, and adds much to the pleasure of a trip through the park. It is commodious and comfortable, and I believe perfectly safe. It is now made a part of the park transportation, and carries passengers, at their option, from the Thumb to the Lake Hotel, thus relieving them of 18 miles of tedious staging. I believe the boat company has enough small boats for the demands of fishing parties, but I think prices might be lowered where boats are used continuously for several hours.

TOURISTS.

Tourists continue to gather specimens when not watched, and write their very commonplace names over nature's most exquisite beauties. No amount of vigilance can entirely prevent this, for, unfortunately, the majority of the transgressors have no conception of the enormity of their offenses. Quite recently one reverend vandal excused himself for the offense of gathering specimens by saying that owing to a want of balge or uniform on the party who stopped him, he did not recognize him as having authority. There is still much to be desired in the way of regulations concerning the carrying of firearms within the park. Of course, all arms passing here or any outpost are sealed, and confiscated if afterwards found with seals broken, but it is impossible to carefully watch all the country, and I fear some of the seals get broken before the boundary is crossed. I recommend an absolute prohibition of firearms within the park, leaving, with the superintendent the right to make carefully considered exceptions. I have removed several camping parties from the park for leaving their camp fires unextinguished, and have sent several men back over long distances to rub and wash out names which they had written on the formations.

FISH.

The fish in lakes and rivers remain undiminished in numbers, notwithstanding the multitudes that have been caught. Prof. Everman, of the Fish Commission, visited the park last year and found most of the stock brought here by the Commission thriving beyond his most sanguine expectations. The following is a list of the distribution made by the Commission:

IN 1889.

East Fork of Gardiner, above falls, 1,000 black spotted trout.
 Gibbon River, above Virginia Cascade, 990 Rainbow trout.
 Madison River, above Keppler's Cascade, 995 Loch Leven trout.
 Gardiner River, above falls, 4,975 brook trout.
 Yellowstone River, above falls, 2,000 whitefish.
 Twin Lakes, 1,000 whitefish.

IN 1890.

Shoshone Lake, 24,012 lake trout.
 Shoshone Lake, 3,350 Loch Leven trout.
 Lewis Lake, 12,013 lake trout.
 Lewis Lake, 3,350 Loch Leven trout.
 West Fork of Gardiner, above falls, 7,850 brook trout.
 Nez Percé Creek, 9,850 Von Behr trout.
 Yellowstone River, above falls, 10,000 whitefish.

I have had these plants carefully examined recently, and find them all thriving splendidly, except the whitefish, of which not a trace remained. I believe all have now become sufficiently established to permit fishing under proper restrictions. The altitude is perhaps too great for the successful introduction of black bass, but I should like to see the effort made in some of the suitable lakes near the hotels—like Grebe and Goose lakes; should they thrive, they would add greatly to the sport afforded enthusiastic anglers.

WORK DONE IN THE PARK.

In June I sent a working party through the park and policed it pretty thoroughly, and opened ways to good camping places off the main roads; for this purpose \$1,000 was allotted me, and nearly the entire amount expended. There are now so many camping parties in the park, with more arriving daily, that it will be impossible to keep up a state of thorough police, so I do not recommend any further expenditure in this line until the close of this season or the opening of the next. I was also authorized to renew the signs obliterated by time, and this work is progressing satisfactorily and is nearing completion. Owing to want of money to repair the roads this spring, a large amount of such work was done by the troops, and without it long sections of the road would have remained impassable.

POACHERS.

Trouble with poachers continues to be one of the greatest annoyances the superintendent has to contend with. There is gradually settling about the park boundaries a population whose sole subsistence is derived from hunting and trapping. All of these people are thoroughly cognizant of the location of the boundary lines, but only respect them in the presence of some member of the park force. Live elk, deer, antelope, and bears are caught and sold; the various fur-bearing animals are trapped for their pelts, and hunting parties are guided into the best game region. So long as these operations are conducted without the park they are unobjectionable, and the park, acting as a reservoir, contributes largely to them. But it is when the park is invaded that the damage begins. It is a serious matter that so simple and much-needed a statute as the one granting legal force to park regulations can not be passed. It can antagonize no interests except those of the poachers, with whom no friend of the park can have sympathy.

During the month of June last, on my return from the East, I was informed that one Pendleton, a butcher and poacher from Cooke City, had captured two buffalo calves on specimen range, and had taken them across the north end of the park; that one had died near the mouth of Crevice Creek, and the other had died just outside the park. It was certain that these calves were captured within the park, as there are none found without it. Pendleton claimed, however, that they were caught on Upper Hell Roaring Creek, and he was released. On investigating the case I determined to forbid him the park, under rule 10, except that he might pass backward and forward from Cooke to Cinnabar, along the main road, which he was not, under any circumstances, to leave farther than 100 yards. This order was delivered to him by Sergt. Kellner, in charge at Soda Butte, but Pendleton, in absolute defiance of it, proceeded to roam at will over that portion of the park, and he was arrested and brought in here on July 9 and confined in the guardhouse. I was absent at the time, and he was held awaiting my return. On questioning him a few days since, he said he caught the buffalo on Hell Roaring Creek, and that he would make affidavit to that fact, but when confronted with the notary he changed his mind about the affidavit. There should certainly be some law by which to deal with cases like this. Every bit of property found on such men is at once claimed by their partners and confederates, on real or fraudulent bills of sale, and confiscation, if made, hurts the transgressors very little. Expulsion from the park is no punishment, for they can return immediately and incur no additional risk. However, I interpret the regulations of the Secretary as having the force of law (see declaratory statute), and I act as vigorously as possible under them. Two other men were caught in the act of taking young elk on Mount Everts, and their horses and outfit confiscated and they expelled from the park.

Soon afterwards they broke open the stable one night and stole the ponies that had been taken from them, and their other belongings were valueless. These are a few of the many instances of this kind that have arisen in the course of the year, and they afford a very discouraging picture. I trust that their mere recital will sufficiently emphasize the need of definite statute law for the park.

GAME.

Buffalo.—Very careful and frequent observations of the bison herds in the park have convinced me that there are certainly not less than four hundred here; of these about 20 per cent were calves last year. This year, also, the calves seem numerous and prosperous. The great value placed upon them by sportsmen and taxidermists makes their protection difficult, but I devote my best energies to it. Their perpetuity within the park is thoroughly assured, and a steady and gradual increase may be looked for.

Moose.—There are still a very few of these fine animals in the extreme south of the park, but as they range beyond the line, I fear their protection will be impossible.

Mountain sheep.—There are several large bands of sheep remaining, mostly near the northern line. If the park is cut off down to the East Fork and Soda Butte Creek, one of their best ranges will be thrown out, and of course they will soon disappear. There is a fine herd that winters on Mount Everts, and they are frequently seen near the road between here and Gardiner.

Elk.—The elk are extremely numerous, and I am not disposed to revise in the least my estimate of 25,000 made last year. The very severe winter was extremely hard on them, and I judge that from 2,000 to 5,000 perished. This is not an alarming mortality among so many when it is considered that the deaths the previous winter were unusually few. The worst feature of it is that owing to the starved condition of the mothers this spring a very large proportion of the calves perished. There are still as many as the winter grazing will accommodate, and loss of the old ones is not to be considered an evil.¹¹

Bears.—The bears are becoming very numerous and in some places quite troublesome, but as they are not in the least dangerous and their presence near the hotels is a source of great amusement, I do not recommend the destruction of any.

Other game.—Antelope, deer, and the numerous kinds of smaller animals and birds are all thriving, increasing, and becoming tame. Their appearance near the routes of travel is a source of much interest to tourists.

Of late I have seen evidences of great numbers of beaver. I hope and believe that they are increasing and that I shall be able to protect and preserve them. A few examples like the recent case of Pendleton will contribute powerfully to this end.

CAPTURE OF ANIMALS.

Under your authority I have continued to capture animals for the National Zoölogical Garden in Washington. Two full-grown bears, a grizzly and a cinnamon, have already been shipped, and added to the collection there. I now have on hand, awaiting funds for their transportation, two black bears, two elk, two foxes, one black tail deer, one beaver, one badger, and one porcupine. I have also two bears, two elk, and an antelope that are too young for present shipment. It would be an easy matter for me to add to this collection, but thus far I have had to bear most of the expense of their keeping out of my private funds, and this does not give the enterprise very great encouragement. If more liberal allotments are made me, I can guarantee to provide almost any animal that is native to the park. It is, however, too late in the season to make captures of most of them; they should be taken when very young, as they are more easily caught and trained at that period. Their presence here is a source of unending interest to tourists.

RECOMMENDATIONS.

I take the liberty to make the following recommendations:

First. The passage of an act defining the boundaries of the park as they now exist, including the timber reserve added by Presidential proclamation, except that the Wyoming line should be made the west boundary.

Second. The enactment of a law establishing a system of government within the park, with appropriate machinery for its execution and prescribed penalties for violation of its provisions

Third. A careful survey of its boundaries, with well-defined markings throughout their whole extent.

Fourth. A transfer to the superintendent of the control of the appropriations for the building and repair of roads.

Fifth. The construction of a good wagon road from Cinnabar to Cooke, or so much of it as may fall within the park.

Sixth. The construction of a good road from the Upper Basin to the southern line of the park, on Snake River.

Seventh. The addition of accommodations for a company of infantry, to be made part of the permanent garrison here.

Eighth. A small appropriation for policing the park and capturing and caring for wild animals while awaiting shipment to Washington.

Ninth. Completion of the road system of the park by the construction of the road from the canyon to Yancy's at the earliest practicable day. If liberal appropriations should be made for this object by the Congress at its next session, the road could be made passable before the end of the next tourist season, and very many people thus enjoy the delights of this incomparable bit of scenery.

I wish to record my thanks due to Capt. George L. Scott, Sixth Cavalry, for the efficient aid rendered by him and his troop.

A meteorological record, kept under the direction of the post surgeon, is hereunto appended.

Yours, very respectfully,

GEO. S. ANDERSON,

Captain Sixth Cavalry, Acting Superintendent

Yellowstone National Park.

The SECRETARY OF THE INTERIOR.

Meteorological register kept at Fort Yellowstone, Wyo., from July 1, 1891, to July 31, 1892.

JULY, 1891.

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.	
	°	°	°			<i>Inches.</i>	<i>Inches.</i>	
July 1	82	42	40					SW.
2	85	44	41					SE.
3	88	47	41					S.
4	85	55	30	4 p. m.	5:20 p. m.	.05		SE.
5	81	47	34					S.
6	74	44	30					SW.
7	75	41	34	4:10 p. m.	5:30 p. m.	.12		SE.
8	70	40	30	3:20 p. m.	5:40 p. m.	.48		E.
9	57	41	16	7:40 a. m.	Storms.	.22		E.
10	67	36	31					SW.
11	51	40	11	During night	During night	.41		E.
12	52	39	13	2:10 p. m.	4:20 p. m.	.11		NW.
13	73	37	36	9:40 a. m.	10:20 a. m.	.05		S.
14	73	40	33					NW.
15	79	44	35	During night	During night	.03		NW.
16	79	45	34					NW.
17	83	50	33	1:30 p. m.	1:50 p. m.	.04		SW.
18	86	46	40	During night	During night	.20		NW.
19	82	47	35	5:05 p. m.	6:10 p. m.	.66		NW.
20	75	43	32					SW.
21	76	40	36					SE.
22	79	40	39					NW.
23	77	42	35	4:30 p. m.	5:10 p. m.	.08		NW.
24	84	46	38					S.
25	88	48	40					S.
26	83	49	34	4:10 p. m.	5:10 p. m.	.16		SW.
27	77	49	28					SW.
28	82	44	38	7:10 p. m.	8:20 p. m.	.12		SE.
29	76	47	29	6:20 p. m.	During night	.42		SW.
30	74	56	24					NW.
31	78	44	34					NW.
Total.	23.71	13.67	1,004			3.15		
Mean.	76.48	44.10	32.39					SW.

Monthly mean, 60.29.

Meteorological register kept at Fort Yellowstone, Wyo., etc.—Continued.

AUGUST, 1891.

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.	
	°	°	°			Inches.	Inches.	
Aug. 1	81	49	32					S.
2	84	46	38					NW.
3	82	49	33	1:50 p. m.	2:40 p. m.	.14		SE.
4	81	50	31	4:55 p. m.	5:10 p. m.	.11		S.
5	87	50	37					S.
6	49	46	33					SW.
7	65	42	23	1:25 p. m.	{5:50 p. m. } {Storms }	.44		S.
8	73	41	32					NW.
9	81	39	42					NW.
10	83	40	43					SE.
11	79	41	38	5:15 p. m.	5:25 p. m.	.08		S.
12	85	46	39					S.
13	89	46	43					NW.
14	85	55	30	5:10 p. m.	5:26 p. m.	.09		S.
15	81	50	31					S.
16	82	48	34					SE.
17	83	46	37					SE.
18	81	49	32					SE.
19	82	44	38	2:30 p. m.	3:20 p. m.	.10		S.
20	70	43	27	During night.	During night.	.08		S.
21	68	43	25	8:20 p. m.	8:50 p. m.	.09		SE.
22	74	35	39	During night.	During night.	.01		NW.
23	84	43	41					NW.
24	81	44	37					NW.
25	75	42	33	During night.	During night.	.02		S.
26	67	42	25					SE.
27	81	37	44					SE.
28	80	39	41					SE.
29	86	41	45					S.
30	84	44	40	2:20 p. m.	3:10 p. m.	1.02		SW.
31	82	51	31	1:10 p. m.	4 p. m.	.04		SE.
Total ..	2,425	1,381	1,094			2.22		
Mean ...	29.84	44.55	35.29					S.

Monthly mean, 62.19.

SEPTEMBER, 1891.

Sept. 1	78	49	29					SW.
2	76	30	46					W.
3	75	41	34	8:20 p. m.	9:15 p. m.	0.26		S.
4	75	38	37					S.
5	79	40	39					SW.
6	73	41	32	6:10 p. m.	During night.	.28		SE.
7	60	46	14	Showers	Showers	.08		NE.
8	74	39	35					SE.
9	72	46	26					S.
10	64	44	20	11:40 a. m.	4:50 p. m.	.33		NW.
11	60	36	24					N.
12	71	37	34					SW.
13	76	42	34					S.
14	74	42	32					SE.
15	74	35	39					SE.
16	60	41	19	During night.	During night.	.13		SW.
17	61	41	20	During night.	During night.	.16		W.
18	69	36	33					SW.
19	65	38	27					S.
20	70	40	30					SW.
21	69	38	31	During night.	During night.	.10		N.
22	62	38	24	During night.	During night.	.05		NW.
23	52	40	12					N.
24	59	25	34					NW.
25	69	28	41					S.
26	70	32	38					SW.
27	54	37	17	8:10 a. m.	10:20 a. m.	.05		NE.
28	60	25	35					SW.
29	60	38	22					S.
30	38	24	14	During night.	During night.	.30		N.
Total ..	1,999	1,129	872			1.74		
Mean	63.66	37.56	25.80					SW.

Monthly mean, 52.11.

Meteorological register kept at Fort Yellowstone, Wyo., etc.—Continued.

OCTOBER, 1891.

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.	
Oct. 1	29	19	10	During night.	10 a. m.	<i>Inches.</i> .78	<i>Inches.</i> 7.60	N.
2	34	17	17	.....	.....	.....	.....	W.
3	36	23	13	9:10 a. m. ....	.....	.....	.....	SW.
4	49	21	28	.....	During night.	.25	2.80	S.
5	48	29	19	.....	.....	.....	.....	W.
6	63	27	26	.....	.....	.....	.....	SW.
7	63	30	33	.....	.....	.....	.....	SW.
8	69	30	39	.....	.....	.....	.....	SW.
9	67	33	34	.....	.....	.....	.....	SE.
10	64	34	30	6 a. m.	3:30 p. m. ....	.10	1.00	SE.
11	39	24	15	.....	.....	.....	.....	NW.
12	39	24	15	.....	.....	.....	.....	N.
13	51	20	31	.....	.....	.....	.....	SW.
14	58	19	39	.....	.....	.....	.....	SE.
15	44	31	13	7:30 a. m.	10:10 a. m. ....	.01	.10	E.
16	43	31	12	During night.	During night.	.10	1.00	W.
17	50	20	30	.....	.....	.....	.....	SE.
18	62	25	37	.....	.....	.....	.....	S.
19	64	32	32	.....	.....	.....	.....	S.
20	59	32	27	.....	.....	.....	.....	SE.
21	64	31	33	.....	.....	.....	.....	W.
22	69	35	34	.....	.....	.....	.....	SW.
23	64	43	21	.....	.....	.....	.....	S.
24	64	43	21	.....	.....	.....	.....	W.
25	59	39	20	.....	.....	.....	.....	SW.
26	62	38	24	.....	.....	.....	.....	S.
27	64	35	29	.....	.....	.....	.....	SE.
28	66	34	32	.....	.....	.....	.....	W.
29	46	34	12	7:20 a. m.	5 p. m. ....	.20	Sleet.	W.
30	42	24	18	.....	.....	.....	.....	NW.
31	38	17	21	.....	.....	.....	.....	SE.
Total ..	1,669	894	775	.....	.....	1.44	12.50	S.
Mean	53.84	28.84	25.50	.....	.....	.....	.....	S.

Monthly mean, 41.34

NOVEMBER, 1891.

Nov. 1	46	18	28	.....	.....	.....	.....	W.
2	49	27	22	.....	.....	.....	.....	S.
3	48	31	17	.....	.....	.....	.....	SW.
4	60	38	22	.....	.....	.....	.....	SE.
5	59	40	19	.....	.....	.....	.....	SW.
6	48	30	18	During night.	During night.	.30	.....	W.
7	34	28	6	During night.	During night.	.05	.50	N.
8	34	11	23	.....	.....	.....	.....	NW.
9	38	17	21	.....	.....	.....	.....	SE.
10	28	25	3	4 p. m.	During night.	.13	1.30	W.
11	26	-1	27	.....	.....	.....	.....	SE.
12	32	6	26	.....	.....	.....	.....	E.
13	30	5	25	.....	.....	.....	.....	E.
14	31	9	22	During night.	During night.	.17	1.50	NE.
15	21	10	11	.....	.....	.....	.....	NW.
16	14	-16	30	.....	.....	.....	.....	W.
17	34	4	30	.....	.....	.....	.....	SW.
18	39	23	16	During night.	During night.	.20	2.00	E.
19	34	20	14	.....	.....	.....	.....	E.
20	28	20	8	9:30 a. m.	During night.	.25	2.10	SE.
21	25	11	14	.....	.....	.....	.....	SE.
22	33	9	24	1:15 p. m.	During night.	.35	2.25	S.
23	34	28	6	.....	.....	.....	.....	NW.
24	32	12	20	.....	.....	.....	.....	S.
25	37	16	21	During night.	4 p. m. ....	.20	1.15	S.
26	39	34	5	10 a. m.	5 p. m. ....	.35	2.25	SW.
27	40	16	24	.....	.....	.....	.....	S.
28	42	32	10	.....	.....	.....	.....	S.
29	45	12	33	.....	.....	.....	.....	S.
30	42	30	12	.....	.....	.....	.....	S.
Total ..	1,102	545	557	.....	.....	2.00	13.05	S.
Mean	36.73	18.16	18.57	.....	.....	.....	.....	S.

Monthly mean, 27.44.

Meteorological register kept at Fort Yellowstone, Wyo., etc.—Continued.

DECEMBER, 1891.

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.	
	°	°	°			Inches.	Inches.	
Dec. 1	42	30	12	During night	11.30 a. m	.05	.50	S.
2	36	16	20	.....	.....	.....	.....	SE.
3	32	7	25	.....	.....	.....	.....	S.
4	26	5	21	.....	.....	.....	.....	S.
5	24	3	21	During night	During night	.06	.50	SW.
6	21	5	26	.....	.....	.....	.....	S.
7	14	2	12	.....	.....	.....	.....	SW.
8	24	9	15	During night	.....	.....	.....	S.
9	28	20	8	.....	9.15 a. m	.90	7.90	SW.
10	34	11	23	.....	.....	.....	.....	W.
11	27	-4	31	.....	.....	.....	.....	NW.
12	16	-4	20	.....	.....	.....	.....	SW.
13	26	5	21	.....	.....	.....	.....	S.
14	30	6	24	.....	.....	.....	.....	W.
15	29	6	23	.....	.....	.....	.....	S.
16	32	12	20	.....	.....	.....	.....	SW.
17	35	20	15	During night	.....	.....	.....	S.
18	35	24	11	.....	2.30 p. m	.50	4.50	SW.
19	34	23	11	6.30 a. m	5.15 p. m	.25	2.30	S.
20	30	21	9	.....	.....	.....	.....	NW.
21	30	12	18	.....	.....	.....	.....	W.
22	26	7	19	.....	.....	.....	.....	SW.
23	28	11	17	2 p. m	During night	.17	1.70	S.
24	35	-7	42	.....	.....	.....	.....	N.
25	32	-24	56	.....	.....	.....	.....	N.
26	29	-22	51	9 p. m	.....	.....	.....	N.
27	33	5	28	.....	12 m	.50	4.00	NE.
28	32	14	18	.....	.....	.....	.....	S.
29	33	6	27	12 m	5 p. m	.10	1.00	W.
30	35	7	28	.....	.....	.....	.....	S.
31	31	9	22	8 a. m	6 p. m	.24	2.30	NE.
Total	919	225	694	.....	.....	2.77	24.70	.....
Mean	29.65	7.26	22.39	.....	.....	.....	.....	S.

Monthly mean, 18.46.

JANUARY, 1892.

Jan. 1	20	7	13	.....	.....	.....	.....	S.
2	30	15	15	.....	.....	.....	.....	SW.
3	32	26	6	.....	.....	.....	.....	S.
4	30	19	11	.....	.....	.....	.....	S.
5	25	4	21	.....	.....	.....	.....	SW.
6	19	-5	24	.....	.....	.....	.....	SW.
7	25	15	10	.....	.....	.....	.....	S.
8	24	10	14	.....	.....	.....	.....	S.
9	14	4	10	9 a. m	During night	.40	4.00	S.
10	5	-19	24	.....	.....	.....	.....	S.
11	2	-22	24	.....	.....	.....	.....	SW.
12	4	-8	12	.....	.....	.....	.....	SE.
13	10	-8	18	.....	.....	.....	.....	N.
14	18	6	12	.....	.....	.....	.....	S.
15	25	15	10	.....	.....	.....	.....	SW.
16	26	13	13	8 a. m	10 a. m	.20	2.00	S.
17	9	2	7	.....	.....	.....	.....	S.
18	18	0	18	9 a. m	10 a. m	.10	1.00	S.
19	26	17	9	During night	During night	.50	5.00	S.
20	25	11	14	.....	.....	.....	.....	S.
21	26	12	14	.....	.....	.....	.....	S.
22	22	9	13	.....	.....	.....	.....	S.
23	29	5	24	.....	.....	.....	.....	S.
24	36	15	21	.....	.....	.....	.....	S.
25	37	11	26	.....	.....	.....	.....	S.
26	39	17	22	.....	.....	.....	.....	SW.
27	30	22	8	.....	.....	.....	.....	W.
28	26	14	12	.....	.....	.....	.....	SW.
29	40	25	15	.....	.....	.....	.....	S.
30	39	28	11	During night	10 a. m	.20	2.00	SE.
31	25	22	3	.....	.....	.....	.....	S.
Total ..	736	282	454	.....	.....	1.40	14.00	.....
Mean ..	23.74	9.10	14.65	.....	.....	.....	.....	S.

Monthly mean, 16.42.

BRUCE

Meteorological register kept at Fort Yellowstone, Wyo., etc.—Continued.

FEBRUARY, 1892.

Date of month.	Temperature.			Precipitation.				General direction of the wind.
	Maximum.	Minimum.	Range.	Time of beginning.	Time of ending.	Total precipitation.	Depth of snow-fall.	
Feb. 1	26	18	8	During night	During night	Inches. .20	Inches. 2.00	S.
2	25	12	13	6 p. m.	7 p. m. ....	.05	.50	S.
3	39	8	31	.....	.....	.....	.....	S.
4	28	7	21	.....	.....	.....	.....	S.
5	30	15	15	.....	.....	.....	.....	S.
6	25	10	15	.....	.....	.....	.....	S.
7	24	9	15	.....	.....	.....	.....	N.W.
8	23	4	19	.....	.....	.....	.....	N.W.
9	14	9	5	.....	.....	.....	.....	S.E.
10	35	16	19	10 a. m.	6 p. m. ....	.40	4.00	S.E.
11	35	24	11	6 a. m.	9 a. m. ....	.20	2.00	S.
12	32	25	7	7 p. m.	During night	.50	5.00	S.
13	24	16	8	.....	.....	.....	.....	S.
14	22	5	17	10:10 a. m.	5 p. m. ....	.40	4.00	S.E.
15	27	10	17	.....	.....	.....	.....	S.E.
16	35	15	20	.....	.....	.....	.....	S.
17	32	26	6	.....	.....	.....	.....	S.
18	34	25	9	.....	.....	.....	.....	S.
19	34	26	8	.....	.....	.....	.....	S.
20	37	27	10	.....	.....	.....	.....	S.
21	40	33	7	.....	.....	.....	.....	S.
22	36	30	6	.....	.....	.....	.....	S.
23	34	13	21	During night	9 a. m. ....	.35	3.50	S.
24	36	5	31	.....	.....	.....	.....	S.
25	39	13	26	.....	.....	.....	.....	S.
26	36	17	19	.....	.....	.....	.....	S.
27	35	20	15	.....	.....	.....	.....	S.
28	38	23	15	.....	.....	.....	.....	S.
29	42	26	16	.....	.....	.....	.....	S.
Total	917	487	430	.....	.....	2.10	21.00	S.
Mean	31.62	16.79	14.82	.....	.....	.....	.....	S.

Monthly mean, 24.20.

MARCH 1892

Mar. 1	41	30	11	10 a. m.	6 p. m. ....	.75	7.50	S.
2	32	28	4	6 p. m.	During night	.50	5.00	S.
3	42	29	13	.....	.....	.....	.....	S.
4	35	23	12	.....	.....	.....	.....	S.
5	40	12	28	.....	.....	.....	.....	S.
6	36	13	23	.....	.....	.....	.....	S.
6	43	25	18	.....	.....	.....	.....	S.
8	45	31	14	.....	.....	.....	.....	S.
9	35	19	16	.....	.....	.....	.....	S.
10	49	20	29	.....	.....	.....	.....	S.
11	48	29	19	.....	.....	.....	.....	S.
12	48	32	16	.....	.....	.....	.....	S.
13	46	35	11	.....	.....	.....	.....	S.
14	26	21	5	.....	.....	.....	.....	N.
15	27	11	16	7 p. m.	During night	.10	1.00	N.W.
16	22	-2	24	.....	.....	.....	.....	N.
17	38	2	36	.....	.....	.....	.....	S.
18	48	17	31	.....	.....	.....	.....	S.
19	28	18	10	1 p. m.	6 p. m. ....	.30	3.00	N.
20	22	13	9	6 p. m.	do	.60	6.00	N.
21	32	8	24	.....	.....	.....	.....	N.
22	38	13	25	During night	During night	.15	1.50	S.
23	35	24	11	.....	.....	.....	.....	S.W.
24	30	20	10	During night	During night	.20	2.00	N.
25	25	14	11	.....	.....	.....	.....	N.
26	29	7	22	.....	.....	.....	.....	N.
27	43	19	24	.....	.....	.....	.....	S.
28	39	28	11	.....	.....	.....	.....	S.
29	30	17	13	During night	During night	.15	1.50	S.
30	38	24	14	10 a. m.	1 p. m. ....	.10	1.00	S.
31	25	23	2	During night	8 a. m. ....	.20	2.00	N.
Total	1.115	603	512	.....	.....	3.05	30.50	S.
Mean	35.97	19.45	16.52	.....	.....	.....	.....	S.

Monthly mean, 27.71.

Meteorological register kept at Fort Yellowstone, Wyo., etc.—Continued.

APRIL, 1892.

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.	
	°	°	°			Inches.	Inches.	
Apr. 1	29	10	19					S.
2	32	20	12					S.
3	39	21	18					S.
4	35	25	16					W.
5	38	17	21					S.
6	44	31	13					S.
7	28	22	6					W.
8	40	3	37					S.
9	42	30	12					S.
10	43	31	12					S.
11	41	29	12					S.
12	38	24	14					S.
13	44	18	26					S.
14	50	27	23					S.
15	51	34	17					S.
16	47	31	16					S.
17	40	29	11					S.
18	39	28	11	6 p m	During night.	.15	1.50	N.
19	38	21	17					N.
20	40	19	21					S.
21	44	18	26					S.
22	50	29	21					S.
23	38	32	6					S.
24	39	26	13					S.
25	36	28	8	During night.	During night.	.20	2.00	S.
26	39	26	13	During night.	During night.	.05	.50	S.
27	34	16	18	During night.	During night.	.10	1.00	S.
28	44	20	24					S.
29	45	33	12	6 p m				S.
30	40	31	9		During night.	.42		S.
Total ..	1,207	729	478			.92	5.00	S.
Mean	40.22	24.30	15.93					S.

Monthly mean, 32.26°.

MAY, 1892.

May 1	35	28	7	During night.	6 p m	.40	4.00	S.
2	33	25	8	7 p m	During night.	.20	2.00	N.
3	41	21	20					N.
4	30	24	6	During night.	6 p m	.40	4.00	N.
5	32	20	12	During night.	During night.	.30	3.00	N.
6	47	16	31	5 a m	7 a m	.25	2.50	N.
7	34	27	7	1 p m	6 p m			
8	43	20	23					NE.
9	51	26	25					N.
10	47	33	14					N.
11	41	29	12	During night.	11.20 a m	.32	3.25	S.
12	39	30	9					N.
13	48	25	23					N.
14	54	26	28					S.
15	61	35	26					S.
16	58	38	20					S.
17	60	36	24	During night.	During night.	.02		S.
18	59	29	30					N.
19	58	39	19					N.
20	56	27	29					S.
21	70	28	42					S.
22	68	36	32					S.
23	69	38	31					S.
24	65	38	27					S.
25	71	40	31					S.
26	73	39	34					N.
27	65	43	22	During night.	During night.	.03		N.
28	67	44	23	6 p m	During night.	.02		N.
29	60	39	21	7 p m	During night.	.10		N.
30	56	33	23	3 p m	5 p m	.02		N.
31	58	29	29					N.
Total ..	1,649	961	688			2.06	18.75	N.
Mean	53.19	31.00	22.19					N.

Monthly mean, 42.10°.

Meteorological register kept at Fort Yellowstone, Wyo, etc.—Continued.

JUNE, 1892.

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.	
	°	°	°			Inches.	Inches.	
June 1	61	38	23	4 p. m.	5.50 p. m.	.20		S.
2	53	41	12	7 p. m.	8 p. m.	.01		S.
3	33	30	3	11 a. m.	5 p. m.	.20	2.00	W.
4	49	32	17					W.
5	63	30	33					S.
6	73	37	36					S.
7	74	42	32					S.
8	60	42	18					W.
9	63	35	28	During night {11 a. m.	During night {5 p. m.	.10		S.
10	49	41	8					W.
11	39	34	5	7 a. m.	6 p. m.	.13		W.
12	49	32	17	During night.	12 m.	.26		W.
13	66	35	31	1 p. m.	2 p. m.	.02		S.
14	64	41	23					S.
15	55	40	15					W.
16	61	40	21	2 p. m.	5 p. m.	.04		S.
17	62	41	21					S.
18	68	45	23	2 p. m.	6 p. m.	.25		S.
19	70	40	30					S.
20	72	50	22					S.
21	65	35	30					S.
22	65	38	27					S.
23	61	35	26					W.
24	68	35	33	4.30 p. m.	5.15 p. m.	.06		S.
25	74	41	33	During night.	During night.	.08		S.
26	80	40	40					S.
27	78	41	37					S.
28	83	44	39					S.
29	86	48	38					S.
30	83	50	33	3.45 p. m.	6 p. m.	.29		S.
Total ..	1,927	1,173	754			1.46	2.00	
Mean	64.23	39.10	25.13					S.

Monthly mean, 51.66°.

JULY, 1892.

1	55	40	15	During night.	During night.	.10		N.
2	62	45	17					S.
3	66	41	25					S.
4	81	46	35					S.
5	84	52	32					SW.
6	81	51	30	3.00 p. m.	4.45 p. m.	.13		S.
7	70	52	18					NW.
8	76	46	30					SW.
9	76	57	19	6.30 p. m.	7.00 p. m.	.75		S.
10	76	46	20					S.
11	68	52	16					S.
12	72	50	22					S.
13	74	50	24					NW.
14	74	49	25					NW.
15	81	53	28					SW.
16	82	51	31					SW.
17	72	61	11					SW.
18	81	50	31					SW.
19	88	63	25					S.
20	89	51	38					S.
21	85	50	35					S.
22	80	50	30					SW.
23	74	38	36					S.E.
24	75	42	33					S.
25	78	39	39					S.
26	81	46	35					S.
27	62	45	17					N.
28	72	36	36					S.
29	78	45	33					W.
30	80	44	36					S.
31	86	47	39					SW.
Total..	23.59	1.498	861			.98		
Mean....	76.10	48.32	27.77					S.

Monthly mean, 62.20°. Heavy hail, rain, and thunder storm on 9th.

REPORT

OF THE

SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1893.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.

1893.

REPORT

OF THE

SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF
YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., July 27, 1893.

SIR: Complying with your request of the 18th instant, I respectfully submit the following report of operations and events in the Yellowstone National Park during the past year:

The tourist season experienced the usual vicissitudes. Following closely on the date of my last report came a substantial increase in travel, and the month of August, 1892, showed a larger volume than any preceding month. September opened well, but cold weather coming about the middle of the month kept tourists back, and the last ten days of the season travel was very slight.

During the winter more snow fell than usual. On June first I started through the Park ahead of the first load of regular visitors. The road was fairly good to the Upper Basin via the Fountain; it was absolutely impassable over the divide towards the Thumb. I made an effort to reach the canyon via Norris, but was obliged to turn back on the evening of June 3, when I was within 3 miles of the hotel.

At that time the snow averaged 3 feet deep over 8 miles of this road, and a repair party had been shoveling on it for three days. The first vehicle got to the canyon on the evening of June 4, and soon afterwards the hotel at that place was stocked and opened. A few days later the lake was reached, and that hotel was opened, but travel to it remained light until the way was cleared for the circuit via the Thumb. Early in June I instructed Capt. Scott, then in his camp at Lower Basin, to use every effort to open the road across the divide. He made several unsuccessful attempts, but finally, about June 20, he sent me word that he had been able to reach the Lake with a working party and a heavy wagon. I immediately started out, and was the first to pass over the road in a light vehicle, on June 25. The next day the road was formally opened for stage travel, and has been in use ever since.

I recall to your honor that snow was still found on the roadside on July 20, when you passed over it.

Notwithstanding an unusual fall of snow and a consequent late season, the travel for June was far better than ever before in that month. Doubtless the World's Fair has much to do with this, for the hotel registers show a large majority of foreigners from every quarter of the globe. I am sorry to have to report a very great falling off for this month.

There are several large excursions due in August, which will, I hope, restore the previous high average. In looking back over past reports and records I find that July has always been disappointing. Perhaps the financial situation of the country has somewhat to do with the falling off this year.

The regular travel last year amounted to 3,645. This, however, is independent of camping parties, of which no record is kept. With more general information about the beauties and wonders to be seen here the number of tourists should multiply many fold. In Germany the pupils of the common schools are taught of this Park, and the result is abundantly shown in the large number of Germans who annually visit it. Perhaps a wide distribution of some public document, giving a popular description of the Park and its wonders, would have the same effect in this country. I recommend the preparation and publication of such a pamphlet.

LEASES IN THE PARK.

The question of leases and franchises in the Park has come forward very prominently within the past year. The Yellowstone Park Association has reduced its plant somewhat, and now has hotels at four points only, viz: Mammoth Hot Springs, Fountain, Lake, and Canyon; and lunch stations at Norris, Upper Basin, and the Thumb.

Under the present law the association may only hold 10 acres of land under lease. This much it already has, so it could not, if it would, extend its accommodations. The benefits to the traveling public of a series of hotels under the same management must be apparent to all. No monopoly is created, for it can not be called monopoly when every charge is regulated by your Department. There is need of a hotel at Norris; perhaps one with twenty or thirty rooms, with ample kitchen and dining-room space, would answer for the immediate future. The old hotel at Upper Basin is this year used as a lunch station only. All tourists have to return for the night to the Fountain, and on the following morning make their third trip over this 10 miles. The obvious remedy is a good hotel at the Upper Basin, and this should be provided for without delay. The site of the present hotel is incomparably the best in the whole Basin, but unfortunately it is within the legal limit of "Old Faithful."

When the law was passed prohibiting the erection of any hotel within one-fourth of a mile of any geyser or other object of interest, it was the fear of Congress that people or corporations would obtain proprietary rights within the Park and charge visitors for the privilege of viewing its wonders. The progress of time has removed all that fear, and the law might well be repealed in general, or at least for this spot in particular. I also recommend the repeal of the law prohibiting leases for more than 10 acres to a single corporation. With these changes I should hope for an increase of accommodations that would add greatly to the pleasure and comfort of tourists.

The leases of the Yellowstone Park Association already cover all the ground to which they are legally entitled. The cottage hotel at this place is under their management, but not on their lease. It has been well managed, and serves a most useful purpose. The association should in some way be confirmed in its rights thereto. A lease for the site at the Fountain should be made out and delivered to it.

I recommend proceedings in condemnation, with a view to obtaining possession, for the government of the two frame cottages near the

mouth of Nez Perce Creek. They are much needed for the shelter of the troops stationed at that point each summer. The old barn and stable on the south side of the plateau, facing the hotel at this place, should be removed and placed at the foot of the bluff back of the hotel, as should also the old blacksmith shop and other old buildings near it. As at present situated they form a very unlovely foreground to an otherwise beautiful view. The old barn back of the cottage hotels with its surroundings is most unsightly. A slight expenditure for renovation would greatly add to its appearance. The Transportation Company has under lease all the ground to which it is legally entitled. Like the Park Association it has need of more, and this I hope may be granted. The company has leases and rights within the Park which are accompanied by corresponding obligations. Their lease requires them to keep transportation in full quantity, and at all times, for all the Park travel. They are required to keep all material of first quality; horses gentle and well broken; drivers sober, courteous, and capable. It would seem that under these circumstances they should be protected in their rights to the most of the Park travel.

I have had before me applications by the score for permits to carry on transportation business within the Park. I am well acquainted with many of these applicants, and others I know by repute. Several of them have regular "runners" at Livingston and on the trains between there and Cinnabar who make false promises about what their own line will do for tourists and false statements about what the regular line does do. The result is that at the present time they are getting a large percentage of the travel, and giving, as a rule, very poor service. I very often hear complaints on this score, but up to the present time I have been powerless to help it. Everyone who has traveled knows what a nuisance the hackman becomes about a depot or landing. These on the Park border are no exception to the rule. They do not carry any forage; their teams must either make the trip on what little grass they can gather during the night, or they get their grain by collusion with soldiers or employés within the Park.

There are, of course, people of limited means who wish to make a tour of the Park cheaply, and others who prefer to make a camping tour. I see no objection to allowing one or two approved parties to carry on this kind of business; but I recommend that licenses be refused all others, or that they be placed under such careful and close supervision as will abate the present nuisance. There is no municipality that does not license and arbitrarily supervise its cab service, and such supervision is doubly necessary at this place.

The leases of Mr. F. Jay Haynes and Mr. John Yancy will soon expire. Mr. Haynes has few equals as a photographer in this country. He has improved and beautified his grounds here, and has conducted his business very satisfactorily. I have recommended that his lease be extended.

There is also satisfactory reason for approving the extension to Mr. Yancy. He keeps a very primitive kind of a place, but it gives the necessary accommodations to the fishing parties that go there, as well as to travelers on the Cooke City road. When the projected road over Mount Washburn is completed a hotel near Tower Falls will be needed; but that should be independent of, and different in character from, the one now kept by Mr. Yancy.

I have recently approved the application of Mr. French for lease of certain parcels of land here, at Yancy's, and at Soda Butte. These are of no benefit to the Park or to Park travel, but are only of use in con-

nection with his contract to carry the mail to Cooke City. Should anything cause the mail route to be abandoned, these leases should all be canceled. Right to keep a small store, with such articles as are generally needed by tourists, should be granted. Such a store, with very limited stock, is now satisfactorily conducted by the postmaster, Mrs. George Ash. There has been no change in regard to the boat company's leases, and none is recommended. I think, however, that authority might be granted to some one to maintain one or more naphtha launches on the Lake. It seems to me that there should be some profit in the venture. Applications for a few other minor permits have been sent you with my approval.

BOUNDARY LINES OF THE PARK.

After an existence of more than twenty-one years the boundaries of the Park still remain unmarked. I have submitted for the consideration of the Department a question concerning the northern boundary. There is a question as yet undecided relative to the western boundary. Once these are finally settled the work of actually locating and plainly marking the entire line should be prosecuted with vigor. The timber reservation on the east and south of the Park has been placed under the "same rules and regulations as obtain within the Park;" in fact, it has become a part of the Park. A contract has been let for a survey of the lines of this addition. No work more useful for the protection of the Park has yet been undertaken. I hope another season will see the north and east lines carefully run and marked, and the greatest obstacle to the control and protection of the Park thus eliminated.

There are those who wish to cut off portions of the Park whenever selfish or mercenary interests ask it. As now constituted, including the timber reserve, it is devoted to the pleasure, the instruction, and the benefit of the whole people. The slightest encroachment upon its limits but opens the door to further dismemberment. I am positively opposed to all of these schemes, and particularly to the one known as the "segregation" bill, which proposes to hand over to the hundred or less inhabitants of Cooke City the most valuable section in the north part of the Park. I still adhere to the remarks on this subject in my report for the last year, to which I invite your attention. No more visionary scheme was ever conceived than that of running a railroad from Cinnabar to Cooke City for the poor mineral prospect that exists there.

The "promoters" of this scheme say that the mineral wealth of the district is "generally conceded," but no mining expert of reputation and character has ever reported otherwise than against it. The sworn testimony of Mr. T. F. Oakes, president of the Northern Pacific Railroad, on page 226, House Report No. 1956, first session Fifty-second Congress, says: "There is nothing in Cooke City mines, and we don't want a railroad there;" and further, that it would not be profitable to build a road there, and that he "did not want it." If such a concession is ever made, I trust it will be coupled with a condition that no part of the land shall be given over to other than railroad uses, and that it shall revert to the Park if the road is not completed within two years at the furthest. When the contractor for the survey of the timber reserve reaches here I purpose going with him to the initial point of his survey, "the easternmost point of Yellowstone Lake." I shall also go, if practicable, to the point 10 miles east of there, where he begins his boundary line. These points I desire should be well monumented, as it is not likely that any future dismemberment of the Park will change them.

PROTECTION OF FORESTS.

After two summers of remarkably good fortune in dealing with forest fires I have this year to report a most disastrous one. During the month of June the rainfall was but 0.38 inch, which is less than ever before recorded. In July, thus far, there has been practically no rain. The result is, all vegetation is dead and dry and ready for a conflagration on the slightest exposure. On July 10, about 1:20 p. m., I had a telegram from the corporal stationed at Norris, saying a fire had started there and he needed a half dozen men to help extinguish it. Lieut. Nance was at drill with the troop. I immediately stopped drill, and in less than half an hour a sergeant and six men were en route to the scene. Just as they left the post I received a supplementary telegram saying the fire was beyond control. I then ordered the balance of the troop to start at once, and ordered Capt. Scott down from the Lower Basin with his troop. All the available men of both troops have been watching and fighting this fire for more than two weeks night and day. It is, I believe, under control, and unless the wind should bring it up anew, I hope to be able to withdraw the soldiers in a day or two.

Capt. Scott and Lieut. Nance, with their men, deserve hearty thanks for energy and perseverance in fighting against it. How it started is not definitely known. It occurred on the roadside, about half a mile north of the Norris station. Capt. Scott, who has investigated the matter, believes it originated with the party building the new road at that point. The party had left work and gone to their dinner when the fire was discovered in the place they were last working. It is possible, however, that it originated in a cigar carelessly thrown from a coach by a passing tourist. Unless rains soon come there is grave danger of a repetition of the case, and should more than one fire rage at a time, it would be impossible to control them, and the entire Park would be liable to destruction.

It has been reported to me that men have been heard to say that they would burn over the entire Park in return for my opposition to the segregation scheme. I know there are men in the country of just such character, yet I have small fear that they will actually carry out their threats.

The country recently burned over is very irregular in outline, and extends northeast from the Norris Station about 7 miles, and in places is 2 miles or more in width. There have been other fires started, but all were extinguished before serious damage occurred. This experience has taught me the necessity of strictly enforcing the penalty of expulsion against everyone who fails to absolutely extinguish his fires.

OUTPOSTS.

The system of outposts is the same as last year, with slight addition of force at some of them. I am sorry to say that poaching has gone on in spite of them, but I have no doubt they have done much good. My great trouble is to get noncommissioned officers to put in charge of them who are able and disposed to cope with the class of men who form the poaching population. A few very well-known transgressors living near the south and west boundaries need close watching. I need at least two more scouts for this purpose, and a trip to that country by a special agent of the Department, sent out for the purpose, would be productive of great good.

MILITARY QUARTERS.

Since my last report the only change in the military quarters here is the erection of a hospital, which is now approaching completion. Troop D, Sixth Cavalry, was retained during the winter and contributed much toward the efficient protection of the Park. I renew my suggestion that barracks, mess room, and stables be erected, and that the garrison be increased by the addition of a company of infantry. I have already made application for this to the War Department, and I hope your influence will be exerted to accomplish the end.

ROADS.

Of the roads I can say but little, as I have no voice in their construction or maintenance. Late last autumn about a mile of new road was begun immediately to the north of Norris. I think this road will soon be completed.

A road was laid out and begun which passed for a short distance down the Gibbon River, and thus avoided the Canyon Creek hill. It will be a great improvement on the old road, and I hope will soon be taken up again and pushed to completion. Nothing of importance has been done on it yet this year.

Some small repairs have been put on the road between the Upper Basin and the Thumb, but the important part, the causeway along the lake, is as yet untouched.

The new road is being cleared of timber from the Thumb towards Lewis Lake, and I presume will soon be in condition to be driven over, although still far from being a good road. In the present very meager state of the appropriations I do not think anything more should be done to it for the present.

About half a mile of very beautiful road was located and begun last fall, passing by the brink of the Upper Falls. It is now being prosecuted slowly, and I presume will be open to travel by the close of the season. Lieut. Chittenden promised last October that it should be completed last June, but some unfortunate changes have operated to delay it. A third of a mile of driveway has also been opened near the Grand Canyon at Inspiration Point. These, I believe, comprise about all the improvements made from last year's appropriation.

At the opening of the season this year we were again confronted with a lack of funds for road repairs. This is one of the great evils of leaving the distribution of the money to one who resides so far from the work. The officer now in charge of road work has made, officially, a slighting remark about the "engineering experience" and "business methods essential to the economical and efficient expenditure of large sums of money." In face of all this I prefer to still remain the "police" officer, but to have some little say as to the direction in which the money shall be expended. A more leisurely reading of my last annual report would have shown that this is all I then asked for. The unfortunate relief of Lieut. Chittenden last spring has been a most serious blow to road building here. He was greatly interested in his work, tireless in his attentions to it, and ably equipped for it.

I renew the recommendation that the acting superintendent of the Park be given the control of the work, and that an officer of the Corps of Engineers be detailed to report to him to superintend it, make the detailed plans, and disburse the appropriations. The benefits that would result are too apparent to need explanation.

HOTELS.

The hotels are again managed by Mr. J. H. Dean, who has proved himself thoroughly fitted for the position. Considering the distance they are from the markets and the distance many of them are from the railroad, I regard them as excellent. The rates at all are fixed by the Department at \$4 per day. After six days this rate is made \$3 by the hotel management, with a view of inducing people to remain longer than the time necessary for the straight tour. But few take advantage of this reduction, as people generally arrive with their plans made for a trip of definite duration, and find it difficult to change these plans after they get here. The rooms are clean and comfortable, and the fare, though plain, is very good. The prices are lower than obtain in any of the first-class summer resorts of the country, and I see no reason why a "stay in the Park," rather than a "tour of the Park," should not be the rule. There is certainly much to interest and instruct the visitor at everyone of its hotels.

TRANSPORTATION.

The company of which Mr. S. S. Huntley is manager still has the lease for transportation privileges. Notwithstanding this fact outside parties by their system of "runners," giving false information and bad advice, secure a large share of the travel. The regular company has remarkably fine transportation. Their horses are well fed, well broken and safe, and vehicles and harness are excellent and well kept. Drivers as a rule, are competent, courteous, and sober. So long as this company is required to have an abundance of transportation of this kind for all the travel they should be protected in their rights to it. As stated previously, it can not be regarded as a monopoly when prices and conditions are arbitrarily imposed by the Department. The vexed question of stop-over privileges has been quite satisfactorily arranged by the stages starting out for the trip with a certain percentage of vacant seats, ready to pick up any passengers who may have remained behind on a previous tour. This has much reduced the complaints heretofore prevalent on this point. A tourist now has simply to notify the company of the day on which he wants to go forward, and a seat is provided for him.

A good many people continue to reach the Park via Beaver Canyon, on the Utah Northern Railroad (Union Pacific). Transportation on this route is furnished mainly by the Bassett Brothers. They hold no leases within the Park, nor have they, as I am aware, any authority under which their business is carried on. It is best for all interested that some one should hold a regular lease for transportation from that point to and through the Park; that he be required to have the same class of transportation as the regular company now has, and that he be protected in his efforts to maintain a high standard by having an exclusive right, with prices adjusted by the Department to a moderate rate of profit. To many, the most enjoyable way of seeing the Park is with a camping party. Others can not afford to see it in any other way. Hence, well-equipped and organized camping transportation is a necessity. Mr. Wylie has established such a line, and advertises regular excursions with fixed dates of start and return. To this part of his business I see no possible objection. He has, however, made application for leases to plots of ground in various parts of the Park whereon to establish permanent camps. The great objection to granting these

leases is the fact that a permanent camp is only a step removed from a shanty or a "shack," and it would be a desecration of the Park to allow such to spring up. Furthermore, we should recognize the right of those who come with their own transportation to use any unoccupied bit of ground for their camps.

I have recently posted a notice requiring camping parties to thoroughly police their camp grounds before leaving, but it has not been satisfactorily observed as yet. Perhaps a few expulsions for nonobservance will act as a stimulus.

BOAT ON THE LAKE.

The steamer continues to be satisfactorily run, and is greatly enjoyed by all tourists who make the trip on it. There are complaints that an extra fare is charged for the ride, but people who do not care to pay it have the option of going on the Lake Hotel from the Thumb in the regular coaches without extra price. If the amount of travel on the boat would warrant a reduction of fare, and the transportation company could make a small refund to those who used the boat, I believe all cause of complaint would be removed. The boat company keeps small boats and fishing-tackle enough to accommodate all who wish to make use of them to enjoy the unequalled sport on the lake. The addition of one or more launches would be a convenience, and probably prove remunerative.

ELEVATOR AT THE CANYON.

Mr. D. B. May has renewed his application for leave to place an incline or elevator in the Canyon, enabling people to make a descent to the bottom near the foot of the lower falls. To this project I am very strongly opposed. The elevator will be an unsightly object against the beautiful walls of the Canyon, will land its passengers where they can not get an extended view in any direction, and in my opinion will not prove a profitable venture. On inquiry I find more tourists who would not go down it if paid to do so than I find willing to pay for the trip.

TOURISTS.

Last year all names written or scratched on the beautiful geyser formations were erased. That made it possible to detect any new ones, and to apply needed discipline to the perpetrators of this foolish vanity. Several parties were arrested and sent back to erase their names, and the influence of these examples was excellent. It is worthy of note that a great majority of the names thus written are in a hand exhibiting lack of familiarity with writing implements. Specimen hunters also continue their vandalism, but with the careful watch kept by the soldier guards about the formations this trouble is kept at a minimum.

After the close of the Upper Basin Hotel last October someone—probably one of the help from the hotel, or one of the drivers who brought them out—broke a piece from the beautiful edge of the "Sponge geyser." I made every effort to discover the perpetrators, but without success. A remedy I should apply in future would be to prohibit any of these parties from ever again taking service within the Park. Camping parties continue to leave their fires unextinguished,

and for this, under a wise regulation, they are expelled from the Park. Several cases of the kind have occurred this year, and I have rigidly exacted the penalty.

I find tourists who complain, sometimes with reason, but oftener without a show of it. As an example of the latter class I cite a case that has just occurred. A man came through on a pass covering railroad and stage transportation and hotel bills. This was given him, I understand, because he was to write up the Park for some paper with which he was connected. At the lake he wandered off to fish, and when his stage was ready he was nowhere to be found. After a wait and a search the stage drove to the Canyon without him, but did take his baggage. He hired a conveyance for \$2.50 from outside parties to take him to the Canyon, and then demanded that this money be repaid him by the regular transportation company. I doubt if any other case has occurred quite as illustrative as this one.

I have also to note that since this report was begun I have discovered a way of "scalping" Park tickets. A man buys a ticket for the tour at \$60 from Livingston. One of the proprietors of outside transportation meets him and offers to take him through with a camping party and accepts the ticket for pay. The ticket is then held by the man who takes it up, until he finds a party who declines to go through with him. To this man he offers the regular ticket for \$50. The result of this is that the "scalper" gets \$50 for taking a man through with a camping outfit, and has a double chance at tourists. I have forbidden all persons caught at this work doing any further business within the Park.

The regulation promulgated last January forbidding firearms being carried in the Park without the written permission of the acting superintendent has been productive of much good, and its beneficial effects will increase as time goes on. Its execution adds much to the work of this office and of the outposts, but the result is worth the trouble. Some parties manage to escape detection until their tour is nearly or quite completed, but a room full of surrendered arms is testimony to the fairly efficient execution of the rule. Last summer Lieut. Chittenden collected some very interesting statistics which should come to your attention and receive publicity. To get an accurate expression of opinion, he took from the hotel register each day the name of one tourist at random, except that he never took one whom he knew personally. He thus got people from all parts of the country, from all stations in life, and of all occupations.

On October 22 he addressed to these people the three following questions:

First. What was the principal drawback to the enjoyment of your tour of the Park?

Second. From the experience of your own tour would you advise your friends to visit the Park?

Third. Assuming that there were a complete system of thoroughly macadamized or graveled roads, so constructed as to largely eliminate the mud and dust nuisance, and on which there would be no hills so steep that teams could not ascend them at a trot, and assuming also that there were a well-equipped electric railway covering substantially the same route, by which method would you prefer to make the tour of the Park—by coach or car?

Everybody took the greatest interest in giving full answers, and often went to some length to emphasize their disapproval of any scheme to put railroads of any kind in the Park. In nearly every letter other members of the party took occasion to add their views, so Lieut. Chit-

tenden got a good many more answers than he sent letters. About thirty letters never found their destination and were returned. The following is the vote:

First question, drawbacks: Roads, 91; hotels, 26 (Upper Basin and Norris complained of); transportation, 17; mosquitos and flies, 17; weather, 2; water, 2; steamboat charges, 2; no guides, 1; geysers failed, 1; no drawback, 24; no answer, 4.

Second question, advice as to visiting Park: Yes, 135; no, 2; no answer, 4,

Second question, coach or car: Coach, 145; car, 25.

A great many, however, said that they voted for the coach only on the condition of having roads as specified. With a majority of 6 to 1 against it, I believe the project for an electric road very undesirable.

FISH.

During the season fish are taken in the lakes and rivers in numbers almost passing belief. I would question the propriety of permitting the sport to go unchecked, were it not for the fact that their numbers are apparently undiminished.

All streams heretofore stocked with trout now furnish excellent fishing; probably no better exists anywhere.

Some months since I wrote the Commissioner of Fish and Fisheries concerning the advisability of stocking certain waters with black bass. In reply he informed me that a temperature of 65° was necessary for the spawn to hatch. I have had temperatures taken in these waters, showing temperatures in excess of 65°, and now have a promise from the Commissioner that the plant will be made as soon as he can arrange for it. He has also promised to make plants of the Eastern brook trout in Moose and Shoshone creeks.

WORK DONE IN THE PARK.

Few people would credit the fact that in my management of the Park I have only an allowance of a few hundred dollars each year for all expenses. Since my last report I have had authority to expend just \$500, of which sum \$150 still remains to my credit. All expended so far this year has been for policing camping places near the traveled roads. Last year I made some expenditures for repainting signboards and some for opening roads, but the meager allowance this year will not permit of such luxuries. There is, as you know, an appropriation for "constructing and repairing roads," but with this I have nothing to do. The only money allowed me for the complete management of the Park is the small rents collected from those who hold leases here. This, I believe, aggregates less than \$1,000 per year. Such a sum annually for the protection of an area larger than the State of Connecticut is an absurdity that one needs only to mention. No State or city in the land would thus neglect the smallest of its public parks or reservations.

I trust you will find it in your power to secure from Congress an allowance with which I can make a beginning on the many bits of work that need attention. A great deal of work of all kinds is done by the troops, but it is neither right nor just that it should be so. Their duties are sufficiently numerous and onerous in protecting the Park from poachers and guarding the formations from the vandalism of specimen hunters, etc.

POACHERS.

As the game diminishes in the adjacent States, professional hunters and trappers become more bold and more active. Montana, Idaho, and Wyoming all have stringent game laws, but in spite of them the game grows rapidly less. In Montana no conviction has yet been had under the law, and I do not believe one is possible. In Idaho it is much the same. In Wyoming the law is more strictly enforced, and arrests and convictions frequently occur. A stringent law, with severe penalties, is one of the most urgent needs of the Park. In this immense area, surrounded by a very rough and densely timbered country, it is impossible to give our large game the protection that it should have. With the addition of two men as scouts and an occasional trip about the Park borders by a special agent of the Department much good could be accomplished. Nothing but a law with severe penalties will entirely break up the evil. Confiscation of the outfit, under existing regulations, has but little effect, as the outfit is generally worthless.

Bears are being trapped near all the boundaries. Beaver are still being trapped in all parts of the Park. Parties come into the Park in the spring on the pretense that they are seeking work on the roads or looking for team work. During the long wait involved they devote their time to trapping the fur-bearing animals, and it is almost impossible to catch them at it. I suggest as a remedy that no one, except those having leases or contracts in the Park, be allowed to camp in one place for more than two days. Of course exceptions could be made in cases of well-proven necessity. I have pretty reliable information that about a dozen buffalo were killed last winter, and it is not improbable that even more shared that fate. The heads of these were mounted by taxidermists in Livingston and Bozeman, notwithstanding the law that declares the possession of such parts *prima facie* evidence that the possessor killed the animals within the State. It would be a great assistance to me in the preservation of the game if some authorized person would begin prosecution of these dealers. Conviction probably would not be had, but the annoyance to them and the publicity of the cases would have good effect.

GAME.

Buffalo.—The buffalo have been seen often during the year, and they appear to be doing well. In all the herds a fair proportion of calves is found. Those killed have been mostly bulls, so the capacity of the herds for increase has not been diminished. Late in June a herd of fifty to sixty crossed the road from west to east near the Riverside Geyser. Thirteen calves were counted. They were very tame, and not the least scared by the soldiers who went among them. The estimate of four hundred placed on their number last year is surely not too high.

Moose.—Within the past year a good many moose have been seen near the outpost on Snake River. In June a band of seven, with three calves, was seen in that vicinity, and others have been seen all along the south line. The establishment of that station has done much to protect them.

Mountain sheep.—These animals are found in several parts of the Park, but the most of them are near the north line. A fine bunch winters each year on Mount Everts, not more than 2 miles from this point. I saw them several times last winter, and one day in February

I drove within 75 yards of about a dozen, and they paid not the slightest attention to me. Segregation would result in the destruction of the herd in the northeast corner of the Park, which is probably the largest one anywhere remaining.

Elk.—For some reason the elk did not winter in the Hayden Valley in the same numbers as formerly. There were abundant signs of them in the autumn, and they reappeared again in the spring. Perhaps many of them staid in the open valley of the Pelican. The usual large herd wintered in the valley of the East Fork, between Yancy's and Soda Butte. I still believe that there are 25,000 in the Park. While fighting the fire at Norris a few days ago the men saw a herd of about eighty with a large number of calves.¹¹

Bears.—The bears do not appear so numerous this year as formerly, although they are constantly being seen near the hotels. It is quite probable that the camping parties to which I have referred have trapped some of them out.

Antelope.—A herd of about four to five hundred wintered on Mount Everets and became very tame. They often approached the town of Gardiner to within a few hundred yards. There were one or two smaller herds in other parts of the Park.

Deer.—This spring I saw more deer than usual, and they are very tame. They are doubtless increasing rapidly.

Beaver signs are multiplying, and over large areas they receive fair protection. A beaver trap is so easy to set, and so difficult for one not knowing its whereabouts to find, that complete protection is impossible. The skins have become so valuable as to make this industry very remunerative.

Wolverines, badgers, porcupines, otters, and other animals are increasing rapidly and are often very tame. Ducks and geese breed in the Park in great numbers, and are not scared by the near approach of travelers.

CAPTURE OF ANIMALS.

The animals mentioned in my last report, with several others collected later, were sent to the National Zoölogical Park in Washington last November. I now have awaiting shipment four elk, one deer, three beavers, one badger, and one porcupine, besides a cage of smaller animals. During the season I hope to secure enough to quite fill a car. It would be a matter of great interest to tourists if I had the funds with which to erect an inclosure and put into it some specimens of the game animals here native. Some provision would have to be made for feeding them in the winter, but the expense would be very small. Elk, deer, and buffalo could easily be secured, and probably antelope, moose, and mountain sheep.

RECOMMENDATIONS.

First. The passage of an act defining the boundaries as recommended last year.

Second. The enactment of a law giving the Park a system of government.

Third. Complete the survey and the marking of the boundary lines.

Fourth. Transfer to the superintendent the disposal of the funds for road work.

Fifth. Liberal appropriations with which to complete the road system as approved.

Sixth. Appropriations for clearing out dead timber, collecting and keeping wild animals and in general for all means of preserving, protecting, and beautifying the Park.

Seventh. Provide accommodations for a company of infantry, to be made a part of the permanent garrison here.

These recommendations are for the most part a repetition of those made last year. My estimate of their importance leads me to again call your attention to them. I anticipate much benefit to the Park from your recent tour of it.

I extend my thanks to Capt. Scott, Sixth Cavalry, for the deep interest manifested by him in all that concerns the Park, and for his constant and tireless labors for its protection.

I am indebted to Surg. C. M. Gandy, U.S. Army, for the meteorological record hereto appended.

Yours, very respectfully,

GEO. S. ANDERSON,
Captain Sixth Cavalry,
Acting Superintendent Yellowstone National Park.

The SECRETARY OF THE INTERIOR.

Meteorological register.

JULY, 1892.							AUGUST, 1892.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	55	40	15	N.	0.10	Rain.	1	90	54	36	S.	.....
2	62	45	17	S.	.....		2	82	55	27	S.	.....
3	66	41	25	S.	.....		3	86	51	35	SW.	.....
4	81	46	35	S.	.....		4	87	53	34	S.	0.07	Rain.
5	84	52	32	SW.	.....		5	82	46	36	S.	.....
6	81	51	30	S.	0.13	Rain.	6	83	49	34	S.	0.06	Rain.
7	70	52	18	NW.	.....		7	81	53	28	S.	0.27	Rain.
8	76	46	30	SW.	.....		8	62	48	14	SW.	0.07	Rain.
9	76	57	19	S.	0.75	Rain.	9	75	38	37	SW.	.....
10	76	56	20	S.	.....		10	83	44	39	S.	.....
11	68	52	16	S.	.....		11	82	57	25	S.	.....
12	72	50	22	S.	.....		12	76	50	26	SW.	.....
13	74	50	24	NW.	.....		13	85	41	44	S.	.....
14	74	49	25	NW.	.....		14	87	50	37	S.	.....
15	81	53	28	SW.	.....		15	91	49	42	S.	.....
16	82	51	31	SW.	.....		16	85	54	31	S.	.....
17	72	61	11	SW.	.....		17	71	52	19	N.	.....
18	81	50	31	SW.	.....		18	80	36	44	S.	.....
19	88	63	25	S.	.....		19	73	49	24	N.	.....
20	89	51	38	S.	.....		20	65	41	24	N.	.....
21	85	50	35	S.	.....		21	79	38	41	N.	.....
22	80	50	30	SW.	.....		22	70	47	23	NE.	0.02	Rain.
23	74	38	36	SE.	.....		23	80	37	43	S.	.....
24	75	42	33	S.	.....		24	62	44	18	N.	.....
25	76	39	39	S.	.....		25	65	42	23	N.	.....
26	81	46	35	S.	.....		26	74	32	42	S.	.....
27	62	45	17	N.	.....		27	50	39	11	N.	0.15	Rain.
28	72	36	36	S.	.....		28	55	32	23	NW.	.....
29	78	45	33	W.	.....		29	75	30	45	S.	.....
30	80	84	36	S.	.....		30	77	42	35	S.	.....
31	86	47	39	SW.	.....		31	79	43	36	S.	.....
Total..	2,359	1,498	861	.....	.....		Total..	2,372	1,396	976	.....	.....
Mean ...	76.10	48.32	27.77	S.	0.98		Mean ...	76.52	45.03	31.48	S.	0.64	

Maximum, 89, 20th instant; minimum, 36, 28th instant; monthly mean, 62.20; total precipitation 0.98; wind, south.

Maximum, 91, 15th instant; minimum, 30, 29th instant; mean, 60.77; total precipitation, 0.64; wind, south.

Meteorological register—Continued.

SEPTEMBER, 1892.							OCTOBER, 1892.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	73	47	26	S.	0.60	Rain.	1.....	50	45	5	SW.	0.22	Rain.
2.....	55	42	13	NW.	0.08	Rain.	2.....	66	35	31	S.	0.02	Rain.
3.....	65	37	28	W.	.....	.....	3.....	71	35	36	S.	.....	.....
4.....	75	38	37	S.	.....	.....	4.....	69	34	35	SW.	.....	.....
5.....	77	37	40	S.	.....	.....	5.....	68	38	30	S.	.....	.....
6.....	76	46	30	S.	.....	.....	6.....	66	39	27	SW.	.....	.....
7.....	62	38	24	S.	.....	.....	7.....	68	31	37	S.	.....	.....
8.....	72	32	40	S.	.....	.....	8.....	71	38	33	S.	.....	.....
9.....	68	42	26	N.	.....	.....	9.....	60	40	20	SW.	.....	.....
10.....	63	41	22	NW.	.....	.....	10.....	51	40	11	SW.	.....	.....
11.....	75	29	46	S.	.....	.....	11.....	34	30	4	NW.	0.41	Sleet.
12.....	78	37	41	S.	.....	.....	12.....	41	28	13	N.	0.10	Snow.
13.....	79	36	43	S.	.....	.....	13.....	54	25	29	N.	.....	.....
14.....	79	37	42	S.	.....	.....	14.....	59	31	28	SW.	.....	.....
15.....	82	39	43	S.	.....	.....	15.....	51	30	21	SW.	.....	.....
16.....	78	42	36	S.	.....	.....	16.....	39	29	10	N.	.....	.....
17.....	71	43	28	S.	.....	.....	17.....	30	20	10	S.	.....	.....
18.....	75	41	34	S.	.....	.....	18.....	34	26	8	S.	.....	.....
19.....	76	39	27	S.	.....	.....	19.....	40	23	17	N.	0.02	Snow.
20.....	55	43	12	S.	.....	.....	20.....	51	19	32	S.	0.02	.....
21.....	60	38	22	S.	.....	.....	21.....	53	22	31	S.	.....	.....
22.....	55	40	15	S.	0.25	Rain.	22.....	58	23	35	S.	.....	.....
23.....	54	47	7	S.	0.16	Rain.	23.....	54	23	31	N.	.....	.....
24.....	50	30	20	N.	0.40	Snow.	24.....	52	20	32	SW.	.....	.....
25.....	67	40	27	S.	.....	.....	25.....	52	21	31	N.	.....	.....
26.....	74	40	34	SW.	.....	.....	26.....	61	24	37	S.	.....	.....
27.....	73	43	30	SW.	.....	.....	27.....	60	31	29	S.	.....	.....
28.....	76	40	36	S.	.....	.....	28.....	57	27	30	S.	.....	.....
29.....	75	51	24	S.	.....	.....	29.....	53	30	23	S.	.....	.....
30.....	73	47	26	S.	0.11	Rain.	30.....	57	23	34	S.	.....	.....
							31.....	41	31	10	SW.	.....	.....
Total .	2,091	1,202	889	.....	.....	.....	Total..	1,671	911	760	.....	.....	.....
Mean ...	69.70	40.07	29.63	S.	01.60	.....	Mean....	53.90	29.39	24.52	S.	.79	.....

Maximum, 82, 15th instant; minimum, 29, 11th instant; mean, 54.73; total precipitation, 1.60; wind, south.

Maximum, 71, 8th instant; minimum, 19, 20th instant; mean, 41.65; total precipitation, 0.79; wind south.

Meteorological register—Continued.

NOVEMBER, 1892.						DECEMBER, 1892.							
Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.
1.....	46	25	21	N.	0.14	Snow.	1.....	30	18	12	SW.	0.35	Snow.
2.....	35	20	15	N.	0.05	Snow.	2.....	35	20	15	S.	.....	.....
3.....	37	29	8	N.	0.20	Snow.	3.....	40	33	7	S.	.....	.....
4.....	46	35	11	S.	.....	.....	4.....	33	28	5	S.	0.40	Snow.
5.....	47	34	13	S.	0.32	Rain.	5.....	25	16	9	N.	.....	.....
6.....	28	24	4	N.	0.05	Snow.	6.....	18	2	16	S.	0.12	Snow.
7.....	28	8	20	S.	.....	.....	7.....	13	-4	17	N.	.....	.....
8.....	27	19	8	S.	0.07	Snow.	8.....	19	5	14	S.	.....	.....
9.....	40	14	26	S.	.....	.....	9.....	18	3	15	S.	.....	.....
10.....	41	31	11	S.	.....	.....	10.....	17	7	10	S.	.....	.....
11.....	49	33	16	S.	.....	.....	11.....	11	-7	18	SW.	.....	.....
12.....	45	35	10	N.	.....	.....	12.....	17	3	14	SW.	.....	.....
13.....	37	21	16	S.	.....	.....	13.....	15	5	10	N.	.....	.....
14.....	31	28	3	N.	.....	.....	14.....	11	-8	19	N.	.....	.....
15.....	24	15	9	SW.	.....	.....	15.....	19	9	10	S.	0.40	Snow.
16.....	21	19	2	N.	.....	.....	16.....	16	13	3	N.	0.20	Snow.
17.....	25	8	17	SW.	.....	.....	17.....	15	-1	16	N.	.....	.....
18.....	32	19	13	S.	.....	.....	18.....	20	11	9	S.	0.25	Snow.
19.....	40	31	9	S.	.....	.....	19.....	10	4	6	N.	0.12	Snow.
20.....	35	21	14	S.	.....	.....	20.....	-2	-13	11	N.	.....	.....
21.....	40	31	9	S.	.....	.....	21.....	-6	-14	8	E.	0.10	Snow.
22.....	46	35	11	S.	.....	.....	22.....	25	-10	35	W.	0.16	Snow.
23.....	41	38	3	SW.	0.17	Rain.	23.....	34	24	10	S.	.....	.....
24.....	28	10	18	N.	0.35	Snow.	24.....	38	33	5	S.	.....	.....
25.....	20	6	14	NE.	.....	.....	25.....	36	32	4	S.	.....	.....
26.....	23	13	10	S.	.....	.....	26.....	37	25	12	S.	.....	.....
27.....	26	19	7	S.	.....	.....	27.....	36	30	6	S.	.....	.....
28.....	33	24	9	S.	.....	.....	28.....	22	16	6	N.	0.07	Snow.
29.....	38	30	8	E.	0.40	Snow.	29.....	21	19	2	S.	.....	.....
30.....	41	33	8	S.	0.15	Snow.	30.....	19	4	15	S.	.....	.....
31.....	.....	.....	.....	.....	.....	.....	31.....	23	15	8	S.	.....	.....
Total..	1,050	707	343	.....	.....	.....	Total..	665	318	347	.....	.....	.....
Mean...	35.00	23.57	11.43	S.	1.90	.....	Mean...	21.45	10.26	11.19	S.	2.17	.....

Maximum, 49, 11th instant; minimum, 6, 25th instant; mean, 29.28; total precipitation, 1.90; wind, south; total depth of snow fall, 14.25 inches.

Maximum, 40; 3d instant; minimum, -14, 21st instant; mean, 15.85; total precipitation 2.17; wind south; total depth of snowfall, 20.05 inches

Meteorological register—Continued.

JANUARY, 1893.							FEBRUARY, 1893.						
Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.
1	32	19	13	W.	.....		1	10	-16	26	SE.	.....
2	34	24	10	W.	.....		2	9	13	7	SE.	.....
3	36	24	12	SW.	.....		3	33	5	28	S.	0.20	Snow.
4	40	26	14	SW.	.....		4	31	22	9	S.	0.15	Snow.
5	34	18	16	W.	.....		5	23	15	8	S.	0.12	Snow.
6	35	19	16	N.	.....		6	17	-5	22	N.	.....
7	24	8	16	N.	.....		7	23	1	22	SW.	.....
8	36	15	21	S.	.....		8	20	7	13	SW.	0.10	Snow.
9	30	9	21	SE.	.....		9	22	12	10	SE.	.....
10	29	24	5	SW.	0.09	Snow.	10	25	14	11	S.	.....
11	23	19	4	N.	.....		11	27	3	24	S.	.....
12	24	6	18	S.	.....		12	32	22	10	S.	.....
13	19	11	8	N.	0.11	Snow.	13	19	14	5	N.	.....
14	12	4	8	N.	.....		14	15	-11	26	SW.	.....
15	4	-13	17	NW.	.....		15	26	9	17	S.	.....
16	12	-10	22	N.	.....		16	29	16	13	S.	.....
17	17	-3	20	NW.	.....		17	35	17	18	S.	.....
18	24	13	11	S.	.....		18	33	12	21	SW.	.....
19	22	8	14	S.	.....		19	36	12	24	S.	.....
20	25	8	17	S.	.....		20	38	13	25	S.	0.10	Snow.
21	29	13	16	S.	.....		21	24	21	3	N.	.....
22	30	18	12	SE.	.....		22	31	12	19	N.	.....
23	31	20	11	S.	.....		23	28	13	15	S.	.....
24	28	19	9	SW.	.....		24	20	5	15	SW.	.....
25	20	-1	21	N.	0.18	Snow.	25	29	5	24	N.	.....
26	29	-10	39	S.	.....		26	11	4	7	N.	0.12	Snow.
27	33	-5	38	S.	0.45	Snow.	27	10	-10	20	N.	.....
28	19	-14	33	S.	0.62	Snow.	28	11	-7	18	N.	.....
29	21	12	9	SE.	0.17	Snow.							
30	18	5	13	SE.	0.20	Snow.							
31	9	-28	37	SE.	.....							
Total..	779	258	521	.....	.....		Total..	667	207	460	.....	.....
Mean....	25.13	8.32	16.81	S.	1.82		Mean..	23.82	16.43	7.39	S.	0.79	

Maximum, 40, 4th instant; minimum, 28, 31st instant; mean, 16.72; total precipitation, 1.82. Wind south; total depth of snowfall, 18.35 inches.

Maximum, 38, 20th instant; minimum, -16, 1st instant; mean 20.12; total precipitation, 0.79; Wind, south; total depth snowfall, 8 inches.

Meteorological register—Continued.

MARCH, 1893.							APRIL, 1893.						
Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.
1	21	2	19	S.S.	.....		1	33	23	10	N.	0.25	Snow.
2	28	8	20	S.S.	.....		2	45	31	14	S.S.	.....
3	29	-3	32	S.S.	.....		3	42	31	11	S.S.	.....
4	37	4	33	S.S.	.....		4	45	33	12	S.S.	.....
5	29	7	22	S.W.	0.10	Snow.	5	52	32	20	S.S.	.....
6	36	20	16	S.S.	.....		6	43	31	12	N.	.....
7	36	5	31	S.S.	.....		7	28	24	4	N.	.....
8	33	11	22	S.S.	.....		8	35	13	22	N.	.....
9	29	25	4	N.	.....		9	33	18	15	S.W.	.....
10	20	13	7	N.	.....		10	37	29	17	S.S.	.....
11	29	15	14	N.	.....		11	33	25	8	S.E.	0.12	Snow.
12	25	20	5	N.	.....		12	31	19	12	N.	0.07	Snow.
13	26	9	17	N.	.....		13	35	17	18	N.	0.02	Snow.
14	32	4	36	S.S.	.....		14	38	23	15	S.S.	.....
15	33	11	22	S.S.	.....		15	37	13	24	S.S.	.....
16	27	10	17	S.S.	0.17	Snow.	16	43	20	23	S.S.	.....
17	32	12	20	S.S.	.....		17	44	29	15	S.S.	.....
18	35	19	16	S.E.	.....		18	31	20	11	N.	.....
19	28	24	4	N.	.....		19	35	12	23	N.	.....
20	32	9	23	N.	.....		20	46	28	18	N.	0.20	Snow.
21	28	21	7	S.W.	0.32	Snow.	21	33	8	25	S.S.	.....
22	32	15	17	N.	0.15	Snow.	22	51	36	15	S.S.	.....
23	33	16	17	N.	.....		23	46	37	9	S.S.	.....
24	35	18	17	S.S.	.....		24	32	23	9	N.	0.16	Snow.
25	33	23	10	N.	.....		25	40	23	17	N.	.....
26	36	26	10	S.S.	0.10	Snow.	26	38	29	9	N.	0.15	Snow.
27	37	16	21	S.S.	.....		27	28	23	5	N.	.....
28	50	28	22	S.S.	.....		28	40	12	28	N.	.....
29	54	36	18	S.S.	.....		29	41	16	25	N.	.....
30	43	38	5	N.	.....		30	48	18	30	S.S.	.....
31	35	25	10	S.S.	0.12	Snow.							
Total.	1,013	479	534	.....	.....		Total.	1,163	687	476	.....	.....
Mean.	32.68	15.45	17.23	S.	0.96		Mean.	38.77	22.90	15.87	N.	0.97	

Maximum, 54, 29th instant; minimum, -4, 14th instant; mean, 24.06; total precipitations, 0.96; wind, south; total depth of snowfall, 9.75 inches.

Maximum, 52, 5th instant; minimum, 8, 25th instant; mean, 30.83; total precipitation, 0.97; winds, north; total depth of snowfall, 9.80 inches.

Meteorological register—Continued.

MAY, 1893.							JUNE, 1893.						
Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Wind.	Precipitation.	Remarks.
1	50	22	28	S.	.....		1	58	36	22	NW.	.....
2	48	30	18	S.	.....		2	50	36	14	NW.	0.07	Rain.
3	35	33	2	N.	0.23	Rain.	3	54	30	24	N.	0.05	Rain.
4	46	27	19	S.	.....		4	52	22	30	N.	.....
5	40	26	14	S.	.....		5	62	34	28	W.	.....
6	54	28	26	N.	.....		6	76	36	40	NW.	.....
7	65	27	38	S.	.....		7	68	37	31	W.	.....
8	72	31	41	S.	.....		8	65	39	26	W.	.....
9	60	37	23	S.	0.05	Rain.	9	74	46	28	SW.	.....
10	43	35	8	N.	0.08	Snow.	10	80	52	28	S.	.....
11	63	26	37	S.	.....		11	75	61	14	W.	.....
12	67	37	30	S.	.....		12	77	49	28	N.	.....
13	68	32	36	S.	.....		13	51	38	13	NW.	0.20	Rain.
14	72	34	38	S.	.....		14	57	40	17	NE.	.....
15	75	37	38	S.	.....		15	67	49	18	E.	.....
16	76	45	31	S.	.....		16	77	51	26	W.	.....
17	65	46	20	S.	.....		17	79	46	33	S.	.....
18	40	33	7	N.	.....		18	76	50	26	SW.	.....
19	51	28	23	N.	.....		19	72	40	32	NE.	.....
20	53	34	19	N.	.....		20	65	35	30	W.	.....
21	40	35	5	N.	.....		21	68	33	35	S.	0.06	Rain.
22	50	31	19	N.	.....		22	77	38	39	SW.	.....
23	39	29	10	N.	0.20	Snow.	23	77	41	36	W.	.....
24	37	28	9	N.	.....		24	68	36	32	W.	.....
25	33	27	6	N.	.....		25	76	38	38	S.	.....
26	48	22	26	S.	.....		26	79	40	39	S.	.....
27	60	25	35	S.	.....		27	76	42	34	S.	.....
28	61	31	30	S.	.....		28	65	40	25	SW.	.....
29	51	39	12	S.	0.18	Rain.	29	65	40	25	SW.	.....
30	58	28	30	S.	0.27	Snow.	30	75	36	39	S.	.....
31	51	38	13	S.	.....							
Total	1,671	980	691	.....	.....		Total	2,091	1,211	850	.....	.....
Mean	53.90	31.61	22.29	S.	1.01		Mean	68.70	40.37	28.33	W.	0.38	

Maximum, 76. 16th instant; minimum, 22. 26th instant; mean, 42.65; total precipitation, 1.01; wind, south; total depth of snowfall, 4.70 inches.

Maximum, 80. 10th instant; minimum, 22. 4th instant; mean, 54.73; total precipitation, 0.38; wind, west.

REPORT

OF THE

ACTING SUPERINTENDENT,

OF THE

YELLOWSTONE NATIONAL PARK

TO THE

SECRETARY OF THE INTERIOR.

1894.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1894.

R E P O R T
OF THE
SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SUPERINTENDENT
YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., August 13, 1894.

SIR: Complying with your request of the 14th ultimo, I submit the following report of operations and events in the Yellowstone National Park during the past year:

The tourist season of last year was the most peculiar of any in the history of the Park. My last report bears date of the 27th of July. From that time on, until the end, the falling off that I then noted continued and increased. The regular travel only amounted to 3,076, as against 3,645 for the year previous. Camping parties and irregular outfits suffered more from the depression than did the regular stage and hotel business. This was doubtless due to two causes—the Columbian Exhibition and the financial condition of the country. There was never a season when the hotel registers showed such a cosmopolitan list of names. Nearly every country in the world was represented, and it was no unusual thing to find in the arrivals of a single day people from ten or twelve different foreign nations. Had it not been for this foreign contingent, business in the Park would have proved ruinous; I doubt if any of the companies having franchises here made any money, and it is probable that nearly all found the balance against them at the end of the season.

The travel during the month of June is mostly from the West. Extensive washouts on that part of the railroads, occasioned by the rapid melting of the very heavy snow of last winter, kept tourists out.

From June 26 until July 20 there were no trains running over the railroads, owing to the strikes; thus one-half of the season was passed with no profitable business. This is particularly to be regretted, as the hotel, stage, and boat companies were in better shape than ever before to care for tourists, and the Park was in many ways unusually attractive. There is now little prospect of a prosperous ending of the season, and 1894 will probably stand as the most disastrous to business interests of any in the history of the Park. People who had planned to make the tour at even later dates than this have become alarmed at the interference with travel and have abandoned their trip.

The road over the divide was opened on June 20, the same date as last year; but at the opening it was in much better condition than ever before at this period. With small expenditures for repairs the road will be one of the best, as it is one of the most interesting, in the whole circuit.

A more thorough and exact system of registry will enable me to report in future the number of tourists who go through in their own conveyances and in camping parties. There is no more satisfactory way of seeing the Park than on horseback and with a camp equipment. To many who live near here, and to people of limited means, this affords a cheap and delightful excursion. Such parties are, however, the source of many annoyances in park management:

(1) They are often careless about leaving fires. (2) They leave their camping places unpoliced. (3) They are more inveterate specimen hunters than any other class. (4) They are more apt to disfigure the Park by inscribing their names on all available places.

The proposition made by some parties to establish semipermanent camping places has not received my approval, nor that of the Department, for the reason that they would soon degenerate into ill-kept, unsightly structures, fit breeding places for vermin of all kinds.

LEASES.

The leases of the Yellowstone Park Association are the same as last year. As I write, the papers bring the news that a bill has been passed regulating leases in the Yellowstone National Park. As I understand the bill, it is an excellent measure, and contains several much-needed changes. The main points are: The extension from 10 to 20 acres of the limit allowed under a single lease, not more than 10 acres of which may be held at any one place. Under existing law no lease may be granted within a quarter of a mile of a geyser or other object of interest. The new law very properly reduces this distance to one-eighth of a mile. The immediate effect of this act will be the authorization of a hotel at the Upper Geyser Basin, on the site now occupied, but illegally, by the lunch station at that place. A hotel here has long been one of the greatest needs of the Park, and should the Park Association be able to raise the money and complete the building it would add much to the attractiveness of the tour.

So far there have been no changes in the leases within the Park, excepting the lease of Mr. F. J. Haynes, the photographer, which expired some months since and has been renewed, as has also that of Mr. Yancey.

Under the new law it will be possible for the Yellowstone Park Association to cover by their leases all the ground now occupied by them.

I renew my recommendation of last year that proceedings be had by the Government for the acquirement of the two frame cottages near the forks of the Fire Hole, for use by the troops there stationed during the summer.

The blacksmith's shop and saddler's shop on the plateau facing this office have been removed. There still remains, however, the unsightly barn pertaining to the Yellowstone Park Association. Were it not for the trouble and expense attending its removal, I should recommend that it be put in a position near the base of the hill to the north of the hotel.

The transportation company has improved all of its sites, and kept them in thorough order. I do not believe that they will need any changes in their holdings under the new law. Since my last report, travel has been so slack that they have had no trouble whatever in handling it. Their plant is the finest I have ever seen.

Applications from outside parties for licenses to carry on transportation business in all forms continue to pour into this office. When I

consider the obligations the regular company has assumed and the bonds that it has given for their faithful performance, I have not felt justified in recommending approval in more than one or two cases, and these were to parties who would furnish good accommodations for the cheaper class of travel. Most of the people who have been barred out of the Park business have made bitter complaints at being deprived of this form of livelihood, but a regulated system here is even more of a necessity than is a licensed cab system in a large city. The extent of the country and the difficulty of watching and guarding it make it doubly essential that none but well-known, reputable, and responsible parties be allowed to conduct this form of business here.

Mr. French, who for several years past has carried the mail from this point to Cooke City, has not received the contract this year, and he desires to transfer his holdings at Yancey's and Soda Butte to the man who succeeds him. There is no objection to this transfer, and I shall recommend its approval.

An application by Mr. George Ash, postmaster, for the lease of a small plot on which to erect a post-office and store, should be approved, as many travelers find themselves in need of such small articles as he keeps for sale.

Within the past year two important decisions relating to the boundaries of the Park have been rendered from your office. The first of these is, that the east and west line through the mouth of the Gardiner River is the north boundary of the Park, notwithstanding the fact that it at one time included a part of the Crow Reservation. The other decision is to the effect that what is now known as "Shoshone Lake," is the one from which the west boundary line is to be established, although in the act of dedication it is called "Madison Lake."

The old project to segregate the northern portion of the Park, in the interests of a few mercenary speculators, was again revived with renewed intensity. It is to be hoped that Congress will adjourn without this bill having a place on the statute books.

A bill that on its face might seem harmless has been introduced in Congress to permit the passage of a railroad through the Park on any line which its projectors may select. In every respect this is the most vicious bill that has been introduced within my knowledge. Six months from the entrance of the first locomotive within the limits of the Park there will not be left one acre of its magnificent forests unburned. The line of this road would of necessity pass near the Yellowstone Lake. The great amount of moisture furnished by the lake and its numerous tributaries give a mantle of snow that will average 15 feet in depth, and with the strong winds prevailing in this mountainous country no railroad could be kept running during the six months of winter without being entirely inclosed in snow sheds, which would prove destructive to the natural beauty of the Park.

Mr. Gallagher, who last year had the contract for running the boundary of the timber reserve, did not begin his work at the most easterly portion of the lake, nor did he make his line continuous from the point where it should have begun, to the north line of the Park, nor did he properly and conspicuously mark the line. If it should be found practicable to have an officer of the Corps of Engineers report to me for temporary duty, I could have the line carefully run and so marked that it would be instantly recognized wherever crossed. The Park now has no greater need than that the boundary line shall be everywhere conspicuous. Last season an accurate determination was made of the latitude and longitude of a point near the lake. A granite

monument has been placed to mark the spot, and a base line measured from it as an origin. This will give a point from which the boundaries of the Park can be accurately located.

PROTECTION OF FORESTS.

In my last report the fire near Norris Basin was reported as under control, but not yet entirely extinguished. From first to last it continued over twenty days, and burned over a very irregular tract about 6 miles long and varying from a few feet to a mile or more in width. During the entire summer fires were being started, through the carelessness of camping parties and in other ways, and it is no exaggeration to say that the thorough system of patrol which I have inaugurated, saved the Park from destruction.

I arrived at the Fountain Hotel, on my trip through the Park about four weeks since, and discovered smoke arising from the timber near by. Word was instantly sent to the troop of cavalry camped two miles from there. The soldiers arrived without delay, and by dint of very hard labor, succeeded in getting the fire under control before it reached the tree tops. Ten minutes more headway would probably have put it in a condition to have resisted all efforts at extinction, and I can put no limit short of the lake to its probable extension. I was on the spot very soon after it originated, and made a careful examination of the surroundings and could find no apparent cause of its origin.

This season there are many people making the tour of the Park on foot, as regular tramps. They leave no sign of their camping places, and if they were to start a fire by their pipes or by other means they could easily escape detection by walking quickly off into the timber. This is not only a possible but a very probable origin of several of our recent fires. I am happy to state, however, that none of them have been at all destructive.

OUTPOSTS.

Our system of outposts remains the same as at the date of my last report. The one established on Snake River two years ago has not proven the success that I had hoped it would. It is too far away to be easy of supervision. It is located in a part of the country much frequented by hunting parties, and the section under its protection is too extended and too rough to permit very effective scrutiny. Another station near the mouth of Thoroughfare Creek would materially aid in the protection of this portion of the Park, but the smallness of force under my command, and the distance from the base of supplies, make it impossible for me to establish one there at present.

A soldier from the station at Riverside started for the Lower Basin on snow shoes one day last March and has not since been seen or heard of. He unquestionably perished in the forest, whether from the cold or from some accident, of course no one can tell.

The Park, with the timber reserve, contains an area greater than the State of Connecticut. This is to be protected from fires, from the vandalism of specimen hunters, and from depredations of poachers, by two small companies of troops, who at the same time are required to perform all of their ordinary military duties. I have but one citizen scout to aid in this work. I had a citizen packer who was useful as an assistant, but by orders from superior authority have recently been obliged to discharge him.

MILITARY POST.

The only improvements made at the military post during the year are the completion of the post hospital and the erection of quarters for the hospital steward. A building to be used as a jail and office for the U. S. commissioner is now under contract and work is just being commenced upon it. It is hoped that it will be ready for occupancy before winter.

ROADS.

The same vicious system of construction and maintenance of roads continues, with small likelihood of change. Each spring finds the appropriation for roads entirely exhausted and the most necessary repairs left to the labor of soldiers or to voluntary contributions from the transportation company. Nearly one-half the appropriation for roads in the last fiscal year was used in the partial completion of a single bridge over a dry ravine near the Canyon, where an intelligent estimate for a proper bridge was less than \$2,000. As this bridge is not yet completed, travel over this bit of road is impossible and will remain so for the balance of the year. I renew my recommendation of last year that the control of the appropriation for Park improvement be given to the acting superintendent of the Park. I have no doubt this would result in a saving of at least 25 per cent of the money granted.

HOTELS.

The hotels pertaining to the Yellowstone Park Association, under the able management of Mr. J. H. Dean, have shown a marked improvement. Increase of rates to \$5 per day, authorized by the Department, has resulted in bringing them up to a very high standard. A reduction of rate to \$3 per day after a stay of ten days in the Park has induced many people to prolong their trip. I hear nothing but praise of their cleanliness, neatness, and the excellent manner in which they are generally conducted.

In addition to the need of a hotel at the Upper Basin, of which I have already spoken, a small hotel, with a few rooms, should be put at Norris. This would fill all the needs of the Park until the construction of the road over Mount Washburn, when one should be placed near the mouth of Tower Creek.

TRANSPORTATION.

The Huntley Company still conducts the regular transportation in a satisfactory manner, with an excellent plant. Transportation from Beaver Canyon, on the Union Pacific Railroad, is conducted by the Bassett Brothers, but without definite license from the Department. The new form of license, which has received your approval, should be made applicable to this line, and the proprietors be required to contribute to the support of the Park. The license of \$5 for each wagon required from such parties is not excessive and does not more than compensate for the expenditure made in cleaning up their abandoned camping grounds and making necessary repairs on the road over which they travel.

The question of stop-over privileges, which has heretofore been a vexed one in Park management, has not, within the last year, presented any difficulties. This is possibly due to the very small travel.

I would recommend that instead of a temporary license some responsible party be given a definite lease for a transportation line over the route from Beaver Canyon, and that they be held to requirements similar to those now imposed upon the Huntley Company. Should this recommendation be approved, I see no reason for permitting any other parties to do transportation business within the Park, excepting those who furnish accommodations to campers. The licenses granted during the past year were but two in number, one to Mr. Dixon and the other to Mr. W. W. Wiley, both of whom cater mostly to those who wish to camp out, and who without this privilege would not be able to see the Park. Many parties still visit the Park in transportation belonging to themselves, or hired in places so distant from the Park that it is not practicable to settle the question of ownership or deny them the privilege of proceeding. The old trouble of camping grounds, unpoliced and unsightly from the rubbish left by camping parties, still continues unabated, in spite of my utmost endeavors to correct it.

The boat company has suffered quite as much as other industries in the Park from lack of patronage. The boat has been put in excellent condition, and it furnishes one of the most delightful bits of travel on the tour. The proposition to put a few small steam or naphtha launches on the lake has not been carried out, but I believe it would prove remunerative and certainly would be a great accommodation to tourists.

FISHING.

Within the Park proper there are but two species of fish, trout and grayling. Prior to 1889 but one species of trout existed, and that was the Oregon trout with black spots. In both 1889 and 1890 the U. S. Fish Commission stocked several of the streams of the Park with four other varieties, and they have multiplied to an almost inconceivable extent. It is the general verdict of all who have fished here that no better fishing can be found anywhere in the world. It is not considered necessary to limit the period of fishing within the Park, because it is sufficiently limited by climatic conditions. A year ago I requested the Commissioner of Fisheries to supply some black bass for plant in some lakes that were believed to be suitable for them, but the plant was not received until December, when the temperature was far below zero, and they all perished before reaching their destination. I have renewed the request for the plant, and have the assurance of the honorable Commissioner that it will be granted.

WORK DONE.

Work done in the Park can be classified under three separate heads: (1) that done by the troops as a military organization; (2) that performed under the direction of the Engineer Corps of the U. S. Army, and (3) that performed under the direction of the superintendent of the Park for the Interior Department. The first is under proper military scrutiny and is reported through proper channels to the War Department. The second is not in the least under my control, and so far as I know has never been supervised or properly inspected. Under the third heading the superintendent of the Park is allowed to spend the revenues coming from the leases in the Park for the current year. This year he is allowed the munificent sum of \$250, nearly all of which has to be expended in picking up filth left in the camping places along the traveled roads. It is a fact which I think should be brought to the

notice of the Department, that for years the private funds of the superintendent have been drawn upon to cover the ordinary and necessary expenses of the most frugal Park management. As a case in point I will cite a very recent example. In March last a desperate poacher was captured in the act of removing scalps from buffalo, which he had recently slaughtered. The capture was effected by a party on snow shoes, sent out under the legal orders of the Park superintendent. It was impossible for this party to carry rations. The War Department declines, under its well-known regulations, to approve accounts for provisions furnished at the hotels, because there were more than two in the party, and commutation is not allowed to parties of greater number. The Interior Department declines to audit the account, although the expense was incurred in the proper "management" of the Park, for the reason that these bills were incurred by people in military service, and hence should be paid by the appropriation for the Army. A consequence of such rulings must be to dishearten and discourage any superintendent, who, no matter what his enthusiasm may be, will naturally feel averse to paying a tax on his own efficiency.

POACHERS.

Unfortunately, I am not able to report any diminution of poaching during the last year, although I have devoted my best efforts to its suppression. A fortunate capture of a poacher last March deserves more than passing notice, in view of the consequences that followed it. Sometime in February I sent a scouting party across the Yellowstone and into the Pelican Valley to look after the herds of buffalo and elk that usually winter there. On the return of this party they reported to me that they had found an old snowshoe and toboggan trail, but that they were unable to follow it. It apparently headed in the direction of Cooke City. While this party was still out, word came to me that Ed. Howell, a notorious poacher of Cooke City, had passed the Soda Butte Station one stormy night and had gone on into Cooke for supplies, but that he had not carried any of his trophies with him. A few days after this the sergeant in charge of the Soda Butte Station reported the finding of a trail of this same party with his toboggan and followed it as far as the Park line. I then determined on a plan which resulted in the capture of Howell. I waited until I thought it was about time for him to be back in the Pelican country, and then sent out a large search party, with Capt. Scott in charge. This party arrived at the Lake Hotel on the evening of March 11. Next day Burgess and Sergt. Troike of the Sixth Cavalry went over into the country previously indicated by me, and made their camp.

On the morning of the 13th, very soon after starting, they came across some old snowshoe tracks which they could scarcely follow, but by continuing in the direction of them they soon came across a cache of six bison scalps suspended above the ground, in the limbs of a tree. Securing these trophies, the party continued on down Astringent Creek to its mouth and then turned down the Pelican. They soon came across a newly-erected lodge, with evidences of occupation, and numerous snowshoe tracks in the vicinity. Soon after this they were attracted by the sight of a man pursuing a herd of bison in the valley below them, followed by several shots from a rifle. After completing the killing, the culprit was seen to proceed with the removal of the scalps. While thus occupied with the first one my scouting party ran upon him and made the capture. It turned out, as I had anticipated, to be Howell, who

coolly remarked that if he had seen the party sooner they could never have captured him, meaning, of course, that he could have shot them before they were near enough to make effective the small pistol, which was the only weapon they carried. They brought him into this place as a prisoner, reaching here on the evening of the 16th of March.

I at once made full report of the affair and it was widely noted in the newspapers of the country. A suitable recognition, in the way of a certificate, was made of the coolness and bravery of Burgess and Troike. The scalps, as far as they could be saved, were brought in and properly prepared by a competent taxidermist and placed at the disposal of the Department. The feeling aroused in the minds of the public by this act of vandalism stirred Congress to prompt action, so that on May 7 an act for the protection of game in the Park received the President's signature. In order that it may receive wider distribution, I inclose a copy to be printed with this report. Howell denied having killed any bison but those found near him, but I feel sure that he did kill the six found in the cache, and it is quite probable that he killed others which we did not find. In one sense it was the most fortunate thing that ever happened to the Park, for it was surely the means of securing a law so much needed and so long striven for. On April 25 Howell was released from confinement in the guardhouse by your order and removed from the Park, and directed never again to return without proper permission. On the evening of July 28 I found him coolly sitting in the barber's chair in the hotel at this point. I instantly arrested him and reconfined him in the guardhouse, had him reported to the U. S. attorney for this district, and on the evening of August 8 he received the first conviction under the law which he was instrumental in having passed. He was convicted before the U. S. commissioner of returning after expulsion, in violation of the tenth of the Park regulations, and sentenced to confinement for one month and to a fine of \$50.

With this conviction as a precedent and a strong determination to make other arrests under the new law whenever it is violated, I believe the days of poaching in the Park are nearly at an end. The dead bodies of 13 bison have been discovered in their winter range. I at first believed this to have been the work of poachers, but investigation shows that no parts of them were taken; it also failed to reveal any bullet marks, though these might easily have escaped observation. I am now thoroughly convinced that they perished from natural causes. I had abundant evidence that beaver were being trapped in this vicinity last autumn; but with the most careful watching I failed to capture the culprits, although I pretty well knew who they were. A fishing party from the post found a large beaver in a trap, freshly caught. Another fishing party found a set trap with nothing in it. The same parties are yet operating in this vicinity, and I do not believe can much longer escape the vigilance of my scouts.

GAME.

Buffalo.—Buffalo have been more carefully watched and more accurately counted than ever before. After deducting the losses from all causes, I feel disposed to reduce my estimate of those remaining to 200, and I believe this to be very close to the mark. A few were seen in their winter range as late as the middle of June, and these had calves with them. They have not been pursued into their summer range, and no accurate statement as to the number of calves can be made.

Moose.—Reports from the outpost on Snake River show an increasing number of moose. They are seen so frequently in that vicinity that I believe they have been well protected and are certain to be preserved. Howell informed me, when I ordered him from the Park, that he had a moose scalp cached near the south line of the Park, and that if I would have him put out at that point he would give me this scalp. Of course, I declined his proposition.

Mountain sheep.—Mountain sheep continue to winter on Mount Everts in considerable numbers. Bands numbering from 10 to 30 can be seen almost any time in winter within a few yards of the roadside between here and Gardiner. As their winter habitat is in the portion of the Park within the State of Montana, the so-called "segregation act" would result in their extinction.

Elk.—The elk wintered well and all reports show a large number of young this spring. A party sent out to Yancey's to investigate the subject in March last saw at least 3,000 of them at one time from a single point of view. This is also in the portion of the Park to be cut off by the segregation bill. The valley of the East Fork of the Yellowstone winters more of them than any other portion of the Park, and should it be cut off, it is safe to say that their numbers would be diminished by at least one-half.

Antelope.—The usual herd of 500 wintered on Mount Everts, which is their only winter range. Should it be cut off, their extinction would follow within a year.

Deer.—Although deer are not as numerous as other varieties of game, we still see many of them during the winter, and they become very tame. From November until June it was easy to count 100 of them any day within a mile or two of this place.

Bears.—Bears are numerous in the vicinity of all the hotels and have become very tame. I recently shipped to the Washington Zoological Park an enormous grizzly bear, which was captured at the slaughter house 4 miles distant. After the passage of the act of March 7, I became doubtful of my authority to continue furnishing animals to the Washington Park. This question I duly presented to you, and, after reference to the Attorney-General, it was decided that I still had such authority; but before the decision had arrived it became too late to capture the young ruminants, and I will therefore have a smaller contribution to make this year than any previous one, although my zeal in the matter has not abated. In March or April last I was requested by the secretary of the Smithsonian Institution to select a site, and obtain proposals for erecting an inclosure in which to retain the wild animals here native. As soon as the conditions of the country permitted I made an inspection of a number of sites and selected one or two which I thought would best fulfill the conditions. I then drew designs and asked for proposals. On submitting these proposals to the acting secretary I was informed that the figures were so far beyond his estimate that nothing would probably be done in the matter.

GEYSERS.

I find there is a general belief in the minds of tourists that there is some measure of regularity in the period of eruptions of most if not all of the geysers. At various times during the last three years I have had records made by the guards of the observed eruptions. Of course, these do not include all of the geysers, nor have all of the eruptions of any one of them been noted. I inclose for publication as an appendix

to this report, a table made of observations upon them during the last three years. A casual inspection of it reveals the fact that none but Old Faithful has the slightest pretense to regularity.

I suggested in my last report that a work be written in popular style, thoroughly describing the Park, and giving in brief a history of the early explorations here. My idea was that this work should be written by some one in the Government service and printed and offered for free distribution by the Department. I have an assurance that such a work is now in course of preparation and will soon be issued, but will not be a Government publication, and, as it can only be had by purchase, it will not have the large circulation that I would wish for it.

RECOMMENDATIONS.

First. A complete survey of the Park boundaries, with an actual marking of the same, so that they may be instantly recognized wherever crossed.

Second. A transfer to the superintendent of the control of the appropriations for Park improvement.

Third. Liberal appropriations with which to complete the road system.

Fourth. The addition to the military post of accommodations for another company.

I am indebted to all the officers of the post for their zealous cooperation in all that tends to the welfare of the Park and for their cordial assistance in all of the duties pertaining to its management.

The meteorological record kept under the direction of Surgeon C. M. Gandy, U. S. Army, is hereto appended.

Yours very respectfully,

GEO. S. ANDERSON,

Captain, Sixth Cavalry, Acting Supt. Yellowstone National Park.

THE SECRETARY OF THE INTERIOR.

AN ACT to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Yellowstone National Park, as its boundaries now are defined, or as they may be hereafter defined or extended, shall be under the sole and exclusive jurisdiction of the United States; and that all the laws applicable to places under the sole and exclusive jurisdiction of the United States shall have force and effect in said park: *Provided, however,* That nothing in this Act shall be construed to forbid the service in the park of any civil or criminal process of any court having jurisdiction in the States of Idaho, Montana, and Wyoming. All fugitives from justice taking refuge in said park shall be subject to the same laws as refugees from justice found in the State of Wyoming.

SEC. 2. That said park, for all the purposes of this Act, shall constitute a part of the United States judicial district of Wyoming, and the district and circuit courts of the United States in and for said district shall have jurisdiction of all offenses committed within said park.

SEC. 3. That if any offense shall be committed in said Yellowstone National Park, which offense is not prohibited or the punishment is not specially provided for by any law of the United States or by any regulation of the Secretary of the Interior, the offender shall be subject to the same punishment as the laws of the State of Wyoming in force at the time of the commission of the offense may provide for a like offense in the said State; and no subsequent repeal of any such law of the State of Wyoming shall affect any prosecution for said offense committed within said park.

SEC. 4. That all hunting, or the killing, wounding, or capturing at any time of any bird or wild animal, except dangerous animals, when it is necessary to prevent them from destroying human life or inflicting an injury, is prohibited within the limits of

said park; nor shall any fish be taken out of the waters of the park by means of seines, nets, traps, or by the use of drugs or any explosive substances or compounds, or in any other way than by hook and line, and then only at such seasons and in such times and manner as may be directed by the Secretary of the Interior. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary and proper for the management and care of the park and for the protection of the property therein, especially for the preservation from injury or spoliation of all timber, mineral deposits, natural curiosities, or wonderful objects within said park; and for the protection of the animals and birds in the park, from capture or destruction, or to prevent their being frightened or driven from the park; and he shall make rules and regulations governing the taking of fish from the streams or lakes in the park. Possession within the said park of the dead bodies, or any part thereof, of any wild bird or animal shall be prima facie evidence that the person or persons having the same are guilty of violating this Act. Any person or persons, or stage or express company or railway company, receiving for transportation any of the said animals, birds, or fish so killed, taken, or caught shall be deemed guilty of a misdemeanor, and shall be fined for every such offense not exceeding three hundred dollars. Any person found guilty of violating any of the provisions of this Act or any rule or regulation that may be promulgated by the Secretary of the Interior with reference to the management and care of the park, or for the protection of the property therein, for the preservation from injury or spoliation of timber, mineral deposits, natural curiosities or wonderful objects within said park, or for the protection of the animals, birds and fish in the said park, shall be deemed guilty of a misdemeanor, and shall be subjected to a fine of not more than one thousand dollars or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

That all guns, traps, teams, horses, or means of transportation of every nature or description used by any person or persons within said park limits when engaged in killing, trapping, ensnaring, or capturing such wild beasts, birds, or wild animals shall be forfeited to the United States, and may be seized by the officers in said park and held pending the prosecution of any person or persons arrested under charge of violating the provisions of this Act, and upon conviction under this Act of such person or persons using said guns, traps, teams, horses, or other means of transportation such forfeiture shall be adjudicated as a penalty in addition to the other punishment provided in this Act. Such forfeited property shall be disposed of and accounted for by and under the authority of the Secretary of the Interior.

SEC. 5. That the United States circuit court in said district shall appoint a commissioner, who shall reside in the park, who shall have jurisdiction to hear and act upon all complaints made, of any and all violations of the law, or of the rules and regulations made by the Secretary of the Interior for the government of the park, and for the protection of the animals, birds, and fish and objects of interest therein, and for other purposes authorized by this Act. Such commissioner shall have power, upon sworn information, to issue process in the name of the United States for the arrest of any person charged with the commission of any misdemeanor, or charged with the violation of the rules and regulations, or with the violation of any provision of this Act prescribed for the government of said park, and for the protection of the animals, birds, and fish in the said park, and to try the person so charged, and, if found guilty, to impose the punishment and adjudge the forfeiture prescribed. In all cases of conviction an appeal shall lie from the judgment of said commissioner to the United States district court for the district of Wyoming, said appeal to be governed by the laws of the State of Wyoming providing for appeals in cases of misdemeanor from justices of the peace to the district court of said State; but the United States circuit court in said district may prescribe rules of procedure and practice for said commissioner in the trial of cases and for appeal to said United States district court. Said commissioner shall also have power to issue process as hereinbefore provided for the arrest of any person charged with the commission of any felony within the park, and to summarily hear the evidence introduced, and, if he shall determine that probable cause is shown for holding the person so charged for trial, shall cause such person to be safely conveyed to a secure place for confinement, within the jurisdiction of the United States district court in said State of Wyoming, and shall certify a transcript of the record of his proceedings and the testimony in the case to the said court, which court shall have jurisdiction of the case: *Provided*, That the said commissioner shall grant bail in all cases bailable under the laws of the United States or of said State. All process issued by the commissioner shall be directed to the marshal of the United States for the district of Wyoming; but nothing herein contained shall be construed as preventing the arrest by any officer of the Government or employee of the United States in the park without process of any person taken in the act of violating the law or any regulation of the Secretary of the Interior: *Provided*, That the said commissioner shall only exercise such authority and powers as are conferred by this Act.

SEC. 6. That the marshal of the United States for the district of Wyoming may appoint one or more deputy marshals for said park, who shall reside in said park, and the said United States district and circuit courts shall hold one session of said courts annually at the town of Sheridan in the State of Wyoming, and may also hold other sessions at any other place in said State of Wyoming or in said National Park at such dates as the said courts may order.

SEC. 7. That the commissioner provided for in this Act shall, in addition to the fees allowed by law to commissioners of the circuit courts of the United States, be paid an annual salary of one thousand dollars, payable quarterly, and the marshal of the United States and his deputies, and the attorney of the United States and his assistants in said district, shall be paid the same compensation and fees as are now provided by law for like services in said district.

SEC. 8. That all costs and expenses arising in cases under this Act, and properly chargeable to the United States, shall be certified, approved, and paid as like costs and expenses in the courts of the United States are certified, approved, and paid under the laws of the United States.

SEC. 9. That the Secretary of the Interior shall cause to be erected in the park a suitable building to be used as a jail, and also having in said building an office for the use of the commissioner, the cost of such building not to exceed five thousand dollars, to be paid out of any moneys in the Treasury not otherwise appropriated upon the certificate of the Secretary as a voucher therefor.

SEC. 10. That this Act shall not be construed to repeal existing laws conferring upon the Secretary of the Interior and the Secretary of War certain powers with reference to the protection, improvement, and control of the said Yellowstone National Park.

Approved, May 7, 1894.

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., August 1, 1894.

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

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

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

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

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

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

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

7. No person will be permitted to reside permanently or to engage in any business

in the Park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the Park unless in charge of a duly registered guide.

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

9. No drinking saloon or barroom will be permitted within the limits of the Park.

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

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the Park.

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

HOKE SMITH,
Secretary of the Interior.

METEOROLOGICAL RECORD.

JULY, 1893.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipita- tion.	Remarks.
1	75	36	39	S		
2	83	39	34	S		
3	83	38	45	S	0.09	Rain.
4	78	50	28	SW		
5	72	39	33	W		
6	63	39	24	NW		
7	63	36	29	NW	0.05	Rain and hail.
8	67	36	31	S		
9	81	33	48	S		
10	86	41	45	S		
11	83	50	33	S		Heavy wind- storm; ther- mometer bro- ken.
12						
13						
14						
15				SW		
16				S		
17				S		
18				S		
19				S		
20				SE		
21				S		
22				W		
23				S		
24				S		
25				S		
26				S	0.15	Rain.
27				S		
28				S	0.25	Rain and hail.
29				S	0.40	Rain and hail.
30				W	0.05	Rain and hail.
31						
Total					0.99	
Mean				S		

Maximum, 86 on 10th; minimum, 36 on 1st, 76, and 8th; total precipitation, 0.99 inch; prevailing wind, south.

AUGUST, 1893.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipita- tion.	Remarks.
1	89			S		
2	91			SW		
3	87			SW		
4	89			SW		
5	87			SW		
6	86			SW		
7	75			SW		
8	81			S		
9	80			S	0.03	Rain.
10	74			W		
11	81			S		
12	80			S	0.01	Rain.
13	78			S		
14	68			NW		
15	68			NW	0.01	Rain.
16	77			S		
17	83			S	0.05	Rain.
18	78			S	0.27	Rain.
19	72			S	0.49	Rain.
20	78			SW		
21	73			SW	0.03	Rain.
22	71			SW	0.14	Rain.
23	69			S		
24	78			W		
25	79			SW		
26	64			S		
27	70			W		
28	75			W		
29	78			W		
30	73			W		
31	73			W		
Total	2,405				1.06	
Mean	77.58			S		

Maximum, 91, 24 instant; average maximum, 77.58; total precipitation, 1.06 inches; wind, south.

SEPTEMBER, 1893.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipita- tion.	Remarks.
1	73			W		
2	80			E		
3	81			SE		
4	84			NW	0.20	Rain.
5	76			W		
6	80			E		
7	81			S		
8	75			E	0.15	Rain.
9	57			S		
10	61			E		
11	73			E		
12	73			E		
13	49			NE		
14	44			NE		
15	65			N		
16	70			N	0.09	Rain.
17	67			E	0.33	Rain.
18	51			E		
19	54			E	0.15	Rain.
20	67			NE		
21	61			N	0.27	Snow.
22	41			N		
23	61			NE		
24	59			W		
25	65			W		
26	61			W		
27	73			W		
28	62			S		
29	55			SW	0.19	Sleet.
30	49			N	0.06	
Total	1,958				1.44	
Mean	65.27			E		

Maximum, 84, 4th instant; average, 65.27; total pre-
cipitation, 1.44 inches; prevailing wind, east.

YELLOWSTONE NATIONAL PARK.

DECEMBER, 1893.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	38	27	11	S.	0.15	Snow.
2.....	39	26	13	S.	.....	.....
3.....	30	16	14	SE.	.....	.....
4.....	37	25	12	S.	.....	.....
5.....	33	5	28	SW.	.....	.....
6.....	31	18	13	SW.	.....	.....
7.....	35	27	8	S.	0.05	Snow.
8.....	36	25	11	S.	.....	.....
9.....	34	24	10	S.	.....	.....
10.....	36	29	7	S.	0.25	Snow.
11.....	35	18	17	N.	.....	.....
12.....	32	11	21	SE.	.....	.....
13.....	35	28	7	S.	.....	.....
14.....	34	25	9	NW.	0.35	Snow.
15.....	25	10	15	S.	0.90	Snow.
16.....	23	17	16	S.	0.14	Snow.
17.....	35	20	15	S.	.....	.....
18.....	29	16	13	SE.	.....	.....
19.....	31	11	20	S.	.....	.....
20.....	33	18	20	S.	.....	.....
21.....	33	21	12	S.	0.07	Snow.
22.....	36	25	11	SE.	.....	.....
23.....	31	18	13	N.	.....	.....
24.....	19	3	16	S.	.....	.....
25.....	23	3	18	S.	.....	.....
26.....	29	14	15	S.	.....	.....
27.....	18	0	18	N.	.....	.....
28.....	19	14	5	N.	.....	.....
29.....	18	5	13	N.	.....	.....
30.....	19	11	8	S.	.....	.....
31.....	30	18	12	S.	.....	.....
Total.	951	530	421	.....	.....	.....
Mean.	30.68	17.10	13.58	S.	1.91	.....

Maximum, 39, 2d instant; minimum, 0, 27th instant; mean, 23.89; total precipitation, 1.91; prevailing winds, south; depth of snow fall, 20.25 inches.

NOVEMBER, 1893.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	27	0.90	.....	N.	0.90	Snow.
2.....	26	.....	.....	N.	.....	.....
3.....	34	.....	.....	N.	.....	.....
4.....	43	.....	.....	N.	.....	.....
5.....	45	0.23	.....	S.	0.23	Rain.
6.....	45	.....	.....	S.	.....	.....
7.....	42	.....	.....	SE.	.....	.....
8.....	46	.....	.....	S.	.....	.....
9.....	41	.....	.....	S.	.....	.....
10.....	37	.....	.....	S.	.....	.....
11.....	36	.....	.....	N.	.....	.....
12.....	41	0.20	.....	S.	0.20	Snow.
13.....	35	.....	.....	S.	.....	.....
14.....	41	.....	.....	S.	.....	.....
15.....	46	.....	.....	S.	.....	.....
16.....	36	0.15	.....	N.	0.15	Snow.
17.....	23	.....	.....	N.	.....	.....
18.....	30	.....	.....	S.	.....	.....
19.....	34	.....	.....	S.	.....	.....
20.....	36	.....	.....	S.	.....	.....
21.....	31	15	16	N.	0.09	Snow.
22.....	23	2	21	S.	.....	.....
23.....	22	5	17	S.	.....	.....
24.....	35	21	14	S.	.....	.....
25.....	34	27	7	S.	0.22	Snow.
26.....	36	25	11	S.	.....	.....
27.....	37	29	8	S.	.....	.....
28.....	36	20	7	S.	0.32	Snow.
29.....	37	28	9	S.	.....	.....
30.....	28	0	28	N.	0.40	Snow.
Total.	1,066	181	138	.....	2.51	.....
Mean.	35.53	6.03	4.16	S.	.....	.....

Maximum, 46, 15th instant; minimum, 0, 30th instant; mean, 8.33, from 21st to 30th; total precipitation, 2.51 inches; prevailing winds, south; depth of snow fall, 22.90 inches.

OCTOBER, 1893.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	45	0.25	.....	N.	0.25	Rain.
2.....	43	.....	.....	N.	.....	.....
3.....	38	.....	.....	NW.	.....	.....
4.....	39	.....	.....	N.	.....	.....
5.....	48	.....	.....	E.	.....	.....
6.....	48	.....	.....	N.	.....	.....
7.....	58	0.17	.....	W.	0.17	Rain.
8.....	53	0.02	.....	N.	0.02	Rain.
9.....	40	0.16	.....	N.	0.16	Snow.
10.....	37	0.20	.....	N.	0.20	Snow.
11.....	48	.....	.....	S.	.....	.....
12.....	43	.....	.....	S.	.....	.....
13.....	64	.....	.....	S.	.....	.....
14.....	65	.....	.....	S.	.....	.....
15.....	82	.....	.....	SE.	.....	.....
16.....	38	.....	.....	SE.	.....	.....
17.....	51	.....	.....	S.	.....	.....
18.....	62	.....	.....	S.	.....	.....
19.....	64	.....	.....	S.	.....	.....
20.....	63	.....	.....	SE.	.....	.....
21.....	44	.....	.....	N.	.....	.....
22.....	42	0.09	.....	N.	0.09	Snow.
23.....	36	.....	.....	N.	.....	.....
24.....	39	.....	.....	N.	.....	.....
25.....	41	0.30	.....	N.	0.30	Snow.
26.....	49	.....	.....	S.	.....	.....
27.....	57	.....	.....	S.	.....	.....
28.....	61	.....	.....	SE.	.....	.....
29.....	51	.....	.....	SE.	.....	.....
30.....	47	0.15	.....	E.	0.15	Rain.
31.....	43	.....	.....	S.	.....	.....
Total.	1,535	.....	.....	.....	.....	.....
Mean.	49.52	.....	.....	S.	1.34	.....

Maximum, 82, 16th instant; average, 49.52; total precipitation, 1.34 inches; prevailing wind, south; total depth of snow fall, 5.90 inches.

METEOROLOGICAL RECORD—Continued.

JANUARY, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	35	25	10	S.	.....
2.....	31	23	8	S.	.....
3.....	30	6	24	N.	.....
4.....	15	3	12	N.	.....
5.....	3	21	24	N.	.....
6.....	5	8	13	N.	.....
7.....	15	4	11	N.	.....
8.....	14	5	9	N.	.....
9.....	13	10	23	S.	.....
10.....	25	10	15	S.	.....
11.....	24	11	13	SE.	0.41	Snow.
12.....	32	22	10	SE.	.....
13.....	40	29	11	S.	.....
14.....	43	32	11	S.	.....
15.....	30	34	4	S.	0.21	Sleet.
16.....	36	27	9	S.	.....
17.....	29	9	20	N.	0.40	Snow.
18.....	25	0	25	N.	.....
19.....	22	1	21	NW.	.....
20.....	25	11	14	S.	0.22	Snow.
21.....	28	15	13	N.	.....
22.....	29	12	17	N.	.....
23.....	10	25	35	N.	.....
24.....	20	11	31	N.	.....
25.....	20	11	9	SE.	.....
26.....	28	18	10	S.	.....
27.....	24	14	10	S.	.....
28.....	30	18	12	S.	0.21	Snow.
29.....	33	21	12	S.	.....
30.....	31	14	17	S.	.....
31.....	17	5	12	N.	0.37	Snow.
Total	770	295	475	.....	1.82	
Mean	24.84	9.52	15.32	S.	.....

Maximum, 43. 14th instant; minimum, —25, 23d instant; mean, 17.18; total precipitation, 1.82; prevailing winds, south; depth of snow fall, 16.35 inches.

FEBRUARY, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	23	7	30	S.	.....
2.....	20	8	12	S.	.....
3.....	21	11	32	S.	.....
4.....	27	2	25	S.	.....
5.....	28	0	28	S.	.....
6.....	25	9	16	S.	.....
7.....	31	19	12	SW.	0.15	Snow.
8.....	30	8	22	N.	.....
9.....	14	5	9	N.	.....
10.....	5	15	20	N.	0.05	Snow.
11.....	14	20	34	N.	.....
12.....	20	1	19	S.	.....
13.....	21	4	17	S.	.....
14.....	25	0	25	S.	.....
15.....	34	17	17	S.	.....
16.....	28	12	16	N.	.....
17.....	19	4	15	SE.	0.41	Snow.
18.....	19	0	19	N.	.....
19.....	15	17	32	N.	.....
20.....	—1	22	21	N.	0.31	Snow.
21.....	6	24	30	N.	.....
22.....	16	15	31	N.	.....
23.....	29	16	35	S.	.....
24.....	32	12	20	S.	.....
25.....	36	14	22	S.	.....
26.....	33	16	17	S.	.....
27.....	33	17	16	S.	0.20	Snow.
28.....	33	17	16	S.	.....
29.....	41	26	15	S.	.....
Total	644	37	607	.....	1.12	
Mean	23.00	1.32	21.68	S.	.....

Maximum, 41, 28th instant; minimum, —24, 21st instant; mean, 12.41; total precipitation, 1.12; prevailing winds, south; depth of snow fall, 11.25 inches.

MARCH, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	35	22	13	S.	.....
2.....	41	17	24	S.	0.07	Snow.
3.....	39	26	13	S.	0.13	Snow.
4.....	30	12	18	S.	0.20	Snow.
5.....	20	15	5	N.	.....
6.....	28	15	13	N.	.....
7.....	24	13	11	N.	.....
8.....	30	11	19	S.	0.30	Snow.
9.....	29	23	6	S.	0.35	Snow.
10.....	25	10	15	N.	.....
11.....	32	18	14	E.	.....
12.....	44	30	14	E.	.....
13.....	43	32	11	S.	.....
14.....	36	31	5	S.	0.20	Snow.
15.....	42	30	12	S.	.....
16.....	44	30	14	S.	0.05	Rain.
17.....	31	22	9	S.	.....
18.....	32	15	17	N.	.....
19.....	31	23	8	N.	.....
20.....	25	12	13	N.	.....
21.....	19	8	11	N.	.....
22.....	40	5	45	S.	.....
23.....	44	16	28	S.	0.29	Snow.
24.....	38	14	24	S.	.....
25.....	36	15	21	N.	0.34	Snow.
26.....	47	22	25	S.	.....
27.....	41	22	19	N.	.....
28.....	48	8	40	S.	.....
29.....	47	37	10	S.	0.11	Snow.
30.....	41	31	10	S.	0.06	Snow.
31.....	39	12	27	S.	.....
Total	1,101	584	517	.....	2.30	
Mean	35.52	18.84	16.68	S.	.....

Maximum, 48, 28th instant; minimum, —5, 22d instant; mean, 27.18; total precipitation, 2.30; prevailing winds, south; depth of snow fall, 22.65 inches.

YELLOWSTONE NATIONAL PARK.

JUNE, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	74	48	26	W.	.....
2.....	76	62	14	W.	0.05	Rain.
3.....	82	73	9	W.	0.01	Rain.
4.....	80	50	30	W.	.....
5.....	85	54	31	SE.	.....
6.....	79	53	26	SE.	0.16	Rain.
7.....	63	53	10	S.	0.60	Rain and hail.
8.....	51	46	5	SW.	.....
9.....	54	46	8	NW.	.....
10.....	44	40	4	N.	0.05	Rain and snow.
11.....	58	47	11	N.	0.11	Rain and snow.
12.....	57	46	11	N.	0.24	Rain and snow.
13.....	51	42	9	N.	0.23	Rain, hail, and snow.
14.....	59	43	16	S.	.....
15.....	70	49	21	NW.	.....
16.....	75	49	26	S.	0.03	Rain.
17.....	75	49	26	S.	0.02	Rain and hail.
18.....	72	48	24	S.	.....	Slight storms.
19.....	61	50	11	N.	0.28	Rain.
20.....	60	52	8	N.	0.05	Rain and hail.
21.....	67	48	19	S.	0.03	Rain.
22.....	68	47	21	SW.	0.07	Rain and hail.
23.....	62	52	10	W.	0.05	Rain.
24.....	70	53	17	S.	0.02	Rain and hail.
25.....	73	48	25	S.	0.04	Rain.
26.....	61	50	11	S.	0.05	Rain.
27.....	60	50	10	SW.	0.02	Rain.
28.....	60	53	7	S.	0.05	Rain.
29.....	70	50	20	S.	0.22	Rain.
30.....	67	50	17	S.	0.12	Rain and hail.
Total.....	1,984	1,501	483	.....	3.10	
Mean.....	66.13	50.03	16.10	S.	.....

Maximum, 85, 5th instant; minimum, 42, 13th instant; mean temperature for the month, 58.08; total precipitation, 3.10 inches; prevailing winds, south.

MAY, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	46	28	18	N.	0.78	Snow and rain.
2.....	46	22	24	N.	0.06	Rain.
3.....	47	25	22	SW.	.....
4.....	46	36	10	E.	.....
5.....	52	37	15	E.	0.32	Rain.
6.....	60	38	22	S.	.....
7.....	61	33	28	S.	.....
8.....	62	40	22	S.	.....
9.....	56	25	31	W.	.....
10.....	57	21	36	SW.	.....
11.....	67	38	29	S.	0.02	Rain.
12.....	69	39	30	S.	.....
13.....	72	45	27	S.	.....
14.....	71	41	30	N.	.....
15.....	65	36	29	N.	0.15	Rain.
16.....	45	31	14	NE.	0.45	Snow and rain.
17.....	56	33	23	NE.	.....
18.....	70	42	28	W.	.....
19.....	71	36	35	S.	.....
20.....	71	36	35	S.	.....
21.....	66	38	28	S.	0.35	Rain.
22.....	55	39	16	E.	0.10	Rain.
23.....	68	39	29	S.	.....
24.....	71	38	33	S.	.....
25.....	75	37	38	W.	.....
26.....	73	38	35	S.	.....
27.....	76	43	33	NW.	.....
28.....	78	40	38	S.	.....
29.....	76	39	37	S.	.....
30.....	76	43	33	E.	.....
31.....	71	43	28	SE.	0.03	
Total.....	1,976	1,115	861	.....	2.26	
Mean.....	63.74	35.97	27.77	S.	.....

Maximum, 78, 28th instant; minimum, 21, 10th instant; monthly mean, 49.86; total precipitation, 2.26; prevailing winds, south.

APRIL, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	47	31	16	S.	0.69	
2.....	44	34	10	N.	.....	Snow and rain.
3.....	32	20	12	N.	.....
4.....	38	8	30	S.	.....
5.....	46	18	26	S.	.....
6.....	52	32	20	S.	.....
7.....	48	30	18	N.	0.14	Sleet.
8.....	35	12	23	S.	.....
9.....	42	21	21	S.	.....
10.....	55	29	26	S.	.....
11.....	51	30	21	N.	0.72	Snow.
12.....	42	18	24	N.	.....
13.....	46	26	20	S.	.....
14.....	45	29	16	S.	.....
15.....	41	27	17	S.	0.05	Snow.
16.....	41	25	16	N.	0.02	Snow.
17.....	42	21	21	N.	.....
18.....	40	28	12	N.	.....
19.....	54	22	32	N.	.....
20.....	63	30	33	S.	.....
21.....	64	32	32	S.	.....
22.....	55	38	17	S.	0.21	Rain.
23.....	52	37	15	S.	.....
24.....	50	36	14	W.	.....
25.....	65	29	36	SW.	.....
26.....	66	33	33	S.	0.04	Snow and rain.
27.....	51	28	23	N.	.....
28.....	46	32	14	N.	.....
29.....	55	27	28	NW.	.....
30.....	52	29	23	S.	.....
Total.....	1,463	812	651	.....	1.87	
Mean.....	48.76	27.06	21.70	S.	.....

Maximum, 66, 26th instant; minimum, 8, 4th instant; mean, 38.86; total precipitation, 1.87; prevailing winds, south; depth of snow fall, 5.63 inches.

Observed eruptions of geysers at Upper Basin, Yellowstone National Park.

JUNE, 1891.

	Beehive.	Castle.	Giant.	Giantess.	Grand.	Lion.	Riverside.	Splendid.
1.	A. M							
	P. M							
2.	A. M							
	P. M							
3.	A. M							
	P. M							
4.	A. M							
	P. M							
5.	A. M							
	P. M							
6.	A. M							
	P. M							
7.	A. M							
	P. M							
8.	A. M							
	P. M	3.30						
9.	A. M							
	P. M							
10.	A. M	9.30						
	P. M							
11.	A. M							
	P. M	3.00						
12.	A. M							
	P. M		11.55					
13.	A. M							
	P. M		7.00					
14.	A. M							
	P. M						12.13	
15.	A. M							
	P. M		6.00					
16.	A. M							
	P. M		6.05					
17.	A. M							
	P. M		10.25					
18.	A. M							
	P. M			11.35				
19.	A. M							
	P. M		5.35					
20.	A. M							
	P. M		10.30					
21.	A. M							
	P. M		7.05					11.55
22.	A. M							
	P. M	2.35						
23.	A. M							
	P. M							8.05, 10.35, 11.55
24.	A. M							
	P. M							1.05, 3.25, 5.55
25.	A. M							
	P. M	12.05	10.25			11.30		
26.	A. M							
	P. M	12.08		11.05				
27.	A. M							
	P. M	3.40	3.30					
28.	A. M							
	P. M		10.25					
29.	A. M							
	P. M		3.35					
30.	A. M							
	P. M	1.25					8.45, 10.05, 11.45	
31.	A. M							
	P. M						2.05, 5.10	
32.	A. M							
	P. M		2.15					7.05, 10.35 1.05, 4.25
33.	A. M							
	P. M	3.45	4.35					

Observed eruptions of geysers at Upper Basin, Yellowstone National Park—Continued.

JULY, 1891.

		Beehive.	Castle.	Giant.	Grand.	Splendid.
1	A. M.					
	P. M.	5. 30	6. 30			
2	A. M.					
	P. M.	2. 45			1. 05	
3	A. M.					8. 30
	P. M.	1. 30	2. 15			
4	A. M.	11. 30	8. 30		11. 40	
	P. M.					
5	A. M.					
	P. M.	1. 45	12. 40	12. 45		
6	A. M.					7. 10
	P. M.	3. 00				
7	A. M.					
	P. M.	1. 05	7. 30			
8	A. M.					7. 25, 10. 15
	P. M.		12. 25		6. 30	12. 30
9	A. M.					
	P. M.		5. 25			
10	A. M.					
	P. M.		5. 05			
11	A. M.				5. 05	
	P. M.					
12	A. M.					
	P. M.					
13	A. M.					
	P. M.		8. 05			
14	A. M.		10. 10			
	P. M.					9. 20, 10. 20
15	A. M.		9. 00			
	P. M.					4. 10, 7. 10
16	A. M.					8. 20, 10. 20
	P. M.	1. 05	2. 30			12. 05
17	A. M.					
	P. M.	3. 25	6. 05			
18	A. M.					
	P. M.	5. 30			4. 25	7. 15, 9. 00, 11. 30
19	A. M.	9. 05				2. 40, 5. 45
	P. M.					5. 15
20	A. M.		10. 15			7. 05
	P. M.	1. 05				1. 45, 8. 10
21	A. M.		10. 05		6. 30	
	P. M.	2. 15				
22	A. M.					10. 00
	P. M.	2. 30	2. 00			4. 10, 7. 30
23	A. M.					7. 00
	P. M.	1. 15			12. 45	
24	A. M.			6. 05		
	P. M.	2. 10				6. 15
25	A. M.		8. 30			9. 00
	P. M.	3. 15				12. 30, 3. 00, 5. 10
26	A. M.					
	P. M.	3. 20	1. 45			
27	A. M.					
	P. M.		2. 10			3. 15
28	A. M.					7. 30
	P. M.	12. 15	1. 45			12. 05, 2. 15
29	A. M.					
	P. M.	12. 45	3. 15			
30	A. M.				5. 55	
	P. M.	3. 00				1. 00, 4. 15, 7. 00
31	A. M.					
	P. M.	3. 20				

Observed eruptions of geysers at Upper Basin, Yellowstone National Park—Continued.

AUGUST, 1893.

	Artemisia.	Beehive.	Castle.	Giant.	Giantess.	Grand.	Oblong.	Splendid.
1.	A. M	8.30					8.00	
	P. M		9.05	12.05		9.00		
2.	A. M						11.40	
	P. M		7.20			7.20	8.10	
3.	A. M						3.20	
	P. M		9.30			9.30	10.00	
4.	A. M	5.00						
	P. M		6.20			6.20	7.30	
5.	A. M						2.30	
	P. M						11.00	
6.	A. M		4.20			4.20		
	P. M						6.20	
7.	A. M						2.15	
	P. M		6.10			6.10		
8.	A. M		3.20, 11.30	11.30		3.20		
	P. M						6.20	
9.	A. M	2.10					3.10	
	P. M		11.20			11.20	8.00, 11.30	
10.	A. M	8.00					3.00	
	P. M						10.00	
11.	A. M		2.00			2.00		
	P. M						6.00	
12.	A. M	3.15						
	P. M		8.00			8.00	7.30	
13.	A. M	3.00					6.00	
	P. M						9.00	
14.	A. M	5.25					5.55	
	P. M		8.10			8.10		
15.	A. M						4.05	
	P. M						11.58	
16.	A. M		7.30			7.10	6.30	
	P. M		6.00	9.00		6.30	3.45	
17.	A. M	9.05	4.30			7.00	7.00	
	P. M					6.00		
18.	A. M		10.00			8.00	3.00	
	P. M	5.40					8.00	
19.	A. M						7.00	
	P. M		4.00			7.05		
20.	A. M						9.05	
	P. M		9.20				5.30	
21.	A. M					8.00	6.30	
	P. M	3.00	2.20			7.00	3.50	
22.	A. M		2.30					
	P. M		10.00			7.05	3.00	
23.	A. M					8.00	6.55	
	P. M						5.00	
24.	A. M	8.05	9.00				8.00	7.00, 9.15,
	P. M			8.00				11.20.
25.	A. M							3.45
	P. M	2.30		8.00	8.00	7.10	1.00, 3.20	
26.	A. M		3.00			3.15	6.00	
	P. M						3.00	
27.	A. M							
	P. M	1.40					6.00	
28.	A. M		11.30			8.00	7.00	
	P. M	6.25		12.30		7.00	5.30	
29.	A. M		5.20			9.10	8.00	
	P. M							
30.	A. M	10.32			11.45	7.20		
	P. M					8.00	3.45	
31.	A. M		8.30				7.00	
	P. M					6.00	5.30	

Observed eruptions of geysers at Upper Basin, Yellowstone National Park—Continued.

SEPTEMBER, 1893.

	Artemisia.	Beehive.	Castle.	Giant.	Giantess.	Grand.	Oblong.	Splendid.
1	A. M.							
	P. M.		12. 15				6. 45	
2	A. M.	5. 30	2. 00			7. 30	7. 30	
	P. M.		7. 30			6. 00	3. 00	
3	A. M.					10. 00	10. 00	
	P. M.					7. 00		
4	A. M.	6. 00	5. 55			6. 00	7. 00, 11. 00	
	P. M.						6. 00	
5	A. M.						6. 00, 11. 30	
	P. M.		1. 58	11. 45			3. 00	
6	A. M.		5. 00				6. 00	8. 00, 10. 00
	P. M.	6. 30				7. 00	4. 00	12. 15, 3. 15, 5. 10, 7. 00 9. 00.
7	A. M.					8. 00	8. 10	11. 30.
	P. M.	7. 00	7. 20			6. 00	4. 00	
8	A. M.					10. 00	6. 00	
	P. M.	6. 10	1. 10				1. 30, 7. 30	
9	A. M.		6. 20			7. 00	8. 00	
	P. M.	5. 30				4. 00	4. 00	
10	A. M.					8. 10	8. 00	
	P. M.	4. 20	2. 05			6. 30	3. 10, 9. 15	
11	A. M.		7. 25			8. 00	7. 45	
	P. M.						5. 00	
12	A. M.		1. 30				6. 10, 11. 10	
	P. M.	2. 00				6. 00	5. 20	
13	A. M.		8. 15				8. 00	
	P. M.	6. 15				2. 10	6. 15	
14	A. M.					8. 15	8. 45	
	P. M.	2. 25		8. 30		7. 10	2. 40	
15	A. M.		6. 10			9. 00	7. 15	
	P. M.	5. 10					3. 45	
16	A. M.		11. 30				7. 30	
	P. M.					7. 15	6. 10	
17	A. M.		5. 10			8. 30	8. 00	
	P. M.	6. 30				5. 30	7. 00	
18	A. M.		12. 52		5. 10	8. 10	8. 10	
	P. M.						3. 15	
19	A. M.	2. 15						
	P. M.	4. 20	1. 10	1. 15		7. 45	3. 10	
20	A. M.					8. 15	6. 00	
	P. M.	5. 00	3. 30, 9. 20	11. 30		7. 10	2. 00, 9. 15	
21	A. M.					7. 30	5. 00, 11. 20	
	P. M.	6. 30		9. 25		5. 15	6. 10	
22	A. M.		7. 50			7. 50	7. 30	
	P. M.	3. 05					5. 10	
23	A. M.	10. 00	4. 00			6. 00	8. 00	
	P. M.					5. 00	5. 00	
24	A. M.		11. 00				7. 00	
	P. M.	5. 04				12. 40	4. 20	
25	A. M.					9. 00	6. 00, 11. 30	
	P. M.		4. 50				7. 00	
26	A. M.					6. 30	7. 10	
	P. M.	4. 20	11. 45			5. 00	5. 15	
27	A. M.							
	P. M.		9. 20			2. 45		
28	A. M.	6. 15	10. 30	9. 15		7. 10	9. 00	
	P. M.					5. 00	6. 30	
29	A. M.					8. 10	7. 15	
	P. M.	7. 05				6. 20	1. 15, 6. 30	
30	A. M.		2. 40			8. 45	7. 10	
	P. M.						3. 45	

Report

OF

The Acting Superintendent

OF THE

Yellowstone National Park

TO THE

Secretary of the Interior.

1895.

WASHINGTON:
GOVERNMENT PRINTING OFFICE

1895.

REPORT

OF THE

ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SUPERINTENDENT
YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., July 25, 1895.

SIR: Complying with your request of the 1st instant, I submit a report of operations and events in the Yellowstone National Park during the last fiscal year.

Beginning my fifth annual report, I wish to make a résumé of the improvements in the Park since my arrival here in February, 1891.

The Yellowstone Park Association has added a hotel near the Fountain Geysers, which is the largest and best of their buildings. The log buildings which constituted their hotel at the Lower Basin have been removed. The old hotel at Norris was consumed by fire, and the lunch station at that place has, since the spring of 1892, been conducted under canvas. In November of last year the old hotel at the Upper Geysers Basin was destroyed by fire. It has been replaced by a temporary structure better adapted than was the old one for the purposes of a lunch station, but without the means of accommodating tourists over night.

The new transportation company, which succeeded the old one in the spring of 1892, has added somewhat to their plant, and at every station the company has improved its buildings.

The road system has been extended to make possible a tour from the lake to the Upper Basin without passing over any portion of the route a second time. At Mammoth Hot Springs a new post has been built to accommodate one troop of cavalry, with the necessary administrative buildings. Nearly a mile of board sidewalk has been laid connecting the principal buildings of the post with the hotel. In addition to this, many minor improvements have been made, which will find notice in subsequent parts of the report.

The prediction made in my last report of the complete failure of travel during the balance of the season was abundantly verified. Tours which may have been planned and arranged for before the railroad strike were probably abandoned before the strike was over, and the season continued to the end the poorest ever known in the history of the Park.

The past winter was exceedingly mild and there was but little snow fall. As a consequence, it was possible to make a complete tour of the Park at the opening of the season, June 1, a thing never before known.

All the hotels were on that date ready to receive and accommodate guests. From all sources came abundant promise of heavy travel, but for some reason this promise has failed of fulfillment. The record of tourists from 1890 to date will show how great is the falling off. The number during June of this year registering at the hotels for the complete tour is but 100 greater than last year, when travel was paralyzed by the financial depression, the washouts on the railroad, and the strikes which prevented the movement of trains.

Record of tourists, 1890-1895.

Month.	1890.	1891.	1892.	1893.	1894.	1895.
June	508	527	718	832	320	426
July	1,400	1,016	849	752	263	956
August	1,284	1,225	1,495	786	735	1,088
September	712	809	583	706	317	.....
Total	3,904	3,577	3,645	3,076	1,635	2,470

It is not easy to assign a reason for the diminished travel through the Park, where there are so many wonders and beauties to be seen and where so much is done for the accommodation and comfort of the traveler. It is certain that the volume of travel to Europe is constantly increasing, while that to the Park is barely holding its own, or even going backward. We are constantly informed by visitors that they had no idea of what there was to be seen here; how many attractions the Park trip presented, or how many superior accommodations were offered them. In Germany much of what the Park contains is taught in the public schools, while in this country but little is known of it, even to the educated and the well informed. I would again suggest that some means be adopted for bringing the mass of the people to realize what a store of wonders and beauties they have within their boundaries. It would be valuable to them as a part of an education, even if they should not be able to see the Park for themselves.

As will be seen by the table printed, there were 1,635 tourists who last year made the regular trip, stopping at the hotels. From my system of registry I estimate that there were 1,470 who went through in camping parties with their own or hired transportation for some kind of trip, either longer or shorter than the regular tour. These camping parties have commenced earlier than usual this year, and there is prospect of greatly increased travel in this way. The system of registry established last year has enabled me to keep better account of them and to watch them more closely, and the result has been that I have suffered less from the annoyances that I then complained of.

LEASES.

Under the law of last year new leases have been granted to the Yellowstone Park Association for the sites occupied by it at the Mammoth Hot Springs, at the Fountain, at the Lake, and at the Canyon, and the old leases held at these places were surrendered. Surveys were also made of sites at Norris, the Upper Basin, the Thumb, and at Tower Creek. I believe it is the intention of the association to ask for leases at these points as soon as business will warrant it in erecting structures there for the accommodation of travelers. The passage of this law has extended to 20 acres the limit which may be held under lease by any

corporation or individual, and has diminished to one-eighth of a mile the distance by which leased ground must be separated from any object of interest. As thus modified it is a great improvement on the old law, and surely at no distant time will be taken advantage of by the Yellowstone Park Association, or some other corporation willing and able to expend the necessary funds.

No action has yet been taken on my recommendation, several times repeated, that the Government acquire the two frame cottages owned by the Yellowstone Park Association at the Lower Basin. They are of absolutely no use to the association at the present time, and are much needed for the accommodation of troops that are camped near them every summer and probably will be so quartered for many seasons to come.

A lease for premises to be occupied as a store and post-office by Mrs. Ash has been authorized, and, I presume, will soon be issued. The plans for the building have been forwarded approved. The site is midway between the Mammoth Hotel and the Cottage. A store such as Mrs. Ash proposes to keep is quite a necessity here, as without it there is no place nearer than Gardiner where notions and small articles so necessary to travelers can be procured, and even there the stock is meager and not wholly adapted to the needs of tourists.

A lease has also been authorized for a plat of ground on which Mr. Ole A. Anderson proposes to erect a neat building in which to conduct the business of coating specimens. This will be situated midway between the Cottage Hotel and the building erected last year as a jail, and used also as a residence by the United States commissioner. For this latter building the Government appropriated \$5,000. The contract was awarded late in July, and the building was finished in time for occupancy in the early autumn. It is a substantial, well-constructed, secure building and the only one in the Park built of stone. It is situated about 150 yards from the Liberty Cap and about the same distance from the old McCartney building, and at the base of the hill which skirts the Cottage Hotel. Mr. Anderson's lease covers the ground now occupied by his tents.

As soon as Mrs. Ash shall have constructed the building on the ground leased by her I shall expect her to remove the old unsightly log building which now serves her as a residence, store, and post-office.

The transfer by Mr. French of his interest in the property near Yancey's and at Soda Butte to his successor as mail carrier has received the approval of the Department. These buildings are now occupied by Mr. Roseborough. I have also permitted him to erect a small building at the Mammoth Hot Springs to be used in connection with his mail contract, to be removed at any time when so ordered by the acting superintendent.

The old trouble concerning licenses granted to outside parties to carry tourists through the Park has not been renewed this year, on account of the wise decision of the Department to only permit such licensees to conduct camping parties. Such licenses have been granted to twelve different parties for from two to five vehicles each, and all seem to be doing a fairly prosperous business. I doubt not that there will be many more applications of this kind received, as the season for camping parties is not yet fairly on. Bassett Brothers have a license for ten wagons, but their route connects with the Utah and Northern Railroad at Beaver Canyon and is over a field not covered by the regular company's coaches, so they in no way interfere, and they are permitted to take passengers to the hotels.

It is a pleasure to note that the various bills for the segregation and dismemberment of the Park were killed in the last Congress through the adverse report of the Secretary of the Interior, in which the committees concurred. It is to be hoped that this wise course will be pursued by coming Congresses, as all such bills are directed to personal gain and not to public interest.

It is not known here what action has been taken in regard to the payment of Mr. Gallagher for his survey of the boundary of the timber reserve. It is certain, however, that his work has no value. He neither began at the initial point of any one of the lines nor did he conspicuously mark these lines. The greatest need of the Park at the present time is that these lines be run with accuracy and be so marked that they would be instantly discoverable by any person who might cross them. So long as the law of the 7th of May, 1894, does not extend to the timber reserve, I would urge that means be taken to survey and locate the lines of the Park itself. While the Park regulations are made to cover the timber reserve, there are no penalties attached to violations of them outside of the Park boundaries proper. I suggest that an effort be made to have a bill passed at the coming session of Congress extending the provisions of this most satisfactory law to the timber reserve.

Two years ago an accurate determination of latitude and longitude was made at a point near the lake outlet by parties sent out by the Coast Survey. No report has yet been received of the result of these observations. I would request to be informed of the correct latitude and longitude of this point, in order that they may be inscribed on the monument already erected there. As this monument is plainly visible from all the distant peaks surrounding the lake, it will be easy to conduct a system of triangulation and accurately locate the lines of the Park astronomically. I would also suggest that monuments be authorized at the easternmost point of the Yellowstone Lake, its most southerly point, and the westerly point of Shoshone Lake, as these are by law the initial points of three of the boundaries of the Park. There will be small expense attached to monumenting these points, and they will serve a definite purpose in properly fixing the lines. I would also endeavor to have inscribed on the monument spoken of the correct altitude of that point, based on a series of levels connecting with the Northern Pacific Railroad survey at Cinnabar.

PROTECTION OF FORESTS.

I have heretofore gone into the subject of protection of forests at such length as to leave but little to say at this time. Last season was noted for the frequency of light rains, which no doubt aided in the prevention of fires. I have once more to report that none of any material consequence occurred during the entire year. I have, therefore, but the one serious fire of July, 1893, to report as occurring since my arrival, and that one I find upon careful examination to have been much less extensive than previously reported. The system of daily patrols from my numerous outposts has done much to prevent fires. My rule is to have a man start every morning from each of these stations, carrying with him a bucket and a shovel with which to thoroughly extinguish any smoldering embers that may be found in the abandoned camps of tourists. These patrols continue on their way until they meet similar patrols from the neighboring station, when, after a short halt, they retrace their steps in the afternoon to their own proper home. In this way

many serious fires are undoubtedly prevented, and to the thoroughness of the system I feel sure most of the good results are due. Whenever camping parties, by their carelessness, leave fires which endanger the forests, arrests are promptly made and the parties brought into this station, where they are tried by the United States commissioner for violation of the Park regulations. Convictions had are freely talked of among the tourists, with the result of making subsequent parties more careful. There have already been twelve convictions for violations of the law of May 7, 1894.

OUTPOSTS.

The work done by the patrols from the various outposts that I have established has continued to give the greatest satisfaction. The duty is hard, involving much riding in summer, exposure to heat and to cold, much snowshoe work in winter, and the incurring of many dangers. I find the freedom and the ease of the life makes this duty very popular with the better class of soldiers, and I have no difficulty in obtaining from the best of men applications for this sort of service.

I have not established any new stations for summer service, but during last winter I added one, which was occupied by a sergeant and three men near the Mud Geyser. The object of this new station was the protection of the bison that winter in the Hayden Valley.

In my last report I noted the death of Private Mathews, of Troop D, Sixth Cavalry, while on detached service from the Riverside Station, going to the Lower Basin for the mail. A most thorough search for his remains was continued for at least six months after his disappearance. His body was found early in June of this year on the south side of the Gibbon River, about 3 miles from its junction with the Firehole. It was evident that he became lost, and while in that condition became crazed and perished from cold.

For this season's work I have been authorized to expend a portion of the appropriation for Park improvement in the employment of additional scouts. As soon as the poaching season fairly begins, I will make such use of this fund as I feel sure will result in important captures, and a few convictions will have a most salutary effect upon game protection.

MILITARY POST.

Although there have been no important additions to the military post, yet many small improvements have been made, and the buildings now constitute a slightly group, as viewed from the porch of the Mammoth Hot Springs Hotel.

It is especially desirable that accommodations for an extra company should be erected at the new post. If it be not found practicable to obtain sufficient funds for the completion of all these buildings within one year, I would urge that at least the barracks for the soldiers and the stables for the horses be erected at once, while the quarters for the officers may await a further allotment.

ROADS.

Soon after my last report was rendered, the control and management of the road work were turned over to me by an order from the Secretary of War. It was then too late in the season to inaugurate any extensive system of road building. Repairs, resulting in material betterment, were, however, instituted. The arch bridge near the Upper Falls of the Yellowstone was completed, and the road at that point thus made pass-

able for travel, but not before the end of the tourist season. The road at the foot of the Virginia Cascade, which had entirely washed out in the spring of last year, was put in a condition to withstand any rise in the water that the springtime might bring. About 2 miles of road in the Gibbon Canyon, which had so washed out as to be almost impassable, were put in a thorough state of repair. A mile of new road was built between here and Gardiner, replacing the old road, which was rendered impassable by the destruction of the bridge over the Gardiner River about a mile and a half below here. By this new road the heavy grades of the old one are entirely avoided, and the experience of this season has shown that it is a much superior thoroughfare.

With the beginning of this season I began work in earnest on the road system. My first object was to put the roads in a thorough state of repair. To this end I made a liberal use of the road machine, filling up the ruts cut by heavy freight wagons in the wet and softened road bed. Following these machines was a man who removed from the track all small stones which were found there, thus saving the jolt caused by them. This, in many places, at small expense, converted a very bad road into a good one.

A new road of full width and easy grades has been constructed down the brink of the Grand Canyon from a point over the Lower Falls to Inspiration Point. I have also had protecting railings put on both Point Lookout and Inspiration Point. The trails leading down to the Lower Falls have been improved, and the dangerous places guarded by hand rails. A new road has been finished from a point on the old road just south of the Alum Creek Bridge, passing round Sulphur Mountain, and joining the old road again near Antelope Creek. A roadway has been opened from the Lake Hotel to the Natural Bridge, so that it now is passable for light wagons. A crew has been working for about a week on the road which was projected along the shore of the lake, near the Thumb, but not heretofore completed. As about 2 miles of this part of the road is very heavy from the covering of loose beach sand, I shall have to surface it with some clayey material, which will not be an inexpensive piece of work. I hope, however, to have it completed within a few days. The road from the Old Faithful to the Upper Crossing of the Firehole has been remade, and a driveway to the Lone Star Geyser opened. I have also made a road passable from the Fountain Hotel around the Constant, or Black Warrior Geyser, and back by way of the Great Fountain. A bridge will soon be completed over the Firehole River just south of the Excelsior Geyser, permitting teams to cross the river at this point and join the direct road in the edge of the woods opposite. A bridge has also been constructed at the old ford near the mouth of the Gibbon Canyon. I have located a new road connecting a point on the old road at the top of the hill beyond the Gibbon Canyon with the same road on the flat about a mile north of the Firehole cottages. This road is already completed for more than half its length, and by August 1 I hope to have it in use. I will also connect this road at its nearest point with the road down the Madison, at the junction of the Gibbon and the Firehole. The balance of this road down the Madison Canyon I shall survey this year, but will leave the construction of it for another season.

In a few days a surveying party will proceed down the Snake River to complete the roadway to Jackson Lake, begun two years ago. As soon as the surveying party can be spared from this last-named work it will be put to work locating the proposed road from the Grand Canyon to Yanceys, over Mount Washburn.

When some of the crews now engaged in road repairs can be spared from that work, I shall place them on the road near Cooke City to open out and improve the road in that vicinity.

All of this work is done under the direction of the Secretary of War, but I embody a mention of it in this report in order that you may be informed of the progress made. Of one thing I feel certain, and that is, that the transfer of the control of the road work from a nonresident officer to the acting superintendent has resulted in great saving of appropriation and in much improvement to the roads.

HOTELS.

Mr. J. H. Dean continues to manage the hotels for the Park Association in the same manner as for the last three years. The high standard set by him has not been lowered, but rather improved. Throughout they are neat, clean, and excellently managed. He deserves the greatest praise for the manner in which they have been conducted. The rates, which were \$5 per day last year, have been lowered to \$4 for this year, with a reduction to \$3 after a seven days' stay in the Park. Of course there is an urgent need of a hotel to accommodate tourists at the Upper Geyser Basin, but so long as this property has failed to be remunerative I see but little chance of obtaining the much-desired improvement. A hotel containing a few rooms should also be erected at Norris, and when the road over Mount Washburn is completed a hotel near the mouth of Tower Creek will be a necessity.

TRANSPORTATION.

The only change to be noted in the transportation is the refusal of the Department to grant licenses to any but the Park Transportation Company to take tourists to the hotels. Many licenses are issued, but they are all, except the Bassett Bros., restricted to camping parties. So long as the regular company maintains its very high standard of excellence, it is right and proper that it should be protected in this manner. It has, and is required to have, an expensive plant, always ready to accommodate the greatest volume of travel. Its whole equipment of horses, harness, vehicles, and drivers is of the best. It has a large sum of money invested in this plant and is under bonds to the Government for the faithful execution of its lease and contract. The fact that its prices are fixed by the Department makes it impossible for just complaint of it as having a monopoly. During all of last year the travel was so slight as to make its business a losing one. Thus far this year it has not been much better.

The satisfaction given by it has been so general, the fault found has been so small, that I am constrained to speak of it in the highest terms. So long as the company has not deemed it worth its while to establish a line of coaches to Beaver Canyon, I have thought it best to offer the license over that route to the Bassett Bros., who have satisfactorily done the business for so many years, and they are at present conducting it under the old form of license, a form which is now only used in their case.

One act of the transportation company has met with very general approval, and that is a very liberal extension of stop-over privileges. The company no longer makes an effort to dictate to any passenger by what route, by what means of conveyance, or during what hours he shall make the tour, no matter how impractical, inconvenient, or absurd the various requests may be.

One difficulty in regard to licensed transportation I have not been able to entirely overcome, and that is the hiring by tourists of vehicles from livery establishments. It is often easy for them to pass through with such means of conveyance, claiming them as their own.

I have had less trouble than usual with camping parties leaving unsightly rubbish behind them in their abandoned camps. This is possibly due to the constant warning given them as they stop to register at the point where they enter the Park.

The Boat Company this season is obtaining a large percentage of the travel. It enables parties to reach the Lake Hotel several hours earlier than they would if they remained in the stages, besides furnishing a delightful trip over one of the most beautiful sheets of water in the world. The boat is safe, is clean, and is capable of carrying as many passengers as will ever desire to use it, and is deserving of patronage. The complaints that I have heard in regard to it are principally with regard to high charge, which is unavoidable on account of the small amount of patronage and the great expense of conducting the enterprise. It is a pity that this boat can not be made a part of the regular Park transportation, and be used or not at the will of tourists, without extra expense. At present there seems no good way of accomplishing this result. Mr. Waters, the manager of the Boat Company, is courteous and attentive to the wants and the interests of his passengers. The complaints against him are mostly from overcharge for damage done fishing tackle, and other minor items furnished by him. During the last year he has been granted a license by the Department to sell candies, nuts, and small groceries to camping parties, to do blacksmithing for the same, as well as to take parties to the Natural Bridge by vehicle or on horseback. It was quite necessary that some one should conduct these small enterprises at this point, and Mr. Waters seemed to be the only person desirous of undertaking them, and so far, I believe, has conducted them satisfactorily.

FISHING.

I have little to add to my previous reports on the subject of fishing in the Park. The enormous number taken here by all parties who take the time to cast a line surpasses all belief. The plants of trout put by the Fish Commission in the Gardiner and Willow Creek, in the Firehole and the Nez Percés, now furnish the rarest of sport to those wishing to try the brook trout, the Loch Leven, or the Von Behr. The plant made by the Fish Commission in Shoshone Creek two years ago has prospered, and the stream is now filled with small ones. The only plant that does not seem to have succeeded is that of the rainbow trout in the Gibbon River, above Virginia Cascade. An occasional fish is seen in this part of the river, but they are nearly all large, indicating that for some cause or other they have not propagated satisfactorily.

The black bass sent out by the Commission in December, 1893, reached here at a time when the thermometer was 22 degrees below zero. By the time they reached Norris they were apparently all dead, but they were thrown into the Gibbon River at that point. I have recent reports from a crew building a bridge over the Gibbon near the mouth of the canyon that several had been seen at that point. I had hoped that they were all dead, as it was not my desire to have them in streams where trout either were, or might be planted.

The plant of bass promised for last year was not sent, but about ten days ago five hundred were received at Cinnabar one morning at 11

o'clock, and before night I had them distributed in the lakes which were their destination, more than 50 miles distant from the point where they were received from the car. Every one of this number was healthy and in good condition, and I have strong hopes of soon adding bass fishing to the other pleasures of the Park tour.

Professor Jordan, who had already made several trips through the Park under the auspices of the Fish Commission, passed through last month as a tourist. He was much interested in the progress of the plant which he had been instrumental in making. He said that he believed the large number of trout taken in the Yellowstone Lake did no harm and that those that remained were improved by it. The opinion of this high authority is conclusive as to the fact that there is no need of protection to fish in the lake and the waters of the Yellowstone. It has occurred to me that protection might be needed for those planted in the Gardiner and the Firehole. It is gratifying to note that they were more numerous this year than ever before in both these streams, but, inasmuch as the volume of tourist travel last year was small, perhaps some restrictive measures will be necessary in the future. I do not suggest a closed season, but rather that a regulation be made requiring all fish under a certain length to be returned to the stream. I suggest 6 inches as a minimum length for any fish permitted to be taken in the streams so stocked. Of course the plant of bass will be protected until they have sufficiently increased in numbers to permit of their being taken without endangering their numbers.

WORK DONE.

The work done within the Park during the past year has been confined principally to repairs and construction of roads; of this I have already spoken at some length. As it is now about the middle of the road-making season, it is not easy to exactly specify what has been done. A good deal of it is under way and in a more or less advanced stage of completion. Before the close of this season I wish to have the circuit of the roads as now traveled by tourists under complete construction. I shall also have a beginning made on the Madison Canyon road, and the balance of this road under survey. I shall make a beginning of 5 or 6 miles on the road near Cooke City, working this way. I shall also have opened a road down Snake River to connect with the Wyoming roads, already completed this side of Jacksons Lake as far as the Park line. Lack of funds will prevent my beginning construction of the road over Mount Washburn, but it will be carefully surveyed and the timber cut from at least a portion of it, and it will be ready for the graders when the next appropriation shall become available. Until this road is finished it is useless to think of attempting to macadamize the present roads, unless Congress is far more liberal in its appropriations. If \$100,000 were allowed each year for three years it is believed that the roads could be put in such shape that travelers would not be inconvenienced by either mud or dust, and the yearly amount required for repairs would be materially lessened. Until the surveys are completed and I have the reports of the engineers, I shall not be able to estimate the cost of the new roads still needed.

POACHING.

The act of May 7, 1894, seems to have had a most healthy effect upon the poachers who surround and prey upon the Park. I believe that those of the north, the east, and the south sides have nearly or quite

ceased troubling it. I can not say as much as this for the Idaho border. There is a section of country beginning at Henrys Lake and extending south for about 25 miles inhabited by a merciless and persistent lot of head and skin hunters. In most civilized countries the occupation of such vandals as these is held in merited contempt, but it is not so in the region of which I have made mention. The laws of Idaho are extremely deficient in game protective measures. I believe it is a fact that the bison, now so nearly extinct, is not protected at all. So long as the only herd of wild bison now existing in the United States is on the border of this State, liable at any time to cross within its dominion, it would seem that the State would pass the laws necessary to protect them with the most vigorous of punishments. Extended inquiry into various rumors of the killing of bison, either in the Park near the Idaho line or across it within that State, has convinced me that this last remaining herd is in danger of extinction by these people of whom I have made mention. I have good evidence of the killing of at least ten less than two years ago near the State line, but probably outside the Park. This was prior to the passage of the protection act, which has nearly put an end to depredations within the Park. I have undoubted evidence of the capture of three calves this spring by a resident of Henrys Lake. He claims that this capture was made outside the Park. There are rumors of a herd of nearly one hundred having been seen in Idaho outside the Park within the last two or three months. The Park act can afford no protection to these animals after they cross its boundary. I trust every influence will be brought to bear to induce the Idaho authorities to pass a protective law, and to this end I will exert my best endeavor.

A single conviction of a poacher under the law of May 7, 1894, will act as a powerful deterrent on these criminals, and I have no doubt will go far toward settling the question of incursions by depredators for all time.

The only other way in which the Park is liable to be troubled by poachers is in the capture of the fur-bearing animals. It is so easy to place poison or set traps where the eye of the most expert scout can not find them; it is so easy to pack the pelts out of the Park without detection, that it has seemed to me one of the most difficult problems that I have been called upon to handle. Of course the constant system of patrols has done much to enforce the law and the regulations on this subject, and I am pleased to state that the effect has been the best. Evidences multiply on all hands of the constant increase of all of these animals. Four years ago I considered the extinction of the beaver imminent. I now find them multiplied many fold in all of the suitable streams in the Park. Of course some of them fall a victim to the trappers who hang around the borders, but the large central area of the Park is as thoroughly protected as though poachers were nonexistent.

The few elk, deer, antelope, bear, etc., that may fall victims to the hunter's rifle within the Park limits will not in any material sense diminish their numbers, and except, as a matter of example, it would not be worth the trouble of pursuing the poacher who confines his depredations to this kind of game.

GAME.

Last winter there was less snow than ever before known within the Park. It was possible for the larger game, such as bison and elk, to pass at will over most parts of it during the entire winter. For that

reason, perhaps, the bison that have heretofore wintered in the Hayden Valley were not massed there this year. The most seen there in a single bunch at any one time was about thirty. Small herds of from three or four to ten were seen in widely separated localities where they have not usually wintered. I feel sure that many of them did not leave their summer range along the Idaho line. How many of them may have been killed or captured I can not determine, but I fear that their number has not increased, although I am still disposed to adhere to my estimate of last year that two hundred still remain. There has been placed at my disposal by Professor Langley, of the Smithsonian Institution, \$3,000 with which to build an inclosure and provide food for so many as can be driven within it during the coming winter. If this plan should succeed we will be able to retain a small herd and keep them nearly in a state of nature. I hope to have this inclosure built by the middle of September.

On account of the mildness of the winter and the early disappearance of the snow it was a particularly favorable season for the rearing of young, and all of the wild animals seen this spring are accompanied by an exceptional number of vigorous and healthy offspring.

From reports received from the station on Snake River, it seems that the moose in that region are rapidly increasing. I have no doubt they are thoroughly protected, and in time will form an important element among the game preserved within the Park.

Of the mountain sheep I have nothing new to report. Their summer habitat is not within my observation, but the usual herds wintered on Mount Everts and were seen almost daily by travelers on the road between here and Gardiner.

The elk have quite held their own or increased in numbers, and have been seen almost daily by tourists up to the present date. They exist within the Park in such great numbers that the question of their preservation is not one that causes any concern. A succession of open winters like the last would possibly make them more numerous than the food supply could well support. That they breed and winter within the Park and wander outside of it to furnish sport for hunters is not an evil, and is perhaps one of the very excuses for game protection within its limits.¹¹

The antelope have increased very materially. Certainly eight hundred of them wintered on the flat this side of the town of Gardiner, where this most shy of all wild animals became nearly as tame as domestic cattle.

The deer seem to have increased more rapidly than any other variety of game. I have seen within the last twelve months double the number that I have ever before seen in a similar period. During the winter and the early spring they wander unterrified over the grassy slopes at this point and pass within a few feet of the houses and barracks, exposed to the gaze of the officers and soldiers, without exhibiting the slightest fear.

Bear are as plentiful and as tame as ever, visiting most of the hotels nightly, where they are a source of amusement and entertainment to the tourists. Although they have increased notably, I do not think it is desirable to diminish their numbers. They are not dangerous to human life, and the Park can well spare whatever of the other game they may consume for their sustenance.

The only contributions made to the National Zoological Park at Washington last year were ten beaver, a few of the smaller animals, and some birds. This was, of course, largely due to the fact that I was uncertain

as to whether I would be permitted under the new law to capture and ship them. An affirmative decision on this point came too late in the season to be of any value, for the young were then too large to be captured. I am arranging to make some captures for shipment this autumn.

GEYSERS.

I have had observations made on the eruptions of the geysers covering only such hours of the day as the men stationed thereat were on duty. Eruptions occurring during the night were, as a rule, not observed or included in the report I append for publication. A list of these observations was made last season and published in my last report with a view of counteracting the prevailing opinion that there is a general law of periodicity in their action. Old Faithful, which years ago was carefully observed during all of its eruptions for nearly a month, was found to have a nearly uniform interval of about sixty-eight minutes. It is probable that this interval has slightly increased, but that it is still measurably uniform from one eruption to the next is quite certain. The Fountain Geyser also has a fairly regular action with an interval of about five hours at the present time. This interval seems to be dependent somewhat upon the surface-water supply, being greater in dry months late in the season than in the spring when the supply of surface water is larger. A fairly regular interval has also been noted for the Great Fountain. At the present time its interval is about eight hours.

PROPRIETARY RIGHTS IN THE PARK.

There are still three claims of private citizens for locations and improvements made within the Park limits before the act of dedication. These claims have all been made the subject of special legislation introduced in Congress, but have not so far become laws.

The claim of Mr. J. C. Baronett is for a bridge built by him in 1871 over the Yellowstone River. The amount of the claim is \$5,000. I do not regard this figure as excessive, and I recommend that the passage of this act receive your approval.

Mr. James C. McCartney has also a claim for \$3,000 for improvements made at this point. It is reasonable and just, and I recommend it to your favorable consideration.

Mr. Matthew McQuirk has a claim for \$4,000. I do not believe his improvements were extensive enough to warrant the entire amount of this claim. I have considered the value of these improvements in a special report heretofore made to you. If his claim were reduced to a suitable amount, I would recommend that it receive your approval.

If these bills should pass and the parties receive a proper remuneration for their improvements, it would remove from the Park limits the last vestige of proprietary interest.

RECOMMENDATIONS.

To make a résumé of the recommendations contained in this report, I would request:

First. A special effort to obtain an accurate and complete survey of the boundaries, with a system of blazing or marking, so that they could be instantly recognized wherever crossed.

Second. Liberal appropriations with which to complete the road system, as now approved, and for the most part under construction.

Third. A continuance of these appropriations until the roads are put in such condition as to reduce to a minimum the trouble from mud and dust.

Fourth. The addition to the military post of accommodations for another company.

I wish to extend my thanks to all the officers on duty in the Park for intelligent and zealous assistance in all that tends to its welfare. I wish particularly to acknowledge my indebtedness to Capt. G. L. Scott for the valuable assistance rendered by him.

The meteorological record kept under the direction of Surg. C. M. Gandy is appended, as is also a record of the geyser eruptions at the Upper Basin, kept under the direction of Captain Scott.

Yours, very respectfully,

GEO. S. ANDERSON,

Captain, Sixth Cavalry, Acting Supt. Yellowstone National Park.

THE SECRETARY OF THE INTERIOR.

METEOROLOGICAL RECORD.

JULY, 1894.							AUGUST, 1894.							SEPTEMBER, 1894.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	80	48	32	S	.....		1.....	76	52	24	W.	.....		1.....	73	57	16	S.	0.03	Rain.
2.....	71	54	17	W.	0.02	Rain.	2.....	76	37	39	W.	.....		2.....	58	57	1	W.	.04	Rain.
3.....	70	52	18	W.	.03	Rain.	3.....	79	51	28	W.	.....		3.....	59	47	12	SW.	.....
4.....	74	55	19	W.	.01	Rain.	4.....	85	57	28	S.	.....		4.....	65	46	19	SW.	.....
5.....	69	53	16	W.	.05	Rain.	5.....	81	61	20	W.	.....		5.....	63	50	13	SW.	.....
6.....	75	53	22	S.	.....		6.....	78	57	21	S.	0.22	Rain.	6.....	57	51	6	NW.	.07	Rain.
7.....	81	52	29	S.	.....		7.....	78	57	21	S.	.....		7.....	57	51	6	NW.	.....
8.....	83	54	29	S.	.....		8.....	80	53	27	S.	.....		8.....	69	44	25	W.	.....
9.....	85	57	28	S.	.....		9.....	79	52	27	SW.	.....		9.....	65	55	10	W.	.....
10.....	90	66	24	S.	.....		10.....	83	54	29	S.	.07	Rain.	10.....	73	49	24	S.	.....
11.....	69	65	4	SW.	.07	Rain.	11.....	74	57	17	SW.	.....		11.....	72	59	13	S.	.08	Rain.
12.....	68	56	12	W.	.....		12.....	79	57	22	S.	.....		12.....	62	51	11	SE.	.....
13.....	73	52	21	S.	.01	Rain.	13.....	78	51	27	S.	.....		13.....	45	42	3	E.	.....
14.....	87	52	35	S.	.04	Rain.	14.....	75	55	20	SW.	.04	Rain.	14.....	50	40	10	E.	.....
15.....	83	53	30	W.	.16	Rain.	15.....	80	49	31	S.	.....		15.....	54	47	7	SE.	.....
16.....	81	52	29	W.	.....		16.....	81	50	31	S.	.01	Rain.	16.....	55	40	15	N.	.....
17.....	68	57	11	NW.	.....		17.....	87	54	33	S.	.....		17.....	60	43	17	SW.	.....
18.....	76	57	19	SW.	.....		18.....	87	51	36	N.	.....		18.....	72	50	22	S.	.....
19.....	83	50	33	W.	.....		19.....	79	58	21	SW.	.....		19.....	68	42	26	S.	.....
20.....	84	57	27	S.	.....		20.....	83	53	30	S.	.....		20.....	68	47	21	N.	.....
21.....	84	57	27	S.	.....		21.....	86	59	27	S.	.07	Rain.	21.....	68	53	15	N.	.....
22.....	88	59	29	S.	.....		22.....	88	56	32	S.	.....		22.....	53	38	15	N.	.....
23.....	88	55	33	S.	.03	Rain.	23.....	83	58	25	S.	.....		23.....	54	38	16	N.	.....
24.....	81	56	25	S.	.....		24.....	86	58	28	S.	.....		24.....	73	36	37	S.	.....
25.....	82	54	28	S.	.02	Rain.	25.....	88	56	32	S.	.....		25.....	74	52	22	S.	.....
26.....	76	53	23	SW.	.10	Rain.	26.....	86	57	29	S.	.....		26.....	69	53	16	NW.	.22	Rain.
27.....	61	48	13	W.	.....		27.....	89	54	35	S.	.....		27.....	53	42	11	NW.	.....
28.....	77	47	30	SW.	.20	Rain.	28.....	89	55	34	S.	.....		28.....	44	42	2	N.	.....
29.....	83	54	29	S.	.....		29.....	85	56	30	S.	.75	Rain.	29.....	55	36	19	NW.	.27	Rain, snow.
30.....	85	60	25	SW.	.25	Rain.	30.....	78	51	27	SW.	.28	Rain.	30.....	65	43	22	NW.	.....
31.....	76	52	24	SW.	.....		31.....	68	58	10	SW.	.31	Rain.	31.....	.....	.....	.....	.....	.....
Total.	2,434	1,685	749	.....	.99		Total.	2,590	1,704	816	.....	1.75		Total.	1,853	1,401	452	.....	.71	
Mean.	78.52	54.36	24.16	S.	.....		Mean.	81.29	54.97	26.32	S.	.....		Mean.	61.77	46.70	15.07	S.	.....

Maximum, 73 on 1st instant; minimum, 36 on 29th instant; total precipitation, 0.71; prevailing wind, south.

Maximum, 89 on 27th instant; minimum, 51 on 30th instant; total precipitation, 1.75; prevailing wind, south.

Maximum, 90 on 10th instant; minimum, 47 on 28th instant; total precipitation, 0.99; prevailing winds, south.

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OCTOBER, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	65	43	22	N.W.	0.02	
2.....	65	42	23	N.W.		Rain.
3.....	55	44	11	N.		
4.....	65	44	21	S.		
5.....	65	49	16	S.		
6.....	54	36	18	N.		
7.....	48	26	22	N.		
8.....	51	36	15	N.		
9.....	51	29	22	N.W.		
10.....	55	27	28	N.E.		
11.....	52	29	23	N.		
12.....	65	27	38	S.		
13.....	67			S.		
14.....	56			S.		
15.....	73			N.		
16.....	73			S.		
17.....	63			S.		
18.....	57			S.W.		
19.....	49	41	8	N.	.14	Rain.
20.....	39	35	4	N.	.12	Snow.
21.....	39			N.		
22.....	43			S.		
23.....	63			S.		
24.....	58			S.E.	.25	Rain.
25.....	50			N.		
26.....	53			S.		
27.....	44			N.	.21	Snow.
28.....	34			N.		
29.....	39			N.		
30.....	45	30	15	S.	.15	Snow.
31.....	39	29	10	S.		
Total	1,661	557	209		.80	
Mean	53.88	34.80	19.03	N.		

Maximum, 73 on 16th instant; minimum, 21 on 8th instant; total precipitation, 0.89; prevailing wind, north; depth of snowfall, 4.05 inches.

NOVEMBER, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	44	28	16	S.		
2.....	44	30	14	S.		
3.....	45	32	13	S.		
4.....	43	17	26	S.E.		
5.....	55	25	30	S.		
6.....	47	33	14	S.W.		
7.....	57	39	18	N.		
8.....	58	38	20	S.		
9.....	57	39	18	S.		
10.....	57	30	27	S.		
11.....	53	33	20	S.		
12.....	57	38	19	E.		
13.....	57	27	30	S.		
14.....	50	39	11	S.W.		
15.....	23	22	1	N.	0.10	Rain.
16.....	24	1	25	N.		
17.....	32	20	12	N.W.		
18.....	42	26	16	N.W.		
19.....	44	32	12	S.W.		
20.....	39	21	18	N.W.		
21.....	36	21	15	N.W.		
22.....	30	10	20	N.W.		
23.....	34	20	14	S.W.		
24.....	44	29	15	S.		
25.....	49	35	14	S.		
26.....	52	42	10	S.		
27.....	46	34	12	S.W.	.05	Snow.
28.....	36	30	6	S.W.		
29.....	35	23	12	W.		
30.....	33	23	10	W.		
Total	1,398	835	493		.15	
Mean	44.27	27.83	16.43	S.		

Maximum, 58 on 11th instant; minimum, -1 on 16th instant; mean, 36.05; precipitation, 0.15; prevailing winds, south.

DECEMBER, 1894.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	29	7	22	N.W.		
2.....	31	5	26	N.W.		
3.....	33	2	31	N.		
4.....	38	21	17	W.		
5.....	38	19	19	W.		
6.....	39	31	8	S.W.	0.40	Snow.
7.....	27	12	15	S.W.		
8.....	30	13	15	S.W.		
9.....	23	10	13	W.	.10	Snow.
10.....	26	9	17	W.		
11.....	23	13	10	S.W.		
12.....	28	10	18	S.W.		
13.....	34	8	26	S.W.	.30	Snow.
14.....	38	14	24	S.W.	.20	Snow.
15.....	25	24	1	W.		
16.....	28	24	4	W.		
17.....	35	25	10	W.	.03	Rain.
18.....	39	28	11	W.		
19.....	43	23	20	W.		
20.....	35	33	2	S.W.		
21.....	36	15	21	W.		
22.....	41	14	27	W.	.20	Snow.
23.....	26	19	7	W.	.10	Snow.
24.....	17	3	14	W.		
25.....	1	1	17	N.W.		
26.....	11	7	18	N.W.		
27.....	9	17	26	N.W.		
28.....	12	12	24	N.W.		
29.....	5	5	7	W.	.01	Snow.
30.....	24	1	25	S.		
31.....	25	8	17	S.		
Total	871	362	509		1.94	
Mean	28.10	11.68	16.42	W.		

Maximum, 43 on 19th instant; minimum, -17 on 27th instant; mean, 19.89; precipitation, 1.34; prevailing winds, west.

METEOROLOGICAL RECORD—Continued.

JANUARY, 1895.							FEBRUARY, 1895.							MARCH, 1895.						
Date.	Maximum.	Minimum.	Range.	Winds.	Precipita- tion.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipita- tion.	Remarks.	Date.	Maximum.	Minimum.	Range.	Winds.	Precipita- tion.	Remarks.
1.....	26	12	14	SW.	0.40	Snow.	1.....	19	3	16	NW.	0.01	Snow.	1.....	36	21	15	SW.	.....
2.....	21	16	5	SW.	.....	Snow.	2.....	30	16	14	NW.	.....	.....	2.....	25	2	27	SW.	.....
3.....	33	2	35	SW.	0.70	Snow.	3.....	32	22	19	NW.	.02	Snow.	3.....	31	2	33	W.	.....
4.....	33	26	7	SW.	.50	Snow.	4.....	31	22	12	NW.	.....	.....	4.....	28	3	31	W.	.....
5.....	30	28	2	SW.	.10	Snow.	5.....	28	19	9	N.	.10	Snow.	5.....	35	1	34	SW.	.....
6.....	22	15	7	SW.	.....	.....	6.....	31	13	18	N.	.....	.....	6.....	31	7	24	S.	.....
7.....	19	2	17	NW.	.....	Snow.	7.....	32	2	34	N.	.....	.....	7.....	36	16	20	S.	.....
8.....	24	6	18	NW.	.01	.....	8.....	22	11	17	N.	.....	.....	8.....	36	21	23	S.	.....
9.....	36	18	18	W.	.....	.....	9.....	23	8	31	N.	.....	.....	9.....	44	16	28	SW.	.....
10.....	34	24	10	W.	.....	.....	10.....	18	8	37	N.	.....	.....	10.....	44	16	28	SW.	.....
11.....	41	26	15	S.	.03	Snow.	11.....	18	0	26	N.	.....	.....	11.....	20	20	.....	NW.	.....
12.....	40	27	13	W.	.....	.....	12.....	14	21	25	N.	.....	.....	12.....	5	5	.....	N.	0.75	Snow.
13.....	38	26	12	W.	.....	.....	13.....	10	10	30	N.	.....	.....	13.....	8	8	.....	N.	.35	Snow.
14.....	22	10	12	W.	.....	.....	14.....	2	20	22	N.	.....	.....	14.....	17	17	.....	N.	.....
15.....	10	15	23	N.	.....	.....	15.....	25	12	37	NW.	.....	.....	15.....	15	10	.....	N.	.....
16.....	29	16	23	N.	.....	Snow.	16.....	27	6	21	NW.	.....	.....	16.....	17	8	.....	N.	.....
17.....	30	12	18	NW.	1.60	Snow.	17.....	24	10	14	W.	.....	.....	17.....	17	13	.....	SW.	.....
18.....	30	21	9	NW.	.....	Snow.	18.....	34	17	17	W.	.20	Snow.	18.....	13	13	.....	SW.	.....
19.....	31	24	7	NW.	.40	.....	19.....	35	25	10	SW.	.....	.....	19.....	19	12	.....	N.	.....
20.....	26	7	19	NW.	.01	Snow.	20.....	39	26	13	SW.	.....	.....	20.....	19	12	.....	N.	.....
21.....	26	7	19	NW.	.02	Snow.	21.....	38	30	8	SW.	.....	.....	21.....	20	19	.....	N.	.....
22.....	36	15	21	W.	.....	.....	22.....	43	31	12	SW.	.....	.....	22.....	21	21	.....	S.	.13	Snow.
23.....	33	23	10	W.	.....	.....	23.....	42	32	10	SW.	.....	.....	23.....	24	11	.....	N.	.65	Snow.
24.....	33	11	22	W.	.....	.....	24.....	44	24	20	SW.	.....	.....	24.....	24	23	.....	S.	.....
25.....	26	2	28	NW.	.10	Snow.	25.....	40	17	23	SW.	.....	.....	25.....	23	23	.....	S.	.....
26.....	16	5	11	N.	.....	.....	26.....	42	13	29	SW.	.....	.....	26.....	33	33	.....	S.	.....
27.....	15	23	38	N.	.....	Snow.	27.....	42	22	20	SW.	.01	Snow.	27.....	38	38	.....	S.	.....
28.....	14	14	28	N.	.01	Snow.	28.....	42	22	20	SW.	.....	.....	28.....	39	39	.....	S.	.....
29.....	16	2	14	N.	.30	Snow.	29.....	42	22	20	SW.	.....	.....	29.....	27	27	.....	NW.	.....
30.....	21	8	13	N.	.30	Snow.	30.....	29	18	11	SW.	.....	.....	30.....	30	18	.....	W.	.71	
31.....	22	1	21	N.	.02	Snow.	31.....	28	22	6	SW.	.....	.....	31.....	30	12	.....	W.	.....
Total	833	322	511	.....	4.76	.....	Total	815	260	555	.....	.....	.....	Total	310	431	235	.....	.....	2.79
Mean.	26.87	10.39	16.50	N.	.....	.....	Mean.	29.11	9.29	19.82	.....	.....	.....	Mean.	31.0	43.1	23.5	.....	.....	.....

Maximum, 44 on 24th instant; minimum, -26 on 11th instant; mean, 19.21; precipitation, 0.34; prevailing winds, northwest and south west.

Maximum, 41 on 11th instant; minimum, -23 on 27th instant; mean, 18.63; precipitation, 4.76; prevailing winds, north.

Maximum, 44 on 8th instant; minimum, -17 on 14th instant; mean, 13.90; total precipitation, 2.79; prevailing winds, south.

Thermometer broken.

YELLOWSTONE NATIONAL PARK.

JUNE, 1895.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	49	35	14	SW.	0.14	Rain and snow.
2.....	53	30	23	NW.	.....	.....
3.....	54	37	17	NW.	.....	.....
4.....	67	33	34	W.	.....	.....
5.....	70	43	27	S.	.01	Rain.
6.....	62	33	29	NW.	.03	Snow and rain.
7.....	38	30	08	N.	.22	2.20 snow.
8.....	42	29	13	NW.	.20	2 snow.
9.....	64	29	35	NW.	.....	.....
10.....	64	32	32	SW.	.....	.....
11.....	66	36	30	S.	.01	Rain.
12.....	70	36	34	S.	.....	.....
13.....	73	48	25	S.	.....	.....
14.....	70	42	28	S.	.01	Rain.
15.....	56	41	15	NW.	.10	1 snow.
16.....	52	28	24	W.	.06	Snow and rain.
17.....	60	31	29	W.	.....	.....
18.....	65	41	24	W.	.01	Rain.
19.....	76	36	40	SW.	.13	Rain.
20.....	76	36	40	SW.	.....	.....
21.....	76	43	33	SW.	.01	Rain.
22.....	79	45	34	W.	.....	.....
23.....	79	45	34	W.	.02	Rain.
24.....	65	46	19	NW.	.....	.....
25.....	76	33	43	NW.	.21	Rain.
26.....	79	38	41	NW.	.....	.....
27.....	70	40	30	NW.	.....	.....
28.....	79	41	38	NW.	.....	.....
29.....	81	46	35	N.	1.55	Rain, hail; heavy thunder storm.
30.....	75	47	28	SW.	.....	.....
Total.....	1,947	1,120	825	.....	.....	.....
Mean.....	64.90	37.40	27.50	NW.	.....	.....

Maximum, 81 on 29th instant; minimum, 29 on 9th instant; mean of maximum, 64.90; mean of minimum, 37.33; total precipitation, 2.71; prevailing winds, northwest.

MAY, 1895.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	36	36	.....	N.	.....	.....
2.....	42	29	13	NW.	.....	.....
3.....	35	35	.....	NW.	.....	.....
4.....	31	31	.....	N.	0.01	Rain.
5.....	32	32	.....	SE.	.01	Rain.
6.....	36	36	.....	SE.	.05	Rain.
7.....	46	46	.....	S.	.....	.....
8.....	35	35	.....	NW.	.01	0.10 snow.
9.....	29	29	.....	NW.	.01	0.10 snow.
10.....	20	20	.....	NW.	.....	.....
11.....	21	21	.....	NW.	.....	.....
12.....	32	32	.....	NW.	.....	.....
13.....	40	40	.....	W.	.....	.....
14.....	40	31	9	W.	.....	.....
15.....	26	26	.....	W.	.....	.....
16.....	31	31	.....	W.	.....	.....
17.....	31	31	.....	W.	.....	.....
18.....	32	32	.....	S.	.....	.....
19.....	38	38	.....	SW.	.....	.....
20.....	64	35	29	S.	.10	Snow and rain.
21.....	65	42	23	SW.	.31	Rain.
22.....	60	36	24	SW.	.....	.....
23.....	61	31	30	E.	.....	.....
24.....	61	33	28	SW.	.....	.....
25.....	68	37	31	SW.	.....	.....
26.....	67	42	25	E.	.51	Rain.
27.....	52	32	20	NW.	.53	Rain and snow.
28.....	48	26	22	NW.	.01	Snow and rain.
29.....	47	32	15	NW.	.....	.....
30.....	49	36	13	NW.	.....	.....
31.....	50	37	13	NW.	.13	Rain.
Total.....	757	1,052	300	.....	1.68	.....
Mean.....	33.93	33.93	.....	NW.	.....	.....

Maximum, broken until 19th instant; minimum, 20 on 10th instant; mean of minimum, 33.93; precipitation, 1.68; prevailing winds, northwest.

APRIL, 1895.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1.....	24	24	.....	S.	.....	.....
2.....	31	31	.....	SW.	.....	.....
3.....	27	27	.....	SW.	.....	.....
4.....	27	27	.....	SW.	.....	.....
5.....	14	14	.....	N.	.....	.....
6.....	6	6	.....	N.	.....	.....
7.....	19	19	.....	SW.	.....	.....
8.....	24	24	.....	S.	.....	.....
9.....	29	29	.....	S.	.....	.....
10.....	32	32	.....	S.	.....	.....
11.....	28	28	.....	SE.	.....	.....
12.....	26	26	.....	SE.	.....	.....
13.....	33	33	.....	S.	0.33	Rain.
14.....	39	39	.....	S.	.....	.....
15.....	21	21	.....	S.	.....	.....
16.....	29	29	.....	N.	.....	.....
17.....	39	39	.....	S.	.....	.....
18.....	33	33	.....	S.	.....	.....
19.....	31	31	.....	S.	.....	.....
20.....	32	32	.....	SW.	.....	.....
21.....	21	21	.....	N.	.15	Rain.
22.....	28	28	.....	N.	.....	.....
23.....	32	32	.....	N.	.....	.....
24.....	32	32	.....	S.	.....	.....
25.....	33	33	.....	S.	.....	.....
26.....	38	38	.....	S.	.....	.....
27.....	36	36	.....	S.	.....	.....
28.....	38	38	.....	S.	.....	.....
29.....	30	30	.....	NW.	.09	Rain.
30.....	38	38	.....	NW.	.04	Rain.
Total.....	884	884	.....	.....	.61	.....
Mean.....	29.47	29.47	.....	S.	.....	.....

Maximum, broken; minimum, 11 on 6th instant; mean of minimum, 29.47; precipitation, 0.61; prevailing winds, south.

Observed eruptions of geysers at Upper Basin, Yellowstone National Park.

JUNE, 1894.

	Artemisia.	Beehive.	Castle.	Giant.	Giantess.	Grand.	Oblong.	Splendid.
1....	a. m.							
	p. m.							
2....	a. m.							
	p. m.							
3....	a. m.							
	p. m.							
4....	a. m.							
	p. m.	5. 20					4. 30	8. 40
5....	a. m.		11. 20					
	p. m.	4. 15		8. 20		5. 20	3. 30	
6....	a. m.			3. 20				
	p. m.	5. 10	3. 15				8. 00	
7....	a. m.			5. 30				
	p. m.						7. 30	
8....	a. m.							
	p. m.	6. 30	4. 00					
9....	a. m.		7. 40					
	p. m.						2. 00	
10....	a. m.							
	p. m.							3. 15
11....	a. m.	8. 50					9. 30	
	p. m.		3. 15					
12....	a. m.						8. 00	
	p. m.							
13....	a. m.		6. 30					
	p. m.						3. 15	
14....	a. m.		1. 20		a 8. 30			
	p. m.	2. 15	2. 35				5. 20	
15....	a. m.		9. 05					
	p. m.						9. 00	
16....	a. m.							
	p. m.						7. 45	
17....	a. m.	10. 00	9. 00					
	p. m.			12. 30			10. 45	7. 00
18....	a. m.			7. 20				
	p. m.						7. 15	
19....	a. m.							
	p. m.							
20....	a. m.		10. 40					
	p. m.							
21....	a. m.	6. 30						
	p. m.						5. 00	
22....	a. m.							
	p. m.							
23....	a. m.							
	p. m.	11. 45	1. 00	12. 45			2. 30	
24....	a. m.			6. 50				
	p. m.							
25....	a. m.					3. 00		
	p. m.		2. 30				6. 30	
26....	a. m.							5. 15
	p. m.							
27....	a. m.	9. 00	9. 10					
	p. m.							
28....	a. m.						10. 30	
	p. m.							
29....	a. m.		10. 00					
	p. m.		3. 10					
30....	a. m.							
	p. m.							

a Thirteen hours.

Observed eruptions of geysers at Upper Basin, Yellowstone National Park—Continued.

JULY, 1894.

	Artemisia.	Beehive.	Castle.	Giant.	Giantess.	Grand.	Oblong.	Splendid.
1.	a. m.		10. 15					
	p. m.	2. 30			a 10. 45			
2.	a. m.	5. 00	6. 45				9. 50	
	p. m.							
3.	a. m.	6. 30						
	p. m.	5. 40	3. 30					
4.	a. m.	12 m.						
	p. m.		8. 00					
5.	a. m.		3. 15	8. 30	3. 45		6. 30	8. 00
	p. m.							
6.	a. m.	1. 10		2. 30				
	p. m.							
7.	a. m.						4. 00	
	p. m.							
8.	a. m.			3. 40				
	p. m.							
9.	a. m.			11. 15				
	p. m.							
10.	a. m.	7. 00					11. 15	7. 45
	p. m.		5. 25					
11.	a. m.							
	p. m.							
12.	a. m.			11. 45				
	p. m.							
13.	a. m.							
	p. m.	4. 30					2. 00	
14.	a. m.			5. 00				
	p. m.	4. 45	12. 30					6. 00
15.	a. m.							
	p. m.		4. 45					
16.	a. m.							
	p. m.	4. 30	10. 15					
17.	a. m.	3. 30					6. 00	
	p. m.							
18.	a. m.		1. 50					
	p. m.	6. 30		12. 05				
19.	a. m.							
	p. m.							
20.	a. m.							
	p. m.		2. 00				10. 00	
21.	a. m.				b 11. 35			
	p. m.							
22.	a. m.	11. 20	8. 45	10. 55				
	p. m.		8. 50				3. 30	
23.	a. m.			1. 30		7. 10	10. 00	
	p. m.							
24.	a. m.							
	p. m.	7. 45		8. 45		7. 20	5. 15	
25.	a. m.						8. 15	
	p. m.	4. 15	2. 15			9. 15	4. 00	2. 15, 4. 30, 6. 30, 8. 15
26.	a. m.							
	p. m.		7. 40				8. 20	
27.	a. m.	8. 20					8. 15	
	p. m.					8. 20		
28.	a. m.			11. 00				
	p. m.	7. 00	2. 30				3. 10	
29.	a. m.			4. 30		7. 45		
	p. m.						4. 15	
30.	a. m.						11. 30	
	p. m.	9. 00	3. 15				3. 45	
31.	a. m.						7. 30	
	p. m.	7. 15	3. 20			9. 30	4. 50	

a Twenty-one hours. b Fourteen hours.

Observed eruptions of geysers at Upper Basin, Yellowstone National Park—Continued.

AUGUST, 1894.

	Artemisia.	Beehive.	Castle.	Giant.	Giantess.	Grand.	Oblong.	Splendid.
1	{ a. m.						8.20	
	{ p. m.	5.30	5.20			10.45	4.15	
2	{ a. m.			10.00				
	{ p. m.							
3	{ a. m.	11.30				6.30	7.20	7.15, 11.30
	{ p. m.	6.15	5.30					3.45, 7.30
4	{ a. m.						8.00	6.30, 9.00
	{ p. m.	12.50						
5	{ a. m.		10.00					
	{ p. m.	6.00	1.15			9.00	8.00	
6	{ a. m.		10.30					
	{ p. m.	5.30	5.30			8.00	7.00	
7	{ a. m.	11.30	11.30				8.00	
	{ p. m.					6.30	3.45	
8	{ a. m.	11.40				7.15		7.00, 10.00
	{ p. m.	4.30					4.30	1.30, 5.15
9	{ a. m.							
	{ p. m.	1.30				8.20	6.45	
10	{ a. m.		9.15			7.15	8.00	
	{ p. m.	7.15	3.00				5.00	
11	{ a. m.	8.45				7.10	7.00	
	{ p. m.		6.30					
12	{ a. m.	11.00		8.30			7.30	7.30, 9.30
	{ p. m.		7.15			9.30	6.00	3.10, 6.00
13	{ a. m.							
	{ p. m.	7.00	1.15					
14	{ a. m.					6.30	7.30	
	{ p. m.	6.00	2.00	1.15			4.00	
15	{ a. m.	7.15	3.15			8.00	8.15	
	{ p. m.						3.45	
16	{ a. m.	10.45	10.15			7.30	7.15	
	{ p. m.							
17	{ a. m.	8.15	11.15	4.30		6.00	8.00	7.15, 10.00, 12.00, 2.00, 4.00, 6.15
	{ p. m.						5.15	
18	{ a. m.		4.00				7.30	
	{ p. m.					11.45		
19	{ a. m.							
	{ p. m.	12.45					7.15	
20	{ a. m.							
	{ p. m.	6.15	1.50	12.45				
21	{ a. m.		7.45	7.10				
	{ p. m.	3.00			a 5.30		3.00	5.15, 7.15, 9.00, 11.15
22	{ a. m.		6.00					7.15, 9.00, 11.30
	{ p. m.	7.50						
23	{ a. m.		11.30				7.10	
	{ p. m.					7.15	5.00	
24	{ a. m.							
	{ p. m.	7.10	5.10			8.00	6.00	
25	{ a. m.		11.15				8.15	
	{ p. m.	6.30					3.45	
26	{ a. m.					7.30		
	{ p. m.	5.15		3.30			3.30	3.15, 5.00, 7.15, 9.30, 7.30
27	{ a. m.		8.30				9.00	
	{ p. m.	6.00						
28	{ a. m.		3.15				7.15	
	{ p. m.	8.15	2.00	9.00			5.10	
29	{ a. m.		6.00			8.00	9.10	
	{ p. m.	7.00					4.15	
30	{ a. m.		9.00			9.15		
	{ p. m.	6.30						3.15, 5.00, 6.45, 9.15, 7.00, 9.00, 11.00
31	{ a. m.				b 3.30		6.30	
	{ p. m.	4.15	2.30	4.30			5.10	

a Eight hours.

b Fourteen hours.

Observed eruptions of geysers at Upper Basin, Yellowstone National Park—Continued.

SEPTEMBER, 1894.

	Artemisia.	Beehive.	Castle.	Giant.	Giantess.	Grand.	Oblong.	Splendid.
1...	a. m.							
	p. m.	5. 10	11. 30	9. 00				
2...	a. m.							11. 30
	p. m.	6. 15		5. 15	10. 15			
3...	a. m.					7. 15		
	p. m.							
4...	a. m.		10. 00			8. 00		
	p. m.	7. 00	11. 30					
5...	a. m.					6. 30		9. 15
	p. m.		9. 00					
6...	a. m.							
	p. m.	5. 30						
7...	a. m.		11. 00			7. 15		
	p. m.	3. 45						
8...	a. m.		7. 00			9. 45		
	p. m.							
9...	a. m.							
	p. m.	6. 00						
10...	a. m.		6. 00					
	p. m.			4. 15		8. 45	1. 30	
11...	a. m.							
	p. m.	5. 15	5. 00	3. 15		7. 00	3. 00	
12...	a. m.		2. 15	8. 15		a 1. 00	8. 00	12 m.
	p. m.	7. 00	8. 00				3. 15	
13...	a. m.		3. 15	2. 30			11. 00	
	p. m.						8. 00	
14...	a. m.					6. 30		
	p. m.	5. 15	8. 30				7. 30	
15...	a. m.		7. 30					
	p. m.	7. 00	10. 30					
16...	a. m.							
	p. m.	8. 00	4. 30	5. 30			7. 00	
17...	a. m.					8. 00		
	p. m.	4. 30					2. 30	
18...	a. m.		10. 00			8. 30	9. 15	9. 00, 10. 45
	p. m.	7. 30						8 00
19...	a. m.		8. 15				2. 30, 8. 00	
	p. m.	6. 00					11. 30	
20...	a. m.					7. 00		
	p. m.	5. 10						
21...	a. m.							
	p. m.		2. 30				4. 30	
22...	a. m.		11. 15				8. 45	
	p. m.						5. 00	
23...	a. m.	11. 30			b 9. 15		10. 00	
	p. m.	3. 15	2. 30				3. 00	
24...	a. m.	10. 30					9. 30	
	p. m.		3. 15					
25...	a. m.			9. 00				
	p. m.					5. 15	8. 00	
26...	a. m.		9. 00					8. 00
	p. m.						3. 15	
27...	a. m.		8. 15			8. 00		11. 30
	p. m.							(c)
28...	a. m.		7. 15					11. 30
	p. m.					4. 30	2. 00	3. 10, 6. 00
29...	a. m.		6. 30					
	p. m.	5. 10				6. 15	3. 15	
30...	a. m.		3. 30					
	p. m.	6. 00	10. 10					

a Forty-two hours.

b Eight hours.

c 1.00, 3.15, 5.00, 7.00, 9.15.

Observed eruptions of geysers at Upper Basin, Yellowstone National Park—Continued.

JUNE, 1895.

	Artemisia.	Beehive.	Castle.	Giant.	Giantess.	Grand.	Oblong.	Splendid.
1	a. m.							
	p. m.							
2	a. m.							
	p. m.							
3	a. m.							
	p. m.							
4	a. m.		9. 15					
	p. m.	6. 30						4. 15
5	a. m.		6. 10					
	p. m.	5. 15		9. 30				
6	a. m.		1. 15		3. 30			
	p. m.	5. 10	11. 30					
7	a. m.							
	p. m.	2. 30				5. 15		
8	a. m.							
	p. m.	4. 30				6. 30		
9	a. m.					11. 15		
	p. m.	3. 00	1. 00					3. 30
10	a. m.							
	p. m.					4. 30		
11	a. m.		4. 00					
	p. m.	3. 15	9. 15	6. 30				
12	a. m.					8. 20		9. 15
	p. m.	4. 15						1. 30
13	a. m.		9. 15					7. 30
	p. m.	5. 10						6. 30
14	a. m.					5. 30		12. 30
	p. m.	3. 45	8. 30					8. 00
15	a. m.					7. 15		
	p. m.	4. 50				5. 00		
16	a. m.		11. 30					
	p. m.	7. 30						
17	a. m.							
	p. m.	9. 15	11. 45			6. 30		
18	a. m.			8. 30	11. 30			
	p. m.		5. 45					6. 30
19	a. m.	5. 30	8. 45			6. 30		9. 30
	p. m.	6. 30	4. 00					7. 00
20	a. m.		7. 30			7. 00		
	p. m.	5. 00	5. 30					
21	a. m.					7. 30		11. 30
	p. m.	6. 15	12. 15					
22	a. m.							
	p. m.	7. 00						
23	a. m.		4. 30					
	p. m.	5. 15						7. 30
24	a. m.		4. 00			7. 00		6. 45
	p. m.	4. 00		2. 30				1. 30
25	a. m.		8. 30			7. 15		7. 15
	p. m.	5. 30						
26	a. m.		5. 30			6. 30		
	p. m.	6. 00	5. 30					2. 30
27	a. m.					7. 15		10. 30
	p. m.	5. 00	12. 30					
28	a. m.					6. 00		
	p. m.	3. 45						
29	a. m.	7. 15	8. 45					11. 45
	p. m.			2. 30				
30	a. m.					9. 00		9. 30
	p. m.	8. 30						

0.

