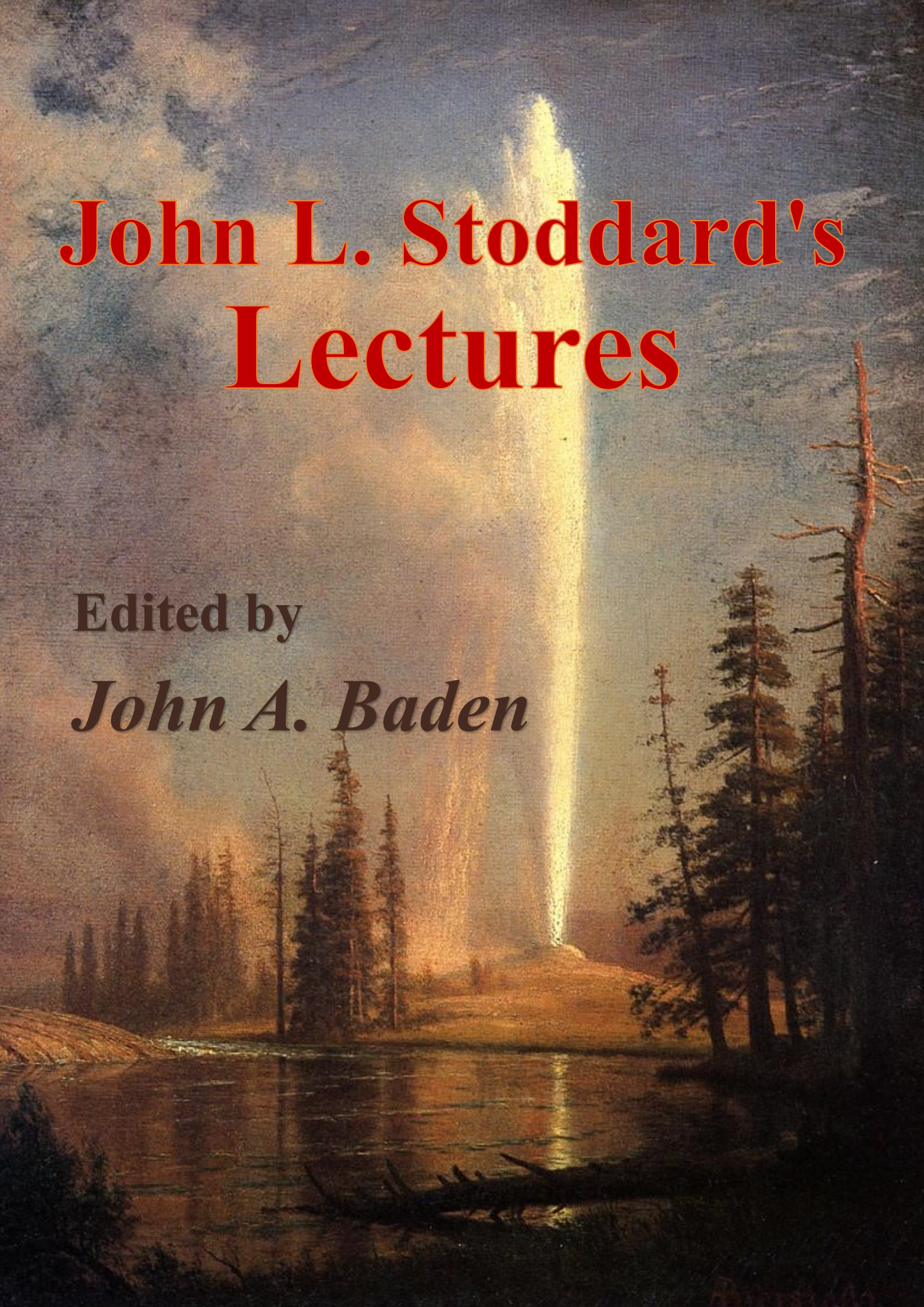

John L. Stoddard's Lectures

Edited by

John A. Baden

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FREE Publishing

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FOREWORD

Yellowstone National Park and the Conservation Movement

by John Baden

People in Bozeman, Montana are remarkably fortunate to have Yellowstone Park in our back yard. We can reach a Park entrance in any season, usually in less than two hours. We owe a great deal to the far-sighted conservationists of the late 1800s. Given certain impending changes and challenges, how might we preserve Yellowstone's values and those of other parks and wild lands? It will be helpful to examine historical experiments with Yellowstone.

The Conservation Movement of the late 1800s to 1920 worked to preserve and protect America's wildlife, wild lands, and other natural resources. Leaders of that movement included nature writer John Burroughs, ethnographer George Bird Grinnell, geologist F. V. Hayden, ecologist George Perkins Marsh, and the more well known John Muir, Gifford Pinchot, John Wesley Powell, and T.R. Roosevelt.

Teddy Roosevelt founded the Boone and Crockett Club in 1887. It was the leading conservation organization of its era. Membership was a who's who of patrician sportsmen-conservationists, e.g., G. B. Grinnell, Yellowstone Park geologist Arnold Hague, and Gifford Pinchot. Boone and Crockett worked for the expansion and protection of Yellowstone Park and led the creation of our National Wildlife Refuge system in 1903. They promoted conservation as an organizing principle of public policy.

John Lawson Stoddard was a contemporary of these men, living from 1850 to 1931. He graduated from of Williams College and studied at Yale Divinity School

for two years. Proud of descending from Mayflower settlers, he was a social equal of the conservation pioneers.

Stoddard began traveling around the world in 1874. His books brought the aristocratic Grand Tour of the East Coast elite to popular audiences by the late 1890s. His photographs of foreign and distant places and peoples reached millions of Americans.

His works were published in ten volumes as the *Stoddard Lectures* from 1898 to 1907. They cover his world travel experiences through natural history, photographs, and art. He wrote about Yellowstone Park in Volume Ten (All of Stoddard's quotes/page numbers that follow are from his volume 10.) He strongly approved of the law establishing Yellowstone that begins: An Act to set apart a certain Tract of Land lying near the Head-waters of the Yellowstone River as a public Park, and continues...

> *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tract of land in the Territories of Montana and Wyoming, lying near the head-waters of the Yellowstone river, ...is hereby reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring-ground for the benefit and enjoyment of the people...*

Stoddard's 94 page description included photos of Yellowstone in the 1890s. His religious perspective is obvious: "On certain portions of our globe Almighty God has set a special imprint of divinity." He included Yellowstone as one of these few portions. He said it deserved (and I strongly believe it still deserves) special protection. He favored the U. S. Army as the protector and service provider.

Stoddard wrote passionately about the marvels of Yellowstone. Here his observations on the Liberty Cap formation at Mammoth.

> *...the hand of Time has stilled its passionate pulsations, and lain upon its stony lips the seal of silence." Another treasure is the Grand Cañon of the Yellowstone. "It is as if Almighty God had kept for His own use one part of creation that man might merely graze upon it, worship, and retire.* (p. 223)

Stoddard knew the threats of destructive looting and poaching were likely to occur in a remote, unmanaged commons filled with rare and beautiful animals and

unique geological features. He understood that poor people on the frontier are often grasping by necessity while the wealthy may opportunistically raid the public weal. By today's standards America was a poor third world nation. (In 1890 the U. S. population was 63,000,000 and the average weekly wage was well under $20.00. Life expectancy for while females was 45 years, males 42 years.)

In short, Stoddard was philosophically and culturally aligned with the patrician conservationists of his time. In their view, people with elite sensitivities would guide professional experts who manage the Park. This, he agreed, was a job for the U. S. Army. At that time in those conditions, it is hard to imagine better counsel. In sum, the experiment of Army running the Park worked well. As Stoddard said,

> "No one who has visited the National Park ever doubts the necessity of having soldiers there....Soldiers patrol the Park continually to see that all the camp-fires have been extinguished. (When a forest fire erupts, the soldiers put it out with dispatch.) (p.216)

> Another important labor of the United States soldiers is to preserve the game within the Park.....A buffalo head which could formerly have been bought for a mere trifle, commands today a price of five hundred dollars. [That is nearly $13,000 in today's dollars.] Hence daring poachers sometimes run the risk of entering the Park in winter and destroying them....Now to protect the few remaining buffaloes , as well as other animals, our troops patrol the Park even in winter." (p.218)

The military was also responsible for the Park's road system. From 1883 to 1918 the U.S. Army's Corps of Engineers built and maintained Yellowstone's roads and bridges. When they left the park in 1918, the Corps had constructed over 400 miles of roads built to uniform specifications. They also built a hydroelectric plant, a water system, streetlights, and concrete sidewalks at Mammoth.

Alas, Stoddard lamented, the government is far too stingy. "Surely the honor of our government demands that this unique museum of marvels be the pride and glory of the nation with highways equal to any in the world." The funding problem for Yellowstone and other parks is evident today - and with infrastructure needs going far beyond roads.

Institutional entrepreneurs arise in anticipation of these worsening budgetary problems. They explore all manner of creative arrangements, notably partnerships and user fees. We've had two earlier and largely successful experiments with

managing Yellowstone, the Army until 1918 and the Progressive Era's Park Service there after.

Now leaders in the park system expect increasing trouble funding the 400 units of the National Park system. New experiments are underway and there are reasons for prudent optimism. We have far better understanding of ecology and of political economy than we did a century ago. Also, Yellowstone is now extremely well known, highly prized, and its workings better understood.

These are ingredients for success in a changing, challenging environment. It will take institutional entrepreneurs to arrange these positive features to preserve Yellowstone's qualities and those of other parks and wildlands.

The 100 Year Park Service Experiment

Congress created the U. S. Park Service in 1916 and it took over Yellowstone's management in 1918. Since then we have enjoyed, or at least experienced, a century of experimentation with political funding of Progressive Era management.

Yellowstone's successes include successful reintroduction of the wolf in 1995 and rejuvenation of the grizzly population. The latter has more than doubled after a population crash in the 1970s. The grizzly's distribution has increased 200 percent since 1981 and they are pushing out in all directions. While the Park Service has made mistakes, most have been corrected or are reversible. Compared to likely alternatives, America has surely benefited from the experiment.

> "As far as we can tell, with the return of the gray wolf the region called greater Yellowstone has reclaimed its full complement of historic mammals; indeed, the area is now commonly described as the largest generally intact ecosystem in the temperate world. This project says a lot about the value Americans place on the creatures of the wild, even those that can be troublesome on occasion. For that matter the entire restoration was guided by directives contained in the Endangered Species Act – a law created to ground a decades-old cornerstone of science that says the healthiest, most stable nature systems tend to be those with high levels of biodiversity. It was specifically the flowering of that knowledge that led the National Park Service – the same agency that killed the last wolf in Yellowstone in 1926 – to commit seventy years later to an extraordinary effort to bring them back. Admittedly, some consider the act of returning the very animal we spent millions of dollars eradicating as a sign of madness. But to others, including many scientists, this has been a move filled with hope – a clear indication that we've finally started to move beyond a longstanding body of myth that treated all predators as if they were God's great mistake. To those who value ecological health, the wolf has become a powerful touchstone to the

wisdom of managing the last pieces of wild America with a generous commitment to wholeness." (Decade of the Wolf: Returning the Wild to Yellowstone, Douglas W. Smith and Gary Ferguson, Lion's Press, 2005)

Now new threats are emerging--and I'm not including climate change or invasive species. Consider the political economy of the National Park System. Under existing institutions the future looks grim. A key reason is simply that discretionary spending by the federal government is trending downward.

Discretionary spending is one of two categories in the federal budget. Mandatory spending, about 60% of the federal budget and growing, is the other. All Park Service funding is discretionary.

In contrast, mandatory spending, which includes servicing the national debt, is automatic. The Congressional Budget Office projects the interest on the national debt to more than double from 2015 to 2020, from $251 billion to $556 billion. Mandatory government spending is determined by formulas, many set years ago. Social Security, Medicare and, agricultural subsidies have strong constituencies and so Congress responds each year to political pressures. Adjusting for inflation, the National Park Service's operating budget has dropped twenty percent since 1990 and national parks are operating with about two-thirds of what they claim is required to meet their mandate. The Park Service deficit is about $600 million a year.

The GAO has documented about $11 billion in backlogged maintenance and neglected infrastructure throughout the system. Yet the number of units in the system keeps increasing as a result of external political pressures from Congressional delegations and conservationists. There are over 400 units in the system, 59 of them national parks. Although the maintenance backlog for existing units continues to increase, fifteen have been added since 2010. Barely three months beyond the

euphoria raised by Ken Burns' 2010 documentary on the national parks (America's Best Idea), President Obama moved to freeze funding levels of the National Park Service. Current appropriations are simply not enough to run the parks nor will it whittle away at the agency's maintenance backlog, which, Park Service Director John Jarvis recently told congressional committees, is nearing $11 billion.

It's not only the federal government that has these budgetary constraints, nearly every state has similar problems. For example, the caretakers of Lincoln's tomb face serious financial trouble on the 150th anniversary of his death. Caretakers of Abraham Lincoln's tomb faced an unflattering critique in National Geographic magazine as looming budget cuts threaten the historic site - - on the 150th anniversary of Lincoln's assassination. The popular tourist site was criticized in National Geographic as having all the historical character of an "office lobby".

Given the obvious and growing squeeze, new arrangements must be created to honor the Park Service mission:

> The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

Governments face tighter budgets constraints, especially retirement expenses at state and local levels. When they kick in, the phrase, "cooperates with partners" will be key to the future of America's parks and wildlands.

When John Stoddard wrote about Yellowstone Park in the 1890s he believed the U. S. Army was the appropriate caretaker. He wrote, "No one who has visited the National Park ever doubts the necessity of having soldiers there...." He was probably correct at that time. Then, in 1916 the Progressives created the Park Service with the goal of scientific management. That experiment has generally worked well. However, as the political economy environment changes, the Park Service must adapt to honor its mandate.

If we agree national parks are among America's best concrete ideas, the challenge is to preserve the values that justified their creation. Some creative conservationists are exploring options for managing parks and wild lands in this changing environment. A key to this success is insulating the parks from political pressures and supplementing or replacing federal funding. This implies increased cooperation with a variety of public nongovernmental organizations.

Americans excel at creating such organizations through a variety of foundation and fiduciary trust arrangements. As we approach the 100th anniversary of the Park Service, people are exploring new models for funding and stewarding the lands and resources it manages. On October 31 of 2014 Dan Wenk took a temporary leave as Superintendent of Yellowstone to become interim head of the National Park Foundation in order to help search for a new president and CEO for the Foundation. He later returned to his position as Superintendent of Yellowstone National Park. Closer to home, the Bozeman based Yellowstone Park Foundation is planning a major capital campaign, ten of millions of dollars stating asking supporters to help sustain the Park and exercise "...the same visionary action that created the Yellowstone we love today, [with] your support we can preserve an extraordinary Yellowstone that lasts forever."

Institutional entrepreneurs envision new arrangements for cooperating toward a shared purpose. They are undertaking this challenge for our parks and wild lands. Their success is our hope for preserving unimpaired the natural and cultural resources of the national parks. As Alexis de Tocqueville noted in 1840:

> "In the United States, as soon as several inhabitants have taken an opinion or an idea they wish to promote in society, they seek each other out and unite together once they have made contact. From that moment, they are no longer isolated but have become a power seen from afar whose activities serve as an example and whose words are heeded".

Yellowstone is unlikely to soon become a legally independent fiduciary trust like George Washington's Mount Vernon. It is a foundation that has not accepted any government funding. Thomas Jefferson's Monticello likewise is a private, nonprofit 501(c)3 corporation, that "...receives no ongoing federal, state, or local funding in support of its dual mission of preservation and education."

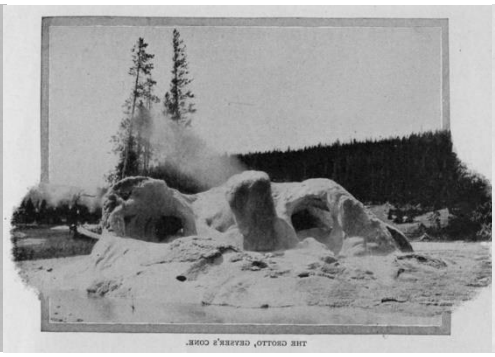
The political mischief of October 1 through 16 of 2013 caused a shutdown of most routine federal activities including the national parks. Mount Vernon and Monticello, being independent trusts, remained open. (Nearby parking lots on federal land were closed by federal law enforcement.)

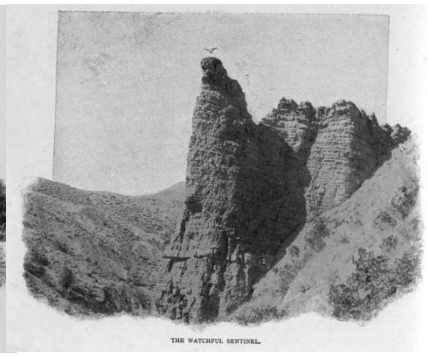
These events indicate some of the dangers inherent to government ownership, management, and control. There will surely be no rapid and radical change in the national parks. However, as the logic of our costly political capitalism plays out, I predict increasing experimentation with fiduciary trusts to manage our parks. They provide one way to protect the values justifying their creation.

1

John L. Stoddard's Yellowstone

On certain portions of our globe Almighty God has set a special imprint of divinity. The Alps, the Pyrenees, the Mexican volcanoes, the solemn grandeur of Norwegian fjords, the sacred Mountain of Japan, and the sublimity of India's Himalayas—at different epochs in a life of travel — have filled my soul with awe and admiration. But now there ranks with these forever-more in my remembrance the country of the Yellow-stone. Two thirds across this continent, hidden away in the heart of the Rocky Mountains, eight thousand feet above the level of the sea, there lies a marvelous section' of our earth, about one-half as large as the State of Connecticut. On three sides this is guarded by lofty, well-nigh inaccessible





mountains, as though the Infinite Himself would not allow mankind to rashly enter its sublime enclosure.

In this respect our Government has wisely imitated the Creator. It has proclaimed to all the world the sanctity of this peculiar area. It has received it as a gift from God and, as His trustee, holds it for the welfare of humanity. We, then, as citizens of the United States, are its possessors and its guardians. It is our National Park. Yet, although easy of access, most of us let the years go by without exploring it! How little we realize what a treasure we possess is proven by the fact that, until recently, the majority of tourists here were foreigners ! I thought my previous store of memories was rich, but to have added to it the recollections of the Yellowstone will give a greater happiness to life while life shall last. Day after day, yes, hour after hour, within the girdle of its snow-capped peaks I looked upon a constant series of stupendous sights — a blending of the beautiful and terrible, the strange and the sublime—which were, moreover, so peculiar that they stand out distinct and different from those of every other portion of our earth.

To call our National Park the "Switzerland of America" would be absurd. It is not Switzerland ; it is not Iceland; it is not Norway; it is unique; and the unique cannot be coin-pared. If I were asked to describe it in a dozen lines, I should call it the arena of an enormous amphitheatre. It's architect was Nature ; the gladiators that contended in it were volcanoes. During unnumbered ages those gladiators struggled to surpass one another in destruction by pouring forth great floods of molten lava. Even now the force which animated them still shows itself in other forms, but harmlessly, much as a captive serpent hisses though its fangs are drawn. But the volcanoes give no sign of life. They are dead actors in a fearful tragedy performed here countless centuries before the advent of mankind, with this entire region for a stage, and for their only audience the sun and stars.

I shall never forget our entrance into this theatre of sub-lime phenomena. The Pullman car, in which we had taken our places at St. Paul, had carried us in safety more than a thousand miles and had left us at the gateway of the park. Before us was a portion of the road, eight miles in length, which leads the tourist to the Mammoth Springs Hotel. On one side an impetuous river shouted a welcome as we rode along. Above us rose gray, desolate cliffs. They are volcanic in their origin. The brand of fire is on them all. They are symbolic, therefore, of the entire park; for fire and water are the two great forces here which have, for ages, struggled for supremacy.

No human being dwells upon those dreary crags, but at one point, as I looked up at them, I saw — poised statue-like above a mighty pinnacle of rock — a solitary

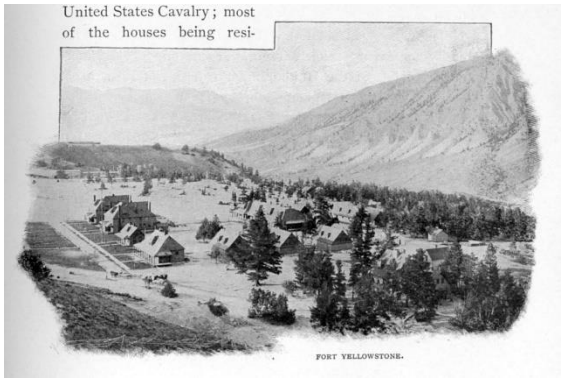
eagle. Pausing, with outstretched wings above its nest, it seemed to look disdainfully upon us human pygmies crawling far below. Living at such a height, in voluntary isolation, that king of birds appeared the very embodiment of strength and majesty. Call it a touch of superstition, if you will, yet I confess it thrilled me to the heart to find that here, above the very entrance to the Wonderland of our Republic, there should be stationed midway between earth and heaven, like a watchful sentinel our national bird, — the bird of freedom!

2

Musings at Mammoth Hot Springs

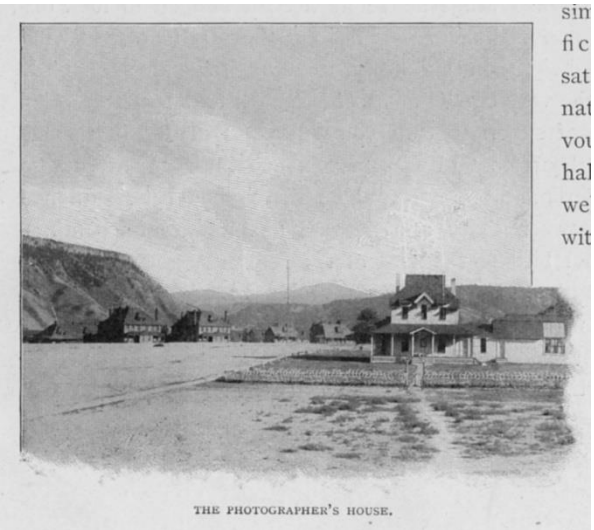
At length a sudden turn revealed to us our first halt-ing-place within the Park, — the Mammoth Springs Hotel. The structure in itself looked mammoth as we approached it, for its portico exceeds four hundred feet in length. Our first impressions were agreeable. Porters rushed forth and helped us to alight, and on the broad piazza the manager received us cordially. Every-thing had the air of an established summer resort. This, I confess, surprised me greatly, as I had expected primitive accommodations, and supposed that, though the days of camping-out had largely passed away, the resting-places in the Park were still so crude that one would be glad to leave them. But I lingered here with pleasure long after all the wonders of the Park had been beheld. The furniture, though simple, is sufficient; to satisfy our national nervousness, the halls are so well - stocked with rocking-chairs that European visitors look about them with alarm, and try to find some seats that promise a more stable equilibrium ; the sleeping-rooms are scrupulously clean soft blankets, snow-white sheets, and comfortable beds assure a good night's rest ; and the staff of colored waiters in the dining-room, steam-heat, a bell-boy service, and electric lights made us forget our distance from . great cities and the haunts of men. Moreover, what is true of this is true, as well, of the other hotels within the Park ; and when I add that well-cooked food is served in all of them, it will be seen that tourists need not fear a lengthy sojourn in these hostelries.

THE MAMMOTH SPRINGS HOTEL.



United States Cavalry ; most of the houses being resi-

FORT YELLOWSTONE.



THE PHOTOGRAPHER'S HOUSE.

HALL OF THE MAMMOTH SPRINGS HOTEL.

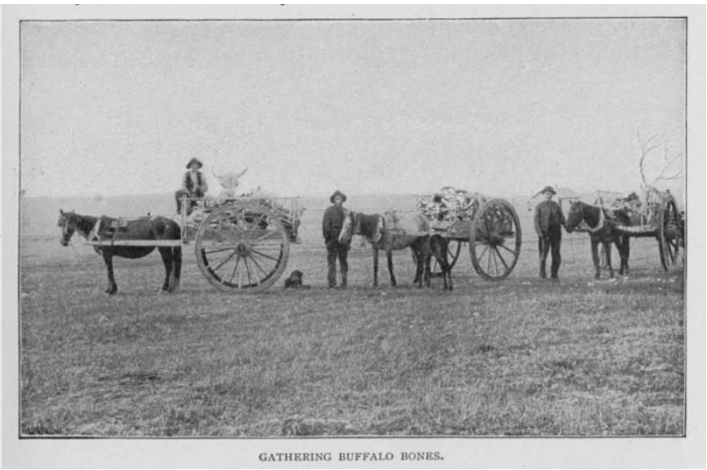
Standing on the veranda of the Mammoth Hot Springs Hotel, I saw between me and the range of mountains opposite a broad plateau, on which were grouped a dozen neat and tasteful structures. With the exception of the photographer's house in the foreground, these constitute Fort Yellowstone. "A fort !" the visitor exclaims, "impossible! These buildings are of wood, not stone. Where are its turrets, battlements, and guns? " Nevertheless, this is a station for two companies of United States Cavalry; most of the houses being residences for the officers, while in the rear are barracks for the soldiers.

No one who has visited the National Park ever doubts the necessity of having soldiers there. Thus, one of the most important duties of the United States troops, stationed within its area, is to save its splendid forests from destruction. To do this calls for constant vigilance. A fire started in the resinous pines, which cover many of the mountain sides, leaps for-ward with such fury that it would overtake a horseman fleeing for his life. To guard against so serious a calamity, soldiers patrol the Park continually to see that all the camp-fires have been extinguished. Thanks to their watchful care, only one notable conflagration has occurred here in the last eight years, and that the soldiers fought with energy for twenty days, till the last vestige of it was subdued.

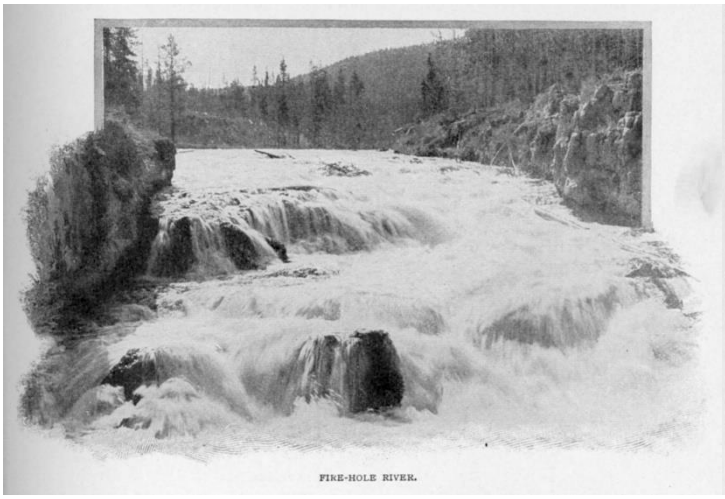
The tourist comprehends the great importance of this work when he beholds the rivers of the Park threading, like avenues of silver, the sombre frame-work of the trees, and recollects that just such forests as adjoin these streams cover no less than eighty-four per cent. of its entire area. In a treeless country like Wyoming these forests are of priceless value, because of their utility in holding back, in spring, the melting snow. Some of the largest rivers of our continent are fed from the well-timbered area of the Yellowstone ; and if the trees were destroyed, the enormous

snowfall in the Park, unsheltered from the sun, would melt so rapidly that the swollen torrents would quickly wash away roads, bridges, and productive farms, even, far out in the adjacent country, and, subsequently, cause a serious drought for many months.

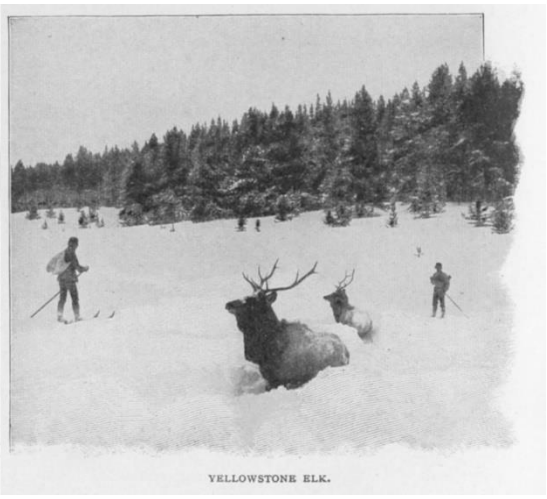
A FOREST IN THE PARK.



GATHERING BUFFALO BONES.



FIRE-HOLE RIVER.

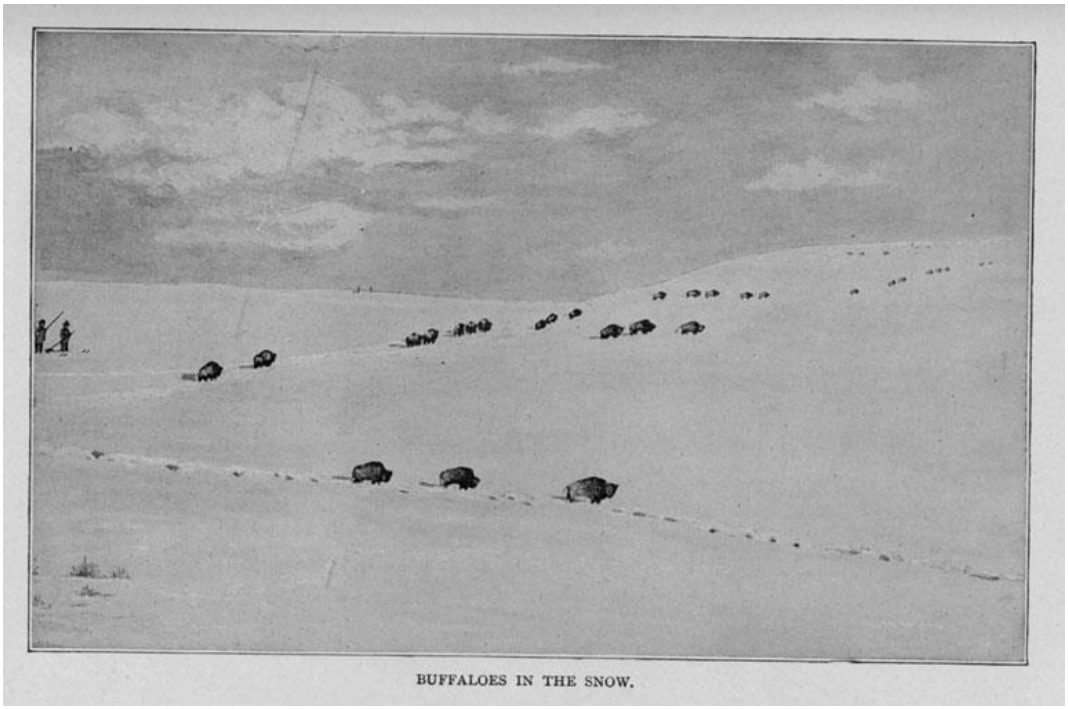


YELLOWSTONE ELK.

Another very important labor of the United States soldiers here is to preserve the game within the Park. It is the purpose of our Government to make this area a place of refuge for those animals which man's insatiate greed has now almost destroyed. The remoteness of this lofty region, together with its mountain fastnesses, deep forests, and sequestered glens, makes it an almost perfect game-preserve. There are at present thirty thousand elk within the Park; its deer and antelopes are steadily increasing; and bears, foxes, and small game roam unmolested here. Buffaloes, however, are still few in number. They have become too valuable. A buffalo head,

which formerly could be bought for a mere trifle, commands, to-day, a price of five hundred dollars. Hence, daring poachers sometimes run the risk of entering the Park in winter and destroying them.

It is sad to reflect how the buffaloes of this continent have been almost exterminated. As late as thirty years ago, trains often had to halt upon the prairies; and even steamboats were, occasionally, obliged to wait an hour or two in the Missouri River until enormous herds of buffalo had crossed their path. Now only about two hundred of these animals are in existence, — the sole survivors of the millions that once thundered over the western plains, and disputed with the Indians the owner-ship of this great continent.



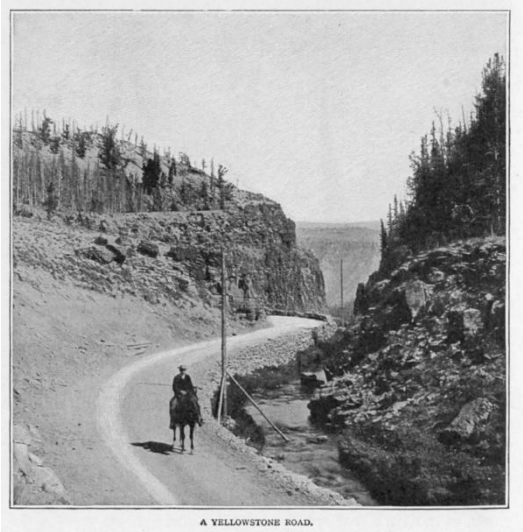
BUFFALOES IN THE SNOW.

Until very recently, travelers on our prairies frequently be-held the melancholy sight of laborers gathering up the buffalo bones which lay upon the plains, like wreckage floating on the sea. Hundreds of carloads of these skeletons were shipped to factories in the east. Now, to protect the few remaining buffaloes, as well as other animals, our troops patrol the Park even in winter. The principal stations are connected by tele-phone, and information given thus is promptly acted on. No traveler is allowed to carry fire-arms ; and any one who attempts to destroy animal life is liable to a fine of one thousand dollars, or imprisonment for two years, or both.

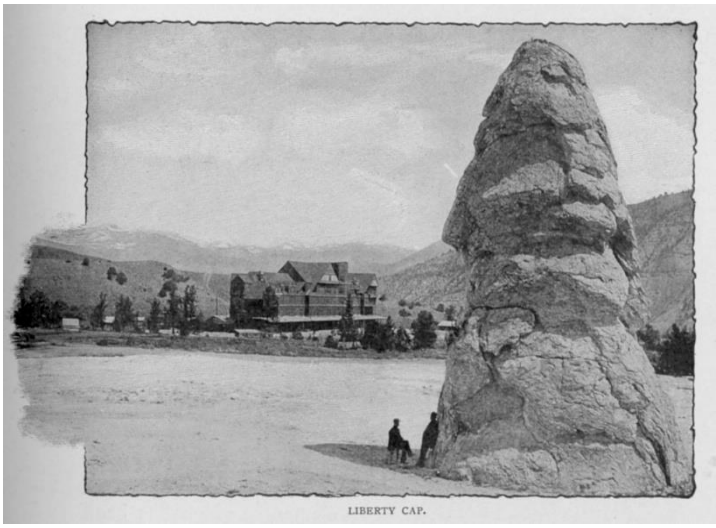
Still another task, devolving upon the Military Governor of the Park, is the building and repairing of its roads. No doubt the Superintendent is doing all he can with the amount of money that the Government allows him ; but there is room for

great improvement in these thoroughfares, if Congress will but make a suitable appropriation for the purpose. At present, a part of the coaching-route is of necessity traveled over twice. This should be obviated by constructing one more road, by which the tourist could be brought to several interesting features of the Park that are now rarely seen.

Every one knows how roads in Europe climb the steepest grades in easy curves, and are usually as smooth as a marble table, free from obstacles, and carefully walled-in by parapets of stone. Why should not we possess such roads, especially in cur National Park? Dust is at present a great drawback to the traveler's pleasure here; but this could be prevented if the roads were thoroughly macadamized. Surely, the honor of our Government demands that this unique museum of marvels should be the pride and glory of the nation, with highways equal to any in the world.



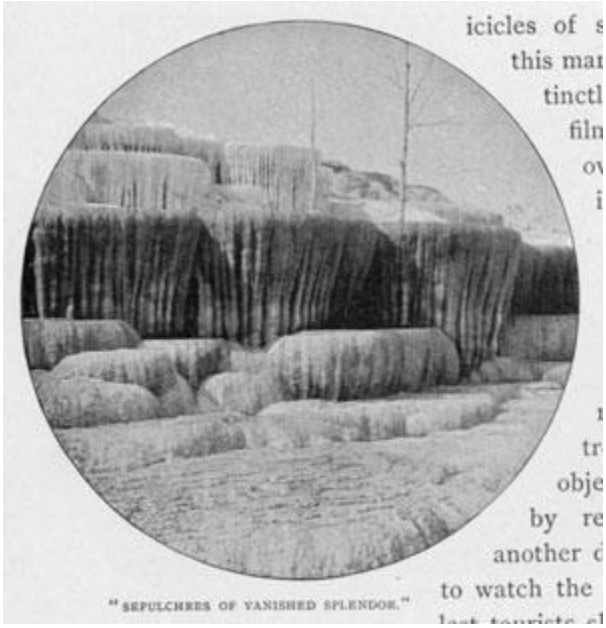
A YELLOWSTONE ROAD.



LIBERTY CAP.

Only a few hundred feet distant from the Mammoth Springs Hotel stands a strange, naturally molded shaft of stone, fifty-two feet in height. From certain points its summit calls to mind the head-dress of the Revolution, and hence its name is Liberty Cap. It is a fitting monument to mark the entrance into Wonderland, for it is the cone of an old geyser long since dead. Within it is a tube of unknown depth. Through that, ages since, was hurled at intervals a stream of boiling water, precisely as it comes from active geysers in the Park to-day. But now the hand of Time has stilled its passionate pulsations, and laid upon its stony lips the seal of silence. At only a little distance from this eloquent reminder of the past I peered into a cavern hundreds of feet deep. It was once the reservoir of a geyser. An atmosphere of

sulphur haunts it still. No doubt this whole plateau is but the cover of extinguished fires, for other similar caves pierce the locality on which the hotel stands. A feeling of solemnity stole over me as I surveyed these dead or dying agents of volcanic power. In the great battle of the elements, which has been going on here for unnumbered centuries, they doubtless took an active part. But Time has given them a mortal wound; and now they are waiting patiently until their younger comrades, farther up the Park, shall, one by one, like them grow cold and motionless.


"SEPULCHRES OF VANISHED SPLENDOR."

Not more than fifty feet from Liberty Cap rise the famous Hot Spring Terraces. They constitute a veritable mountain, covering at least two hundred acres, the whole of which has been, for centuries, growing slowly through the agency of hot water issuing from the boiling springs. This, as it cools, leaves a mineral deposit, spread out in delicate, thin layers by the soft ripples of the heated flood. Strange, is it not? Everywhere else the flow of water wears away the substance that it touches; but here, by its peculiar sediment, it builds as surely as the coral insect. Moreover, the coloring of these terraces is, if possible, even more marvelous than their creation; for, as the mineral water pulsates over them, it forms a great variety of brilliant hues. Hot water, therefore, is to this material what blood is to the body. With it the features glow with warmth and color; without it they are cold and ghostlike. Accordingly, where water ripples over these gigantic steps, towering one above another toward the sky, they look like beautiful cascades of color; and when the liquid has deserted them, they stand out like a staircase of Carrara marble. Hence, through the changing centuries, they pass in slow succession, from light to shade, from brilliancy to pallor, and from life to death. This mineral water is not only a mysterious architect; it is, also, an artist that no man can equal. Its magic touch has intermingled the finest shades of orange, yellow, purple, red, and brown; some-times in solid masses, at other places diversified by slender threads, like skeins of multicolored silk. Yet in producing all these wonderful effects, there is no violence, no uproar. The boiling water passes over the mounds it has produced with the low murmur of a sweet cascade. Its tiny wavelets touch the stone work like a sculptor's fingers, molding the yielding mass into exquisitely graceful forms.

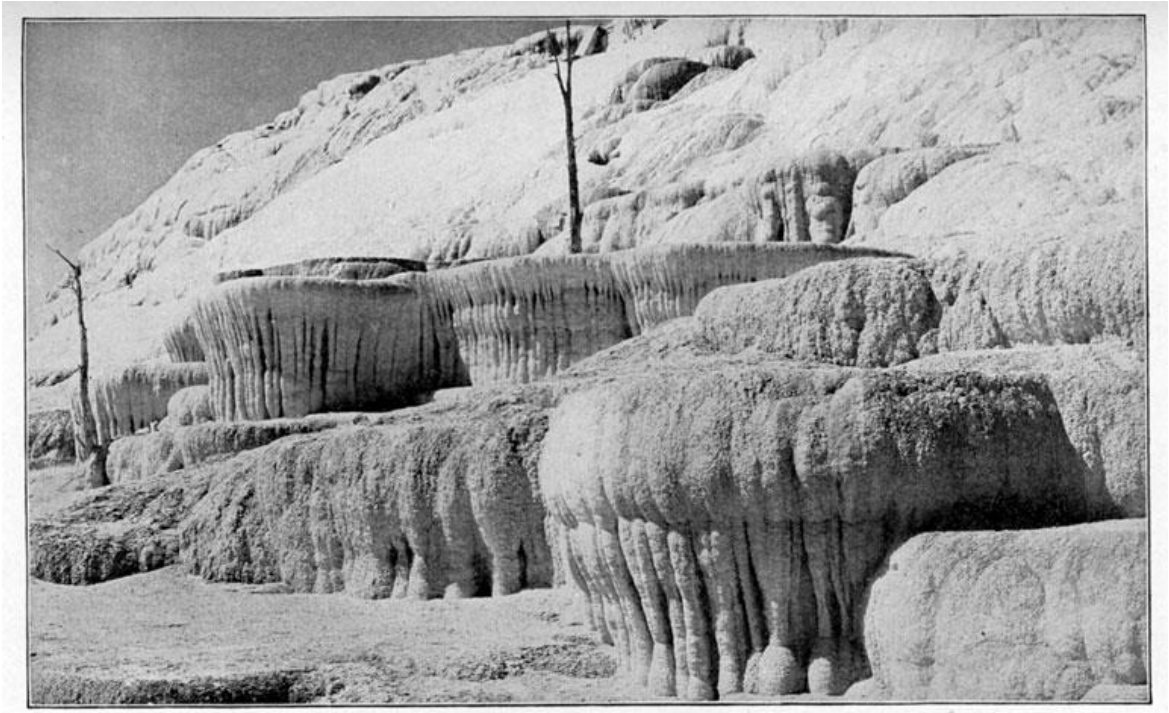
The top of each of these colored steps is a pool of boiling water. Each of these tiny lakes is radiant with lovely hues, and is bordered by a colored coping,

resembling a curb of jasper or of porphyry. Yet the thinnest knife-blade can be placed here on the dividing line between vitality and death. The contrast is as sudden and complete as that between the desert and the valley of the Nile. Where Egypt's river ends its overflow the desert sands begin ; and on these terraces it is the same. Where the life-giving water fails, the golden colors become ashen. This terraced mountain, therefore, seemed to me like a colossal checker-board, upon whose colored squares, the two great forces, Life and Death, were play-ing their eternal game. There is a pathos in this evanescent beauty. What lies about us in one place so gray and ghostly was once as bright and beautiful as that which we perceive a hundred feet away. But nothing here retains supremacy. The glory of this century will be the gravestone of the next. Around our feet are sepulchres of vanished splendor. It seems as if the architect were constantly dissatisfied. No sooner has he finished one magnificent structure than he impatiently begins another, leaving the first to crumble and decay. Each new production seems to him the finest; but never reaching his ideal, he speedily abandons it to perish from neglect.

MAN AND NATURE.

It cannot be said of these terraces that " distance lends enchantment to the view." The nearer you come to them the more beautiful they appear. They even bear the inspection of a magnifying glass, for they are covered with a bead-like ornamentation worthy of the goldsmith's art. In one place, for example, rise pulpits finer than those of Pisa or Siena. Their edges seem to be of purest jasper. They are upheld by taper-ing shafts resembling richly decorated organ-pipes. From parapets of porphyry hang gold stalactites, side by side with icicles of silver. Moreover, all this marvelous fretwork is distinctly visible, for the light film of water pulsates over it so delicately that it can no more hide the filigree beneath than a thin veil conceals a face. It is a melancholy fact that were it not for United States troops, these beautiful objects would be mutilated by relic- hunters. Hence, another duty of our soldiers is to watch the formations constantly, lest tourists should break off specimens, and ruin them forever, and lest still more ignoble vandals, whose fingers itch for notoriety, should write upon these glorious works of nature their worthless names, and those of the towns unfortunate enough to have produced them. All possible measures are taken to prevent this vandalism. Thus, every tourist entering the Park must register his

name. Most travelers do so, as a matter of course, at the hotels, but even the arrivals of those who come here to camp must be duly recorded at the Superintendent's office. If a soldier sees a name, or even initials, written on the stone, he telephones the fact to the Military Governor. At once the lists are scanned for such a name. If found, the Superintendent wires an order to have the man arrested, and so careful is the search for all defacers, that the offending party is, usually, found before he leaves the Park. Then the Superintendent, like the Mikado, makes the punishment fit the crime. A scrubbing brush and laundry soap are given to the desecrator, and he is made to go back, per-haps forty miles or more, and with his own hands wash away the proofs of his disgraceful vanity. Not long ago a young man was arrested at six o'clock in the morn-ing, made to leave his bed, and march without his breakfast several miles, to prove that he could be as skillful with a brush as with a pencil.

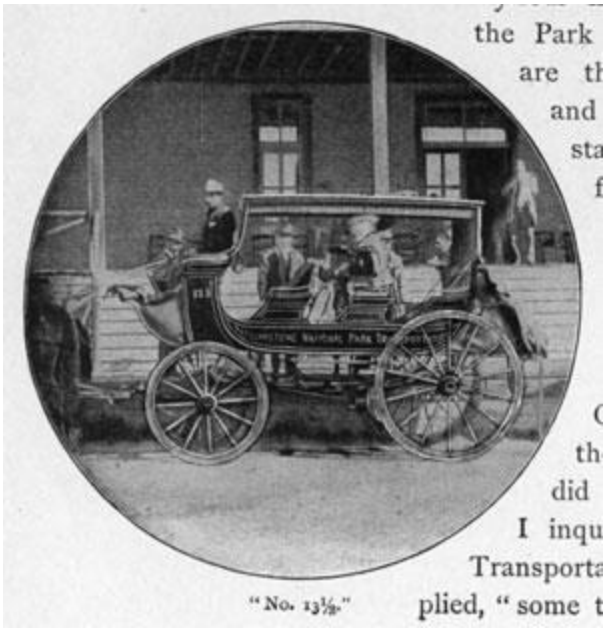


THE PULPIT TERRACE.

3

To the Park's Interior

A COACHING-PARTY.



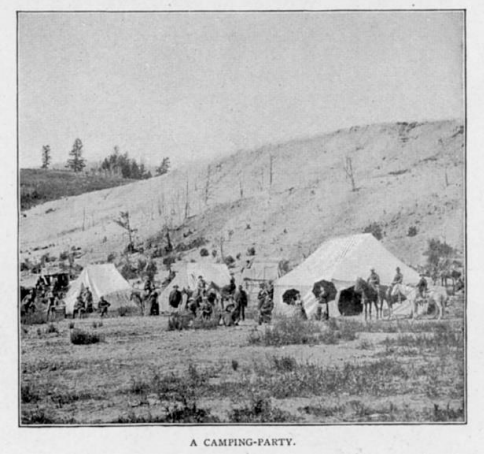
"No. 13½."

After spending several days at the Mammoth Hot Springs, we started out to explore the greater marvels that awaited us in the interior. The mode of travel through the Park is a succession of coaching-parties over a distance of one hundred and eighty miles. The larger vehicles are drawn by six, the smaller ones by four, strong horses, well fed, well groomed, high spirited, yet safe. This feature of our National Park astonished me. I had formed no idea of its perfection or its magnitude. Here, for example, are vehicles enough to accommodate seven hundred tourists

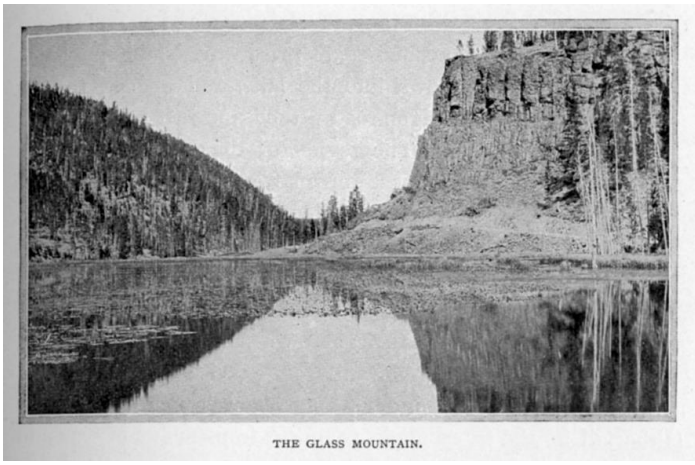
for a continuous journey of five days! Here, too, are five hundred horses, all of which can be harnessed at twenty-four hours' notice ; and, since the Park is so remote, here also are the company's blacksmith and repair shops. Within the stables, also, are the beautifully varnished coaches, varying in cost from one to two thousand dollars, and made in Concord, New Hampshire, twenty-five hundred miles away. On one of these I read the number, " I31." "Why did you add the fraction? "I inquired of the Manager of Transportation. " Because," he re-plied, "some travelers would not take a number thirteen coach. They feared a breakdown or a tumble into the river; so I put on the half to take ill-luck away." I dwell at length upon these practical details, because I have found that people, in general, do not know them. Most Americans have little idea whether the driving distance in the Park is ten miles, or a hundred. Especially are they ignorant of the fact that they may leave the coaches at any point, remain at a hotel as long as they desire, and then resume their journey in other vehicles, without the least additional expense for transportation, precisely as one uses a stop-over ticket on a railroad.

The fact that it is possible to go through the Park in four or five days is not a reason why it is best to do so. Hundreds of tourists make the trip three times as rapidly as they would were they aware that they could remain comfortably for months. When this is better known, people will travel here more leisurely. Even now, parents with little children some-times leave them at the Mammoth Springs Hotel in charge of nurses, and receive messages by telephone every day to inform them how they are. An important consideration, also, for invalids is the fact that two skilled surgeons, attendant on the army, are always easily accessible. Moreover, the climate of the Park in summer is delightful. It is true, the sun beats down at noonday fiercely, the thin air offering scant resistance to its rays, but in the shade one feels no heat at all. Light overcoats are needed when the sun goes down. There is scarcely a night here, through the year, which passes without frost. To me the pure dry air of that great height was more invigorating than any I had ever breathed, save, possibly, that of Norway, and it is, probably, the tonic of the atmosphere that renders even the invalid and aged able to support long journeys in the Park without exhaustion. In all these years no tourist has been made ill here by fatigue.

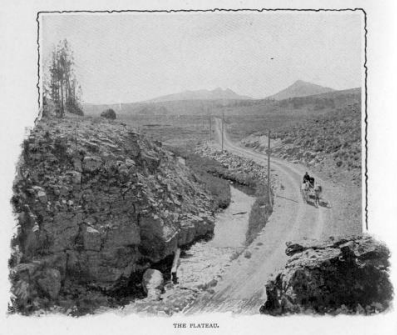
A few miles after leaving the Hot Springs, we reached the entrance to a picturesque ravine, the tawny color of whose rocks has given it the name of Golden Gate. This is, alike, the entrance to, and exit from, the inner sanctuary of this land of marvels. Accordingly a solitary boulder, detached from its companions on the cliff, seems to be stationed at this portal like a sentinel to watch all tourists who come and go. At all events it echoes to the voices of those who enter almost as eager as seekers after gold; and, a week later, sees them return, browned by the sun, invigorated by the air, and joyful in the acquisition of incomparable memories.



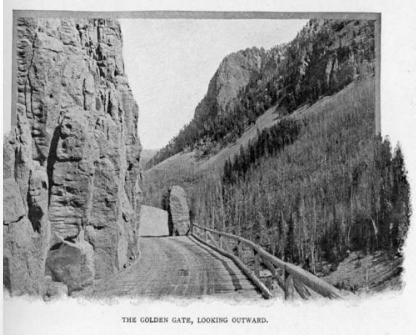
A CAMPING-PARTY.



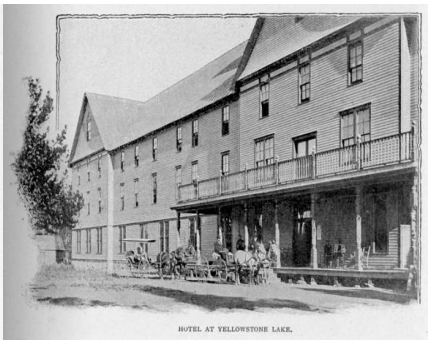
THE GLASS MOUNTAIN.



THE PLATEAU.



THE GOLDEN GATE, LOOKING OUTWARD.



HOTEL AT YELLOWSTONE LAKE.

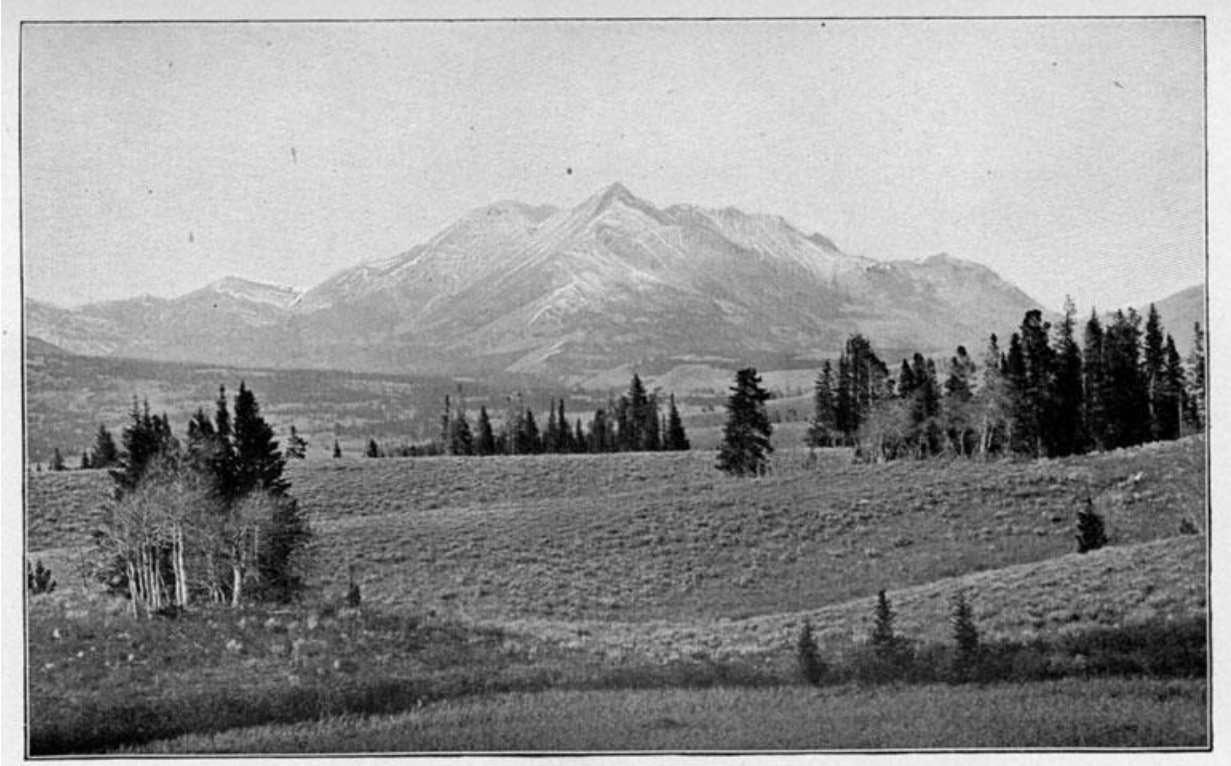
Emerging from this Golden Gate, I looked about me with surprise, as the narrow walls of the ravine gave place to a plateau surrounded everywhere by snow-capped mountains, from which the Indians believed one could obtain a view of Paradise. Across this area, like a railroad traversing a prairie, stretched the driveway for our carriages.

"Do tourists usually seem delighted with the park ?" I asked our driver.

"Invariably,". he replied. "Of course I cannot understand the words of the foreigners, but their excited exclamations show their great enthusiasm. I like the tourists," he continued, " they are so grateful for any little favor ! One of them said to me the other day, Is the water here good to drink ? " Not always,' I replied, 'you must be careful.' At once he pressed my hand, pulled out a flask, and said, I thank you "

While crossing the plateau we enjoyed an admirable view of the loftiest of the mountains which form, around the Park, a rampart of protection. Its sharply pointed summit pierces the transparent air more than eleven thousand feet above the sea, and it is well named Electric Peak, since it appears to be a storage battery for all of the

Rocky Mountains. Such are the mineral deposits on its sides, that the best instruments of engineers are thrown into confusion, and rendered useless, while the lightning on this favorite home of electricity is said to be unparalleled.



ELECTRIC PEAK.

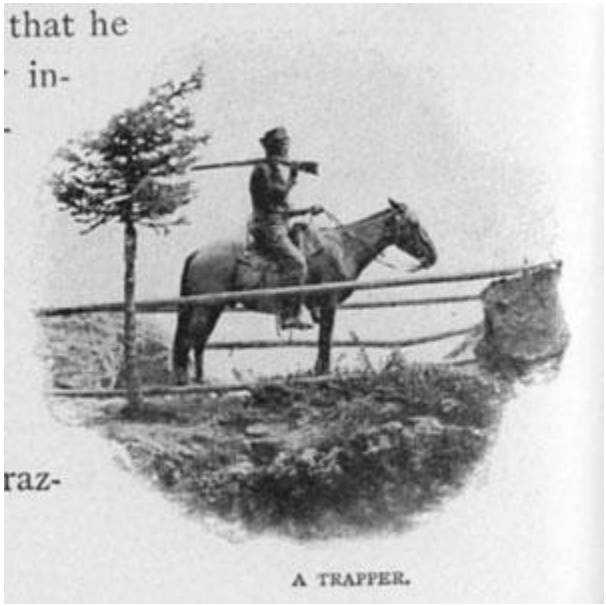
Presently a turn in the road revealed to us a dark-hued mountain rising almost perpendicularly from a lake. Marvelous to relate, the material of which this mountain is composed is jet-black glass, produced by volcanic fires. The very road on which we drove between this and the lake also consists of glass too hard to break beneath the wheels. The first explorers found this obsidian cliff almost impassable; but when they ascertained of what it was composed, they piled up timber at its base, and set it on fire. When the glass was hot, they dashed upon the heated mass cold water, which broke it into fragments. Then with huge levers, picks, and shovels, they pushed and pried the shining pieces down into the lake, and opened thus a wagon-road a thousand feet in length.

AN INDIAN CHIEF.

The region of the Yellowstone was to most Indian tribes a place of horror. They trembled at the awful sights they here beheld. But the obsidian cliff was precious to them all. Its substance was as hard as flint, and hence well suited for their arrow-heads. This mountain of volcanic glass was, therefore, the great Indian armory; and as such it was neutral ground. Hither all hostile tribes might come for implements of war and then depart unharmed. While they were here a sacred, inter-tribal oath protected them. An hour later, those very warriors might meet in deadly combat, and turn against each other's breasts the weapons taken from that laboratory of an unknown power.

Can we wonder that, in former times, when all this region was still unexplored, and its majestic streams rolled nameless through a trackless wilderness, the statements of the few brave men who ventured into this enclosure were disbelieved by all who heard. them? One old trapper became so angry when his stories of the place were doubted, that he deliberately revenged himself by in-venting tales of which Munchhausen would have been proud. Thus, he declared, that one day when he was hunting here he saw a bear. He fired at it, but without result. The animal did not even notice him. He fired again, yet the big bear kept on grazing. The hunter in astonishment then ran forward, but suddenly dashed against a solid mountain made of glass. Through that, he said, he had been looking at the animal. Unspeakably amazed, he finally walked around the mountain, and was just taking aim again, when he discovered that the glass had acted like a telescope, and that the bear was twenty-five miles away!

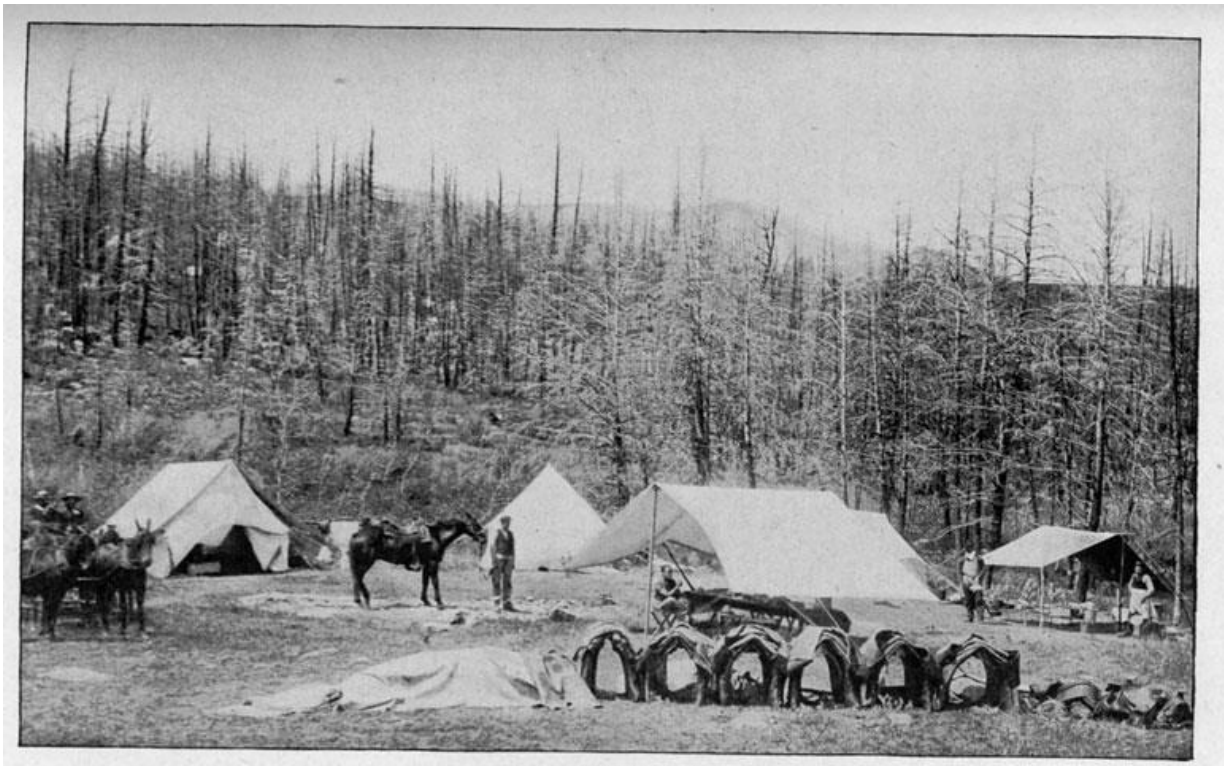
Not far from the volcanic cliff which gave the trapper inspiration for his story, we reached one of the most famous basins of the Park. In briefest terms, these basins are the spots in the arena where the crust is thinnest. They are the trap-doors in a volcanic stage through which the fiery actors in the tragedy of Nature, which is here enacted, come upon the scene. Literally, they are the vents through which the steam and boiling water can escape. In doing so, however, the water, as at the Mammoth Springs, leaves a sediment of pure white lime or silica. Hence, from a



A TRAPPER.

distance, these basins look like desolate expanses of white sand. Beside them always flows a river which carries off the boiling water to the outer world.

No illustration can do justice to what is called the Norris Basin, but it is horrible enough to test the strongest nerves. Having full confidence in our guide (the Park photographer) we ventured with him, outside the usual track of tourists, and went where all the money of the Rothschilds would not have tempted us to go alone. The crust beneath our feet was hot, and often quivered as we walked. A single misstep to the right or left would have been followed by appalling con-sequences. Thus, a careless soldier, only a few days before, had broken through, and was then lying in the hospital with both legs badly scalded. Around us were a hundred vats of water, boiling furiously; the air was heavy with the fumes of sulphur; and the whole expanse was seamed with cracks and honeycombed with holes from which a noxious vapor crept out to pollute the air. I thought of Dante's walk through hell, and called to mind the burning lake, which he describes, from which the wretched sufferers vainly sought to free themselves.



A CAMPING-STATION.

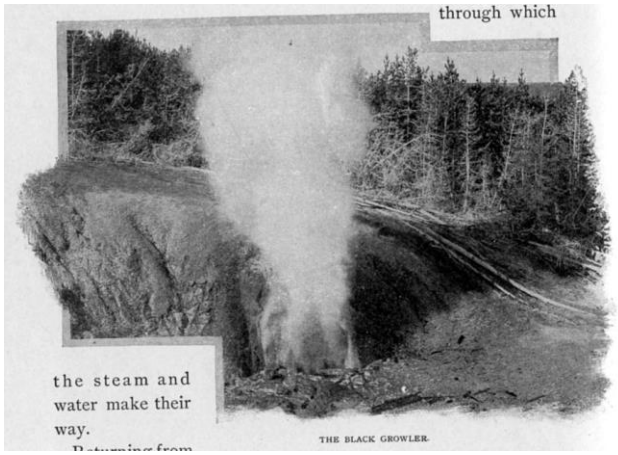
Leaving, at last, this roof of the infernal regions, just as we again stood apparently on solid ground, a fierce explosion close beside us caused us to start and run for twenty feet. Our guide laughed heartily. "Come back," he said, "don't be afraid. It is only a baby geyser, five years old." In fact, in 1891, a sudden outburst of

volcanic fury made an opening here, through which, at intervals of thirty minutes, day and night, hot water now leaps forth in wild confusion.

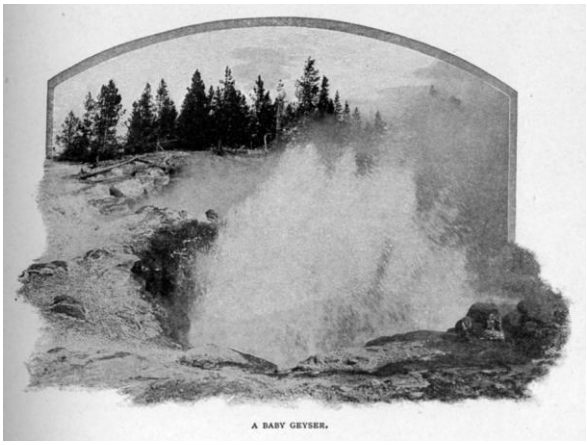
"This, then, is a geyser!" I exclaimed.

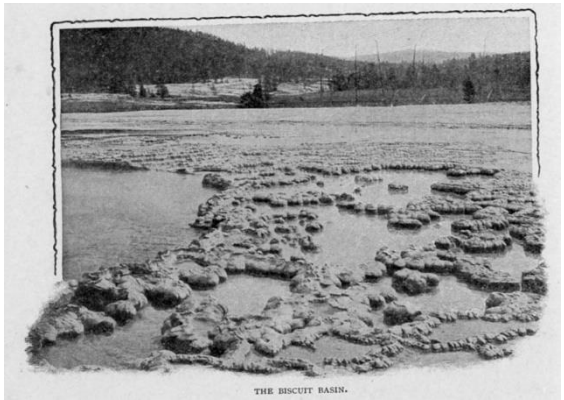
"Bah !" said the guide, contemptuously, "if you had seen the real geysers in the Upper Basin, you would not look at this."

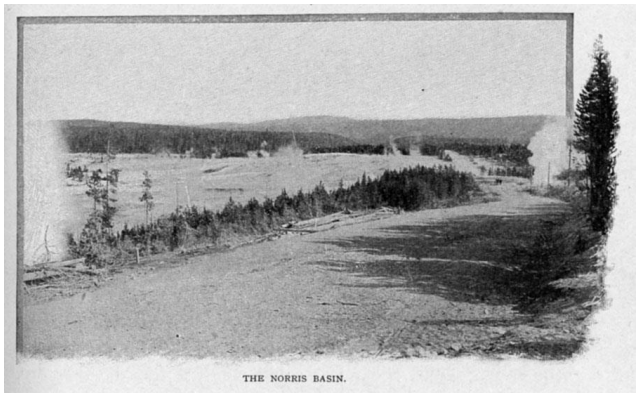
Meantime, for half an hour we had been hearing, more and more distinctly, a dull, persistent roar, like the escape of steam from a transatlantic liner. At last we reached the cause. It is a mass of steam which rushes from an opening in the ground, summer and winter, year by year, in one unbroken volume. The rock around it is as black as jet; hence it is called the Black Growler. Think of the awful power confined beneath the surface here, when this one angry voice can be distinctly heard four miles away. Choke up that aperture, and what a terrible convulsion would ensue, as the accumulated steam burst its prison walls ! It is a sight which makes one long to lift the cover from this monstrous caldron, learn the cause of its stupendous heat, and trace the complicated and mysterious aqueducts through which the steam and water make their way.



THE BLACK GROWLER.


A BABY GEYSER.


THE BISCUIT BASIN.


THE NORRIS BASIN.

Returning from the Black Growler, we halted at a lunch-station, the manager of which is Larry. All visitors to the Park remember Larry. He has a different welcome for each guest : "Good-day, Professor. Come in, my Lord. The top of the morn-ing to you, Doctor." These phrases flow as lightly from his tongue as water from a geyser. His station is a mere tent ; but he will say, with most amusing seriousness : " Gintlemen, walk one flight up and turn to the right. Ladies, come this way and take the elevator. Now thin, luncheon is ready. Each guest take one seat, and as much food as he can get."

LARRY.

"Where did you come from, Larry ?" I asked.

"From Brooklyn, Sor," was his reply, "but I'll niver go back there, for all my friends have been killed by the, trolley cars."

Larry is very democratic. The other day a guest, on sitting down to lunch, took too much room upon the bench. "Plaze move along, Sor," said Larry.

The stranger glared at him. "I am a Count," he remarked at last.

"Well, Sor," said Larry, "here you only count wun!"

"Hush!" exclaimed a member of the gentleman's suite, "that is Count Schouvaloff."

"I'll forgive him that," said Larry, "if he won't shuffle off this seat." Pointing to my companion, Larry asked me: "What is that gintleman's business?"

"He is a teacher of singing," I answered.

"Faith," said Larry, "I'd like to have him try my voice. There is something very strange about my vocal chords. Whenever I sing, the Black Growler stops. One tourist told me it was a case of professional jealousy, and said the Black Growler was envious of my forte tones. 'I have not forty tones,' I said, 'I've only one tone.' 'Well,' says he, 'make a note of it! ' "

Only once in his life has Larry been put to silence. Two years ago, a gentleman remarked to him: " Well, Larry, good-by; come and visit me next winter in the East.

In my house you shall have a nice room, and, if you are ill, shall enjoy a doctor's services free of all expense."

"Thank you," said Larry, "plaze give me your card."

The tourist handed it to him ; and Larry, with astonishment and horror, read beneath the gentleman's name these words : "Superintendent of the Insane Asylum, Utica, New York."

Some hours after leaving Larry's lunch-station, we reached another area of volcanic action. Our nerves were steadier now. The close proximity to Hades was less evident; yet here hot mineral water had spread broadcast innumerable little mounds of silica, which look so much like biscuits grouped in a colossal pan that this is called the Biscuit Basin ; but they are not the kind that " mother used to make." If a tourist asked for bread here, he would receive a stone; since all these so-called biscuits are as hard as flint. We walked upon their crusts with perfect safety; yet, in so doing, our boots grew warm beneath our feet, for the water in this miniature archipelago is heated to the boiling point.

4

Show me a Geyser!

"Show me a geyser!" I at last exclaimed impatiently, "I want to see a genuine geyser." Accordingly our guide con-ducted us to what he announced as "The Fountain." I looked around me with surprise. I saw no fountain, but merely a pool of boiling water, from which the light breeze bore away a thin, transparent cloud of steam. It is true, around this was a pavement as delicately fashioned as any piece of coral ever taken from the sea. Nevertheless, while I admired that, I could not understand why this comparatively tranquil pool was called a geyser, and frankly said I was disappointed. But, even as I spoke, I saw to my astonishment the boiling water in this reservoir sink and disappear from view.

"Where has it gone?" I eagerly inquired.

"Stand back!" shouted the guide, "she's coming."

I ran back a few steps, then turned and caught my breath; for at that very instant, up from the pool which I had just beheld so beautiful and tranquil, there rose in one great out-burst of sublimity such a stupendous mass of water as I had never imagined possible in a vertical form. I knew that it was boiling, and that a deluge of those scalding drops would probably mean death, but I was powerless to move. Amazement and delight enchained me spellbound. Talk of a fountain ! This was a cloud-burst of the rarest jewels which, till that moment, had been held in solution in a subterranean cavern, but which had suddenly crystallized into a million radiant forms on thus emerging into light and air. The sun was shining through the glittering mass; and myriads of diamonds, moonstones, pearls, and opals mingled in splendid rivalry two hundred feet above our heads.

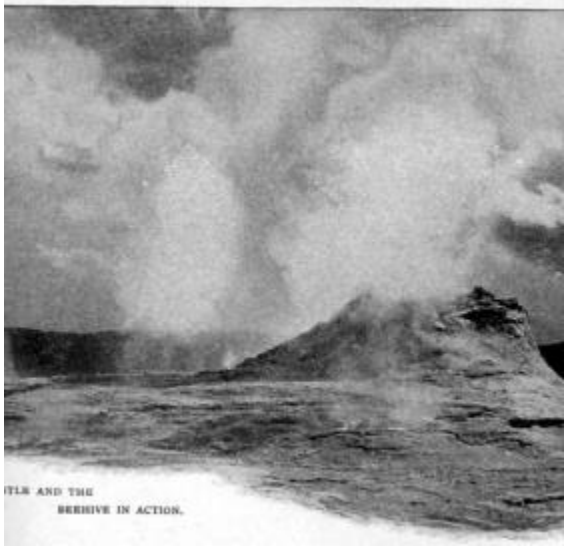
"A CLOUD-BURST OF JEWELS."

A GEYSER POOL.

THE OBLONG GEYSER.

THE CASTLE GEYSER.

ON "ITS FLINTY SIDES."



ITLE AND THE
BEEHIVE IN ACTION.

THE GIANT GEYSER.

We soon approached another of the many geysers in the basin. They are all different. Around one, a number of colored blocks, exquisitely decorated by the geyser's waves, appeared to have been placed artistically in an oblong frame. When I first beheld them, they looked like huge sea-monsters which, startled by our footsteps, were about to plunge into the depths.

What is there in the natural world so fascinating and mysterious as a geyser? What, for example, is the depth of its in-tensely-colored pool of boiling water ? No one can tell. One thing, however, is certain; the surface of the pool is but the summit of a liquid column. Its base is in a subterranean reservoir. Into that reservoir there flows a volume of cold water, furnished by the rain or snow, or by infiltration from some lake, or river. Meantime, the walls of the deep reservoir are heated by volcanic fire. Accordingly the water, in contact with these walls, soon begins to boil, and a great mass of steam collects above it. There must, of course, be some escape for this, and, finally, it makes its exit, hurling the boiling water to a height of one or two hundred feet, according to the force of the explosion. Imagine, then, the amount of water that even one such reservoir contains; for some of these volcanic fountains play for more than half an hour before their contents are discharged! Think, also, that in this basin there are no less than thirty geysers, seven-teen of which have been observed in action simultaneously.

Thus far we had seen merely geysers that arise from pools; but, presently, we approached one which in the course of ages has built up for itself a cone, or funnel, for its scalding waves.

"That," said our guide, "is the Castle Geyser."

"That rock a geyser!" I exclaimed incredulously, "it looks like an old ruin, without a single indication of activity; save, possibly, the little cloud of steam that hangs above it, as if it were the breath of some mysterious monster sleeping far below."

"If you doubt it," he replied, "go nearer and examine it."

THE EXCELSIOR, IN 1888.

We did so. I scrambled up its flinty sides, and found an opening in the summit three feet wide. I touched the rock. It was still warm and yet no water was discernible. No sound was audible within its depths.

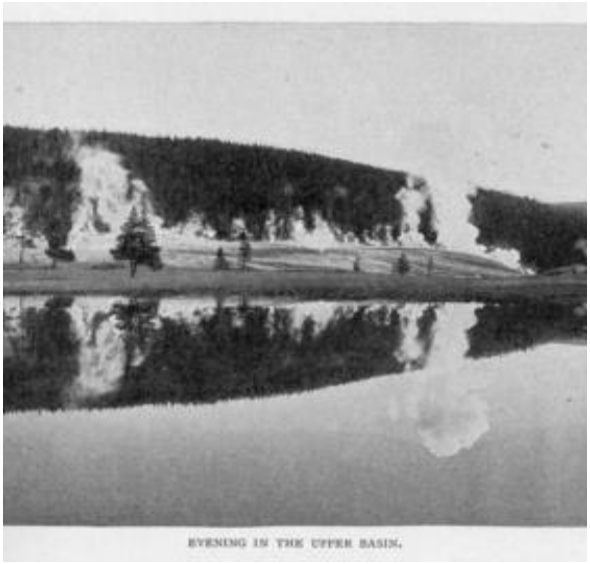
"If this be really a geyser," I remarked, "it is no doubt a lifeless one like Liberty Cap."

My comrade smiled, looked at his watch, then at his notebook, and finally replied: "Wait half an hour and see."

Accordingly, we lingered on the massive ledges of the Castle Geyser, and learned that it is the of all the active geyser cones within the Park. Once its eruptions were no doubt stupendous; but now its power is waning. The gradual closing up of its huge throat, and the increasing substitution of steam for water, prove that the monster has now entered on the final stage of its careerlargest, probably the oldest,; for here, as on the terraces, in the summit three scrambled up its flinty sides, and found an opening I touched the rock. It was still warm, and yet we are surrounded by specimens of life, decay, and death. The young, the middle-aged, the old, the dead, — they are all here!

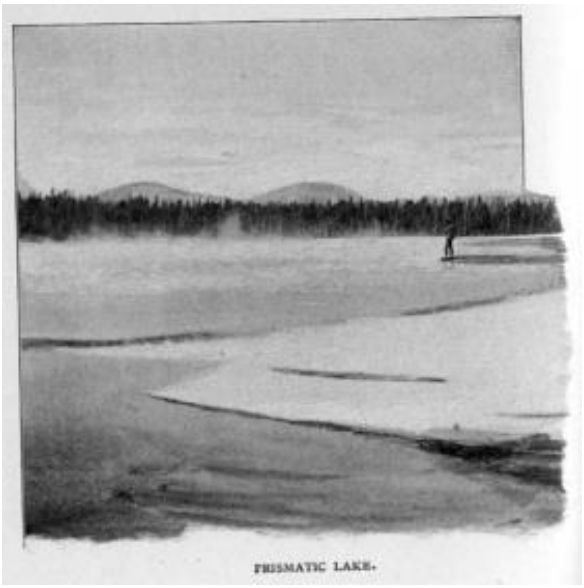
The fiery agitation of the pool and the impulsive spurts of water are indicative of youth. A steady, splendid outburst proves maturity. The feebler action of the Castle shows the waning powers of old age. Last of all comes the closed cone, like a sealed sarcophagus, and that is death.

HELL'S HALF ACRE.



EVENING IN THE UPPER BASIN.

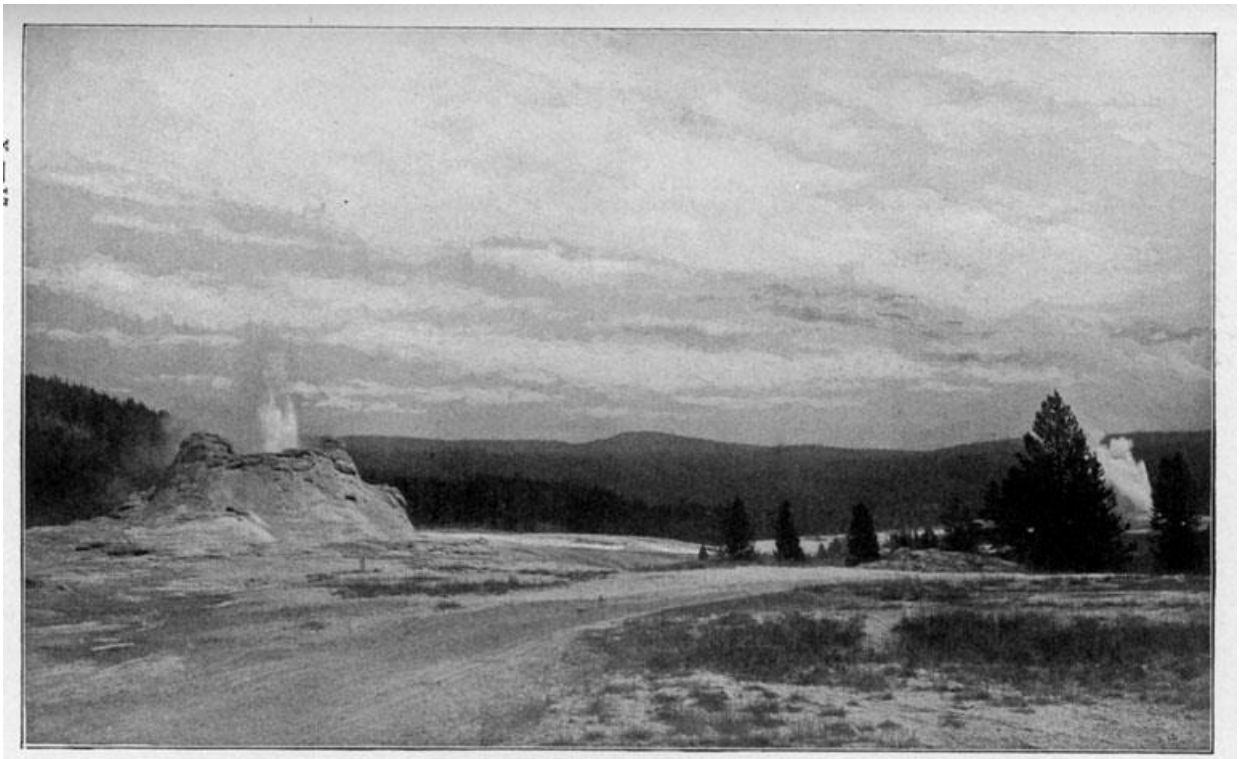
THE MORNING-GLORY POOL.



PRISMATIC LAKE.

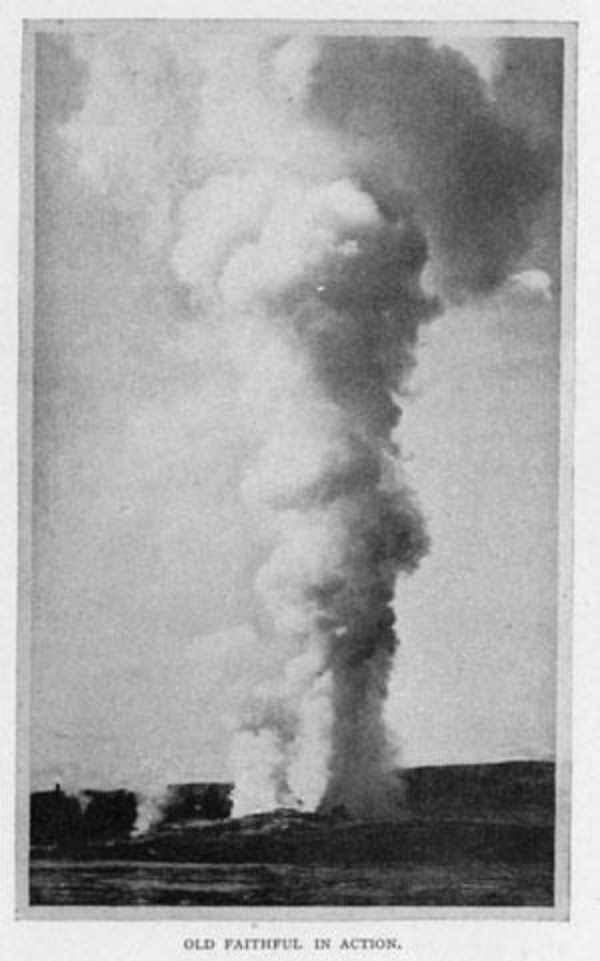
Meantime, the thirty minutes of expectancy had passed; and, suddenly, with a tremendous rush of steam, the Castle proved that its resources were by no means exhausted. At the same instant, half a mile away, the Beehive Geyser threw into the air a shaft of dazzling spray fully two hundred feet in height. I realized then, as never before, the noble action of our Government in giving this incomparable region to the people. If this had not been done, the selfishness and greed of man would have made a tour here almost unbearable. A fence would, doubtless, have been built around every geyser, and fees would have been charged to witness each wonderful phenomenon; whereas, to-day, thanks to the generosity of Congress, the Park itself, and everything that it contains, are absolutely free to all, rich and poor, native and foreigner, —forever consecrated to the education and delight of man.

But no enumeration of the geysers would be complete without a mention of the special favorite of tourists, Old Faithful. The opening through which this miracle of Nature springs is at the summit of a beautifully ornamented mound, which is itself a page in Nature's wonder-book.



CASTLE AND OLD FAITHFUL GEYSERS.

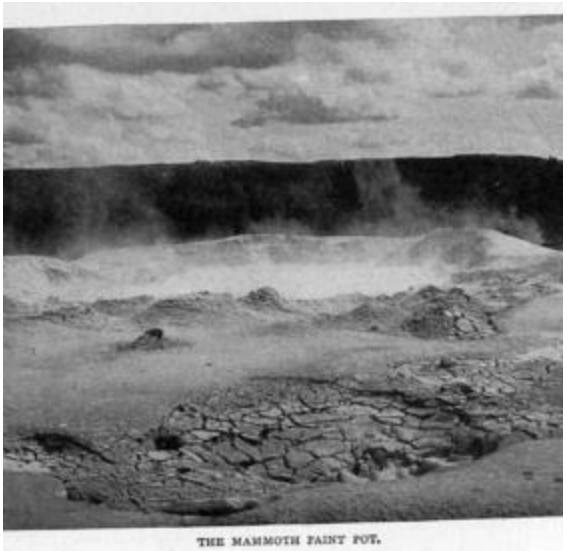
The lines upon its wrinkled face tell of a past whose secrets still remain a mystery. It hints of an antiquity so vast that one contemplate s it with bated breath; for this entire slope has been built up, atom after atom, through unnumbered ages ; during which time, no doubt, the geyser hour by hour has faithfully performed its part, without an eye to note its splendor, or a voice to tell its glory to the world. Old Faithful does not owe its popularity entirely to height or beauty, though it possesses both. It is beloved for its fidelity. Whatever irregularities other geysers show, Old Faithful never fails. Year in, year out, winter and summer, day and night, in cold and heat, in sunshine and in storm, Old Faithful every seventy minutes sends up its silvery cascade to the height of about Of all the geysers know'n to and perfect. Station yourself one hundred and eighty feet. man this is the most reliable before it watch in hand and, punctual to the moment, it will never disappoint you. Few realize on how large a scale the forces of Nature work here. At each eruption, Old Faithful pours forth about one million five hundred thousand gallons, or more than thirty-three million gallons in one day! This geyser alone, therefore, could easily supply with water a city of the size of Boston.



OLD FAITHFUL IN ACTION.

Within this area of the active geysers is a place called Hell's Half Acre. It is rightly named. Rough, perpendicular ledges project over a monstrous gulf of unknown depth, from which great clouds of steam are constantly emerging. When the wind draws back for a moment a portion of this sulphur-laden curtain, the visitor perceives a lake below, seething and boiling from internal heat. For years no one suspected this to be a geyser; but suddenly, in 1881, the underlying force hurled the entire lake up bodily to the height of two repeated the eruption exhibition ceased, and In 1888, however, it energy, ejecting at each hundred and fifty feet, and even frequently. After some months the all was calm again for seven years. once more burst forth with prodigious explosion more boiling water than all the other geysers in the Park combined. Even the surrounding ledges could not withstand this terrible upheaval, and tons of rock were sometimes thrown up, with the water, more than two hundred feet. It is not strange, therefore, that this is called Excelsior, the King of Geysers. It is the most tremendous, awe-inspiring fountain in the world. When it will be again aroused, no one can tell. Its interval would seem to be from seven to ten years. Said an enthusiastic traveler to me: "If the Excelsior ever plays again, I will gladly travel three thousand miles to see it."

THE EMERALD POOL.



THE MAMMOTH PAINT POT.

THE DEVIL'S PUNCH-BOWL.

"GROTESQUE IMAGES IN CLAY."

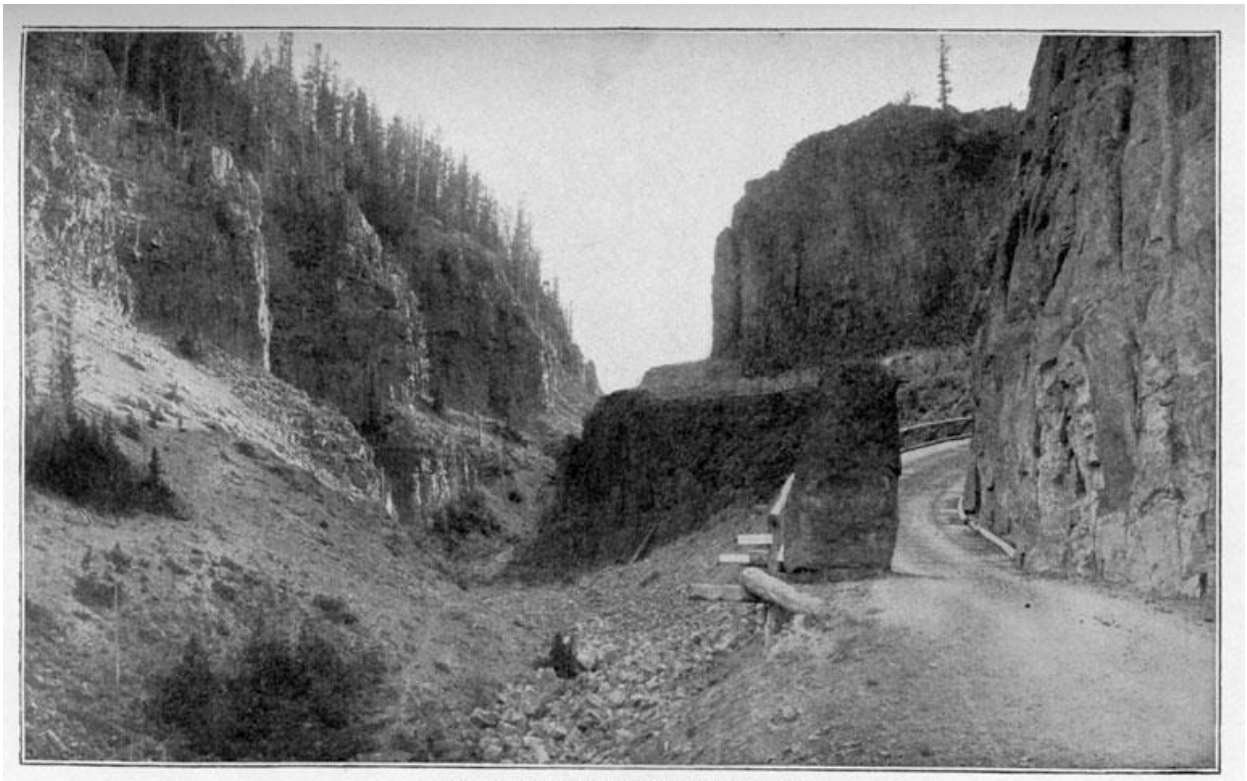
ON THE CONTINENTAL DIVIDE.

I have a vivid remembrance of my last night at the Upper Basin. The hush of evening hallowed it. Alone and un-disturbed we looked upon a scene unequaled in the world. Around us liquid columns rose and fell with ceaseless regularity. The cooler air of evening made many shafts of vapor visible which in the glare of day had vanished unperceived. So perfect were their images in the adjoining stream, that it was easy to believe the veil had been at last withdrawn, and that the hidden source of all this wonderful display had been revealed. No sound from them was audible; no breeze disturbed their steadfast flight toward heaven; and in the deepening twilight, the slender, white-robed columns seemed like the ghosts of geysers, long since dead, revisiting the scenes of their activity.

But geysers do not constitute the only marvels of these volcanic basins. The beauty of their pools of boiling water is almost inconceivable to those who have not seen them. No illustration can do them justice; for no photographer can adequately re-

produce their clear, transparent depths, nor can an artist's brush ever quite portray their peculiar coloring, clue to the minerals held in solution, or else deposited upon their sides. I can deliberately say, however, that some of the most exquisitely beautiful objects I have ever seen in any portion of the world are the superbly tinted caldrons of the Yellowstone.

Their hues are infinitely varied. Many are blue, some green, some golden, and some wine-colored, in all gradations of tone; and could we soar aloft and take of them a bird's-eye view, the glittering basin might seem to us a silver shield, studded with rubies, emeralds, turquoises, and sapphires. Moreover, these miniature lakes are lined with exquisite ornamentation. One sees in them, with absolute distinctness, a reproduction of the loveliest forms that he has ever found in floral or in vegetable life. Gardens of mushrooms, banks of goldenrod, or clusters of asparagus, appear to be growing here, created by the Architect and colored by the Artist of these mineral springs.



THE ROAD NEAR THE GOLDEN GATE.

The most renowned of all these reservoirs of color is called the Emerald Pool. Painters from this and other lands have tried repeatedly to depict this faithfully upon canvas, but, finally, have left it in despair. In fact, its coloring is so intense, that as the bubbles, rising to its surface, lift from this bowl their rounded forms, and pause a second in the air before they break, they are still just as richly tinted as the flood beneath.

Accordingly this pool appeared to me like a colossal casket, filled with emeralds, which spirit hands from time to time drew gently upward from its jeweled depths.

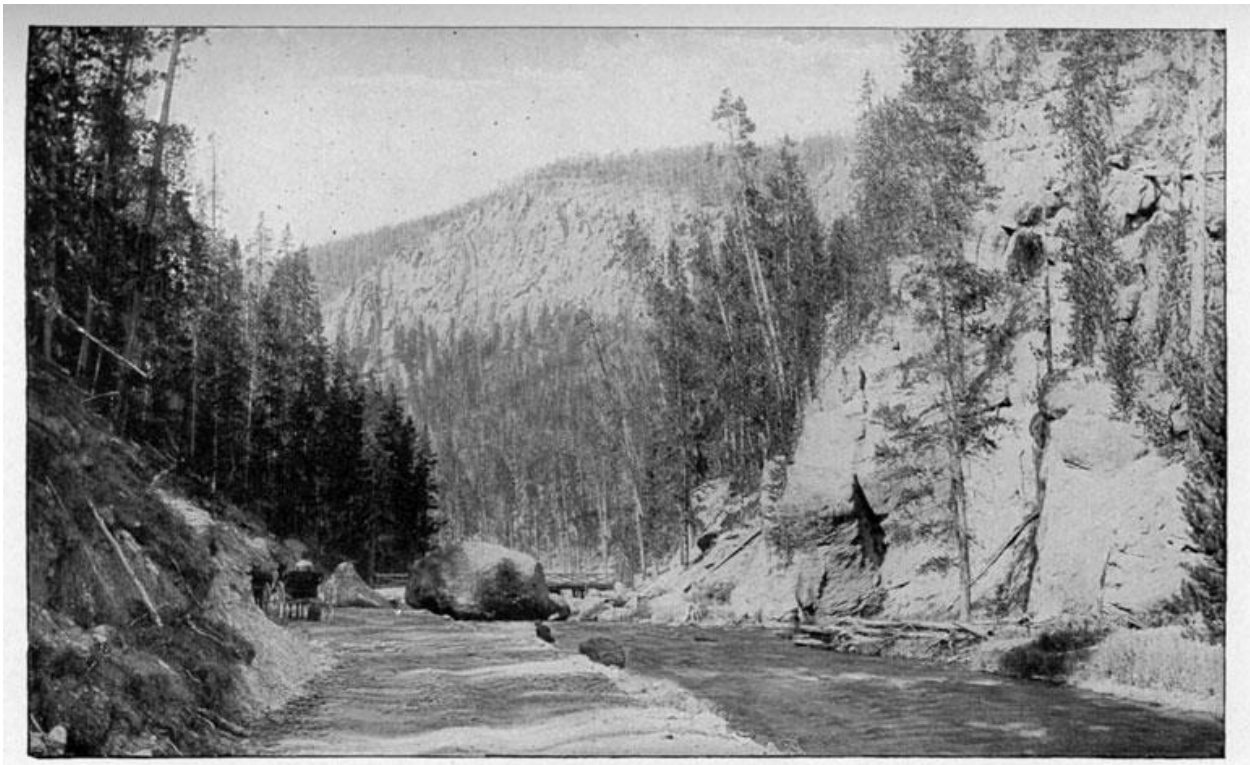
Close by this is another boiling pool called the Sunlight Lake. On this I saw one of the most marvelous phenomena I have ever looked upon. The colors of this tiny sheet of water appeared not only in concentric circles, like the rings of a tree, but also in the order of the spectrum. The outer band was crimson, and then the unbroken sequence came: red, orange, yellow, green, blue, and violet in the centre! More-over, the very steam arising from it (reflecting as it did the varied tints beneath) was exquisitely colored, and vanished into air like a dissolving rainbow. All these prismatic pools are clasped by beautifully decorated curbs of silica, and seem to be set in rings of gold, with mineral colors running through them like enamel. So delicate are the touches of the magic water, as the persistent heart-beats of old Mother Earth propel it over their ornamental rims, that every ripple leaves its tiny mark. Hence it is no exaggeration, but literal truth, to say that beautiful mosaic work is being formed each time the films of boiling water are dimpled by the passing breeze.

The great variety of wonders in our National Park was a continual source of pleasure and surprise to me. Thus, in the midst of all the pools and geysers in the Upper Basin is one known as the Mammoth Paint Pot. The earth surround-ing it is cracked and blistered by heat, and from this rises a parapet five feet high, enclosing a space resembling a circus ring. Within this area is a mixture of soft clay and boiling water, suggesting an enormous caldron of hot mush. This bubbling slime is almost as diversely tinted as the pools them-selves. It seemed to me that I was looking into a huge vat, where unseen painters were engaged in mixing colors. The fact is easily explained. The mineral ingredients of the volcanic soil produce these different hues. In a new form, it is the same old story of the Mammoth Terraces. Fire supplies the pigments, and hot water uses them. All other features of the Park are solemn and impressive ; but the Mammoth Paint Pot provokes a smile. There is no grandeur here. It seems a burlesque on volcanic power. The steam which oozes through the plastic mass tosses its sub-stance into curious Liliputian shapes, which rise and break like bubbles. A mirthful demon seems to be en-gaged in mold-ing grotesque images in clay, which turn a somersault, and then fall back to vanish in the seething depths. Now it will be a flower, then a face, then, possibly, a manikin resembling toys for children. Meanwhile one hears constantly a low accompaniment of groanings, hiccoughs, and expectorations, as if the aforesaid demon found this pudding difficult to digest.

Soon after leaving the Upper Geyser Basin, we approached a tiny lake which has, in some respects, no equal in the world. With the exception of some isolated mountain peaks, it marks the highest portion of our country. In winter, therefore, when encircled by mounds of snow, it rests upon the summit of our continent like a crown of sapphire set with pearls. So evenly is it balanced, that when it overflows, one part of it descends to the Atlantic, another part to the Pacific. This little streamlet, therefore, is a silver

thread connecting two great oceans three thousand miles apart. Accordingly, one might easily fancy that every drop in this pure mountain reservoir possessed a separate individuality, and that a passing breeze or falling leaf might decide its destiny, propelling it with gentle force into a cur-rent which should lead it eastward to be silvered by the dawn, or westward to be gilded by the setting sun.

On either side of this elevation, known as the Continental Divide, the view was glorious. In one direction, an ocean of dark pines rolled westward in enormous billows. The silver surfaces of several lakes gleamed here and there like whitecaps on the rolling waves. Far off upon the verge of the horizon, fifty miles away, three snow-capped, sharply pointed mountains looked like a group of icebergs drifting from the Polar Sea. They did not move, however, nor will they move while this old earth shall last. They antedate by ages the Pyramids which they resemble. They will be standing thus, in majesty, when Egypt's royal sepulchres shall have returned to dust. Forever anchored there, those three resplendent peaks rise fourteen thousand feet above the sea, and form the grand tiara of our continent, the loftiest summits of the Rocky Mountains.

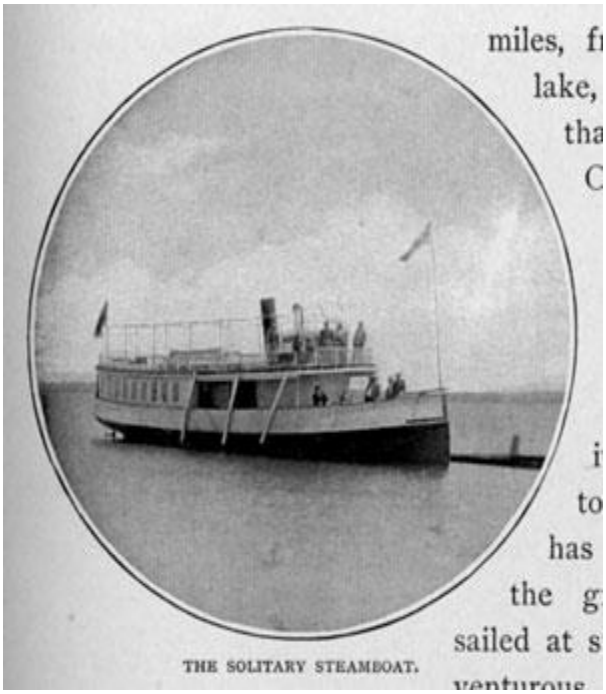


THE ROAD BY GIBBON RIVER.

5

On to Yellowstone Lake

As we began the descent from this great elevation, another splendid vision greeted us. We gazed upon it with delight. Beyond a vast expanse of dark green pines we saw, three hundred feet below us, Lake Yellowstone. It stirred my heart to look at last upon this famous inland sea, nearly eight thousand feet above the ocean level, and to realize that if the White Mountain monarch, Washington, were planted in its depths (its base line on a level with the sea), there would remain two thousand feet of space between its summit and the surface of this lake! In this respect it has but one real rival, Lake Titicaca, in the Andes of Peru.



THE SOLITARY STEAMBOAT.

Descending to the shore, however, we found that even here, so far from shipyards and the sea, a steamboat was awaiting us. Imagine the labor of conveying such a vessel sixty-five miles, from the railroad to this lake, up an ascent of more than three thousand feet. Of course, it was brought in several sections; but even then, in one or two mountain gorges, the cliffs had to be blasted away to make room for it to pass. It is needless to add that this steamer has no rivals. It was with the greatest interest that I sailed at such a height on this adventurous craft ; and the next time that I stand upon the summit of Mount Washington, and see the fleecy clouds float in the empyrean, one-third of a mile above me, I shall remember that the steamer on Lake Yellowstone sails at precisely sun-tinted galleons of the sky.

THE THREE TETONS.

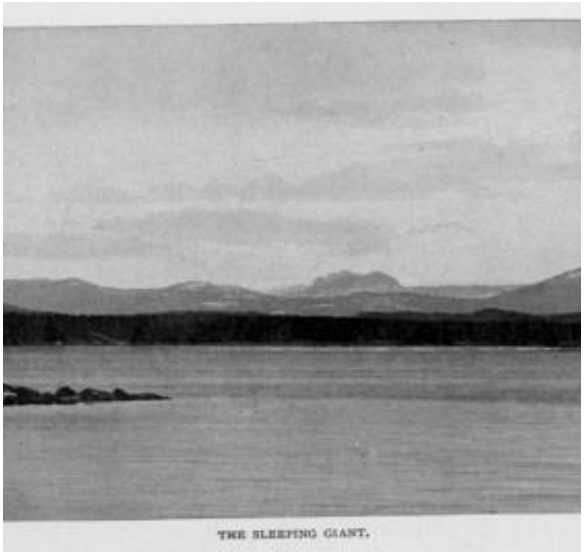
LAKE YELLOWSTONE, FROM A DISTANCE.

ON LAKE YELLOWSTONE.

THE "SILVER THREAD CONNECTING TWO OCEANS."

To appreciate the beauty of Lake Yellowstone, one should behold it when its waves are radiant with the sunset glow. It is, however, not only beautiful; it is mysterious. Around it, in the distance, rise silver crested the same altitude as that enjoyed by those peaks whose melting snow descends to it in ice-cold streams. Still nearer, we behold a girdle of gigantic forests, rarely, if ever, trodden by the foot of man. Oh, the loneliness of this great lake ! For eight long months scarcely a human eye beholds it. The wintry storms that sweep its surface find no boats on which to vent their fury. Lake Yellow-stone has never mirrored in itself even the frail canoes of painted savages. The only keels that ever furrow it are those of its solitary steamer

and some little fishing-boats engaged by tourists. Even these lead a very brief existence. Like summer insects, they float here a few weeks, and disappear, leaving the winds and waves to do their will.



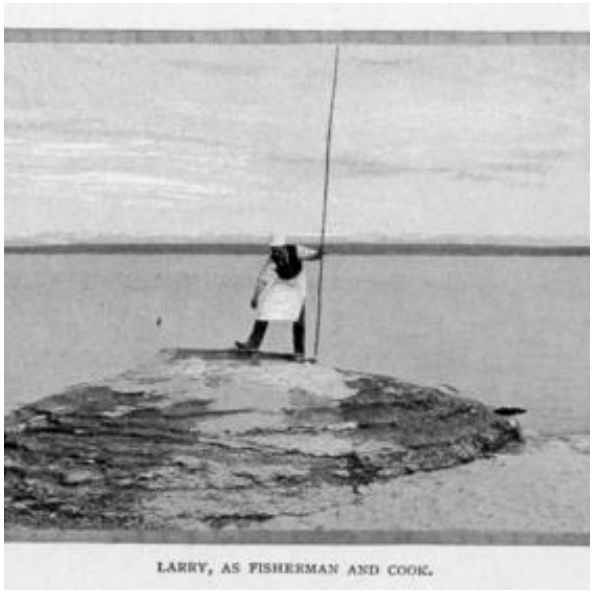
THE SLEEPING GIANT.

In sailing on this lake, I observed a distant mountain whose summit bore a strange resemblance to an upturned human face, sculptured in bold relief against the sky. It is appropriately called the Sleeping Giant; for it has slept on, undisturbed, while countless centuries have dropped into the gulf of Time, like leaves in the adjoining forest. How many nights have cast their shadows like a veil upon that giant's silhouette! How many dawns have flooded it with light, and found those changeless features still confronting them! We call it human in appearance, and yet that profile was the same before the first man ever trod this planet. Grim, awful model of the coming race, did not its stern lips smile disdain-fully at the first human pygmy fashioned in its likeness?

This lake has one peculiarity which, in the minds of certain tourists, eclipses all the rest. I mean its possibilities for fishing. We know that sad experience has taught mankind to invent the proverb: "Once a fisherman, always a liar." I wish, then, at the start, to say I am no fisherman; but what I saw here would inevitably make me one if I should remain a month or two upon these shores. Lake Yellowstone is the fisherman's paradise. Said one of Izaak Walton's followers to me: "I would rather be an angler here than an angel." Nor is this strange. I saw two men catch from this lake in one hour more than a hundred splendid trout, weighing from one to three pounds apiece! They worked with incredible rapidity. Scarcely did the fly touch the water when the line was drawn, the light rod dipped with graceful curve, and the revolving reel drew in the speckled beauty to the shore. Each of these anglers had two hooks upon his line, and both of them once had two trout hooked at the same time, and landed them; while we poor eastern visitors at first looked on in dumb amazement, and then enthusiastically cheered.

GREAT FISHING.

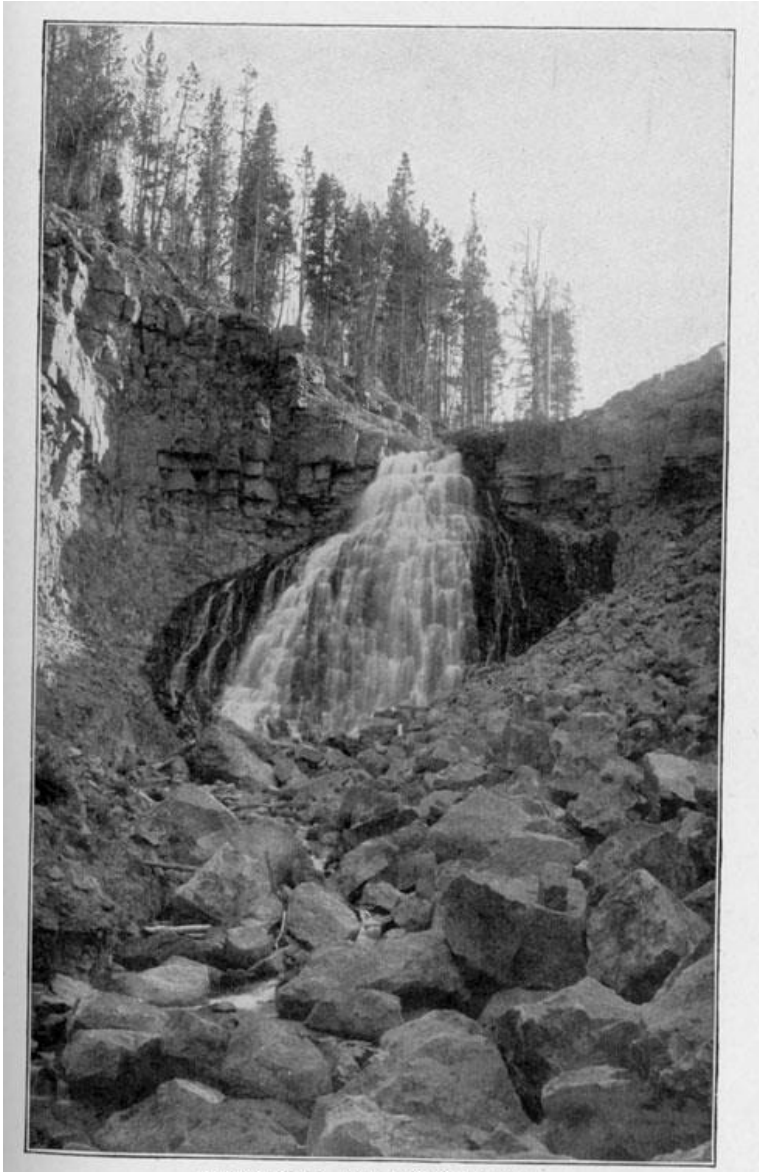
Can the reader bear something still more trying to his faith ? Emerging from the lake is a little cone containing a boiling pool, entirely distinct from the surrounding water. I saw a fisherman stand on this and catch a trout, which, without moving from his place, or even unhooking the fish, he dropped into the boiling pool, and cooked! When the first scientific explorers of this region were urging upon Congress the necessity of making it a National Park, their statements in regard to fishing were usually received with courteous incredulity. But when one of their number gravely declared that trout could there be caught and boiled in the same lake, within a radius of fifteen feet, the House of Representatives broke forth into roars of laughter, and thought the man a monumental liar. We cannot be surprised, therefore,



LARRY, AS FISHERMAN AND COOK.

A FALSE ALARM.

that enthusiastic fishermen almost go crazy here. I have seen men, after a ride of forty miles, rush off to fish without a moment's rest as if their lives depended on it. Some years ago, General Wade Hampton visited, the Park and came as far as Lake Yellowstone. On his return, some one inquired what he thought of Nature's masterpiece, the cation of the Yellowstone.



RUSTIC FALLS, YELLOWSTONE PARK.

"The canon!" cried the general, "no matter about the canon; but I had the most magnificent fishing I ever saw in my life."

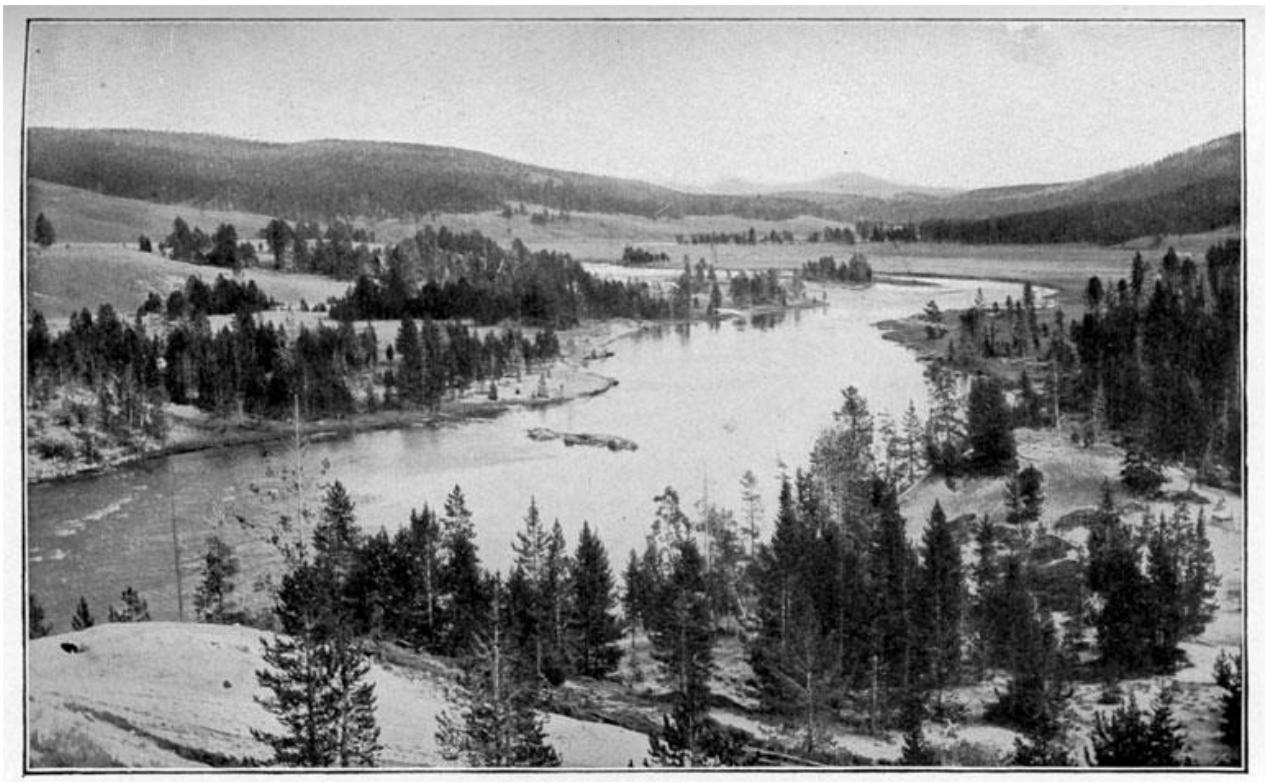
One day, while walking along the shore, my comrade suddenly pressed my arm and pointed toward the lake.

"An Indian! " I cried in great astonishment, "I thought no Indians ever came here."

Our guide laughed heartily; and, as he did so, I perceived my error. What I had thought to be an Indian was but a portion of a tree, which had been placed upright against a log. The only artificial thing about it was a bunch of feathers. Everything else was absolutely natural. No knife had sculptured it. No hand had given a support to its uplifted arm. Even the dog which followed us appeared deceived, for he barked furiously at the strange intruder. There was to me a singular fascination in this solitary freak of nature; and, surrounded though I was by immeasurably greater wonders, I turned again and again to take a farewell look at this dark, slender figure, raising its hand, as if in threatening gesture to some unseen foe.

6

To Hayden Valley and the Grand Canyon



HAYDEN VALLEY.

Leaving the lake, we presently entered the loveliest portion of the Park, — a level, sheltered area of some fifty square miles, to which has been given the appropriate name of Hay-den Valley, in commemoration of the distinguished geologist, Doctor Ferdinand V.Hayden, who did so much to explore this region and to impress upon the Government the necessity of preserving its incomparable natural features. Even this tranquil portion of the Park is undermined by just such fiery forces as are elsewhere visible, but which here manifest themselves in different ways. Thus, in the midst of this natural beauty is a horrible object, known as the Mud

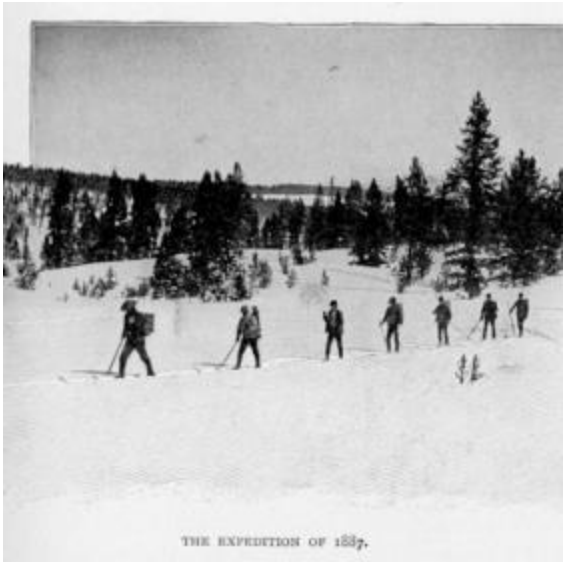
Geyser. We crawled up a steep bank, and shudderingly gazed over it into the crater. Forty feet below us, the earth yawned open like a cavernous mouth, from which a long black throat, some six feet in diameter, extended to an unknown depth. This throat was filled with boiling mud, which rose and fell in nauseating gulps, as if some monster were strangling from a slimy paste which all its efforts could not possibly dislodge. Occasionally the sickening mixture would sink from view, as if the tortured wretch had swallowed it. Then we could hear, hundreds of feet below, unearthly retching; and, in a moment, it would all come up again, belched out with an explosive force that hurled a boiling spray of mud so high that we rushed down the slope. A single drop of it would have burned like molten lead. Five minutes of this was enough; and even now, when I reflect that every moment, day and night, the same regurgitation of black slime is going on, I feel as I have often felt, when, on a stormy night at sea, I have tried to sit through a course-dinner on an ocean steamer.

APPROACHING THE MUD GEYSER.

A STRANGER IN THE YELLOWSTONE.

A PETRIFIED FOREST.

THE PARK IN WINTER.



THE EXPEDITION OF 1887.

Not far from this perpetually active object is one that has been motionless for ages, — a granite boulder enclosed by trees as by the bars of a gigantic cage. It is a proof that glaciers once plowed through this region, and it was,no doubt, brought hither in the glacial period on a flood of ice, which, melting in this heated basin, left its burden, a grim reminder of how worlds are made. Think what a combination of terrific forces must have been at work here, when the volcanoes were in full activity, and when the mass of ice which then encased our northern world strove to enclose this prison-house of fire within its glacial arms ! One of our party remarked that the covering of this seething, boiling area with ice must have been the nearest approach to " hell's freezing over" that our earth has ever seen.

A NATURAL BRIDGE.

Another striking feature of our National Park is its Petrified Forest, where, scattered over a large area, are solitary columns, which once were trunks of trees, but now are solid shafts of agate. The substance of the wood, however, is still apparent, the bark, the worm-holes, and even the rings of growth being distinctly visible; but every fibre has been petrified by the mysterious substitution of a mineral deposit. No doubt these trees were once submerged in a strong mineral solution,

tinted with every color of the rainbow. Still, more marvelous to relate, an excavation on the hillside proves that there are eleven layers of such forests, one above another, divided by as many cushions of lava. Think of the ages represented here, during which all these different forests grew, and were successively turned to stone! This, therefore, is another illustration of the conflict between Life and Death. Each was in turn a victor, and rested on his laurels for un-numbered centuries. Life is triumphant now; but who shall say that Death may not again prove conqueror? If not immediately, Death may well be patient. He will rule all this planet in the end.

F. J. HAYNES.

No one can travel through the Yellowstone Park without imagining how it looks in winter. The snowfall is enormous, some drifts in the ravines being hundreds of feet deep, and, owing to the increased supply of water, the geysers throw higher streams. No traveling is possible then except on snow-shoes; and it is with difficulty that some of the Park hotels are reached as late as the middle of May. Of course, in such a frigid atmosphere, the steam arising from the geysers is almost instantly congealed; and eye-witnesses affirm that, in a temperature of forty degrees below zero, the clouds of vapor sent up by Old Faithful rose fully two thousand feet, and were seen ten miles away.

It can be well imagined that to do much exploration here, in winter, is not alone immensely difficult, but dangerous. In 1887 an expedition was formed, headed by Lieutenant Frederick Schwatka; but, though he was experienced as an Arctic traveler, in three days he advanced only twenty miles, and finally gave out completely. Most of the exploring party turned back with him; but four kept heroically on, one of whom was the photographer, Mr. F. J. Haynes, of St. Paul. Undismayed by Schwatka's failure, he and his comrades bravely persisted in their under-taking. For thirty days the mercury never rose higher than ten degrees below zero. Once it marked fifty-two degrees below! Yet these men were obliged to camp out every night, and carry on their shoulders provisions, sleeping-bags, and photographic instruments. But, finally, they triumphed over every obstacle, having in midwinter made a tour of two hundred miles through the Park. Nevertheless, they almost lost their lives in the attempt. At one point, ten thousand feet above the sea,

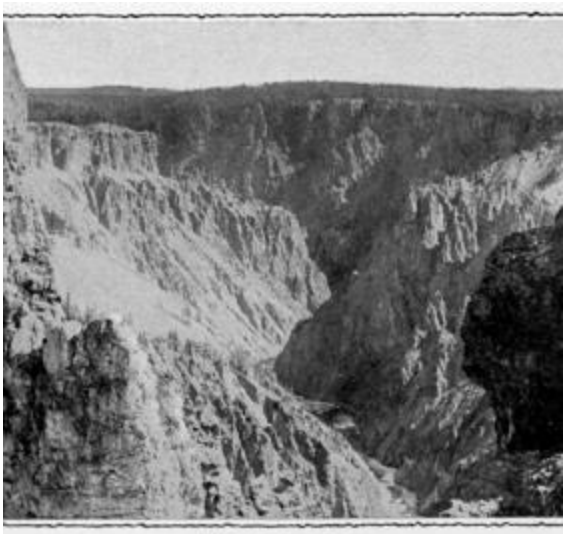
a fearful blizzard overtook them. The cold and wind seemed unendurable, even for an hour, but they endured them for three days. A sharp sleet cut their faces like a rain of needles, and made it perilous to look ahead. Almost dead from sheer exhaustion, they were unable to lie down for fear of freezing; chilled to the bone, they could make no fire; and, although fainting, they had not a mouthful for seventy-two hours. What a terrific chapter for any man to add to the mysterious volume we call life!

THE CAÑON FROM A DISTANCE.

UPPER FALLS OF THE YELLOWSTONE.

THE CAÑON FROM BRINK OF FALLS.

THE CAÑON FROM GRAND POINT.



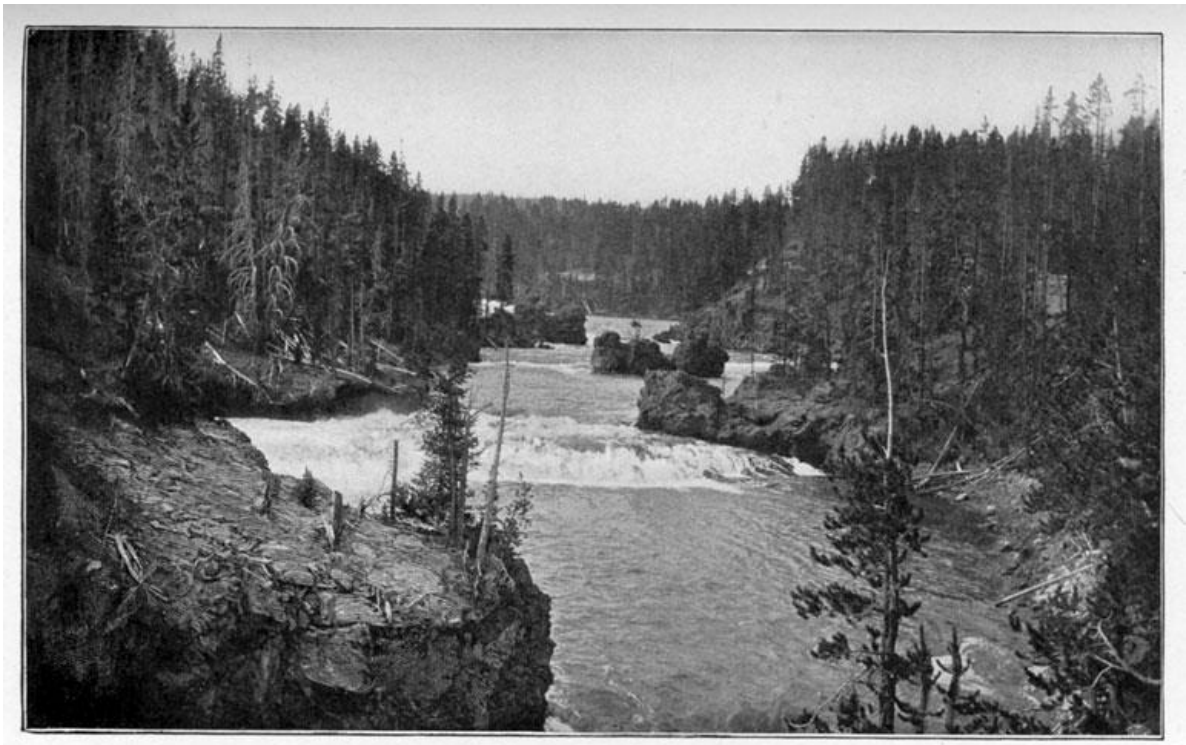
MILES OF COLORED CLIFFS.

One might suppose by this time that all the marvels of our National Park had been described; but, on the contrary, so far is it from being true, that I have yet to mention the most stupendous of them all, — the world-renowned canon of the Yellowstone. The introduction to this is sublime. It is a waterfall, the height of which is more than twice as great as that of Niagara. To understand the reason for the presence of such a cataract, we should remember that the entire region for miles was once a geyser basin. The river was then near the surface; and has been cutting down the walls of the canon ever since. The volcanic soil, decomposed by heat, could not resist the constant action of the water. Only a granite bluff at the upper end of the canon has held firm; and over that the baffled stream now leaps to wreak its vengeance on the weaker foe beneath.

THE GREAT FALLS
OF THE YELLOWSTONE.

Through a colossal gateway of vast height, yet only seventy feet in breadth, falls the entire volume of the Yellowstone River. It seems enraged at being suddenly compressed into that narrow space; for, with a roar of anger and defiance and without an instant's hesitation, it leaps into the yawning gulf in one great flood of dazzling foam. When looked upon from a little distance, a clasp of emerald apparently surmounts it, from which descends a spotless robe of ermine, nearly four hundred feet in length. The lower portion is concealed by clouds of mist, which vainly try to climb the surrounding cliffs, like ghosts of submerged mountains striving to escape from their eternal prison. We ask ourselves instinctively: What gives this river its tremendous impetus, and causes it to fill the air with diamond-tint-ed spray, and send up to the cliffs a ceaseless roar which echoes and reechoes down the canon? How awe-inspiring seems the answer to this question, when we think upon it seriously! The subtle force which draws this torrent down is the same power that holds the planets in their courses, retains the comets in their fearful paths, and guides the movements of the stellar uni-verse. What is this power? We call it gravitation; but why does it invariably act thus with mathematical precision? Who knows? Behind all such phenomena there is a mystery that none can solve. This cataract has a voice. If we could under-stand it, per-haps we should distinguish, after all, but one word, — God.

As for the gorge through which this river flows, imagine if you can a yawning chasm ten miles long and fifteen hundred feet in depth. Peer into it, and see if you can find the river. Yes, there it lies, one thousand five hundred feet below, a winding path of emerald and alabaster dividing the huge canon walls. Seen from the summit, it hardly seems to move; but, in reality, it rages like a captive lion springing at its bars. Scarcely a sound of its fierce fury reaches us; yet, could we stand beside it, a quarter of a mile below, its voice would drown our loudest shouts to one another.



YELLOWSTONE RIVER ABOVE THE FALLS.

Attracted to this river innumerable little streams are trick-ling down the colored cliffs. They are cascades of boiling water, emerging from the awful reservoir of heat which under-lies this laboratory of the Infinite. One of them is a geyser, the liquid shaft of which is scarcely visible, yet in reality is one hundred and fifty feet in height. From all these hot additions to its waves the temperature of the river, even a mile or two beyond the canon, is twenty degrees higher than at its entrance.

"Are there not other canons in the world as large as this?" it may be asked.

Yes, but none like this. For, see, instead of sullen granite walls, these sides are radiant with color. Age after age, and aeon after aeon, hot water has been spreading over these miles of masonry its variegated sediment, like pigments on an artist's palette. Here, for example, is an expanse of yellow one thousand feet in height. Mingled with this are areas of red, resembling jasper. Beside these is a field of lavender, five hundred feet in length, and soft in hue as the down upon a pigeon's breast. No shade is wanting here except the blue, and God replaces that. It is supplied by the o'erspreading canopy of heaven.

BELOW THE UPPER FALLS.

Yet there is no monotony in these hues. Nature, apparently, has passed along this cation, touching the rocks capriciously; now staining an entire cliff as red as blood, now tingeing a light pinnacle with green, now spreading over the whole face of a mountain a vast Persian rug. Hence both sides of the canon present successive miles of Oriental tapestry. Moreover, every passing cloud works here almost a miracle; for all the lights and shades that follow one another down this gorge vary its tints as if by magic, and make of it one long kaleidoscope of changing colors.

Nor are these cliffs less wonderful in form than color. The substance of their tinted rocks is delicate. The rain has, therefore, plowed their faces with a million furrows. The wind has carved them like a sculptor's chisel. The lightning's bolts have splintered them, until, mile after mile, they rise in a bewildering variety of architectural forms. Old castles frown above the maddened stream, a thousand times more grand than any ruins on the Rhine. Their towers are five hundred feet in height. Turrets and battlements, portcullises and draw-bridges, rise from the deep ravine, sublime and inaccessible; yet they are still a thousand feet below us! What would be the effect could we survey them from the stream itself, within

the gloomy crevice of the canon? Only their size convinces us that they are works of Nature, not of Art. Upon their spires we see a score of eagles' nests. The splendid birds leave these at times, and swoop down toward the stream; not in one mighty plunge, but gracefully, in slow, majestic curves, lower and lower, till we can follow them only through a field-glass, as they alight on trees which look to us like shrubs.

But many of these forms are grander than any castles. In one place is an amphitheatre. Within its curving arms a hundred thousand people could be seated. Its foreground is the emerald river; its drop-curtain the radiant cation wall. Cathedrals, too, are here, with spires twice as high as those which soar above the minster of Cologne. Fantastic gargoyles stretch out from the parapets. A hundred flying but-tresses connect them with the mountain side. From any one of them as many shafts shoot heavenward as statues rise from the Duomo of Milan; and each of these great canon shrines, instead of stained glass windows, has walls, roof, dome, and pinnacles, one mass of variegated color. The awful grandeur of these temples, sculptured by the Deity, is over-powering. We feel that we must worship here. It is a place where the Finite prays, the In-finite hears, and Immensity looks on.

Two visions of this world stand out within my memory which, though entirely different, I can place side by side in equal rank. They are the Himalayas of India, and the Grand Canon of the Yellowstone. On neither of them is there any sign of human life. No voice disturbs their solemn stillness. The only sound upon earth's loftiest mountains is the thunder of the avalanche. The only voice within this canon is the roar of its magnificent cascade. It is well that man must halt upon the borders of this awful chasm. It is no place for man. The Infinite allows him to stand trembling on the brink, look down, and listen spellbound to the anthem of its mighty cataract; but beyond this he may not, cannot go. It is as if Almighty God had kept for His own use one part of His creation, that man might merely gaze upon it, worship, and retire.

Stoddard Afterward

by John Baden

I hope you enjoyed John Stoddard's 1890's reflections and photos of Yellowstone Park. Finding his manuscript on the eve of the National Park Service Centennial was pure luck.

Yellowstone, the world's first national park, is the crown jewel of the National Park System. It provides a model for park management worldwide and offers great lessons. Here is a key one: Park creation and design incorporates political pressures. Government lands are inherently political lands. Despite problems inherent to and arising from political interference, the National Park System is a great achievement of the Progressive Era. Here is how it began.

During the post-Civil War period, from 1865 to 1910, America resembled a rapidly developing Third World nation. Corrupt big city machines and corporate cronyism marked our political economy. These maladies have re-emerged in modern forms. Governmental units have been captured and mobilized to transfer benefits, usually upward. Not even the national parks are immune from this pathology.

During the Progressive Era, plunder, pollution, and predation were common. Property rights to natural resources were neither well defined nor enforced. Timber seemed inexhaustible, and fish and wildlife were available for exploitation. Antelope, bison, and elk were nearly extinguished while predators including bear, bobcat, lion, and wolves carried bounties.

Fortunately, a conservation ethic for our natural resources was developing as an important force among America's elite. The creation of the Boone and Crockett Club and forestry schools at Cornell, Harvard, and Yale testify to major cultural changes during that period. These changes are important features of Progressive Era reforms.

For example, Boone and Crockett helped expand Yellowstone National Park and led the American Conservation movement. Boone and Crockett helped eliminate commercial market hunting and led the creation of the National Park Service, the US. Forest Service, and the National Wildlife Refuge system. This and allied clubs and organizations also developed funding mechanisms for conservation, always a complex and challenging goal. Here is a reason why.

Environmental policy formation and management are plagued by several confounding factors. Ecological issues usually have two characteristics that make good policy formation and management difficult; they are scientifically complex and carry heavy emotional baggage. This conjunction generates error and acrimony as policies are formulated and implemented.

Stoddard's perspective helps understand the contemporary challenges to the Park Service mandate of protecting, preserving, and returning the parks to their "natural conditions – that which would occur in the absence of human dominance over the landscape" according to 2006 Park Service 2006 management policy.

One predictable and persistent problem of management is insulating Park scientists and upper managers from political pressures and bureaucratic ambitions. Here is a brief example.

Shorty after the famous Yellowstone Park fires of 1988 the Wall Street Journal requested George B. Hartzog, Park Service Director for nine years, and me to write companion columns for their editorial page. The Journal ran them side by side on November 23, 1988 with the heading "Take Politics Out of the National Parks". Our columns were separated by a graphic of the nation's Capital Building floating above a scene depicting Yellowstone.

Hartzog admonished Americans to "...stand firm to protect these resources from narrow, special interests". He lamented intrusive politics overriding science and stifling sound management of Yellowstone. My companion column observed that: "Political pressure that overrode science has led to years of reverberations felt through the entire ecosystem." What is important here is that we agreed on the goal even as we no doubt had different ways of achieving it. Hartzog wanted to protect his bureaucratic guardians from political interferences. To better accomplish this, I suggested we convert the parks into national public trusts.

In addition to constant political pressures from local and national interests, three known major dangers confront Yellowstone today: growing competition for federal funds, increased crowding by visitors, and controlling the populations of large non-human animals, mainly bison. Two of these three threats, diminished political funding and crowding by people, arise outside the Park. Yellowstone's

managers can anticipate and react but not control them. A fourth threat is that resulting from the unknowable dangers of climate change. If Manhattan or Miami are in danger of flooding, their claims on federal attention and funds will surely swamp appropriations for national park funding.

Funding for maintenance, safety, and infrastructure comes first in honoring Yellowstone's mandate. These key functions are at risk. Whereas much federal funding is locked in by legally required federal entitlements, congressional funding for the national parks is entirely discretionary.

Entitlement programs have strong political constituencies. Those of the Park Service are less powerful--although the recipients of Medicare and Social Security funds are eligible for a Golden Age Passport. This grants lifetime access to all national parks and monuments for a one-time charge of $10.00! Younger and likely less well off people may buy an Annual Pass for $80.00. Thus the Park Service has built a constituency of elderly potential supporters but has yet to mobilize them.

Yellowstone faces rapidly growing visitor demand for Park access. Annual visits averaged nearly three million from 2000 through 2010 and then exceeded four million in 2015. At the end of the 2015 visitor season Yellowstone Superintendent Dan Wenk observed, “Last year’s visitation tested the capacity of Yellowstone National Park. We are looking at ways to reprioritize in order to protect resources, to provide additional ranger programs, and to keep facilities clean.”

Visitation rates increased further in early 2016. In the near future the Park Service may have to make some very difficult decisions to ration visitation. Unless carefully done the political fallout from restricting access will be substantial. Only the winners consider government allocations of valuable resources fair, equitable, or efficient.

In regard to large animals the ecologically destructive elk population dynamic of the late 1900s now looms for bison. And of course, the management of a growing bison population is highly contentious. The result is likely to be a replay of the elk controversy that plagued Yellowstone for decades.

Bison didn't live in the Yellowstone high country in large numbers until the late 1800s. In 1876 they were nearly extinct elsewhere and the Park provided refuge. Essentially, they are extremely large, tough, exotic animals. Without population control by human hunters or successful predators, bison numbers increase. Ultimately they degrade the productivity of their range and suffer winterkill and low caving numbers. Ecologically and ethically, this is a serious downward spiral.

Park Service is caught between the cultural-political force of "Don't kill the animals!" and the ecological reality of excessive numbers. This constrains management options. The agency then creates themes such as "natural regulation" to govern the system.

Shifting the task to nature, the key to "natural regulation", provides a justification for avoiding active management. Observers from outside the agency, some with excellent credentials, challenge the scientific justifications of the policy--and even the integrity of Park Service officials. Indeed, one of the most dramatic and disquieting of these was the publication of Alston Chase's book, Playing God in Yellowstone: The destruction of America's First National Park, in 1986.

Wolf reintroduction in 1995 addressed and greatly improved the elk population problem. Wolves reduced elk numbers by some 80%. There is no such simple, politically acceptable answer for bison. Any solution will require political shrewdness and creativity along with cooperation with outside agencies, private landowners, and NGOs.

Since we can't (yet) reintroduce the saber tooth tiger or dire wolf, both extinct for some 12,000 years, I can't think of a solution analogous to the wolf-elk population fix for the nearly 5,000 bison overgrazing the Park, especially the Lamar Valley. Management options are constrained by political forces and the ecologic ignorance of well-intended citizens.

Yet, things that can’t go on indefinitely will somehow stop. Given this, what are the best ways to arrest adverse consequences of funding shortages, high visitation numbers, and rising bison population growth? Ecological, political, and economic constraints on management cannot be pretended away. What arrangements will better enable sound ecological science to be buffered from political forces and bureaucratic ambitions? Let’s envision a new institutional arrangement that could address all three and in the process reform the Park Service.

A proposal for reform employs recent experience with land trusts and builds on my suggestion following the Yellowstone fires of 1988.

First, Park Service and outside scientists estimate the Park’s carrying capacity for bison and initiate an extended public education program on the multiple and ever growing problems of excessive bison numbers – just as they did with the reintroduction of wolves.

Next would be to enter into a cooperative agreement with, for example, the American Prairie Reserve. APR is a non-governmental public land trust. It could take the Park's excess bison and manage the resultant herd within their 3.5 million

acres. This area is one and a half times the size of Yellowstone Park, is roughly a mile lower in elevation, and has far more and better grazing land.

APR range and wildlife scientists are better insulated from political pressures than those in a governmental agency. The APR could market excess bison along with their cattle via an expanded Wild Sky Beef program. In the words of APR, Wild Sky Beef "supports wildlife-friendly ranching by returning a portion of its profits to participating ranchers raising cattle to a set of specific conservation-oriented practices. By creating incentives for ranchers to view wildlife as an asset we plan to blur the boundaries of the Reserve with surrounding agricultural lands."

Being a non-profit 501 (c-3) trust with open books, APR has freedom to innovate. Park leaders and their colleagues can only envy its opportunities to innovate and succeed.Here is the American Prairie Reserve's position on bison told to me by Sean Gerrity, the founder and president of the American Prairie Reserve:

"We are of course very interested in taking Yellowstone bison (provided they are tested with SNPS (Single Nucleotide Polymorphism testing) technology and certified disease free, which is not hard to do) and incorporating them on the APR. Happy to take them anytime and let the public enjoy them as they are doing with the bison roaming the prairie out there now."

If bison are successfully transplanted, then an obvious question will arise: Where else could this happen? What other areas could provide habitat and good management for the Yellowstone bison? Environmental entrepreneurs inside and outside of governments will search for them, some in unlikely places. People who want to see large herds of bison in their native habitat will visit APR and spend money and time locally. Visitor revenues and contributions will help pay for infrastructure and operating costs.

Yellowstone National Park is a conservation experiment, one that evolved from management by the U.S. Army from just after its founding until 1918-19. This experiment is ongoing and subject to ecological, political, and economic reality checks. The bison population problem could lead Americans toward policy options that will help protect the world's first national park by expanding the model elsewhere

Policy makers can learn from earlier, highly contentious issues of feeding bears, exterminating wolves, and extinguishing fires. Finding a solution to excess bison and other problems will require wise, courageous, and creative Park Service managers. A successful outcome will surely involve the kind of environmental entrepreneurship being demonstrated on the American Prairie Reserve and elsewhere throughout the world. Not only can such organizations manage animal

dynamics, they also have more flexibility to generate revenue and handle human visitor pressures than do agencies constrained by political forces.

The creation of the National Park System in 1916 is surely one of America's best ideas. It is a stellar example of institutional entrepreneurship that created legal and political arrangements to achieve social goals. Nearly a century later, environmental entrepreneurs from Bozeman, Montana created the American Prairie Reserve. As Yellowstone became a model for parks worldwide, organizations such as APR may play similar roles in the 21st century.