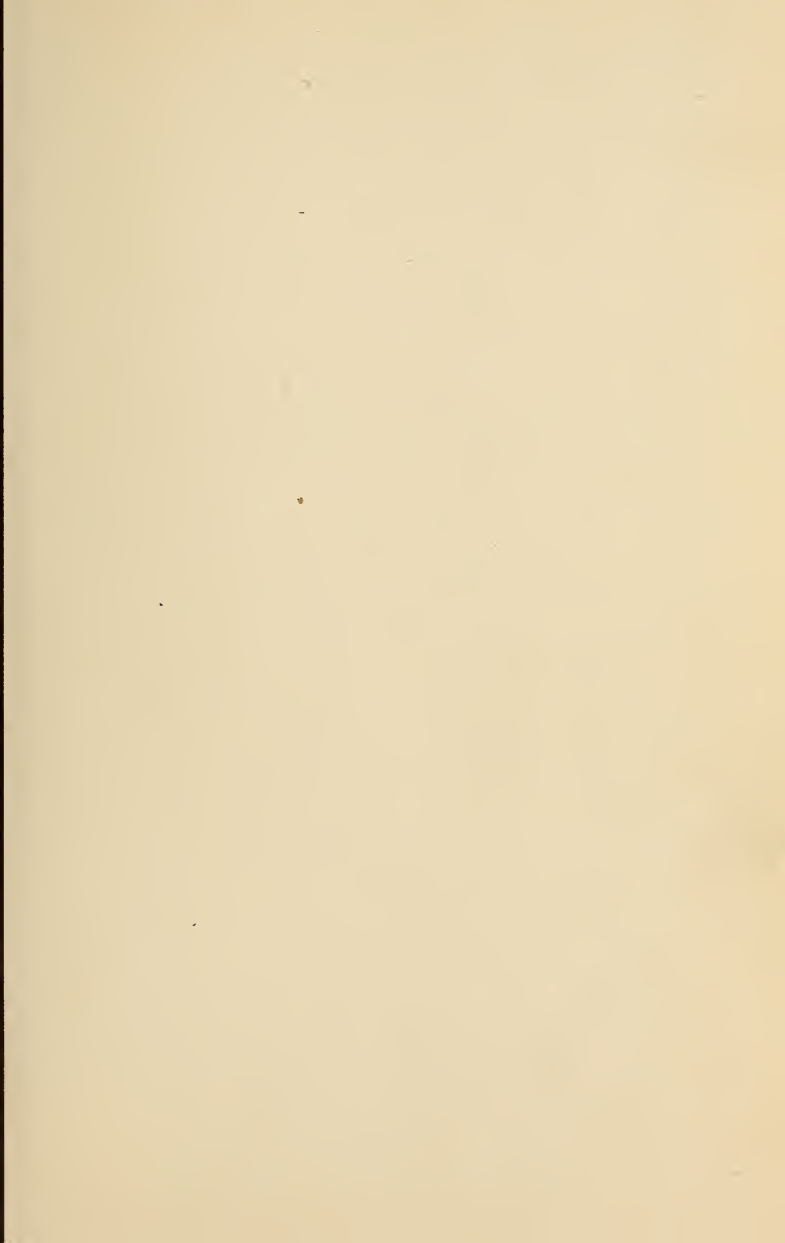


**OUR NATIONAL
RECREATION PARKS**

DR. NICHOLAS SENN





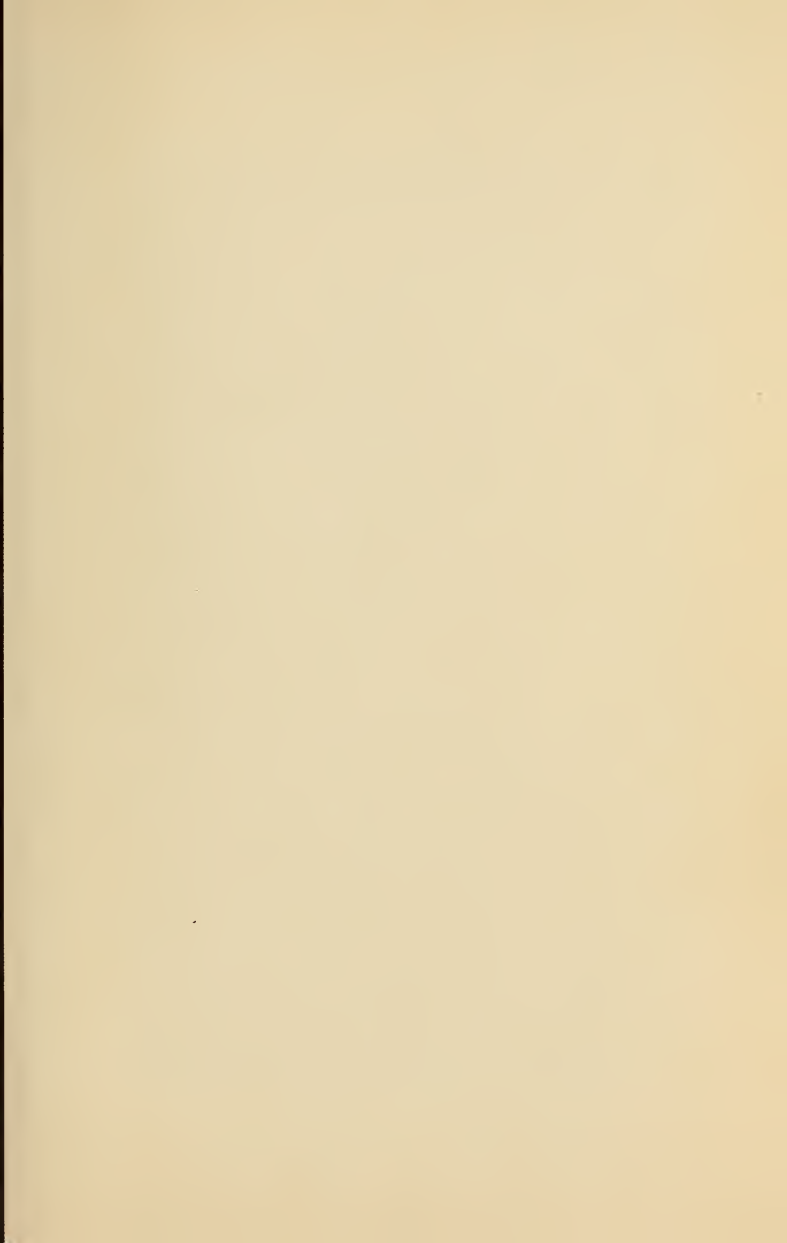


AROUND THE WORLD, VIA SIBERIA, by Nicholas Senn, M. D., Professor of Surgery in Rush Medical College, Chief of Operating Staff with the Army in the Field during the Spanish-American war, and Surgeon-General of Illinois; pp. 402, and nearly 100 half-tone engravings; \$1.50. W. B. CONKEY COMPANY, Hammond, Ind.

The author is an experienced and observant traveler, and writes, with refreshing vigor and picturesqueness, a particularly interesting description of the various places traversed in the journey; with the most reliable information to be obtained on matters concerning government and policies, people, manners and customs, religions, laws, learning, arts, industry, commerce, and literature. Dr. Senn is a trained observer, and we have here the clear, fresh, entertaining impressions of a thoughtful writer whose observations may be regarded as absolutely trustworthy representations. The chapter on Siberia is particularly timely. There is a very spirited description of the wonderful railroad that connects in one grand, continuous line Moscow in the frozen north with Port Arthur on the Yellow Sea—the first great enterprise of the twentieth century. Prison life in this forlorn land of perpetual exile is described with fascinating vividness. China and Japan are brought before us; and his observations on race characteristics are of surpassing interest and value.

The one hundred illustrations are peculiarly instructive, and add greatly to the value of an exceedingly interesting book. It is a large 12mo admirably printed on excellent paper and bound in handsome silk cloth. It is a strikingly beautiful and attractive book, inside and outside, and should find its way to every book-shelf.—*Literary News*.

*OUR NATIONAL
RECREATION PARKS*





YOSEMITE VALLEY FROM ARTIST'S POINT.

OUR NATIONAL RECREATION PARKS

BY

NICHOLAS SENN, M. D., Ph. D., LL. D.

Professor of Surgery in Rush Medical College, in
Affiliation with the University of Chicago; Surgeon-
in-Chief St. Joseph's Hospital; Attending Surgeon
Presbyterian Hospital; Lieutenant-Colonel and Chief
of the Operating Staff with the Army in the Field
during the Spanish-American War; Surgeon-Gen-
eral of Illinois.



WITH FIFTY ILLUSTRATIONS

CHICAGO

W. B. CONKEY COMPANY

1904

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PREFACE

THIS little book conveys the impressions made upon me during a visit to our great national recreation parks—the Yellowstone and Yosemite Valley—during my recent summer vacation. An inspection of these wonderlands can not fail in leaving lasting impressions of their manifold indescribable beauties, exquisite illustrations of natural art and exhaustless resources of nature's ceaseless activities. The many enchanting sceneries defy description, and accounts of the hundreds of mysterious geysers and the Grand Canyon of the Yellowstone and the big trees of the Sierras, sound like fairy tales. No visitor who has ever seen these natural parks has ever been disappointed in his expectations. The alpine and subalpine regions, with their great primeval forests, bewitching lakes, the numerous mountain springs and rivers teeming with choicest fish, the charming flora and varied fauna, furnish object-lessons from the book of nature which attract the eye and engage the mind from sunrise to sunset, and the cool nights and pure mountain air will bring back sleep if it has been chased away by

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PREFACE

an exacting, arduous, artificial city life. Nowhere in the world can a vacation of a few weeks be spent more pleasantly and profitably than by a visit to these parks which have been set aside by a generous and far-sighted government as recreation grounds for the benefit of the people. To those who would like to see the most beautiful sceneries and nature's grandest products and exhibitions of art, I would unhesitatingly say: "Come and see."

Chicago, Christmas, 1903.



AMONG THE BIG TREES, MARIPOSA GROVE.

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OVERHANGING ROCK AT GLACIER POINT.

INTRODUCTION

THE man who toils with his brain in the bank, the pulpit, the court room, the library, the great mercantile establishments, and last, but not least, at the bedside of the sick or in the operating room, is the one above all others in need of an occasional rest, change of mental activity and surroundings. Men who ignore nature's warnings and appeals for rest, sooner or later are made to pay dearly for their neglect, and only too often mend their ways when it is too late. Brain toil means the prolonged strenuous application of the neurons which preside over functions required in the discharge of professional duties or business transactions. If these functions are overtaxed, brain fatigue is the result. This brain fatigue involves that part of the brain which has been overtaxed, while the remaining neurons are suffering from the consequences of idleness. Indigestion, insomnia and a morose temper are the earliest and surest indications of brain exhaustion, and when they do appear must be heeded by the sufferer, who then should seek the necessary relief by appropriate rest and change of surroundings. Loss of sleep is responsible for much of the unhappiness in this world and innumerable acts of desperation. Sleep is the brain's staunchest ally, and when it hides itself, the delicate machinery will soon rebel against the most indomitable will. Insomnia is the brain toiler's worst enemy.

“O sleep, O gentle sleep,
Nature's soft nurse! how have I frightened thee,
That thou no more wilt weigh my eyelids down
And steep my senses in forgetfulness?”

—*Shakespeare.*

If the sufferer from insomnia begins battle with his enemy by substituting artificially induced sleep for natural sleep, his downfall will be speedy and certain. The average physician, when consulted by the sleepless sufferers, gives the well-meant advice to cease work and seek rest. This advice, even when promptly accepted and carried into effect, is often void of the expected results, for

“Powerful indeed is the empire of habit.”

—*Publius Syrus.*

What is rest for some is toil to others. Idleness is not rest. The needed rest is rest for the overburdened neurons and useful employment for the neurons which have been at a standstill. The fashionable summer resorts, crowded, noisy cities, long wearisome journeys and luxurious clubs are not congenial to the sufferer from brain fatigue.

“Indolence, that dangerous siren, must be eschewed, or thou must be content to yield up whatever thou hast acquired by the nobler exertions of thy life.”—*Horatius.*

Labor is man's mission on earth, and when the monotony of one kind of strenuous exertion creates fatigue, a change of work and surroundings brings the much desired repose. The artisan and farmer, when affected by muscle fatigue, will find the busy city interesting, instructive and restful; the brain toiler should seek rest and relief in nature's work shops and art

galleries, where there are no telephones, no telegraphs, no daily news, and where the screech of the steam whistle and the hum of manufactories have no access. The trees, the shrubs, the flowers and the birds are the best friends of the weary, fretful soul.

The most successful physician is he who finds and removes the cause of disease. In no other disease is this more important than in brain tire. The most frequent cause of brain fatigue is care, a fact recognized by the poet of all poets when he said:

“I am sure care’s an enemy to life.”

—*Shakespeare.*

For the intelligent mind there is no loneliness in solitude. Nature’s handiwork is everywhere. It is seen in the desert, on the prairies, in the forests, the rivers, the lakes and the countless forms of animal and vegetable life.

Man is never alone. During the day busy nature is the entertainer, and at night the ever-varying sky is the silent instructor.

The seeker for mental repose away from all care in the midst of solitude will become conscious of the fact that

“He is never less at leisure than when at leisure.”

—*Cicero.*

And

“In solitude, where we are at least alone.”

—*Byron.*

There is no country in the world that has as many imprudent brain workers as the United States. The unbridled ambition for fame, influence and wealth leads to a strenuous life which has shortened the lives and curtailed the usefulness of thousands of our best

professional and business men annually, and there are no indications pointing to an abatement of the intense struggle for supremacy in all walks of life. Fortunately, there is no country that can equal our own in the number and attractiveness of places of genuine recreation for those who are in search of mental repose. We can boast of an expanse of seashore, countless placid lakes, endless prairies, numerous fascinating rivers, great primitive forests, snow-clad mountains, Niagara Falls and the Yellowstone and Yosemite National Parks. We have the best means of rapid transit by which the most remote parts of the country can be reached with ease and comfort in a few days. We have a variety in climate that takes away every possible excuse for tourists to cross the ocean on either side when in search for rest and recreation. Let me urge upon all those in need of mental rest to abstain from the worry and care of travel to foreign countries and select one from the hundreds of the most attractive places within the limits of our own country in which to spend their much-needed and well-earned vacation. Plain food, plenty of outdoor physical exercise and congenial mental occupation will accomplish more than medicines in resting the brain and in restoring its functions to normal. The dry, cool, bracing air of a high altitude is particularly well adapted in the treatment of functional nervous disorders. One of the most desirable places for this class of patients is unquestionably the Yellowstone Park. No valley within its limits has an elevation of less than 6,000 feet, while many of the mountain peaks within and adjacent to the Park rise from 10,000 to 14,000 feet above the level of the sea.



SENTINEL ROCK.

HISTORY AND LOCATION
OF
YELLOWSTONE PARK

IN 1872 the government took the necessary steps to establish a national park in the most romantic part of the Rocky Mountains—the northwestern corner of Wyoming, the Switzerland of the United States. Its boundaries overlap a few miles into Montana on the north and Idaho and Montana on the west. The original reservation is sixty-five miles east and west and seventy-five miles north and south. By an act of Congress, the 3,344 square miles which it embraces were set aside “and dedicated as a public park, or pleasure ground, for the benefit and enjoyment of the people.” It is in every sense of the word a public pleasure ground. It has recently been enlarged by thousands of square miles by an act of Congress providing for a timber reserve. It is one of nature’s masterpieces. Its alpine scenery is superb; its lakes and rivers of the purest water teem with choicest fish; its meadows and dark, primitive forests are decorated with countless varieties of flowers; it is the home of the noblest game, and its spouting, mysterious geysers lend an attraction found on no other continent. The most industrious student can spend a whole season in this wonderland, and then leave it with a keen sense of

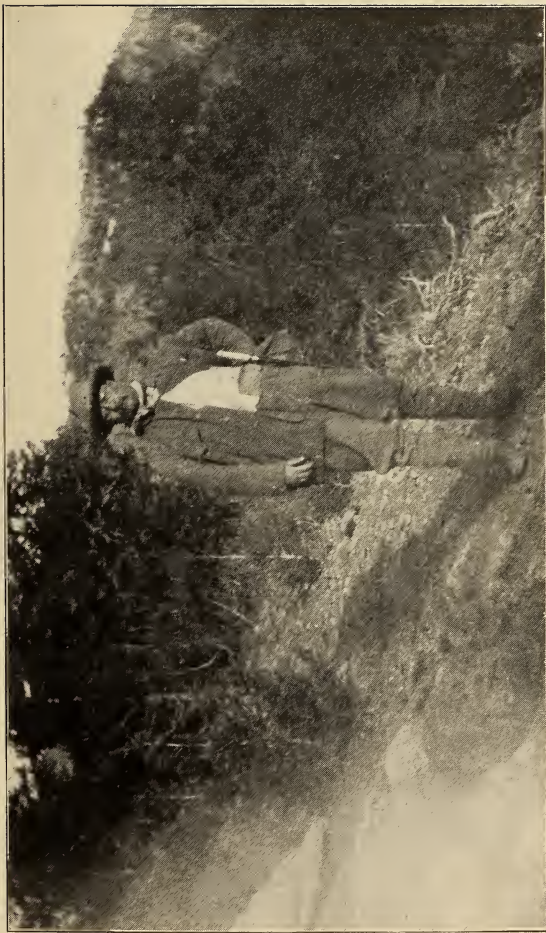
having seen only a few of its most important attractions.

ENTRANCE TO THE PARK FROM THE WEST.

Yellowstone Park is accessible from two sides—from Cinnabar on the north and Monida on the west. I visited the Park during my summer vacation in 1903, and selected the western entrance from Monida, making the trip in a direction opposite to the great stream of visitors. Monida is on the Oregon Short Line. It is the headquarters of the Monida and Yellowstone Stage Company. The Summit House is an excellent little hotel, where the traveler can spend a restful night. The stages, private carriages, horses and drivers leave nothing to be desired. The routine stage journey from here through the Park is made in seven days, for which a charge of twenty-eight dollars is made. As it was my intention to study the beauties of the Park thoroughly and travel leisurely, I made the trip in a private conveyance, accompanied by Dr. Salomon, of Coblenz, Germany, and his wife.

FROM MONIDA TO THE PARK.

We started Tuesday morning, July 7th, and arrived at Red Rocks, the first station, a distance of thirty miles, at four o'clock in the afternoon. Overcoats and blankets were necessary to protect ourselves against the chilly wind from the west. The distance from Monida to the boundary of the Park is seventy miles. The road is in excellent condition and for the most part level; the highest hill over which we passed had an elevation of less than 200 feet. The Monida route threads the foothills of the Rocky Mountains,



PRESIDENT ROOSEVELT IN YELLOWSTONE PARK.

skirting the lovely Centennial Valley, the Red Rocks Lakes, and after passing through the flowery meadows of Alaska Basin, crosses the Divide to Henry Lake in Idaho, whence it recrosses the range into Montana via Turghe Pass, near the western entrance to the Park. Fertile pasture lands, snow-clad mountains on both sides, crystal mountain streams and smooth, silvery mountain lakes charm the eye along the entire route. The scenery on the entire trip to the Park is as beautiful and captivating as the Park itself. It is a mistake to make the journey in one day. The little hamlet Red Rocks has a charming location, as the scenery around it is superb. The hotel is a one-story log house with a frame addition. We were privileged to occupy a separate cozy log house villa. A general store, saloon and a few log cabins make up the balance of the hamlet. Graylings at least ten inches in length were served for lunch and supper, and were greatly enjoyed by all. This fish and speckled trout are found in abundance in the mountain streams and Red Rocks and Henry Lakes. Epicures differ as to the merits of these two kinds of fish; we certainly had no fault to find with our grayling. From an eminence west of the hamlet a view is obtained which defies pen and brush to do it justice. The quiet, peaceful, diminutive hamlet below, with a high liberty pole in its center, the top graced by the stars and stripes floating in the evening breeze; in front of it a mountain stream hedged in by blossoming willows; behind it high mountain peaks covered here and there by blankets of snow; to the left the Red Rocks Lakes in the distance, and the Sheep Mountain, famous for a small herd of bighorns that so far have escaped the

onslaught of the most intrepid hunters and are frequently seen by the aid of glasses; to the right Bear Mountain, the home of the grizzly, silvertip, cinnamon and black bear; the whole panorama resplendent in the soft rays of the retiring sun.

TWO FAMILIES OF PRAIRIE CHICKENS.

On our way from Monida to Red Rocks we had an opportunity to make a practical study of maternal love and devotion. Within twenty feet of our carriage we surprised two prairie chickens with their offspring. Both mothers manifested intense anxiety for their ten to twelve little ones, who but a few days before had first seen the sage brush in which they had left the narrow limits of their shell. The little chicks, unconscious of danger, playfully scampered around their frightened mothers. The mothers refused to make use of their wings and seek safety in flight. They urged the little ones by all kinds of movements and suggestions to make the best use of their tiny legs in the direction away from their enemies. The retreat was slow, but orderly. We looked in vain for the fathers of the little babes; they scented danger in time and were out of sight when we rudely disturbed the morning reunion. This observation showed us as plainly as could be demonstrated by action the pre-eminence of maternal over paternal love and devotion. Another little animal that entertained us at short intervals during the entire day was the small variety of ground squirrel. Like the larger variety so common in California, it lives under ground. The head is that of a squirrel; the tail is long, but not bushy. It is said they are a cross between the real ground squirrel and



HERD OF MOUNTAIN SHEEP.

the mountain rat. They are sociable creatures and live in colonies. When alarmed, they hasten to the open door of their subterranean home, squat on their haunches, tail on the ground, body erect, arms against the chest and forearms slightly flexed, remaining in this attitude statuette-like, perhaps elongating or shortening the body for half an inch or an inch in jerks as they take in the surroundings; then again remaining motionless until, when they believe the dangerous moment has come, they plunge head forward into the hole with the speed of lightning.

The following day we left for Dwelle, forty miles distant, where we arrived in time for supper. This part of the journey is replete with pleasant surprises. The lofty snow-clad mountains are constantly in view, for the most part timbered to near the barren peaks; the mountain streams and rivulets are crossed at short intervals, and the excellent road skirts the Red Rocks and Henry Lakes; the rich meadows in the valleys, passes and gorges are veritable botanical gardens. The abundance and beauty of the subalpine flora reminded us of:

“And because the breath of flowers is far sweeter in the air (where it comes and goes like the working of music) than in the hand, therefore nothing is more fit for that delight than to know what be the flowers and plants that do best perfume the air.”—*Bacon*.

The day was perfect. In the morning we saw thin pellicles of ice on little pools near the hotel, but with the rising sun the chill in the air disappeared and all kinds of insects, including mosquitoes, left their hiding-places and enjoyed the warm sunshine, bent upon

enjoyment and search for food. The cloudless sky and the enchanting sceneries made this part of our journey restful and delightful. On the larger of the two Red Rocks Lakes we counted nine swans and a number of small flocks of ducks.

AN INQUISITIVE INHABITANT OF THE PRAIRIE.

A short distance from Lake View Hotel I discovered a moving mass in the high sage brush on the right side of the road which disappeared very suddenly. It was not a bird, and from the size and color of the disappearing body, I concluded it must have been a badger. Upon this supposition the carriage was brought to a standstill and a thirty-thirty rifle made in readiness. I looked intently in the direction where the mass disappeared, and after a short pause I recognized a sharp nose with black vertical stripes make its appearance in a large hole with a diminutive embankment behind. Very soon a pair of eyes and two short ears came in sight. The animal was evidently watching us as carefully as we were him. He did not think it prudent to advance any farther. I fired, and judging from the fur that flew, I was confident that the bullet had been sent in the right direction. We stepped up to the hole and found the dead badger barely within sight and reach. The bullet had done its deadly work by carrying away the right half of the lower jaw and by traversing the base of the neck. My companion took charge of the skin and will have an American badger in his collection on his return to Europe.

TWO SANDHILL CRANES TAKEN BY SURPRISE.

Between the Red Rocks Lakes and Henry Lake we discovered two immense birds in a ravine below a bank of snow and near the edge of the pine forest. They stalked about majestically and in a very bungling manner jumped across a ditch, slowly wending their way in the direction of the near cover. The hunting spirit of my friend was suddenly awakened, and although the birds were at least 150 yards away, he grasped his rifle, took deliberate aim and fired. With the report of the gun the birds rose, and with a penetrating gr-gr-gr began their flight across the valley. Another bullet was sent after them, which had the effect of still more increasing the speed of their enormous wings. Sandhill cranes are not seen often in this section of the country, and it was a pleasant experience for my companion to see and shoot at these strangers of the alpine mesa.

Lake Henry is a beautiful sheet of water and the source of the Snake River. It is a favorite place for fishermen in pursuit of speckled trout and grayling. Snake River, near its origin where it is crossed by the road, is at least fifteen yards wide and on an average three feet in depth. The excellent pasturage all along has attracted many cattlemen who live in small log houses always on the bank of a mountain stream. After crossing Snake River, the road enters Turghe Pass. At the entrance of the Pass the road leads through an immense dense grove of poplars, the light green trembling foliage of which furnished a strong contrast with the dark green background of pines. From here to Dwelle the valley is narrow and vegeta-

tion more scanty. Dwelle has a large log hotel with a new annex of similar construction, and in case of necessity tent accommodations. The rooms are comfortable and the kitchen satisfactory and freely supplied with grayling and trout from Henry Lake and the south branch of Madison River. In the general store the traveler will find everything he will need for a trip through the Park. In the hotel is a collection of prepared skins and mounted specimens of nearly all game animals of the Rocky Mountains. A feature of this collection is a number of superb elk heads. Dwelle is six miles from the western boundary of the Park. We changed horses, carriage and driver at this station, and next day left for the Park. The road passes through a dense forest of pine until the bridge that spans Madison River is reached. In crossing the bridge we encountered a number of ground-hogs who appeared to be on the most intimate and best terms with the tourists, so much so that we succeeded in photographing some of them at a range of less than ten feet. When pressed too close they would unwillingly crawl into their hiding-place among the loose stones underneath the bridge. We made the journey from Dwelle to the Fountain Hotel, a distance of twenty-eight miles, in less than five hours. The road follows the Madison River from the bridge to where it is formed by the junction of the Firehole and Gibbon Rivers, when it passes through Christmas Park, so called from the arrangement and beauty of pine trees on both sides of it. The Fountain Hotel is a large frame structure painted yellow, in full view of the geysers of the upper geyser basin. Although built seven years ago, it is a

modern structure with all conveniences found in the hotels of large cities. A company of cavalry is stationed a few miles north of the hotel, and we found the soldiers busily engaged in the construction of a new telegraph line, while some of the officers were wading the river and exercising their muscles in casting for trout.

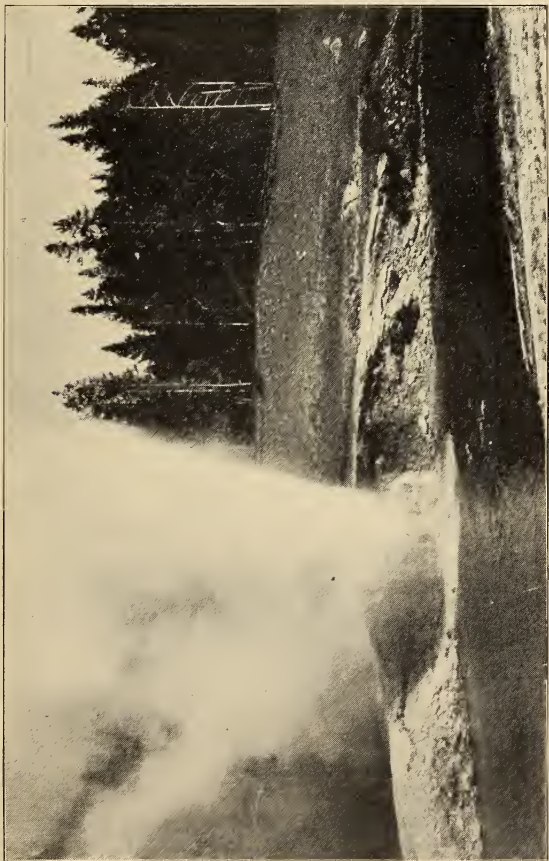
BEAR HOTEL GUESTS.

In the evening we joined the remaining guests of the hotel on their way to a place about 200 yards behind the hotel, the feeding ground for bears. The food is deposited on a little knoll guarded in front by a single wire fastened to trees. On a board nailed to one of the trees was printed in large type the warning: "Keep Out—Danger." We were not kept long in suspense. A one-year-old black bear came out of the woods noiselessly and cautiously, found the expected morsel in the shape of a large soup bone, seized it with his mouth and slowly walked from the open place into a clump of trees where, in full view of the audience, he satisfied his sense of hunger. Very soon he was joined by a larger companion, and for reasons we could not comprehend at the time, both of them climbed the same tree, the smaller one in the lead. These bears were shot at repeatedly, not with guns, but with a number of kodaks. The reason for the climbing of these bears became evident when an immense cinnamon bear took possession of the food supply. This bear is well known to the residents of the hotel, who informed us that when he comes all of the little bears are expected to retire. The cinnamon bear took his time in consuming his evening meal, and

no amount of whistling or loud talking could disturb the equilibrium of his well-balanced instinct. When darkness set in, the little bears in the tree were still watching the giant of the bear camp disposing of the rations so liberally furnished by the hotel. This cinnamon bear is the one that figures so conspicuously in the collection of photographic illustrations of the bear tribe of the Park. He is seldom absent at supper time, and his arrival is a strong hint for the smaller bears to clear the field. When he has finished his meal the subordinates are welcome to what is left. The big bear is not vicious, but extremely selfish and intolerant. It is to his advantage that the grizzly is no competitor for the free food supply. With all his shortcomings as far as the nobler virtues are concerned, he is always a welcome visitor, and during the open season he is sure of an appreciative audience. He appears to know that the visitors are not only anxious to see him, but equally anxious to carry his shadow home with them in the camera, as he condescends to pose in all possible bear positions, to the great delight of the amateur kodakists.

THE GEYSERS.

The greatest wonder of the Yellowstone Park is the Geyser Valley. The other attractions of the Park can be found elsewhere on an equal and some of them on a superior scale, but to see a geyser in this country we must visit the Yellowstone Park. A geyser is a spouting hot spring. Hot springs are numerous and are found in most countries, but geysers only exist in Iceland, New Zealand and the Yellowstone Park. The geyser with which every child who has studied geog-



RIVERSIDE GEYSER.

raphy is most familiar is the one near Hankadale, Iceland. The hot wells and geyser here were due to the volcanic eruption of 1294, when the old hot springs disappeared and those now in existence came. Iceland's great geyser spouts very irregularly, sometimes a very large volume of water to a height of 100 feet. The only other geysers are on the North Island, New Zealand. Napa Valley has boiling springs improperly called geysers. Geyser action remains a puzzle to the scientific men. Many theories have been advanced. The theory entertained by Bunsen is the one most generally accepted. According to Bunsen, the ejection of the water is caused by explosive action due to the heating of the water under pressure in the lower part of the geyser-tube to considerably above the boiling point. The elastic force of the heated water overcomes the weight of the superincumbent water, and the relief from pressure is so great during the ascent of the column of water that steam is generated rapidly and to such an amount as to eject with great force from the tube a great quantity of the water. The water thrown up by the geysers contains silica, which when deposited around the margins of the craters constitutes what is known as geyserite. It occurs as white or grayish, porous, in stalactitic, filamentous, honeycomb or cauliflower-like forms. The geyserite stones are stratiform, very hard, the layers varying greatly in thickness. The stones exempt from further geyserite formation crumble on the surface when the disintegrating stone is transformed into small chips and sand-like debris. All of the orifices of geysers have everted or undermined margins of this flint-like geyserite, which by increase of the deposits grow

into cones variable in shape, sometimes resembling a cup, a bowl, or even a castle, varying in height from a few inches to twenty feet (Castle geyser).

THE YELLOWSTONE GEYSERS.

The Yellowstone geysers are noted for their number and variety. The place to study geyser action is in the Firehole Basin. To the tourists who, like ourselves, have seen these first, the fearful geysers of the Norris Basin have lost much of their terror. The Firehole Basin is divided into lower, middle and upper, all of which have geysers of established reputation. These basins occupy a valley of varying width extending from north to south, bisected by the Firehole River and walled in by mountains covered with a dense pine forest from base to summit. The valley is eight miles in length, and with the exception of short intervals, clouds of steam are never out of sight, and the gurgling, hissing and blowing of the geysers, large and small, almost constantly engage the ear. The basins present a desert-like appearance, the so-called formations made up of the silica precipitations, the geyserite in solid stone or the crumbled debris of the surface of the underlying stones. All of the basins appear like underground cities with smoking chimneys reaching to or projecting from the surface. In fact, the whole valley is one immense subterranean caldron with vents in the form of fissures and craters varying from a mere chink to great clefts and from a circular opening the size of a thimble to craters thirty feet in diameter. These geysers undoubtedly have a common volcanic heat supply and communicate with each other by a complicated network of subterranean pas-



EMERALD SPRING.

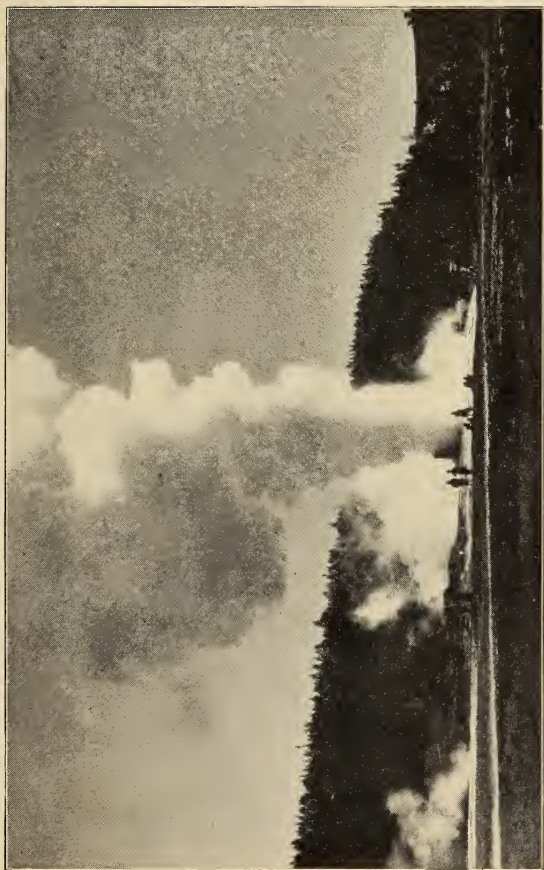
sages. All of the active geysers contain and eject water heated to the boiling point. Geysers appear and disappear. Some of the largest geysers which were active less than twenty years ago are now only hot wells, and some of the geysers have been born and have won fame since that time. The steam, the columns of hot water of the spouting geysers and the bubbling, gurgling, hissing, blowing noises impart to these basins an awe-inspiring aspect. In contemplating these mysterious spectacles of the strange underground furnace, the words of Milton occur to the visitor:

“For hot, cold, moist, and dry,
Four champions fierce
Strive here for mast’ry.”

No wonder the savage Indians avoided the Firehole Valley. They called it the spirit land. None of the numerous Indian trails near it lead into it. They looked upon these underground smoking cities from a safe distance. The craters have been shaped into strange forms. Some are artistic, others grotesque. All of the principal geysers have a signboard upon which is printed their name in large letters so that the signs can be read at a distance. These names are descriptive of the form of the crater, the colors reflected by the water in the hot well, or the manner of action during the explosion. The following are a few of the most familiar names: Giant, Lion, Castle, Constant, Grand, Prismatic, Beehive, Sponge, Butterfly, Sawmill, Faithful, Turquoise, Fan, Morning Glory, Surprise, Fountain, Mortar, Oyster, Boiler, Black Growler, Minute Man, Skyrocket and Grotto. The largest geyser in the world seventeen years

ago was the Excelsior in the Middle Basin. At that time it spouted regularly every two hours six months out of the year, and sent the boiling water 300 feet into the air. To-day it is simply a hot well. There are a dozen or more craters on Mount Schurz, a mountain 2,000 feet above the level of the living geysers. They have lost their geyser action and emit only a feeble column of steam. The number of dead geysers and hot wells which formerly were great geysers is very large, probably outnumbering the active geysers. This is more especially the case in the Norris Basin. Three years ago there was a large geyser in a deep gorge of the east bank of the valley. This geyser is now extinct, and a few yards above it the two most terrible geysers of this basin have formed, the Boiler and the Black Growler. The Boiler is the most terrifying of all the unearthly underground caldrons in the Park. When it first made its appearance, the steam escaped with such force that the roar it created could be heard at a distance of a mile. It has never spouted water. The steam which escapes now from two orifices is ejected with such force and such a large volume as to frighten the most intrepid when standing near the awful chasm. Less than 100 feet above it is the Black Growler, one of the two geysers which have taken the place of the one that disappeared three years ago. From a number of small craters in a line representing an immense fissure steam is ejected with tremendous force, and the hot water is thrown a distance of only a few feet in intermittent jets.

For several years there existed near the Congress geyser in the Norris Basin, the "Steam Vent," one of



GIANT GEYSER.

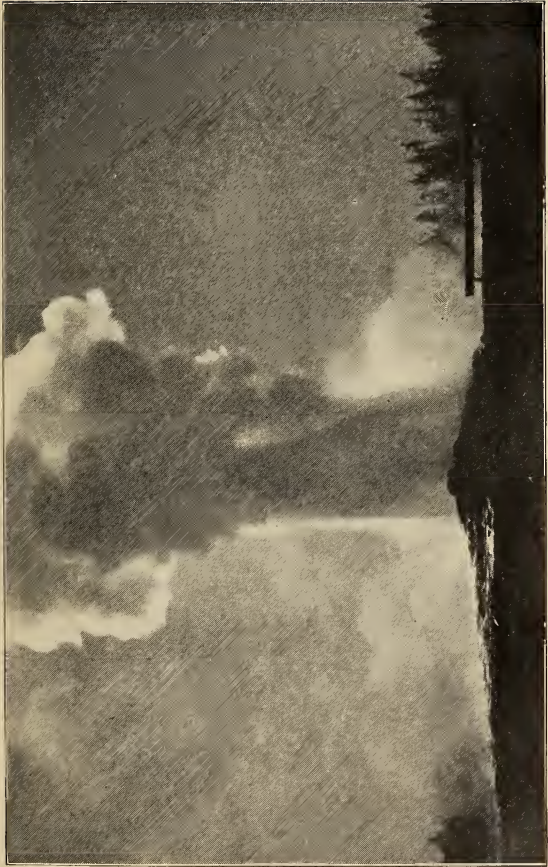


the features of this basin. It consisted merely of an opening in the rocks from which a great quantity of steam was constantly escaping; the roaring of the same could be heard for miles. During the winter of 1893 the "Steam Vent" and the Congress appeared. The first eruptions were of great force and completely blockaded the road with masses of earth and geyser formation. The water of all of the geysers has a strong odor of sulphur, but the quantity of sulphur varies; its presence accounts for the turbidity of a few of the hot pools, and one of the geysers of the Norris Basin is noted for the amount of sulphur mixed with the boiling water and deposited on the margins of the long, narrow fissure-like crater. The Norris Basin is known for the number of small craters; many of them but thinly crusted are insufficient to support a person's weight, and for the safety of the visitors planks have been laid over the most dangerous part of the valley. The visitor experiences a greater sense of danger in walking over the smooth, steaming, boiling surface of the Norris Basin than the geyser basins of Firehole River Valley. The Constant geyser is a punctual and instructive entertainer. Every minute he sends from the center of the round basin a jet of steam and boiling water to a height of forty feet, while the column of water seldom exceeds ten feet. With each act he demonstrates to the astounded, admiring visitor geyser action. He is not vain, but in a modest manner exhibits his virtues—punctuality, perseverance and, as his name indicates, constancy. Many of the geysers in the Firehole River Valley pour the boiling water directly into the river,

but this admixture has had no destructive effect on the inhabitants of the cold mountain stream.

A GEYSER IN ACTION.

Geysers action is variable, as it depends largely on the size and construction of the crater tube and the steam pressure which lifts the water above the surface of the crater. The elevation to which the water is projected varies from an inch to 100 or more feet. The innumerable baby geysers with an opening not larger than a thimble spout diligently, but seldom succeed in throwing the water more than a few inches above the diminutive crater. The most famous geysers, such as the Faithful, Castle, Giant and Grand, at the present time, on an average force their boiling contents to a height of 100 feet. Some of the geysers, like the Old Faithful and Minute Man, have gained a well-merited reputation for their punctuality. The Old Faithful requires sixty-five minutes to gather sufficient strength to accomplish his set task, while the Minute Man goes through with sixty-five smaller performances during the same space of time and with the same degree of punctuality. Some geysers, like the Giant, have become unpopular for their unreliability. The Giant takes from five to ten days' rest between his giant acts. The Surprise will spout when least expected. To see a large geyser in action is to witness one of nature's grandest acts. I will attempt to describe one of Old Faithful's displays. The opening of the crater of this geyser is two feet wide and four feet in length. The crater occupies the summit of a mound about ten feet in height, made of geyserite, an indication of its great age. Seated on a bench upon



OLD FAITHFUL AT SUNRISE.

the summit of an extinct geyser of the same height and within twenty yards of Old Faithful, I was one of many visitors prepared to witness the next act. From the crater a large volume of steam escapes constantly, which, when the wind is not in its way, rises to a height of at least 100 feet. When at rest the crater contains no water. The first indication of the gathering of the subterranean force is the increase in the volume and force of the escaping steam with a corresponding accentuation in the hissing and blowing noise which attends this preliminary act. The next phenomena include filling of the basin above the crater with seething, boiling water, followed by a few feeble explosions which throw numerous jets of water several feet into the air. These jets rise and fall a number of times, when all of a sudden with a loud, thud-like noise, a column of water is shot up into the air to a height of 100 feet or more. The act has now commenced in earnest. After this solid column of boiling water has been thrown up to its maximum height like a rocket, its descent is contested by a few additional explosions of the same force, and the struggle between the rising and descending water begins. The fierce contest between the steam and gravitation forces is seen in the air. The descending water yields to the explosive force and falls in a spray over and around the ascending column of hissing, boiling water. The large drops of falling water in the intense light of the sun appear like a shower of diamonds. The column becomes lower and lower and wider and wider, and the audience has come to the conclusion that the act is over. Not so the Old Faithful. In a last and desperate effort he shoots up another column to a

height of perhaps fifty feet. The strength now leaves him and all he can do for another minute or two is to hold the seething mass four to six feet above the rim of the basin, when a sudden collapse sets in and the water retreats over the crater and much of it falls to its underground vat to be reheated and utilized in the next act, while the overflow forms rivulets of hot water which soon empty into the nearby Firehole River. The whole performance is finished in from four to five minutes. We studied geyser action for three days in the Firehole Valley and Norris Basin, and left the latter for Mammoth Springs Sunday, July 12th, greatly pleased with what we had seen and learned. The road from the Fountain Hotel to Norris Basin passes through a primitive pine forest and follows for the most part the Firehole and Gibbon Rivers. A large force of men is employed in improving the road, which is now in an excellent condition. On our way we met twelve stage coaches and a number of private carriages going in an opposite direction, every seat occupied, showing that the busy season had commenced. A new and large hotel is now in process of construction at the Upper Basin, which will be completed with the opening of next season. At present the hotel proper consists of an office, a dining-room and kitchen. The patrons live in tents supplied with stoves and comfortable beds. Norris Basin is a lunch station, but a small hotel can accommodate all the guests who desire to spend more time in visiting the interesting geysers and formation of this basin. As the distance from the Fountain Hotel to Mammoth Springs is forty miles, it is advisable for tourists who travel leisurely to spend one night at Norris Basin, half-way between the two large hotels.

The road from the Fountain Hotel to Norris Basin follows the Firehole River and later the Gibbon canyon and river of the same name. Gibbon Falls, although only twenty feet in height, is an interesting sight viewed from the roadbed above it cut out of the solid rock. The moment the visitor arrives at Norris Basin until he leaves it, he breathes air strongly impregnated with sulphurous gases.

THE GEYSERS AS ARTISTS.

“Nature is the art of God.”

—*Browne.*

The geysers are not only the very personification of a mysterious, awe-inspiring, hidden power, but when at rest they assume the function of an artist. They paint in colors human art and skill cannot reproduce. How artists must envy their skill! Some of these boiling hot wells produce a paint which the coarse human hand can use in beautifying the rough building material. The Mammoth Paint Pots in the Lower Basin of the Firehole River Valley manufacture a white paint that has been used in painting the interior of the adjacent Fountain Hotel. This manufacturer of paint is one of the most remarkable features of that part of the geyser region. This strange mud caldron has a basin which measures forty by sixty feet, with a mud rim on three sides, which is from four to five feet in height. In this basin is a bubbling white mass of the consistency of cream in a state of constant agitation. This remarkable mud well has been in action as long as it has been known and has undergone but little change. The constant boiling

has reduced the contents to a thoroughly mixed mass of silicious clay which mixes readily with turpentine, and when thus mixed constitutes an excellent white paint. On the north side of the mud basin the rim is low and forms the edge of a flat of pink and red, which is cracked and seamed, and over which are scattered thirty or forty solid mud cones of a pinkish color, some two to three feet in height. The seething, bubbling, dull white mass is the same now as when this mysterious associate of the many neighboring geysers was first discovered. The hot wells, resting geysers, contain crystal water remarkable for its transparency. The reflection of the rays of the sun and pigmented deposits give rise to a blending of colors such as never has been seen on canvas. It is the delicacy of coloration and the almost imperceptible blending of the tints that characterize the touch of the invisible brush of the geyser artist. Some of these hot wells represent in color the purest gems, like the turquoise, emerald and sapphire, from which property they have derived their names. The different tints of blue and green are seen in many of the hot wells. The geyser artist has left a masterpiece in the middle basin of the Fire-hole Valley—the Prismatic Lake, once an immense geyser. It is a beautiful sheet of water somewhat oblong in shape, 400 feet in its longest diameter. The center of this pool is dark blue, shading into a lighter tint of the same color; then comes a zone of delicate yellow, fading into orange. Outside its rim there is a brilliant red deposit which almost imperceptibly shades into the different tints of purple and brown, all upon a gray background, the pulverized silicate deposits surrounding the diminutive lake. It is a

picture of the geyser artist to which no painter's brush can ever do justice. The greatest variety of colors and most delicate blending of tints are seen on the artistically carved surfaces of the Minerva and Jupiter Terraces below the Mammoth Hot Springs. These pictures on the terraced walls exhibit all the colors of the rainbow, and the blending of the many tints is so delicate that the shading between them is absolutely insensible. The student of nature's picture gallery will have to acknowledge:

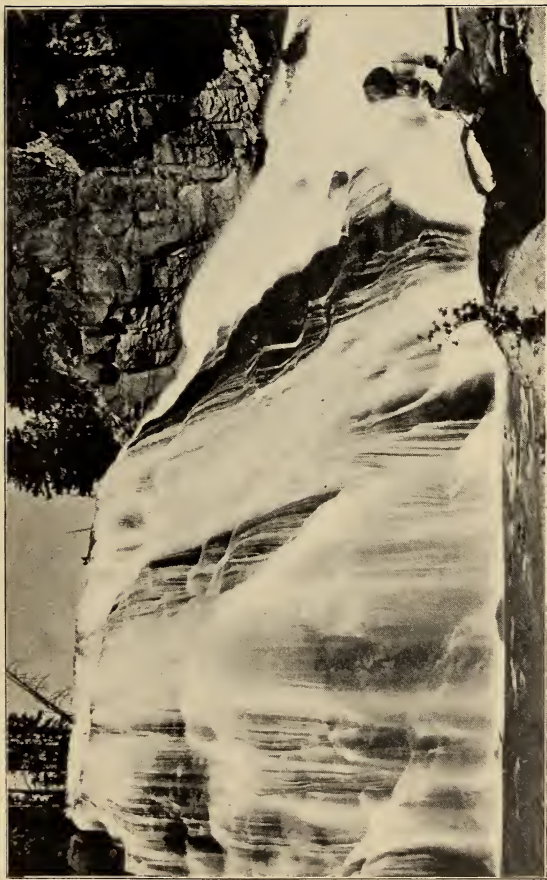
“But who can paint
Like Nature? Can imagination boast,
Amid its gay creation, hues like hers?”

—*Thomson.*

FROM NORRIS BASIN TO MAMMOTH HOT SPRINGS.

The visitor who leaves Norris Basin does so deeply impressed with what he has seen and heard. He has looked with awe upon the effects of the fearful underground power. He has seen nothing beautiful. While in the smoking basin he was made to feel that if by any sudden change the steaming vents and roaring craters should become blocked, an explosion would occur that might equal the recent catastrophe wrought by Mount. Pelée. He has seen nature in its angriest mood and with a certain sense of relief resumes his journey in the direction of a more peaceful, restful scenery. The smell of sulphur is stronger in the Norris Basin than in any of the others, and all of the surroundings impress the visitor with the thought that he has escaped a calamity when he again breathes the pure mountain air away from the dreadful basin. After such an experience nothing could be more pleas-

ant and refreshing than the drive to Mammoth Hot Springs, a distance of twenty miles over one of the best roads in the Park, which is sprinkled at regular intervals to keep it free from dust. This road is a masterpiece of road-making. In many places it is cut out of solid rock and has a stone wall on the canyon side. It skirts a number of charming little lakes. On one of these we saw a number of ducks accompanied by large families of tiny chicks but a few days old taking their first lessons in the art of swimming. Their mothers scented danger on our approach and urged them to increase their speed in the direction of safety. At the same time we discovered a flock of geese in the tall grass fringing the lake. They left their hiding-place and floated gracefully over the glass-like, smooth surface of the lake. The road passes through Gibbon Valley and for some distance follows the river of the same name. The canyon is closed in by pine-clad mountains, and on the way views are obtained of Mount Schurz, named after Carl Schurz; Mount Holmes, so called in honor of the distinguished anatomist and poet, and the Electric Peak. A few miles from Norris Basin is Roaring Mountain on the right, the summit 8,000 feet above the level of the sea, riddled with steaming vents and craters. The whole canyon is a geyser region dotted with hot wells and springs. Little Beaver Lake owes its existence to the busy animal which gave it its name. The numerous beavers living in this locality obstructed a creek by building a zigzag dam several feet in height and at least thirty yards long. The beaver is not only an industrious animal, but he is endowed at the same time with no inconsiderable engineering talent. He



GIBBON FALLS.

will cut a tree six and more inches in diameter on the bank of a river, creek or lake, in such a way that it will fall in the right direction. All beavers evidently do not possess the engineering talent in the same degree, and it seems, to judge from their work, that they have recognized overseers to plan the work. I found a number of years ago in the northern part of Michigan, a beaver-cutting in the form of a stump on the edge of a river that proved the correctness of this statement. About a foot above this stump the tree, six inches in diameter, had been cut through one-half on the wrong side. At that stage of wood-cutting a consultation must have been held, as the cutting was done later on the opposite side and the tree fell in the desired direction. Along the banks of the Firehole River I observed many beaver-cuttings, and some of the trees, owing to ignorance or lack of proper instruction, fell in the wrong direction out of reach to be used in the construction of the proposed dam.

The thirsty traveler can refresh himself at Apollinaris Spring, a few yards from the road in the dense forest on the right side of the road—a delicious spring of natural Apollinaris water, as refreshing as the genuine article from the German springs. A point of great interest awaits the tourist when he is in sight of volcanic glass, the Obsidian Cliff. The columns of pentagonal-shaped blocks of obsidian, rising some 250 feet above the road, reflect the rays of the sun mirror-like. This glass is jet black and quite opaque, with traces of similar formation variegated with streaks of red and yellow. This volcanic glass is exceedingly hard and was used by the Indians for arrowheads. Swan Lake Basin is a favorite camping-ground for

deer and elk during the winter. It is a prairie-like expansion of the valley covered with a luxurious growth of grass.

Golden Gate, four miles from Mammoth Springs, is a rugged, narrow pass between the base of Bunsen's Peak and the southern extremity of Terrace Mountain, through which flows the west branch of the Gardiner River. The wall-like cliffs are covered with sulphur moss, imparting to them the appearance of old gold. It is in this pass where the government has spent much money and where the engineer of the Park, Captain Chittenden, has displayed great skill in cutting the road through solid rock.

Passing through the Golden Gate, the road by many curves enters the Silver Gate and the Hoodoos, a wild region covered with immense white rocks thrown about in great confusion. This region was formerly considered inaccessible and was frequently sought as a hiding by the Indians when at war among themselves or with the white men. From this point the road descends on a sharp incline until the tourist is in sight of

MAMMOTH HOT SPRINGS.

There is a strong contrast between Mammoth Hot Springs and the geyser basins. In the distant past there were undoubtedly many large geysers here, as is evident from the number of extinct craters and the character of formation. Liberty Cap and Devil's Thumb in all probability belong to this class. There are no geysers here now, but many hot wells and springs. This place is noted for the plastic character of the formation. There are no geyser noises, very



OBSIDIAN CLIFF.

little steam, and the air is almost entirely free from the disagreeable odor of sulphur that pervades the air of the geyser basins. The hot springs perform their artistic work silently and without interruption. The terrible is absent here; works of art meet the eye at every turn. The present active portion of the hot springs is located on the eastern slope of Terrace Mountain, from fifty to 300 feet above the plateau upon which the hotel and Fort Yellowstone are constructed. In contemplating the wonderful works nature exhibits here for inspection and study, we can not resist the thought:

“Those things are better which are perfected by nature than those things which are finished by art.”—*Cicero*.

In examining the many objects of interest here, the visitor must consider himself in the atelier of a master sculptor and painter. Liberty Cap, at the foot of Terrace Mountain, is a cone-shaped column fifty-two feet high with an extinct crater at its summit. Near by and partially imbedded in the hillside is the Devil's Thumb, a lower but wider cone of similar origin and formation.

The Minerva Terrace has a hot spring on the summit with a scanty and irregular water supply. The water is heavily charged with carbonate of lime, so that any article placed where the water can run over it is soon coated with a hard white crust of carbonate of lime. The articles sold in one of the shops are allowed to remain immersed in the water for three days. The pools of hot water are fringed with

stalactitic masses in all possible shapes, presenting the most delicate coloring of various tints.

Jupiter Terrace, the largest of the group, with an elevation of about 100 feet, is the center of attraction, presenting as it does the most exquisite plastic forms and the greatest variety of coloring and shades of tint. Viewed as a whole, the surface appears as a solid cascade, over which the hot water flows in a very thin sheet in minute ripples and wavelets corresponding with the irregularities of the formation. The picture on the carved stone wall is as pleasing as it is imposing. The grooves, ridges and gentle curves upon the recent formation add to the beauty of the scene and enhance the charm of the coloration. The absence of gurgling and hissing noises and of large volumes of steam imparts to the whole terrace region a peaceful aspect, and the magnificent panorama is changed from time to time by new formations and the varying quantity of water issuing from the hot wells. Among the most interesting of the extinct craters is Devil's Kitchen. Through an opening large enough to admit an adult one can descend a ladder into the kitchen. The moist and heated atmosphere is oppressive, and no one remains longer than a few minutes before he feels an urgent desire to come to the surface for fresh air. There are a number of smaller terraces, but the Jupiter overshadows them so much in grandeur and beauty that they hardly deserve mention here. After all, Mammoth Hot Springs is not without a baby geyser. The Orange Geyser has to answer for his species and is much admired by the visitors who begin the inspection of the Park from this point. It consists of an oblong mound of geyser deposits twenty



GARDINER CANYON.

feet in height. The diminutive geyser, which spouts on a small scale without ceasing, and the brilliant display of colors are its chief attractions.

The Mammoth Hotel, facing the new park, is a large and commodious building. It is the only hotel in the Park that employs colored waiters in the dining-room. A band plays every evening, during and after dinner, for the entertainment of the guests. The headquarters of the military force, consisting of cavalry under command of Major John Pitcher, is located here and is known as Fort Yellowstone. Major Pitcher takes great interest in the development of the Park, and is a favorite with his men as well as with the visitors to the park. The little Post Hospital is open to civilians in need of medical or surgical service, a great privilege for the visitors as well as inhabitants of the Park. Drs. Usher and Skinner are the medical officers now on duty.

From here our little party made an excursion to Gardiner, the railway terminal to the north entrance to the Park. The little hamlet faces the entrance to the Park. The road descends in a gentle incline the entire distance, six miles, and follows Gardiner River, a beautiful mountain stream. Not far from Mammoth Hot Springs the river runs several hundred yards parallel with Boiling River, the outlet of the Hot Springs, which finally pours its boiling water into the cold bosom of the mountain stream. It is here that the fisherman can stand on the narrow strip of land separating the two rivers, catching trout on one side and cooking them on the other without changing his position. The scenery along the entire drive is beautiful, and as the road is sprinkled, the drive is

made more pleasant by the absence of dust. The arched entrance to the Park, of solid volcanic stone, is nearing completion and is a credit to the architect who designed it, as well as the master mason who has the work in charge. The railway station at Gardiner is a unique structure. The building has a stone foundation upon which rests the superstructure of immense pine logs in the bark. The shed consists of upright pine logs of similar size which support the roof. Gardiner has a large general store and seven saloons, and a number of log houses for laboring men and their families. From here Electric Peak, with gulches filled with snow, stands out in bold relief as a conspicuous landmark which can be seen from a great distance. It has received its name from the fact that it is the center of violent thunderstorms and that it unsettles the compass when brought too near its bare peak.

FROM MAMMOTH HOT SPRINGS TO THE GRAND CANYON.

The distance from Mammoth Hot Springs to the Grand Canyon is thirty-two miles. We made the trip Wednesday, July 14th. We retraced our steps as far as Norris Basin, where we stopped for lunch. From Norris Basin the road ascends gradually to the Divide, more than 8,000 feet above the level of the sea. The wide valley, the Virginia Valley, is heavily timbered with pine, and owing to the high altitude and the scarcity of water, vegetation is scanty and animals of all kinds avoid this region. As this road is not sprinkled, the clouds of dust proved very annoying. Literally, we were forced to breathe and eat dust. A white post marks the exact point of the Divide. We



GOLDEN GATE.

were hardly conscious that we had reached the watershed, the parting of the waters for the Atlantic and Pacific slopes. But such was the case. Of one thing we were certain, namely, that in this instance Cowper was wrong when he wrote:

"Mountains imposing
Make enemies of nations who had else,
Like kindred drops, been mingled into one."

We know that the people on both sides were one in thought and action, and that, regardless of the Divide, they were loyal to the same government and loved and admired the same flag. Descending from the Divide, the verdure of the soil again appeared and increased in loveliness as we approached our destination.

THE GRAND CANYON OF THE YELLOWSTONE.

"Give me an ounce of civet, good apothecary,
to sweeten my imagination."

—*Shakespeare.*

From all he has read and heard, the visitor to the Yellowstone Park expects to find its greatest wonder on reaching the Grand Canyon. In this anticipation he will not be disappointed. Much as he may have admired the geyser basins, the hot wells and springs, the primeval forest, the rich flora and fauna, the bubbling brooks and rushing rivers, the Grand Canyon will reveal to him the most precious works of nature's school of art. The moment this great cleft in the very midst of the high plateau of the Rocky Mountains is in sight, he forgets the annoyance caused

by the clouds of dust on the way over the Divide, and at once his eyes feast on the wonders it contains, and upon his ears falls the music of the nearby upper falls of the famous Yellowstone. Before he goes any farther it is well for him to ask for an ounce of civet, that he may prepare his mind and soul for what awaits him when he begins sight-seeing next day, after a refreshing sleep during the first night. It needs a mental preparation of the right kind to see what there is offered to be seen in this, the most fascinating spot of the Park. The man or woman who turns away from this great canyon dissatisfied is hard to please and must be classified with the pessimists referred to by the poet when he said:

“Ah, how unjust to Nature and himself
Is thoughtless, thankless, inconsistent man!”
— *Young*.

The Canyon Hotel is a plain, large frame building painted in slate color and with a red shingle roof. It is well managed, and from the veranda facing south a fine view is obtained of the surrounding country. In the distance the snow-clad peaks of a range of mountains project far above the level of the vast meadow plateau on the opposite side of the river. To the left is an undulating, dark green sea of the primeval pine forest, lost on the summit of a low range of mountains far away. To the right the canyon widens into the vast expanse of pasture of Hayden Valley, fringed by forest in the direction of the setting sun. Behind and on each side of the hotel is an undulating meadow, the favorite place for the evening promenade of the mule-deer.

SUPPER FOR A SILVERTIP BEAR.

Like most of the hotels in the Park, the Canyon has its regular bear guests during the open season. About 300 yards west of the hotel, in a narrow, shallow valley near the edge of the forest, is the feeding place. The regular time for the bears to avail themselves of the hospitality of the hotel is from eight to nine o'clock in the evening. The visitors congregate behind the brim of a hill facing the feeding ground. The bear attendance is somewhat irregular; seldom less than two make their appearance at the expected time. When we attended this performance the audience was large and certainly appreciative, when at half past eight an enormous silvertip, followed by a cub, rushed out of the dark woods and ran at full speed down the short, sharp incline and at once, without any preliminary ceremony, attacked what had been deposited for supper. He was hungry, and reached out right and left and devoured the food with haste and a keen relish. The little one was not as greedy, but did his share in disposing of the food supply. The large audience undoubtedly had something to do with the speed with which the food disappeared, as was evident when the monster silvertip grasped a large bone with his giant jaws and disappeared as unceremoniously as he came at a full run up the steep bear path and into the dense, dark woods, the little one following at his heels.

The road follows the river bank for two miles and a half, where it terminates at Inspiration Point, near the end of the picturesque part of the Grand Canyon. The canyon, the rapids and the falls can be viewed from different points with and without names. The points

from which the wonders of the canyon can be viewed to greatest advantage are Point Lookout, Grand View, Inspiration Point and Artist's Point. The canyon itself as far as it can be seen is a tortuous excavation out of a complicated rock formation, with steep, sculptured inclines from 300 to 400 yards wide, narrowing down to the bed of the river. From the hotel to Inspiration Point is two miles and a half; in reaching the same place the water travels nine miles in the zigzag, rock-lined and rock-floored bed of the river, dashing over falls and rapids from one end of the canyon to the other. Following the road downward, a bridle path on the left leads to Mount Washburne, named after the late Elihu B. Washburne, one of our ablest statesmen and father of Hon. Hempsted Washburne, ex-mayor of Chicago. Mount Washburne is more than what its name implies; it is in reality a range of mountains, from the summit of which several bald peaks pierce the sky. The distance from the hotel to one of its peaks is twelve miles, and as the journey can be made the whole distance on horseback, this side trip is a pleasant and profitable one. A few hundred yards farther on from the mountain path is an isolated reminder of the glacial period in the form of an immense granite boulder at least fifteen feet in height. It would be guesswork by thousands of years to fix the time when this landmark of that remote period was left behind by the ocean of ice.

GRAND CANYON OF THE YELLOWSTONE RIVER.

To undertake to describe Grand Canyon is a thankless task, from which with few exceptions the visitors refrain for reasons which grow with the progress of



BEAR BOARDERS.

the inspection. The immensity of the chasm is apparent, no matter from what side or point it is viewed. Who knows how this enormous cleft in the rock was made? The eye can not fathom its depth with anything approaching a correct estimate. It is only by comparing certain objects that we can realize that time and a combination of forces have chiseled away the rock and lowered the river to the depth of 2,000 feet. Rain, snow, ice, heat, water and chemical action have been the chisels and hammers employed in nature's workshop in accomplishing the stupendous task. In a slow but persistent manner the original cleft, undoubtedly of volcanic origin, has been widened and deepened to the present dimensions, and the same processes are in operation to-day and will continue to modify the general aspects of this wonderful waterway.

Hayden Valley above the upper falls was originally a lake, which has been drained by the deepening of the canyon. The rock formation as seen on the surface of the steep slopes is a very complicated one. Carbonate of lime, silica, sulphur and granite constitute the principal ingredients of the composite mass. Looking into this awful chasm, two things at once attract attention—the irregularities on the surface of the inclosing walls and the richness of their coloration. The walls are carved and painted. The chisel of time has made furrows of pleasing design, castles, towers, minarets, cupolas, doorways, columns and ruins in profusion. The great variety of carving and architecture characterizes the work of the mechanical, thermal and chemical agents which have combined here in making a pathway for the restless river below. In looking at this prodigious rock defect and contem-

plating the forces which brought it about, we are in the best possible mood to appreciate the meaning of

“He cutteth out rivers among the rocks; and his eye seeth every precious thing.”—*Job xxviii, 10.*

and

“Stones are hollowed by constant drops of water.”
—*Ovidius.*

The entire canyon is a picture gallery. The prevailing colors are yellow, brown and silver gray. However, nature's artists have despised here the primary colors. They have shown a decided preference for mixed colors, and the most delicate shading has been and remains their specialty. As an aid to recognize the different primary colors, I took with me a color scale, but soon found that none of the colors shown in the scale could be matched by the colors fixed on the canvas of stone. The yellow, for instance, showed so many shades of this color, from a deep ochre to the most delicate tints of this color. The same applied to red and blue. It is the shading and intermingling of colors that stamp the art exhibition of the Grand Canyon as unique, the like of which can not be seen in any other part of the world, be it the product of nature or the brush of the most famous artists. The canyon viewed as a whole impresses one with its vastness and variety combined with minuteness of detail. The last distinctive feature is keenly felt when it is examined in detail from the different most advantageous points of observation. It is when we come to a detailed description of this gem of the Yellowstone Park, exhibiting as it does in no ordinary



CANYON OF THE YELLOWSTONE.

way nature's unlimited resources and artistic power, that we begin to realize the utter inadequacy of the pen and the brush to do it justice. Pen pictures, as well as colors on canvas, fail alike in conveying anything approaching a correct idea of the grandeur and beauty of the original. The best description of this great canyon is but a silly composition when compared with the reality, and the most famous paintings are but daubs when contrasted with the pictures on the stone wall. An attempt to reproduce the fascinating beauties of this wonderful natural aqueduct by writing or painting is a laudable effort, but author and artist will finish the task with a feeling of unworthiness and disappointment. A correct idea of this masterpiece of nature can only be gained by a personal and careful inspection.

UPPER FALLS.

Yellowstone River is the outlet of the mountain lake of the same name. It is a magnificent stream of pure mountain water about the size of the Rhine at Schaffhausen, Switzerland. It meanders through the Hayden Valley as a quiet, peaceful stream until it reaches the rapids some distance above the entrance to the canyon. From that point through the entire canyon the water is agitated furiously in passing over the falls and rapids. Standing upon a projecting rock a little below and above the level of the Upper Falls and looking up the river, scattered granite boulders of enormous size contest the space with the water as it dashes down the rapids, when, at a sudden turn of the river, the current strikes a perpendicular stone wall and is repulsed and seeks freedom on the opposite

side only to meet the same fate. The mad current again makes a turn and with increasing speed rushes over the rapids. The fight of the water with the unfriendly canyon has only begun. Three falls from six to eight feet in height at short intervals increase the speed of the turbulent stream and prepare it for what is next to happen. With ever-increasing velocity the mighty current next leaps over a precipice 140 feet in height and strikes the deep basin cut out of solid rock with a roaring noise, rebounds geyser-like and in the form of a halo of fine spray in which the rays of the afternoon sun paint a rainbow which spans the yawning gap in the form of a most graceful arch. On the furious stream rushes, bearing upon its thousands of little crests the white foam of rage. No rest for the roaring torrent; on it speeds from rapid to rapid in the too-narrow, unyielding bed of rock with ever-increasing speed and growing impatience to reach some quiet sunlit basin for a rest. No rest, no halt in the yawning chasm. A still more cruel fate lies in wait in fearful proximity. What looks like a haven of rest ahead is but the gathering point for a frightful fall. Between two perpendicular rocks only seventy feet apart the narrow bed of the river contracts to a point too narrow for such a desperate race. But a halt is an impossibility; through this narrow gate the angry, whirling, rushing torrent must make its leap over

THE LOWER FALLS.

Let us witness this fearful event from Artist's Point, where the battle between water and rocks and the struggle between force and resistance can be seen and felt more vividly than from any other of the innu-



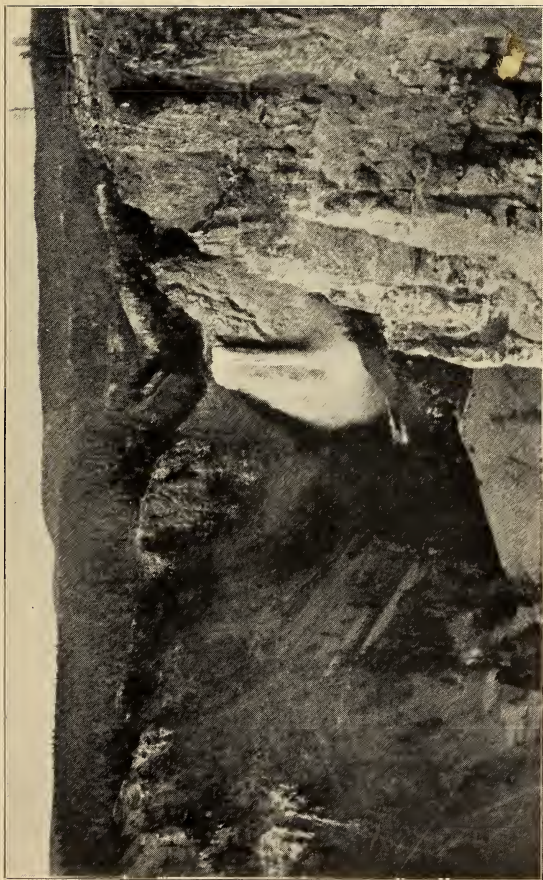
UPPER FALLS OF THE YELLOWSTONE.

merable points of observation. It is not difficult to locate the central figure that has attracted artists from far and near, and from this point thousands witness annually one of nature's grandest exhibitions. The ear catches the roaring, thundering noise; the eye at once the place from whence it comes. There it is! From a dizzy height we look down into the awful abyss below. A mighty river of olive-green water sprinkled with snow-white foam is leaping in a continuous sheet 308 feet in height into the giant stone basin below. It strikes the stone foundation with the fury of a cyclone, bent upon revenge for the hostile reception it has met with in the canyon. But the canyon is equal to the desperate onslaught of the frenzied foe. The basin spits out the agitated water and throws wave after wave high into the air, and in this turmoil their periphery is pulverized and fills the gorge below for hundreds of feet with a spray and a mist that rise in a vain attempt to escape from the iron grasp of the relentless, unmerciful chasm. The dreadful roaring, heard miles away from the seat of conflict between stone and water, resistance and weight, announces to the amazed and speechless spectator the majesty and power of nature's conflicting forces. The spectacle is inspiring and yet fearful. No wonder a sense of fear and danger takes possession of the visitor, and he clings instinctively to a rock, a tree or the solid framework which surrounds the lookout. In the presence of such tremendous manifestations of power, even these supports seem unreliable, and the feeling of absolute safety returns only when he turns his eyes away from the seat of turmoil and retreats into the quiet, peaceful solitude of the adja-

cent virgin forest. Let us walk to the nearby Observation Point and seek an acquaintance with an

EAGLE FAMILY.

Of all the birds the eagle exercises the greatest caution in the selection of his home. He makes no mistakes in the choice of a location. He builds his nest in places inaccessible to man and animals he has to fear. His powerful wings will carry him to a height out of reach of his would-be destroyers. He is fond of the mountain climate and builds his home upon one of the most inaccessible cliffs. There he dwells and there he rears his small family. Is it any wonder that the Grand Canyon is inhabited by so many eagle families? Nearly 2,000 feet below Observation Point is a tapering column of rough stones which looks very much like the chimney of one of our large manufacturing establishments. Upon the very summit of this pile of stones is a large nest made of sticks. In this nest the naked eye can detect a small, restless body not larger than a sparrow. We avail ourselves of the use of an excellent field-glass and recognize a large young eagle and beside him an unhatched eagle's egg. The bird is hungry. He opens and closes his soft bill at short intervals, but there is nothing to eat. He is too young to trust to his wings, he is dependent on his parents to supply him with food. He flops his imperfect wings to prepare them for flight, a task he is confident he will soon be able to perform. He looks anxiously in all directions for his mother. She left him alone and has gone in search of food with which to satisfy his hunger. He sees eagles sailing up and down in the deep canyon



POINT INSPIRATION AND LOWER FALLS.

and high in the air, but his mother is not among them. Where is she? Why does she not return for so long? She left with the dawn of day, and it is now nearly noon. She has probably had bad luck in catching trout in the roaring stream below, or perhaps she has satisfied her own desire for food and has failed to secure another fish for the hungry babe. Something was wrong. I saw this same helpless baby eagle again late in the evening. He was still alone. His actions left no doubt that his hunger had increased. He craned his neck in all directions, but in vain. His mother had not returned, or she returned without food and had gone on another search. Let us hope that the little, lonely, hungry, helpless eagle was made happy before darkness set in by the return of his mother with an ample supply of food. There the eagle nest was built years ago, there successive generations have been hatched upon that hard bed of sticks, and from there year after year the young eagles have looked down into the bottom of the yawning gap and up to the blue sky above the sculptured cliffs until their wings were strong enough to make them free and independent and relieve their mother from all maternal care and worry. There that nest will remain for years to come, safe from the attacks of inquisitive man and bloodthirsty animals, for

“Strong is thy dwelling-place, and thou
puttest thy nest in a rock.”—*Numbers xxiv, 21.*

INSPIRATION POINT.

On the way from the carriage-drive to the immense rock jutting out from a narrow neck which connects it with the brim of the canyon, called Inspiration Point,

a conspicuous sign on the left bears a legend, the meaning of which in our country has no practical application. It reads: "Castle Ruins." We as a nation have had no castle builders, and we have had no use for anything even suggestive of royalty. But away down in that deep gap and clinging to the steep incline rising from the bed of the river can be seen the ruins of a great castle. Can it be that a prehistoric race inhabited this cleft in the earth perhaps thousands of years ago? This can not be; the ruins bear the impress of a more recent age. They look like the ruins of castles we see in Spain, France, Switzerland and Germany, along the banks of the Rhine; the ruins of castles built during the feudal times. But here are the ruins of an immense castle. Look at the broken-down strong wall, the narrow streets, the parapets, the dilapidated watch towers, immense halls, and numberless rooms partly filled with the débris of fallen ceilings and caved-in, crumbling walls. Scattered over the whole castle area are isolated stones of all sizes from which time and the elements have erased the chisel marks. Between these stones, in the form of white and gray sand, is the mortar which once cemented them together. Truly, if these ruins do not tell the story of a castle, as indicated by the label upon the signboard, the imitation carved by nature is so true as to deceive the most experienced traveler. But now, let us take one last, long look at the canyon from Inspiration Point. Walk slowly, leave all irreverent and irrelevant thoughts behind and enter into communion with nature, for

"To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language."
—*Bryant.*



LOWER FALLS OF THE YELLOWSTONE.

Tread softly as you approach the spot from whence you will look upon the canyon's choicest artistic treasures. Tread softly as you pass over a deep crack which has widened four inches during the last seventeen years, because who knows but your weight may suffice in completing the fissure, with the awful certainty that in such an event you will follow the rock into the hungry abyss from whence there is no return this side of eternity. And now, grasping the rock on the left or the balustrade in front, open your eyes and study the panorama that unfolds itself to your astonished gaze. I need not tell in what direction to look first. You can not help it; you will look down, down 2,000 feet, where this terrible cleft ends in the narrow, tortuous bed of the river. How small the river looks! You have seen the mighty river above the Upper Falls. You have seen its water spouted from the basin below the Lower. What has become of it? Has the greater part entered some unknown subterranean passage, to reappear as a stately river on either side of the Rocky Mountain slopes? No. It is the same river, which only distance has reduced in size. It is the same turbulent water that has dashed down the long rapids and plunged over the falls. It is rushing on over the steep rapids below, and you follow the serpentine olive-green thread bearing the white foam of anger until it is lost in the somber cleft of the unknown part of the canyon. You hear the roaring of the Lower Falls, and turn to the right and catch a glimpse of the solid wall of water as it begins its plunge into the bottom of the canyon 308 feet below. You look across the frightening gap and look upon a wall of trees, slender, straight as an arrow, their tops adorned by rectangular

branches, bearing tufts of dark green, awl-shaped leaves. You see eagles, ravens, fishhawks and swallows cross and recross the threatening, yawning chasm without fear. The sense of danger disappears like flakes of snow before the warm breath of returning spring. Confidence returns, and you are now in a proper mood to study the artistic exhibits of the wonderful canyon. You will look in vain for what is ordinarily understood by a picture. There is no madonna, no Venus, no Apollo, neither landscapes nor paintings recalling stirring events in history. Nature does not waste her time making images of ordinary things—things that artists can duplicate. She employs her agencies in the formation of colors and mixture of colors, and the latter is her specialty. The delicate tints of flowers are familiar to all, but here in this canyon they are thrown on the cold, lifeless stone wall. Look where you will and you will see tints that you have never seen before, tints not to be found in any color scales, tints that have never been named. I will mention only a few colors that had any resemblance to what I found in the color scale—yellow, green, blue, brown, red, black, silver gray, slate, amber, turquoise. The shading of one color with another is often so delicate that it is impossible to determine where one ends and the other begins. This is a great school for artists. Let them come here and learn how to mix colors, because it is their province to imitate nature as nearly as can be done with their limited means. The effect of sunlight on these painted walls is marvelous. To appreciate to the fullest extent the beauty of this natural art gallery, the canyon must be seen when the rays of the

sun illuminate it from the east, from high noon and from the west. Some of the steady colors do not change with the variations in the direction of the sun. An immense pile of rocks near the edge of the racing river looks as though each one of its huge stones had been dipped in blood, no matter what time of day it is seen. Some of the half domes cut out of the rock retain their sulphur color from dawn until long after sunset. The somber black appears only blacker with the approach of night. The pink and sky and violet blue are made more brilliant by the slanting rays of the sun. Let us turn away from these fascinating colorations and look around for a moment for more familiar things. Across the river and in the very depth of the canyon is a tall dead pine tree. It has lost some of its bare arms. At the very tip of the trunk a few terminal branches serve as a foundation for an eagle's nest. In this nest are two young eagles engaged in childish play, careful, however, during their frolic to avoid coming too near the dangerous edge of their limited playground. Their mother has left them hours ago, and they are anxiously awaiting her return, confident she will bring them long-expected food. Two other nests of the same size and construction, perched on the most inaccessible cliffs, are uninhabited. Here and there scattered pine trees, growing out of the rock, with their roots wedged in fissures of the inhospitable host, have labored hard for half a century or more to keep the stunted trunk, short branches and tufts of emerald-green leaves from starving. Small and large crevices in the rock have accumulated in the course of time enough soil for the growth of little patches of tender grass of a pale green color which

contrasts strongly with the gray or light yellow background. Take in one more sweeping glance at the whole magnificent panorama and you will conclude with the immortal poet:

"All nature is but art unknown."

—*Shakespeare.*

HAYDEN VALLEY.

Hayden Valley is the connecting link between Yellowstone Lake and the Grand Canyon. By the road which follows the course of the Yellowstone River the distance between the two places is seventeen miles. We made this trip Thursday, July 16th. The valley is for the most part an immense meadow inclosed by tree-clad hills, the footstools of the distant mountain ranges. The first object of interest met with is the sulphur mountain, an isolated, bald, gray and yellow peak with hot sulphur springs on the summit and sides and a geyser at its base. The landscape throughout the entire valley is beautiful, varied from time to time by groups of trees, the winding river, babbling brooks, and the appearance and disappearance of distant mountain peaks. This valley is the favorite rendezvous of the elk and deer during the long and severe winter months.

A high column of vapor announces that we are nearing another point of interest. In a shallow ravine facing the road we are within a few steps of the Mud Geyser. The basin is an immense one in the shape of a funnel of prodigious size with a perpendicular stone wall behind some forty or fifty feet in height. Two craters belch at short, regular intervals into this basin a mouse-colored boiling fluid,

each act accompanied by a noise suggestive of a steam pump underneath the sizzling, boiling, steaming liquid mud. On the opposite side of the right hill inclosing the ravine, and on the same level, is a hot well of clear water with an artistic crater resembling the gable of a diminutive house painted a green-blue color, from the lower open end of which the hot water is thrown a foot and more in height into a shallow basin, from where it returns whence it came. A number of small hot wells in front of these two large ones emit steam strongly impregnated with sulphur.

YELLOWSTONE LAKE.

Much has been said and written about the beauty of mountain lakes. I have seen those of Switzerland, Norway, Austria, Italy, Siberia and Japan, and none of them, beautiful as most of them are, are entitled to precedence over Yellowstone Lake. Some of these lakes are too large, others are too small; the Yellowstone, as far as size is concerned, meets the ideal. The Yellowstone is a real mountain lake, a lake not only wedged in between mountains, but upon a mountain. Its altitude is 7,738.49 feet. Some of the most famous mountain lakes are so inclosed by precipitous walls that little else but water, stone and sky can be seen. The Yellowstone is not so imprisoned. It occupies the center of an immense cup-shaped, heavily timbered plateau with snow-clad mountain peaks in the distance all around, from which it receives its supply of water, serving as a reservoir for the melting snow and crystal springs of a large mountain district. Although there are no less than seventy hot-spring areas surrounding the lake, much of the overflow of

which reaches its basin, the water is crystal clear and cold, the ideal home for the trout. It is about twenty-five miles long and very variable in width, as in many places it reaches out its arms in the direction of the high mountain ranges in its eagerness to reach them. The largest of these prolongations is the Thumb, so called from its resemblance to the thumb of the human hand. The surrounding plateau is from three to fifty feet above the water level, pine-clad, with many openings, genuine meadows, usually watered by a mountain spring, splendid pastures for the elk and deer, so numerous in this part of the Park. The lake is evidently a funnel-shaped basin, as it is of great depth in the middle, and from its margins the descent all around is gradual. Its beach and bottom are covered with sand and gravel. It is dotted by a number of charming little islands covered with pine, little emeralds set in a sea-green gem. From its banks the green sea of the forest extends to the tree-line at the base of the snow-covered peaks far, far away. Among the most attractive of these peaks are the Sleeping Giant and Mount Sheridan. The face of the Sleeping Giant is clean-cut, peaceful, the head and chest on a gentle incline, and the monster shoulders and back part of the head buried in a pillow of light brown rock. Sheridan Mountain is stern, like the famous general whose name it commemorates, and the numerous deep gulches of its summit are filled with snow insensible to the rays of the midsummer sun. Yellowstone Lake teems with life. Over its calm, smooth, silvery surface glide the large water fowl which take their summer vacation here. Swans, white pelicans, ducks, gulls and geese entertain the

fishermen when they have become tired of reeling in and netting the trout. Of these winged sailors, the snow-white, proud and sagacious swan is the most graceful.

“On thy fair bosom, silver lake,
The wild swan spreads his snowy sail,
And around his breast the ripples break
As down he bears before the gale.”

—*Percival.*

Yellowstone Lake is the paradise for fishermen, skilled and unskilled. Many of the visitors to the Park, men and women, utilize the opportunity and spend much of their time engaged in the sport of fishing. I can readily conceive that to many angling is a genuine amusement, and with enthusiasts it becomes a passion. I presume, too, it is true what Izaak Walton said of this sport:

“God never did make a more calm, quiet,
innocent recreation than angling.”

It is, I imagine, a sort of recreation perhaps more restful than any other outdoor sport, for

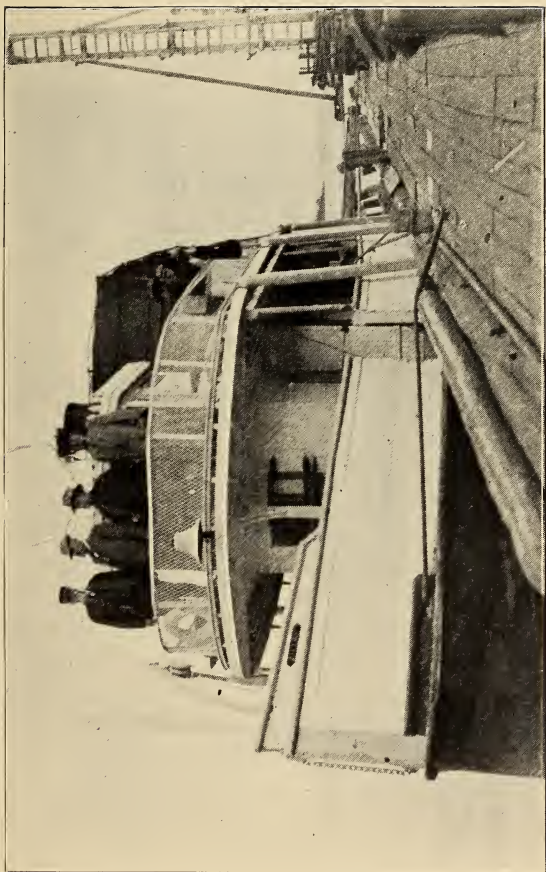
“You will find angling to be like the virtue of
humility, which has a calmness of spirit and a
world of other blessings attending upon it.”

—*Izaak Walton.*

I doubt if this ancient authority on fishing would be satisfied in plying the art here, because the trout are so numerous and hungry that they fall an easy prey to unskilled hands. The number of trout caught here daily is almost incredible. I was informed by Captain Walters that one day several parties remain-

ing over at the Lake Hotel brought in half a ton. The fish are most numerous at the outlet of the lake. All around our boat they kept jumping out of the water, striking for insects. The water is so clear that they can be seen at a depth of ten and more feet under and all around the boat. Standing on the bridge crossing the river a short distance below the lake, I could count from fifty to a hundred trout at any time at a standstill in the water at various depths, sculling with the tail fast enough to counteract the force of the current. With the exception of some of the salmon streams in Alaska, I had never seen such a sight. The fisherman can often see the fish before it makes the strike and watch the ensuing struggle until it is ended in the landing net. Three kinds of trout are found here—the salmon, mountain and speckled trout. The salmon trout is most abundant. Unfortunately, it is the trout most frequently hooked, and as it is unfit for the table, owing to the fact that most of them are infested with worms, when it is caught it is either returned or thrown away after landing. Sportsmen bring enough trout to the Lake Hotel to be served daily, to the great delight of its large number of guests. As the guests seldom remain longer than two or three days, the appetite for this delicacy is not lost.

A little steamer, the *Zillah*, makes a daily trip to West Thumb, and on the way calls at a little island, where the captain, Mr. E. C. Walters, has a little herd of buffalo and a number of elk. The passengers see here the largest buffalo living. This animal, a monster weighing nearly a ton and a half, is a cold-blooded murderer. He has a bad record, as he has



STEAMER ZILLAH ON YELLOWSTONE LAKE.

killed, so far, four of his companions. He is now isolated. He is a surly-looking beast, and has to be handled with the utmost caution to prevent further crimes against man and beast on his part.

The Lake Hotel, already a capacious frame building painted yellow, is being enlarged by the building of a wing nearly as large as the present building. This is the most desirable place in the Park to remain for at least several days. Fishing and the steamer trips to the Thumb are recreations which will be appreciated by most of the tourists. The nineteen-mile drive to the Thumb is over a new road and affords many very pleasing landscapes. Four miles from the hotel is the Natural Bridge. It is an extinct crater with one side blown out. In the center the bridge is not more than four feet in thickness and supports a pine tree about ten feet high. The road crosses quite a high mountain range, and nearly the whole distance, with the exception of a few valley and plateau meadows, had to be blazed through a virgin pine forest. For several miles on the highest part of the mountain I found tumors on trees unusually prevalent. It seems certain that this disease is endemic here. I had observed isolated cases of tumor formation throughout the entire Park, but here, over a well-defined area corresponding with the highest part of the ridge, a large percentage of the trees were afflicted. Some of the trees had one tumor; others several, and some of them so many it would have been somewhat difficult to count them. Age appeared to have little influence as a predisposing cause. Some of the small trees with slender trunk not larger than a broom-handle were among the silent sufferers. The disease kills, but its malignancy varies

greatly. Many of the fallen dead trees were killed by the disease; others affected in various stages of the progress of the disease showed its effects in undermining their vigor by a gradual decline, and still others were hopelessly crippled, chronic invalids, on the sure way to premature death. Is the disease contagious or infectious, or both, or is the exciting cause present here in greater quantity or more virulent than elsewhere in the Park? It would be very interesting and instructive to have those who have the management of the Park in charge inquire into this matter carefully, as a solution of these questions by scientific investigation and experimentation would undoubtedly add much valuable information in solving the much-discussed question of the origin of tumors in the human subject—something upon which much new light is needed before any decided progress can be made concerning their prevention and more successful treatment. It seems to me that these tumors, as found in this part of the Park, manifest decidedly malignant properties. A careful anatomic examination of the tumors and a series of inoculation experiments of the same species and other trees in different localities might clear up the cause and nature of this endemic and the subject of tumor formation in trees in general.

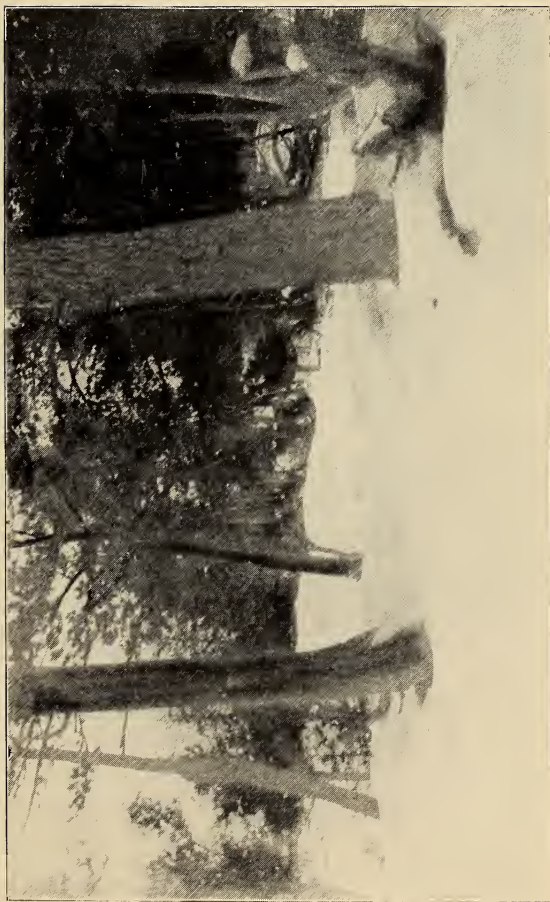
WEST THUMB.

Until now West Thumb has been only a lunching station between the Upper Geyser Basin and Yellowstone Lake for the Park tourists in following the circle and returning either by the way of Gardiner or Monida. As the distance from one point to the other is forty-six miles, the ride is quite a long one and

somewhat fatiguing, as the new part of the road in many places is not yet completed and consequently rough. Then, too, West Thumb has its points of interest which some of the tourists would like to give more than a glance, which is the case now. The hotel company proposes to erect a hotel here, something which is very much needed. At present there are no provisions made for travelers to remain over night except the small Wylie camps. The fishing at the Thumb is excellent. After the completion of the hotel, the guests of the Lake Hotel and the one at this point will have an easy way to visit each other by taking a pleasant steamboat ride of two and a half hours. Captain Walters is building another steamer that will carry 600 passengers at a time and will, after its completion, undoubtedly make two in place of one trip daily, as is the case at the present time. Here we improved the last opportunity to observe and study geyser action and hot wells. There is only one real geyser here, but innumerable minute hot springs and a number of very fine hot wells. In front of the lunch station is the famous hot well in which the trout are cooked without a change of position of the fisherman and without taking the fish from the hook, a procedure that can be witnessed daily, as the fish are plentiful and the water in the basin always boiling. With the West Thumb, we finished the Park tour Saturday, July 18th, but instead of returning to the west entrance from where we started, we continued our journey in the direction of Jackson Lake with the intention of seeing this genuine mountain lake and its famous background, the Teton Mountain.

THE PARK FOREST.

The preservation of the virgin forest of the Park is one of the greatest benefits growing out of the reservation. If the government had not acted in time, we would find to-day this beautiful natural park a desert covered with charred timber and stunted grass and fading flowers. This immense forest, intercepted by meadows large and small, has retained the moisture, attracted rain and has fed the innumerable springs, brooks, rivers and lakes. In consequence of this system of natural irrigation, there is a luxurious growth of grass in meadows and forest, and the whole Park is a veritable flower garden. Forest fires are carefully guarded against by the military force scattered in small numbers throughout the Park, aided by scouts who patrol the lines of travel and who see to it that the necessary precautions against fire are enforced, and in case of fire act promptly in extinguishing it. In many places the ravages of fires twenty and thirty years ago can be seen in the shape of fallen timber and a young growth of pine. It is fortunate that the variety of pine which grows here has the intrinsic capacity to restore the loss sustained by fire. The growth of the young tree is, however, very slow; it does not exceed on an average a foot each year. The variety of trees and shrubs growing in the Park is remarkably small, as the altitude for a greater diversity is too high. The prevailing tree is the white pine, with a scanty sprinkling of spruce, balsam fir, aspen and a stunted variety of red cedar. Willows and juniper are also common. The pine is a stately tree, straight as an arrow and slender. It is exceedingly



YELLOWSTONE PARK IN MIDWINTER.

modest in its demands for food and moisture. It will grow on a rock with no visible soil, absorbing its scanty food supply from crevices into which the roots insinuate themselves. In the more yielding soil, it sends out its roots at a right angle from the base of the trunk covered at best only by a few inches of soil, and very often the larger roots are laid bare in the course of time. The crown of the full-grown tree is remarkably small for the size and length of the trunk. The young tree has branches almost from the very roots, becoming shorter and shorter as the apex of the handsome cone is reached. The young tree is the delight of children on Christmas evening. The pine tree is a friendly neighbor. It is not as aggressive as most of the hardwood trees and resorts to hostile measures only in case of extreme emergency. Its ambition from childhood to old age is to reach the sky.

There is a remarkable uniformity in the height of these trees, which averages about 100 feet. A tree with a circumference not exceeding the arm of an adult is not far behind its centenarian neighbors as far as height is concerned. As the tree grows in height the lower branches die, drop off, leaving a branchless trunk seldom more than fourteen to sixteen inches in diameter clothed in a light brown, rather smooth bark.

Nature's forester, in his desire that the trees in his charge should not become extinct, sows the seed liberally, often less than a foot apart. As the little trees send out their roots, the struggle for existence soon begins. Some of them must die. The survival of the fittest can be studied nowhere to better advantage than in the silent pine forests of the Park. With the exception of fire, there is no wholesale slaughter, no

windfalls. The forest is so dense that it would take a cyclone of extraordinary violence to cut a swath. The forest presents all indications of interstitial death where life is made impossible by a too dense population. In large tracts of the over-populated forest, death, starvation and vigorous life are seen side by side. Barkless, branchless dead trees can be seen standing, leaning against a friendly neighbor and prostrate on the ground. In many places the white corpses lie parallel, crosswise and oblique to each other, forming a network impassable for man and horse. In these cemeteries of the dead are seen the bleached trunks of trees that resisted wind and storm, cold and heat, and lived on a scanty food supply for a hundred years and more side by side with slender trunks of trees that succumbed during infancy and childhood. It is in places like these that starvation can be studied in all its phases. There is a tree showing the first symptoms of failing health. The needles of some of the branches have lost their deep green color; they have turned yellow. There is another whose branches are bare nearly to the point of the dying trunk. Next we see one without any signs of life, still standing in the same proud attitude as during its most prosperous periods in life, ready to join its decaying neighbors on the ground when a kindly storm will loosen its lifeless roots. Among all these scenes of disease and death life throws an enchanting picture. Tall green pines guard the cemetery, and their shadow throws a somber veil over the dead, and in the tree-tops the evening breeze chants the funeral march. The pale green, soft grass and the exquisite subalpine flowers decorate the city of the dead



PINES NEAR THE CHAPEL.

during the short summer, and during the winter it is protected by a mantle of snow.

THE FAUNA.

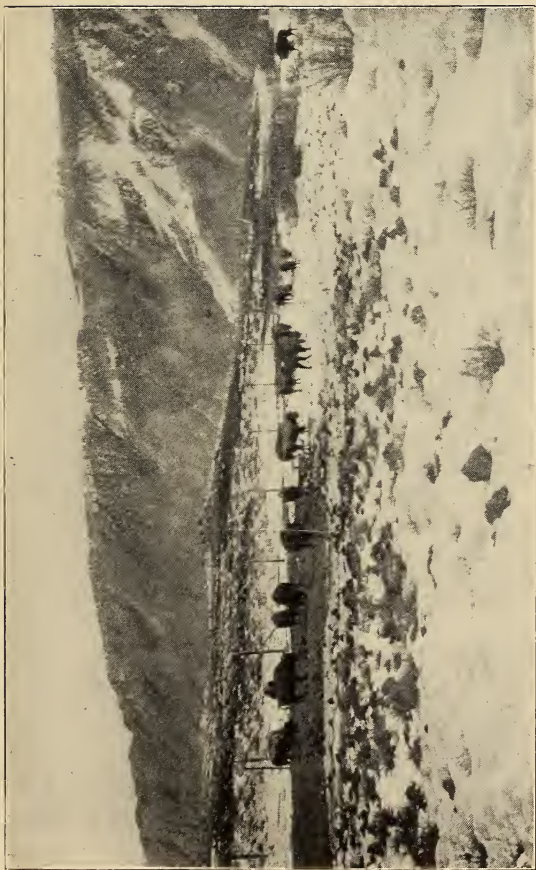
“Nature teaches animals to know their friends.”

—*Shakespeare.*

One of the principal motives for the establishment of the Yellowstone National Park was to secure an advantageous place for the protection and perpetuation of our noble game. The rapid and almost complete extinction of the buffalo taught us a lesson in game protection which will be handed down to all future generations. The wholesale slaughter of this harmless, noble game of the western prairies was a national sin for which the government and the people can make no satisfactory excuse. Any one with any foresight whatever could not escape the conviction that unless the general government took the necessary steps, the elk, bighorn and antelope would in a very few years meet the same fate as the buffalo. The northwestern part of Wyoming has always been the home of the large noble game. The choice of the location of the Park was therefore a most excellent one. This large tract of land is one great natural pasture well supplied with the purest water and ample cover for the game in the virgin forest and inaccessible canyons and mountain peaks. It is, in other words, an ideal natural game preserve. The administration of the affairs of the Park under military rule has been such ever since it was opened that the game of all sorts has found here not only the requisite protection, but also the needed assistance during the long and severe winter months. All wild animals, when tor-

tured by hunger, approach human habitations in quest of food. Hunger conquers fear. Hunger satisfied by a liberal hospitality begets confidence. Truly, "Nature teaches wild animals to know their friends." The wild animals in the Park appear to know that every gun that is brought into the Park is sealed by their friends, the soldiers, and remains sealed until it leaves the Park. Since the soldiers have taken possession of this great national game preserve, the animals have not heard the report of a gun. Even the meanest of poachers has a certain respect for the Park regulations. He may prowl around its immediate vicinity and kill the game that unknowingly trespasses upon the surrounding country, but he seldom looks for game within its precincts. The animals soon find out the exact limits of the preserve and are careful not to go beyond. Every hunter knows how soon ducks become tame after the open season closes. The animals in the Park no longer regard man as their enemy. The kind treatment they have received has made them confident. This is particularly true of the game that winters in the Park. It is during the severe season that the deer, elk, antelope and mountain sheep enjoy the hospitality of the different posts and park hotels.

At Yellowstone Fort and other points hundreds of these animals congregate and satisfy their hunger at the hay-racks. It is during the middle of the long winter that the mountain sheep, the wildest and most cautious of all the game, the residents of the highest mountain peaks, call for their rations near the dwelling-places without fear and mistrust. The bears sleep during the long winter, but as soon as the warm spring sun stimulates their sluggish circulation and



HERD OF BUFFALO NEAR FORT YELLOWSTONE.

rouses them to consciousness, they remember their feeding-places in the rear of the different hotels and promptly announce themselves as their regular summer boarders. The fierce grizzly and silvertip share the same table with the harmless black bear, provided the rations are large enough to go around, for

“Bears, savage to others, are yet at peace among themselves.”—*Juvenalis*.

It is safe to say that each hotel in the Park has from half a dozen to thirty and more of these welcome, appreciative boarders. The bear resembles the Indian in many respects—the moment he is surrounded by civilization he will not work if he can get his food in any other way. Civilizing influences make him indolent. If he sees his way to appease his hunger at the liberal garbage pile, he will come regularly for his evening meal, devour it in the presence of a crowd of spectators, retire into the forest, perhaps pick up here and there a few dainties not on the menu of the garbage pile, and spends the balance of the time in sleep in some out-of-the-way place. This kind of a life, however, will, in the course of time, take away some of his bear nature and prove detrimental to his race.

It is a source of great satisfaction to know that the efficient game protection has been rewarded by the best results. With the exception of the buffalo, all other game has increased. Seven years ago the number of buffaloes in the Park was estimated at 200; the present number, it is believed, does not exceed twenty-five. The government has recently bought a herd of twenty which live in a well-selected inclosure near Fort Yellowstone. Every effort will be made to increase this herd and bring it gradually in contact

with the wild buffaloes which the tourists never see. Captain Walters has another smaller herd on a little island in Yellowstone Lake. The government will undoubtedly improve every opportunity to increase the herd by new purchases of buffaloes, the property of private individuals in the West. Major Pitcher estimated the number of elk in the Park two years ago at 25,000. The number of deer undoubtedly is much larger. The Park has no extensive tracts adapted for antelope. The great timber reserve recently set aside for the purpose of securing additional game protection and to guard against forest fires is a move in the right direction. This timely legislation is a wise one, and will eventually result in the extension of the present boundaries of the Park.

Every influence should be brought to bear to make the Teton Mountain Range, Jackson Lake and a part of Jackson Hole the southern extension of the Park. The Teton Mountain and Jackson Lake would add genuine alpine sceneries to the Park, and Jackson Hole is the natural game preserve for elk. It is a real pity the manner in which this noble animal is now slaughtered every fall and winter, and still a greater pity that so many die of starvation. Jackson Hole is the place to look for an increase of the elk under proper protection. If the government would establish feeding stations and prohibit killing in the Park extension, the increase in a very few years would be simply fabulous. Walking through a ravine in Jackson Hole, I found no less than half a dozen carcasses from last spring, and the distance did not exceed a mile. I saw here a pathetic scene. Upon a projecting rock lay the bleaching skeleton of a large elk.



ELKS—HAYDEN VALLEY IN WINTER.

Upon this lookout he had undoubtedly stood guard during prosperous, happy days. Emaciated to a skeleton, he made his last exertions in climbing to this favorite spot; the eyes already dimmed by death took the last glance at the river that quenched his thirst so often, and at the mountain on the opposite side he had scaled so frequently during many seasons. His legs refuse to support the frail body, his head drops, his knees bend, and he falls lifeless upon the cold bed of snow. Such is the sad fate of hundreds of elk during an unusually severe winter, and many die annually. This is not as it should be. The elk has served as food for the inhabitants of Jackson Hole ever since that part of the country was settled, and has given excellent sport to hundreds of hunters from the east during many seasons, and for these reasons alone he deserves a better fate at a time when the ranchmen's cattle have despoiled his winter feeding-ground. It is time that the general government should take the necessary steps to supply this noble game with food when nature's supply is inadequate or out of reach.

The mountain lions and bear have increased to an undesirable extent, and last winter a number of the more troublesome bears were killed, as well as thirty mountain lions. This action became necessary to relieve campers of the annoyances caused by too familiar bears, and as a measure for game protection. The howl of the small wolf or coyote is often heard toward morning. Among the smaller animals that interest and amuse tourists are the gopher, squirrel, ground-hog, badger, chipmunk, jack-rabbit and beaver. The work of the beaver can be often seen along creeks in the shape of dams, huts and tree-cuttings.

A short distance below West Thumb we had the somewhat unusual opportunity to see a large beaver close to the road doing day-work. This otherwise very shy animal was not in the least disturbed by our presence, and we left him as we found him, hard at work in repairing a defective dam. Among the aquatic birds we saw swans, geese, ducks, white pelicans, herons and plovers. The birds of prey are represented by the eagle, owl and different kinds of hawks. Ravens, black-birds, robins, blue jays and the so-called camp-robber are some of the birds most frequently seen. Several varieties of grouse inhabit the mountains, but seldom come near enough the line of travel to be seen. The mosquito, gnat and horsefly are very troublesome to man and beast, especially on the shores of lakes, along water courses and in marshy places. The naturalist will find the Yellowstone Park an exceedingly interesting place to study the form, color and habits of the wild animals, as most of them have become habituated to the presence of man and can be observed at close range. The amateur photographer will have here an opportunity to secure pictures which it would be impossible to take anywhere else. The hunter and artist will enter here a school of instruction replete with the most interesting object-lessons in animal life. Children can receive here a part of their education in this great kindergarten of nature which can not be obtained in any school-room.

THE FLORA.

"Flowers worthy of paradise."

—*Milton.*

During the early part of summer the whole Park is a veritable flower garden. The plateau prairies, the



ON THE LOOKOUT.

woodland meadows, the mountain sides, the forest, the river banks and the shores of the alpine lakes all are strewn with flowers of every hue. The flora of the Yellowstone Park is almost a duplicate of that of the Transbaikal Mountains in Siberia. The reasons for this are quite apparent, as both of these localities have much in common in altitude, climate, soil and water supply. Considering the high elevation even of the lowest valleys of the Yellowstone Park, the flora is remarkable for its great variety and exquisite beauty. The visitor from the East will find many flowers familiar to him, but many of them in an entirely new dress. Some of our old acquaintances impress us here with their giant size, others we find dwarfed, and most of them have assumed brighter and more lovely colors. It would seem that the soil, the pure mountain air and water constitute a combination of influences which nature utilizes in painting the flowers with a richness of tint almost unknown at or near the level of the sea. It seems that here, as elsewhere, the hard struggle for existence brings about results proportionate to the intensity of the effort. In southern climes, with a rich alluvial soil and under the influence of a tropical sun, the plants and flowers grow luxuriantly, everything being conducive to their growth and life, constantly

“Indulging in the inglorious ease.”

—*Virgilius.*

The results of such a life of leisure are usually tender, succulent, overgrown plants with little resistance to outward hostile influences, and showy, gorgeous flowers which, however, lack the variety and delicacy

of tints that appeal so strongly to the sense of beauty. The hardy plants of the subalpine regions do not lead a life of ease and luxury. From the moment the spark of life is awakened in the seed the struggle begins. What has to be accomplished must be done quickly. They have no perennial summer sun to lull them into an unconscious, dreamy life of indolence and luxury. They have no gentle spring during which to enjoy the childhood days and by slow progression reach maturity. They are aroused and suddenly started into an active existence by the stimulating rays of the summer sun, and in less than four months all hope of further activity is banished by the untimely appearance of an arctic winter which holds plant-life in its icy grasp the balance of the year. The two most beautiful seasons of the year for all kinds of vegetation—spring and fall—are almost unknown to the flowers of Yellowstone Park. Birth and death are equally sudden, separated by a short but exceedingly active and useful life. The annual plant has only one-third of the year in which to grow, blossom and produce seed. In many instances it has to depend on a scanty soil for its nourishment; it must contend with frost, drouth and chilly nights, and must bear the scorching rays of the midday sun. The hardy plants of this great national park exhibit the effects of toil. Their framework is firm, their parenchyma compact, their very leaves and roots show a degree of hardiness unknown in plants inhabiting a more congenial climate and with more favorable environments. Their diligence, perseverance and self-denial, however, are rewarded by a full measure of success. They are in the Park for a purpose. Their sole object in life is to delight the eye of the



ELK NEAR YELLOWSTONE LAKE.

tourist. They make their appearance as soon as the blanket of snow is removed, and many of them are buried alive under the late September snow. During this short summer the flowering plants decorate the Park with a variety of flowers never to be found in a tropical forest or mesa. The pale green carpet of soft grass is spangled with flowers of all hues, some of them nestled in the grass, some of them peeping through the green background, still others towering high above the sward. In painting these flowers nature has employed the most skillful artists. Flowers, which in lower regions have but one color, appear here in the greatest variety of tints. All possible shades of the primary colors can be seen here. To one who has studied the flora of the Yellowstone Park will occur the lines:

“To gild refined gold, to paint the lily,
To throw perfume on the violet,
To smooth the ice, or add another hue
Unto the rainbow, or with the taper-light
To seek the beauteous eye of heaven to garnish,
Is wasteful and ridiculous excess.”

—*Shakespeare.*

It would be impossible, after a short sojourn of eleven days in the Park, to give a detailed description of its interesting and magnificent flora. It would require the earnest labor of an expert botanist for years to do this subject justice. I will undertake to call attention to only a very few of the most beautiful flowers which are well calculated to attract the attention of the tourist on his way through the Park. It would not be an easy matter to decide upon the comparative merits of the many queens of the meadows,

prairies and forests in the Park. This task would be as fruitless and thankless as the award of prizes in a beauty show. It would require a jury of impartial and expert botanists to arrive at anything like a just decision in classifying the flowers here in reference to their claims for beauty. Such an effort would be one largely dependent upon individual taste. The admirer of blue would select a flower of that color, another partial to a more lively color would give preference to one of the many varieties of red flowers, while still another would award the first place to one presenting one of the endless tints of yellow. The beauty of a flower does not depend exclusively on the coloring of its petals; its shape, demeanor and the foliage of the plant contribute much in adding to or detracting from its beauty.

A FEW OF THE QUEENS OF THE YELLOWSTONE PARK FLORA.

Larkspur (*Delphinium triorne*). This flower deserves prominent mention, perhaps less owing to its attractiveness than its omnipresence, not only in the Park, but all over the mountains and sandy plains of the Rocky Mountain states. The long raceme of pretty blue flowers and the dark green, alternate, three or five palmately divided leaves attract the herbivorous animals, and where grass is scanty the plant is a most welcome food for cattle and horses. The root of this plant is poisonous, and on this account the plant has received the unenviable name of *staggerweed*. Many cattle in the west die annually, especially during the early spring months. At this time the root which contains the poison is pulled out of the

soft ground and is eaten with the plant. Horses cut the plant even with the ground with their teeth, and consequently escape the danger of poisoning. This plant is not particular as to location. It is found as high as the tree limit and grows luxuriously on the moist river banks as well as on the arid plains. In color the flowers vary from a dark blue to nearly white. The deep blue color of the flower is a reliable indication of the vigorous growth of the plant.

Wild Cranesbill (*Geranium maculatum*). The wild geranium grows in profusion throughout the entire Park, and judging from the gigantic size which it attains in many localities, it appears to have found here a congenial soil and surroundings. The corolla of five rounded petals varies in color from a purplish pink to nearly white. The delicate streaks of dark purple color add much to the beauty of the flower. The large, hairy leaves are palmately, somewhat unequally, three, five or seven, divided. The large root is strongly astringent and is used quite extensively in the treatment of diarrhœal affections. In appearance it compares favorably with its garden relatives.

Moss-pink (*Phlox subulata*). The color of the moss-pink found in the Park and on the arid plains of Wyoming is a pure white. The plant grows in small bunches, the short stems prostrate rising slightly from the ground. The little snow-white flowers with five obovate lobes notched at the apex on pedicels are arranged in terminal racemes. The exquisite beauty of this little flower shows to greatest advantage when it decorates the cracked, arid soil upon which it seems to prosper best. It is very strange that when it is severed from the inhospitable dry soil its petals wilt

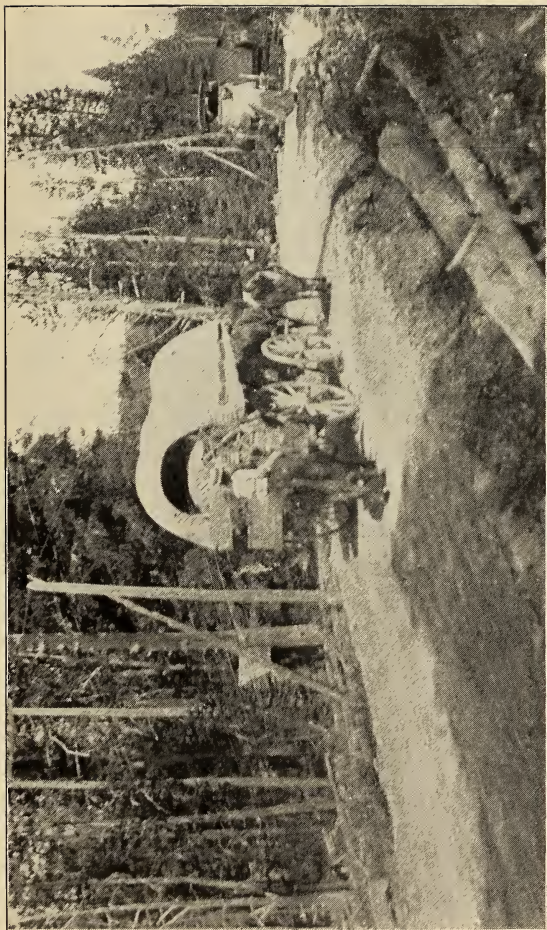
and shrivel at once, so that no time should be lost in placing it in the botanical press if it is to be preserved for the herbarium.

Blue Flag (*Iris versicolor*). This is the fleur-de-lis so familiar to the frequenters of mill-ponds and marshy places. The subalpine blue flag prefers a dry soil. It resembles its eastern sisters in every respect as far as size, structure of leaves and flowers are concerned, but has taken here a new garb, as the flower is of a white color slightly tinged with yellow.

Pointed Blue-eyed Grass (*Sisyrinchium angustifolium*). The iris family has another beautiful little representative in the Park, the blue-eyed grass. The leaves are linear, grass-like, and the solitary sky-blue flower grows from a pair of green bracts. It is a modest little flower that is fond of burying itself in the taller grass. It dislikes to be incorporated in a bouquet, as it shrivels almost immediately after it is severed from the stem.

Shooting-star (*Dodecatheon meodia frigida*). It would be difficult to find a more beautiful flower than the shooting-star, if the flower is given the thoughtful attention it deserves. It makes no pretensions, no display. It is fond of company, as it grows in a terminal umbel in groups of two to twenty. It bends its shapely head modestly and turns its lovely little face toward the handsome obovate to lanceolate leaves beneath. The five parted calyx and lilac or pink corolla are strongly reflexed. The five stamens embrace the single pistil, forming a shapely cone. The rich cinnamon fragrance is as pleasing to the sense of smell as the beauty of the flower is to the eye.

Hairy Willow Herb (*Epilobium hirsutum*). The



LOOKING FOR A NEW HOME.

leaves of this plant resemble in shape and color those of the willows, differing from them, however, in that they are hairy. It usually inhabits moist meadows, but in the Park it is satisfied with the moisture it receives in the vicinity of brooks, springs and rivulets. The small, rosy pink, nodding flowers grow in terminal corymbs.

Blue Cardinal Flower (*Lobelia syphilitica*). This is one of the most showy flowers in the Park. It is a tall, erect flower with a very bold, proud bearing. It claims attention wherever it grows by its size and handsome, two-lipped, tubular flowers arranged in a leafy panicle.

Monk's-hood (*Aconitum uncinatum*). Poison lurks behind this attractive flower. It charms by its beauty and kills or sickens by the paralyzing juices contained in its dark green, three to five lobed, petioled leaves and tuberous root. I found this flower in greatest abundance in the Grand Canyon region. The bluish purple, very irregular flower is conspicuous for its unsymmetrical structure. The calyx of five sepals is strangely fashioned like a monk's hood. The helmet, one and a half inches long, is broad and wide with turned-down visor. The corolla is made up of two small petals that look like chin tabs. In its general aspects and poisonous properties it has much in common with its near neighbor, the larkspur, for which it might be mistaken by a superficial observer; the flower of the former, however, is, as a rule, of a much deeper blue.

Fringed Gentian (*Gentiana crinata*). The brilliant blue fringed gentian seems to have a special predilection for the geyser basins, as it is found in great abundance in all of them, and very often in dangerous

proximity to the spouting geysers and boiling, steaming, bubbling hot wells. The blue fringed gentian is a striking beauty. The funnel-shaped, terminal, solitary, deep blue flower lifts its head erect from a delicate stem one to two feet in height, resting in the green cup of four pointed, unequal sepals. The four rounded lobes of the corolla are beautifully fringed at the edges. The leaves are sharply pointed, opposite lanceolate and clasping. The delicate fringe is a suggestion of fashion, and the soft green calyx, blending with its incomparable blue corolla, is an example of the most exquisite taste. When the sun retires the corolla folds its fringed borders and closes for the night as if to protect its interior against the chilly night air and to exclude the unwelcome dew.

Long-spurred Columbine (*Aquilegia coerulea*). This variety of columbine is a native of the Rocky Mountains and is found in all parts of the Park where grass and other flowers grow. It is not as showy as the red and yellow *aquilegia truncata* found in the East, but its white or cream-colored petals possess a strong fascination for the eye. The terminal, solitary flowers nodding from thread-like pedicels are very images of purity and profound modesty. The corolla of five united, tubular, spurred petals are in exquisite harmony with the ovate, colored sepals with their slender, spreading spurs, double the length of those of the petals with which they alternate. This flower, with its red and yellow kin, would do honor to any flower garden.

Swamp Rose (*Rosa Carolina*). The pink-faced, fragrant rose of the Rocky Mountains finds enough moisture in some of the well-watered places to rival its

sisters in the swamps of the East in beauty and fragrance. The five soft, delicate, crimson pink petals expand boldly from the narrow confines of the tubular, five-clefted, green calyx. The numerous stamens and pistils decorate the interior of the flower in a most artistic and becoming manner. The soft, green leaves of odd, pinnate, three to nine serrated leaflets, with a paler under surface, impart a peculiar charm to this as well as all others of this family of flowers. Like all other roses, the swamp rose has its liberal supply of recurved prickles projecting unpleasantly above the surface of the erect and otherwise smooth stem.

Painted Cup, or Indian Pink (*Castilleja coccinea*). This flower is at its best in the Park. To any one who has seen it at a low altitude, it is a surprise here, shining, as it does, like a flame of fire from the green grass from which it projects to a commanding height. In many places it is numerous and of such giant size and the whorl of floral leaves so gaudily painted, that it buries the grass and smaller flowers under a flaming sheet of vermilion red. The Indian pink is the haughtiest and most presuming flower in the Park. It hides its homely face in a mask of coarsely-painted whorl of floral leaves. It palms off this gaudy mask to the superficial observer and ignorant as its own face. Tear away this deceptive cover borrowed from the leaves and you expose a very homely, irregular, scentless flower. The three bract-like, vermilion lobes near the flower induced Bryant to write:

"Now, if thou art a poet, tell me not
That these bright chalices were tinted thus
To hold the dew for fairies, when they meet
On moonlight evenings in the hazel bowers,
And dance till they are thirsty."

Wild Sunflower (*Helianthus giganteus*). This familiar yellow composite flower is well represented in many places in the Park. Although a coarse plant, its large sulphur yellow flowers at the end of the upright, branched, leafy, rough stem present a pleasing picture in the shady woods and sunny meadows. The large receptacle is crowded with ray and disk flowers of the same color, and inclosed by an involucre of two series of bract-like, pointed leaves. In some localities this flower is so abundant that it hides the smaller flowers and grass under a cover of its large, towering, gold yellow flowers.

Coneflower (*Rudbeckia hirta*). This flower is readily distinguished from the ordinary sunflower by the central cone or disc of a chocolate brown color of disc flowers. The ray flowers, often nearly two inches in length, are pointed, spreading and of a deep yellow color. The pale green leaves are lanceolate, narrow, rough and disagreeable to the touch; the lower ones petioled, the upper ones sessile. The branching stem is from one to two feet in height. The flower commemorates the name of the famous Swedish botanist, Rudbeck.

Common Harebell (*Campanula rotundifolia*). The harebell is one of the gems of the flora of the Park. Its little sky-blue flowers at the end of slender, drooping stalks meet the eye everywhere. The bell-shaped, five-lobed corolla is embraced at its narrow base by a tubular calyx with five narrow, spiked lobes. The ground leaves are rounded or heart-shaped, and are supported by a slender petiole. The stem leaves are almost linear, few and scattered. The single pistil protrudes from the five stamens which surround it like a miniature clapper.

Tall Bellflower (*Campanula Americana*). This light and dark blue beauty is one of the loveliest flowers of the forest and meadows in the Park. The flowers, arranged in a dense, long spike, are so vigorous and fresh as to rivet the attention of the tourist at once, and this charm continues as long as they remain in sight. The corolla of five pointed petals is almost wheel shaped. The long, curved pistil projects far beyond the five stamens. The plant, with alternate, lanceolate, finely-toothed leaves, rises to a height of from one to five feet; the average height of the stem does not exceed two feet, while in the East, in more fertile soil and under more congenial climatic influences, it not infrequently aspires to the height of six feet.

I have given the names and a brief description of only a very few of the beauties of the Park flora as an indication of the wealth of the floral kingdom in this part of the world, exposed to the rigors of a long and unusually severe winter. Every visitor will look with astonishment and admiration upon the floral exhibit and wonder at how much nature can accomplish in such a short space of time and under such adverse circumstances. Cattle and horses make no distinction between flowers and grass when they feed lazily in the rich meadows and prairies around the Park, and it does seem like sacrilege to see them shear off the lovely flowers and mix them with the common grass in the living mowing-machine and the hungry stomach. Hay made in these localities is largely flower hay perfumed by the fragrance of the greatest variety of the most beautiful flowers which, in common with the coarse grass, the legitimate food for beasts of burden, suc-

cumb to the deadly sickle of the mower, and with it are stored up for winter supply. The hay of eastern meadows is a common article compared with the product of the mountain meadows and prairies so strongly impregnated with fragrant flowers and aromatic herbs.

A SIDE TRIP TO JACKSON HOLE.

Jackson Hole is a large upland valley, thirty miles long and eight to ten miles wide, enclosed by high mountain ranges with towering peaks. This magnificent mountain valley is watered by the Snake River, which, on its entrance into it, expands into Jackson Lake, the most picturesque alpine lake in the world. Before Jackson Hole was known to the outside world, it served as a hiding-place for a desperate band of horse thieves headed by a man by the name of Jackson. From this secluded retreat excursions were made in all directions in search of booty, which, when secured, found in this mountain retreat the best of pasturage and security against molestation from without.

This gang of robbers and outlaws was finally captured, and its chief was imprisoned for a long term. Since that time Jackson Hole has won a national reputation as being the best hunting ground for large game—bear, mountain lions, deer and, more especially, elk. During the open season hundreds of hunters have annually enjoyed their sport here and have returned after a stay of one to six weeks with the expected trophies of their chase. The rich valley is now under cultivation, principally by men who formerly made a living by hunting and trapping, who have taken claims and now devote themselves largely

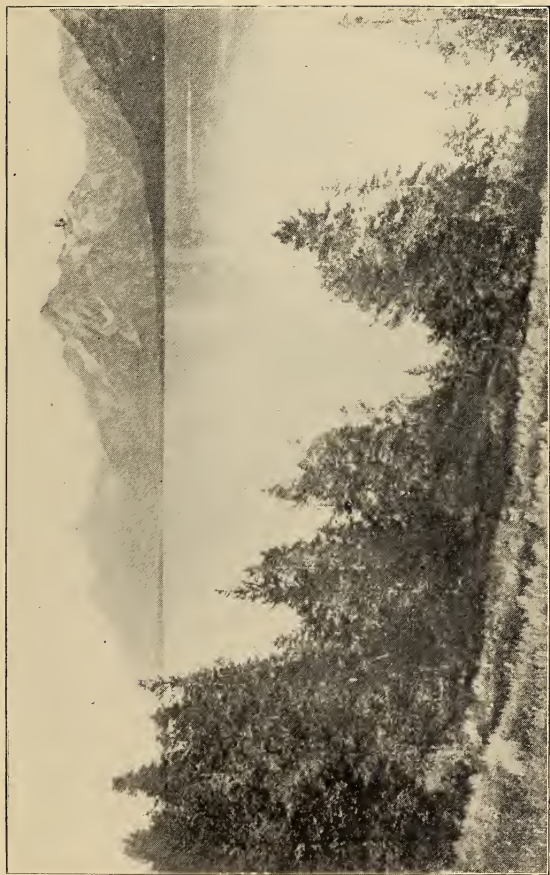


GROUSE HUNTING PARTY IN VIEW OF TETON MOUNTAINS.

to the raising of cattle. For those who are under the impression, as I was, that Jackson Hole is a wilderness, I will say that it is inhabited by nearly two hundred peaceable, orderly, hard-working citizens, with their families; that it has four school-houses, several hotels and general stores, and a Mormon meeting-house. These people are well posted on what is going on beyond the mountain ranges, as they are liberal patrons of newspapers and the best magazines published in this country and abroad. Albert Nelson is one of the most prominent inhabitants of this secluded spot in the Rocky Mountains. He is a Swede, a taxidermist by trade, and a much-sought-for guide during the hunting season. He is a man of more than average intelligence, happily married to a mountain girl, and owner of a promising ranch. A good military road connects West Thumb with Jackson Lake. The southern boundary of the Park is about half-way between these two points; the whole distance, forty-eight miles. On leaving the Park, the last military station is passed, and the remaining journey leads through the timber reservation. Near the outlet of Jackson Lake is a small hotel owned and managed by Mr. Allen, who also keeps a small general store.

Jackson Lake is a charming alpine lake, ten miles long and on an average two and one-half miles wide, dotted by several little islands, favorite breeding places for a variety of water fowl. The background of the lake is the Teton Mountain range, with the Grand Teton and Moran Peaks as leading landmarks, which can be distinctly seen in several directions at a distance of 100 miles. The Grand Teton is the higher of the two, its bare gray peak having an eleva-

tion of over 14,000 feet above the level of the sea. Each one of the peaks has a glacier of considerable size, ending below in an immense abrupt wall of ice. The whole mountain range is flecked with perennial snow, and up to the tree-line is heavily timbered with pine. The foot of the mountain forms the west bank of the lake. From the east bank the ascent to a lower and broken range of mountains is more gradual. This beautiful sheet of water is merely a deepened and widened bed of the most crooked flowing body of water in the world—Snake River. The water is clear as crystal, ice cold and teems with several varieties of trout and land-locked salmon. The average weight of the trout caught is about two and one-half pounds, and the yield to a skillfully handled rod from two to three per hour. A small naphtha launch at the upper end of the lake is at the disposal of fishermen. The quality of the fish caught in this lake is excellent. This part of the timber reserve has been intended by nature as an essential addition to Yellowstone Park. Nowhere in the Park is the mountain scenery so grand, and Jackson Lake, if anything, is more beautiful than Yellowstone Lake. No time should be lost in extending the Park in this direction so as to include the entire range of the Teton Mountains, Jackson Lake and the upper part of Jackson Hole, the winter camp for the elk. Jackson Lake is the most desirable place for a large modern hotel for tourists. The trip from West Thumb to this station could be made with ease and comfort in one day. This extension would lengthen the tour through the Park by two days, but would add many new and most interesting attractions. The landscapes along the extended route are superb



THE 'TETONS,' FROM JACKSON LAKE.

and the trip would terminate by unfolding to the visitor an alpine scenery, majestic and beautiful beyond description, with a gem of a mountain lake in the foreground. With such an extension of the Park, and proper care of the hundreds of elk and deer who are driven into Jackson Hole by the deep snow and long and severe winter, the laudable efforts at game protection would be complete.

We left Jackson Hole by way of the Teton Pass, which reaches an elevation of 8,425 feet above sea level. It was on this part of our trip that we passed through one of the grandest primeval forests of pines much larger than in the Park, and red spruce of enormous size, and the variety and beauty of the alpine flora surpassed anything we had seen and admired before. The road on both sides of the mountain is steep and rough, but the inconveniences and hardships of the trip are more than balanced by the pleasures derived from the magnificent sceneries, the imposing forest and the great variety of lovely flowers. This pass should be included in the Park, and the road so improved as to furnish a new and easy avenue to and from the Park by way of the nearest railway station—St. Anthony. The distance from Jackson Lake to St. Anthony is ninety-five miles. From the pass to the station the road passes through a number of prosperous Mormon settlements. It is expected that the Oregon Short Line has in contemplation the extension of the road to Jackson Hole, and if this is done, the entrance into the Park from that side would add much to the present facilities and would make this route a very popular one.

THE ROSEMITE VALLEY

YOSEMITE VALLEY

Another public pleasure resort of which the people of the United States, and more especially the State of California, may well feel proud is the Yosemite Valley and the nearby Mariposa grove of big trees. The landscapes, sceneries and objects of interest are so different here from those in the Yellowstone National Park, that a visit from one to the other is attended by more than the usual degree of pleasure and profit. The Sierra Mountains have charms and surprises unknown in the heart of the Rockies. The comparisons between these mountain fastnesses, unlocked by a generous and far-sighted government, are very striking. The Yellowstone Park is vast; the Yosemite, as compared with it, small. Although the altitudes of the valleys and mountains of the former are much greater than of the latter, the reverse appears to the tourist, owing to the compactness of its territories. It requires at least seven days to view the varying sights of the Yellowstone Park, while from Inspiration Point, at the entrance to the Yosemite, nearly every point of interest it presents can be seen without a change of position. The spouting geysers, boiling springs, hot rivers and Grand Canyon inspire one with awe and a keen sense of fear; the Yosemite Valley is a peaceful, quiet mountain enclosure through which flows the sleepy, crystal, clear water of the Merced. The roaring and thundering of the Yellowstone Falls is in strong contrast with the whisperings of the Bridal Veil and the Yosemite Falls. In the Yellowstone Park the visitors have to look down to see its most notable attractions; in the Yosemite the

eyes must be turned in the opposite direction to behold its grandest beauties. The Yellowstone Lake is one of the most charming of all mountain lakes; Mirror Lake, beautiful and enchanting as it is, is but a small pool created by a widening of the bed of the Merced River. Yosemite is inhabited by very few wild animals; the Yellowstone Park is a great game preserve, where the visitor will never be disappointed in seeing bear, elk and deer. The greatest difference in the two national picnic grounds is, however, to be found in the character of the forest. The forest of the Yellowstone Park is vast, but somewhat monotonous; the forest of the Yosemite and the country around it is noted for the great variety and the gigantic size of some of its trees. The Mariposa grove of big trees is something that can be seen nowhere else. Nature has expended here all her forces to demonstrate what she can accomplish in the way of tree growth. She has been busily engaged in this work for thousands of years to illustrate what she can do in the way of building monster trees. Other parts of the world have big trees, but none of them can compare with what is exhibited here. We have many things to which the superlative adjectives fitly apply, but here we find something in the way of tree growth that is absolutely incomparable. If Yosemite and Mariposa had nothing else to show except their wonderful trees, they would be famous places well worth seeing by visitors from all parts of the world. The Yellowstone Park has exhibits of nature's fearful forces and exquisite products of art; the Yosemite illustrates the style of her rough architecture and the boundless resources of her vegetable kingdom. Undoubtedly when this mountain



A STORM IN THE YOSEMITE.

valley was excavated out of the solid granite rock, it was the scene of mighty convulsive movements that made the mountains tremble and their sides echo and re-echo with a voice of thunder. It is quiet and peaceful now. We were reminded the first evening after our arrival of what occurred here perhaps thousands of years ago, when we were made to experience the impressions of quite a severe shock of earthquake. The shock came at 11:55 p. m. and lasted for twelve seconds. The first sensation was one of a falling away of the floor underneath the feet, followed by a corresponding rise, and then came the rocking movements. The sensations experienced were very much the same as felt on a ship during a squall. In contemplating the wonders of both of these national parks, one can not resist the thought:

“All are but part of one stupendous whole,
Whose body Nature is, and God the soul.”

—*Pope.*

FROM SAN FRANCISCO TO THE YOSEMITE.

The Yosemite is reached by one of two routes, either by the way of the Southern Pacific or Santa Fé road, the former being the one most frequently selected. Its terminus is Raymond, about 200 miles from San Francisco and seventy-one miles from Yosemite.

We left San Francisco at 9:10 p. m. and boarded the sleeper at Oakland, from where the train departed at 11:25 the same evening, and arrived at Raymond at six the next morning. Arrangements have been recently made to reach Yosemite the same day by the inauguration of a limited stage service. The limited

stage carries the mail and makes the trip of seventy-one miles over one of the roughest of rough roads in twelve hours. After a hasty breakfast, the passengers mount the four-horse, open stage coach at Raymond, and the wild ride began in earnest. We left at 6:45 a. m. and were landed in front of the Sentinel Hotel, Yosemite Valley, at 7:15 p. m. At Wawona a stop of thirty minutes was made for lunch, and about half of this time was spent in vain attempts to part with the dust that had been deposited upon and in our clothing and had masked the faces almost beyond recognition. The Yosemite Stage and Turnpike Company, in their advertisements, make the prospective patrons understand that they will enjoy the luxury of traveling over an "oiled, dustless road." The tourist will have a better understanding of the meaning of these attractive descriptive terms before he leaves the dust-laden stage. It is true, the first thirty miles of the road have been oiled at great expense, \$300 per mile, but it is by no means dustless. The balance of the road is either a good sample of stone corduroy or covered with several inches of yellowish red dust, or both. The trip is a very trying one, as the horses are kept at full trot, and sometimes at a gallop, except when ascending steep grades. The entire road is one of the roughest and certainly the most crooked of all public highways. A limber back and a knack of balancing are necessary in order to occupy the same seat. Often in descending a steep grade, the many sharp turns and stone-paved road, the compact, stout vehicle rocks like a ship in a storm, and the knocks and jolts the passengers receive try the most steady and courageous nerves. In the wild descents, the wheel track



MAJELLA, AN OLD INDIAN WOMAN, IN SEARCH OF ACORNS.

on the dangerous side is often not more than a couple of feet from the margin of an awful precipitous decline. The breaking of a wheel or axle, the giving way of the roadbed or miscalculation on part of the driver in such dangerous places would mean almost certain death. Serious accidents are only avoided by the unusual skill of the experienced drivers, the well-trained, gentle horses and the use of coaches built specially for such hazardous usage. A person advanced in years or in impaired health should avoid the limited stage, and make the trip in two days instead of one, stopping at Wawona for the first night. There is probably no other place on earth where stage passengers are more annoyed with dust than in going over the last forty-one miles of the "dustless road." The clouds of dust are often so dense that the suffering occupants of the stage could not distinguish anything beyond them, even if their unprotected eyes should be in a condition to functionate properly. A duster is of questionable utility, as the fine dust in the form of an impalpable yellowish red powder will find its way through the clothing until, in the course of time, further penetration is arrested by the dust-proof skin. Eyes, mouth, nose and ears are its favorite lodging-places. It finds entrance through every crevice of the hand baggage, and ruins articles which are supposed to be safe from this aggressive and unpleasant intruder. The eyes, nose and throat soon become painfully aware of the constant irritation due to the presence of this foreign substance, and sneezing, hawking and coughing add to the distress of the existing sense of suffocation.

I presume many a passenger on this unsteady, vio-

lent mountain ship, after leaving the oiled part of the road, has been tempted to go no farther, but the very thought of a succession of scenic treats so near by and for which he had been longing for years, urged him on and enabled him to collect courage to face the worst. Indeed, the expectancy of a realization of such a long-felt desire is a source of great consolation under such trying experiences. The dust-laden traveler must remember that everything that is easily obtained has but little value. The tourist who climbs the Pilatus or Righi by rail does not experience the same exquisite pleasure in looking at the grand panorama around and below him as the one who walks and spends a whole night in ascending these famous mountain peaks. If diamonds and the precious metals were not hid away in the depths of their rocky beds, so difficult of access to the greedy grasp of man, they would not represent the intrinsic value they do. To be given an opportunity to see the grandeur and beauty of the Yosemite Valley and the magnificent forests which have guarded it for thousands of years, is worth an effort, for

"Life is accustomed to give nothing to man
without a world of toil."—*Horatius*.

The tired-out stage passenger, when free from dust and comfortably quartered at the Sentinel Hotel, will soon forget the wild and dusty ride when he is face to face with some of the most remarkable handiworks of nature. From the veranda next morning he will see the sun rise over the towering Half Dome, the rays reflected on the opposite side of the valley by the silvery Yosemite Falls, leaping over the walls of the peak of the same name, and looking down almost beneath his feet, he sees the ripples of the crystal,



HALF DOME.

clear water of the Merced, and in the calm current the trout busily engaged in their search for living food with which to satisfy their sense of hunger. As the rays of the sun strike the large, cool dew drops clinging to the emerald green foliage in the valley, millions of purest gems appear as by magic to vanish as mysteriously as they came, when the pearls are kissed away by the more amorous rays of the ascending sun. It is now that the rested traveler is in a proper mood to appreciate that

“Toil and pleasure, in their natures opposite, are yet linked together in a kind of necessary connection.”—*Livius*.

The whole trip from Raymond to this wonderful valley is a preparatory one, and culminates when Inspiration Point is reached. The road passes over the foothills of the Sierras, and after it has penetrated into the heart of the mountains, many of the bare peaks above the tree-line come into view. The hills grow higher and higher, the valleys wider and deeper, the scattered boulders bigger, the forest denser, and the trees progressively larger, as the point of destination draws nearer. For a distance of thirty-five miles the trees are scattered and stunted, the short grass yellow and dead, the flowers faded, the springs dry, a picture reverse to that of early spring,

“When spring unlocks the flowers to paint the laughing soil.”—*Heber*.

We were too late to see the open mountain prairies in bloom; we made the trip too late to see the flowers that announce and accompany the season of the year when nature is at her best. We were in the midst of

the *saison morte* of this part of the Pacific slope. We simply saw the remnants of the beauties of spring, only here and there a straggling flower, as most of the vegetation had yielded to the irrepressible demands of the summer's drouth. The earth was parched and cracked, thirsting for rain. Little patches of green in the deeper ravines and on the mountain sides marked the places of starving springs. The trees we met here were the hardy nut-pine, with its silver gray foliage and large cones ripening the delicious little nuts; the white oak, short and stout, with its long, strong rectangular arms outstretched, and its enormous, greedy roots abstracting moisture and food from far and near without any regard for the needs of its nearest neighbors; the black oak and the live oak, both of these trees showing only too plainly by their small size and rickety shapes what they had to contend with in abstracting from the scanty, arid soil the necessary sustenance to maintain life.

The variety of shrubs along the entire route is confusing. Among these the most conspicuous are the manzanita, with its crooked trunk and equally tortuous branches wrapped in a smooth bark of copper color, and its broadly ovate, compact, smooth, silvery leaves, and the buckeye, with its white, smooth coat of bark and large pinnatifid leaves fading into yellow and red, suggestive of the approach of premature death. Another shrub worthy of a more than passing notice is the mountain mahogany (*Cercocarpus parvifolius*). This shrub is from two to twenty feet high, branching from a thick base. The leaves are alternate, short petioled, cuneate, serrate across the summit, silky above and hoary beneath, from six to



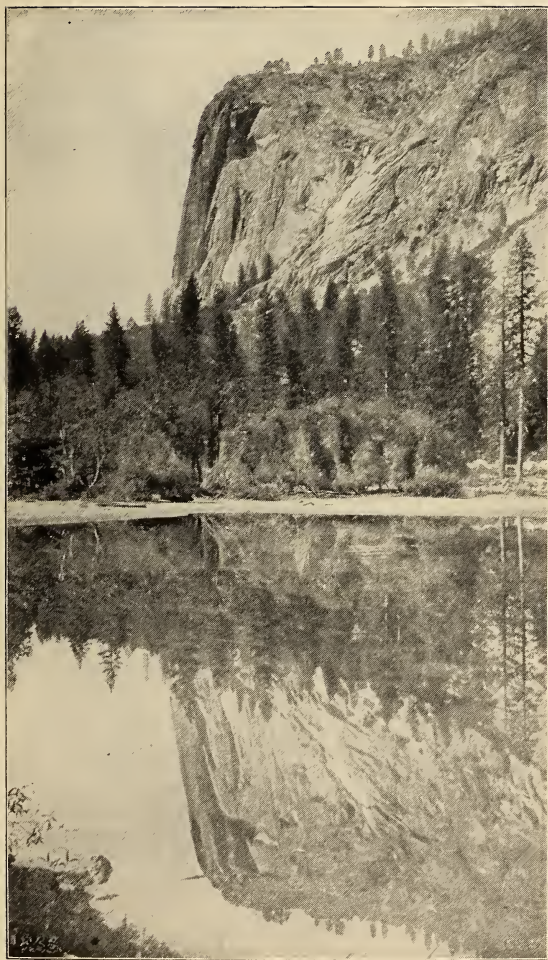
YOSEMITE VALLEY AFTER A SNOW-STORM.

eight inches long. The shrub is easily recognized by its wedge-shaped, willow-green leaves, prominently veined and notched at the summit. Its wood is the heaviest and hardest found in California. Another shrub on this route, from eight to twelve feet high, apparently leafless, yet in season covered with bright yellow blossoms of great beauty, is the leatherwood (*Fremontia Californica*). Two shrubs, which possess valuable medicinal properties, found in abundance all over the foothills, are the yerba santa (*Eriodictyon glutinosum*) and the cascara sagrada. The yerba santa, the sacred herb of the Indians, evidently enjoys an arid soil, as shown by the freshness of its dark green, long, narrow, net-veined, serrated leaves. The upper surface of the leaf is shiny and smooth, as though it had been varnished; the lower surface is a paler green. The cascara sagrada, California coffee (*rhamnus Californica*), is a shrub four to eighteen feet high with alternate, elliptic to oblong, denticulate or entire, leathery leaves, narrow and one to four inches long. The medicinal properties reside in the bark. From it is obtained a laxative remedy which has gained a well-deserved reputation at home as well as abroad.

After passing over the foothills, the nut-pine disappears and its place is taken by the long-leaf yellow pine and the red and white cedar, all of them stately forest trees. These trees are first seen about thirty-five miles from Raymond. The largest of these trees reach a height of from 150 to 200 feet, and many of the massive trunks have a circumference of from twelve to twenty feet. The ambition of the young trees is to equal their seniors in height. Trees not

more than a foot in diameter are often seen equal in height to the neighboring aged giants. As soon as an altitude of 4,000 feet is reached another pine, the sugar-pine (*Pinus Lambertiana*, Dougl.), joins the pine family. This is the acknowledged regal pine, the prince of the whole pine family, exceeded in size only by the immense sequoia. It grows cones from ten to twenty-six inches in length. The columnar, branchless trunks often reach a height of 100 and more feet, bearing a light green, thickly set crown. The bark of the yellow pine is lighter than that of the sugar-pine, and is more coarsely checked. The bark of the cedar is brownish red and deeply corrugated in a vertical direction. All of these trees are remarkable for their healthy appearance, with the exception of those which from their location are subjected to starvation, and those affected with senile decay. Occasionally a tree is seen with a large tumor, but usually as a single, isolated affection. Some of these tumors are of enormous size, but seldom encircle the trunk. The tree most frequently afflicted with tumors is the white oak. This tree has another equally formidable enemy to encounter—the mistletoe. This parasite makes serious demands on its helpless, passive host. Many of the oaks are supporting a number of these parasites, which not infrequently attain the size of a beehive, draining the resources of the host until life is exhausted, when death to both is the inevitable consequence. The pine has its own mistletoe. It is not as aggressive and less dangerous parasite. It is much smaller, and seldom we find more than one on the same tree.

With a light breakfast, and after a ride of forty-



WASHINGTON COLUMN AND MIRROR LAKE.

five miles over a rough mountain road, we were glad to reach the lunch station, Wawona. Heat, dust, thirst and hunger made us understand what Shenstone said of an inn:

“Whoe'er has travell'd life's dull round,
Where'er his stages may have been,
May sigh to think he still has found
The warmest welcome at an inn.”

The road from Wawona to the Yosemite is the roughest, but as it passes through a grand primeval forest, the traveler's attention is riveted continually on towering trees and new landscapes, which change with every turn of the road as it skirts the steep slopes of the valleys and canyons which follow each other in ceaseless succession. Now we look down a yawning chasm, now up a treeless, gray, somber peak, which

“Risest from forth thy silent sea of pines.”

—*Coleridge.*

As we finish the last climb, we look down a deep valley, from which the setting sun has already departed. The driver tightens the reins, and the sweating, panting horses are only too willing to obey his silent order to halt. Pointing with his whip to a large sign, he informs us that we have reached

INSPIRATION POINT.

This is the point from which the Yosemite Valley is first seen by the traveler coming over the Wawona route. The beauty of the valley and the grandeur of its inclosing mountains and silvery waterfalls present at once a scenery which no pen can describe and no artist can reproduce. Deep down in the wide mountain gorge is the park-like valley, sleeping in the vast

mountain solitude. We see the groups of stately trees, the green meadows, the heavily-timbered slopes, the silvery, dreaming Merced, the zigzag bridle path and the winding carriage roads, and as we lift our eyes, the almost perpendicular walls of granite, surmounted by domes and spires, cliffs, peaks and crags, from 3,000 to 5,000 feet in height, reflecting the rays of the setting sun. We see the sturdy El Capitan on the left, rising almost perpendicularly from the valley, its bald face furrowed by age; on the right the Cathedral Rocks, the Sentinel Dome and Glacier Point lift their majestic heads high up into the azure-blue evening sky, and in the distance, apparently beyond the opposite limits of the valley, the solemn, mighty form of the Half Dome comes into view, the crest of which rises 9,000 feet above the level of the sea. We could see from here the Bridal Veil Fall dashing over a perpendicular rock 900 feet high. It could not have received a more appropriate and deserving name. It plows down the rugged face of the mountain in a stream of white, fleecy foam, seeming to touch its rocky cheeks with a caress. The turbulent, silvery stream descends with a quick, rapid, gliding motion, now striking the rock, then leaping into the air with a movement of witching grace, seeming to laugh description to scorn. Artists have stood here and at the nearby Artist's Point, and have attempted to reproduce on canvas the grand panorama unfolded before the dazed eyes of the traveler as he stands on Inspiration Point, spellbound, bewitched by the grandeur and incomparable beauty of this favored spot in the heart of the Sierra Mountains. I am sure that the best pictures, when finished and compared with



WIND PLAYING WITH BRIDAL VEIL FALLS, 900 FEET.

nature's handiwork, must have been a source of keen disappointment to the artists themselves. There is a limitation to human skill in reproducing nature's works of art, and here is one of the many places where its imperfections must be most keenly felt. In this, as in so many other instances, we can not form a correct idea of nature's plastic and decorative art by looking through the eyes of the most skillful artist; the reality must be seen in order to be correctly understood and justly appreciated. With the slowly-growing twilight, we descended the last steep mountain slope, entered the valley and arrived at the Sentinel Hotel, the only hotel in the valley, in time for a belated supper.

THE VALLEY.

This secluded mountain valley in the very heart of the Sierras was once the hiding-place of warfaring Indians. It was discovered by a company of volunteers under command of Captain Boling in 1851. A description of the scenic beauty of this wonderful gorge was first given by J. M. Hutchings in 1855, and published in the *Mariposa Gazette* the same year. Mr. Hutchings, a lover of nature, made it his home soon thereafter, until he died last year from the effects of injuries sustained during a runaway accident. In due time the state set it aside as a public pleasure-ground, in charge of a state board of commissioners. More recently the general government has added to it a timber reserve forty miles square. A number of groves of sequoia trees in its vicinity are also in safe-keeping by state and government legislation. The valley has an elevation of 4,000 feet, is seven miles in

length, by from a half to one mile in width. It is excluded from the outside world by mountains from 3,500 to 6,000 feet in height, over which leap numerous waterfalls from 350 to 2,000 feet at a single bound—generous contributions to the lovely Merced River. This river, clear as crystal, a true mountain stream, 100 feet wide, meanders lazily through the grass-carpeted meadows and between the stately trees of the valley. The forest in the valley is not dense; ample room is left between the majestic trees for the growth of shrubs, grass and flowers. The beautiful forest, the trout-stocked Merced, the lovely meadows, the winding roads, the fine hotel and cottages, the little brown church with its diminutive spire, the frowning cliffs, the tree-clad mountain sides and the charming, leaping waterfalls, make up a picture which no artificial park can equal in grandeur and beauty. Among the trees in the valley and on the mountain sides we find the following: Yellow pine (*Pinus ponderosa* and *Pinus Jeffreyi*), sugar-pine (*Pinus Lambertiana*), tamarack-pine (*Pinus contorta*), red or incense cedar (*Libocedrus decurrens*), silver firs (*Abies concolor*, *Abies grandis* and *Abies nobilis*), black oak (*Quercus Kelloggii*), poplar (*Populus balsamifera*), alder (*Alnus virides*), quaking aspen (*Populus tremuloides*), live oak, dogwood (*Cornus Nuttallii*), soft maple and mountain laurel (*Umbellularia Californica*).

A FEW OF THE BELATED FLOWERS.

One of my greatest regrets in visiting this wonderful valley was that I was too late in the season to see, study and admire its floral beauty. May and June are the months to see the subalpine and alpine flora in



EL CAPITAN.

their glory. I considered myself fortunate in finding two of the flowers that have contributed so much to the fame of this valley—the azalea and snowplant—although in a somewhat faded condition.

Snowplant (*Sarcodes sanguinea*). This is the most beautiful and certainly the most famous flower of the Yosemite. It grows in the valley as well as on the summit and mountain slopes. The bright scarlet dress which it wears throughout imparts to it an unrivaled attraction and dignity, and distinguishes it at once from all other flowers of the same color. The stout stem is from six to eight inches high. In place of leaves the thick, fleshy, column-like, hairy stem is imbricated with bracts of a rosy tint. The scarlet flowers are short pediceled, with a corolla six lines long, campanulate and five-lobed. This gem of a flower despises an altitude of less than 4,000 feet, and its color is brightest and the stem most succulent when it has the privilege to grow at an elevation of from 6,000 to 8,000 feet above the level of the sea. Its blood-red color is in strong contrast with the melting snow during the early months of spring.

Californian Azalea (*Rhododendron occidentale*). This shrub, bearing beautiful snow-white and yellow flowers, is from two to twelve feet high, is very abundant, and is one of the spring attractions of the valley. When the shrub is in blossom, the spicy fragrance emanating from its flowers lends an exquisite perfume to the pure, cool mountain air. At the time of my visit, I found the flowers wilted, a wreck of their former beauty. Attractive and charming as this shrub appears when decorated by a profusion of blossoms, it is said its leaves and roots contain a powerful

narcotic poison. The flowers grow in large, showy clusters at the ends of the branches. The white corolla, resembling a honeysuckle in shape, has a funnel-form tube and five-cleft border, the upper lobe blotched with yellow and sometimes tinged with pink. Its base rests in the five-cleft, green calyx. The dark green obovate to lanceolate leaves, two to four inches long, are clustered with the flowers at the ends of the branches.

Californian Dandelion (*Troximon grandiflorum*). Our dandelion, so common east of the Rocky Mountains and so widespread over the world, one of the earliest delights in the spring, and one that persists in blossoming until the icy winds of approaching winter suspend vegetable life, refuses to grow in the sunny climate of the Pacific slope. I have seen this flower on the North Cape, in Siberia and other remote places of the world, where vegetation has to make a determined struggle for existence, but it has so far objected to the soil and climate of California, and will not mingle with its rich and varied flora. The dandelion is represented here by a different genus, which is quite as handsome, though the flowers are not so vivid a gold. It is of a paler color. The scape, surmounted by a single terminal flower, is from one to two feet high. In form and size the heads resemble our dandelion very closely. The leaves are all radical, lanceolate or oblanceolate. Scapes and leaves contain a bitter milky juice. In some varieties of *Troximon* the leaves are laciniately pinnatifid as in our genus.

Evening Primrose (*Oenothera biennis*). The gorgeous, smiling, gold yellow primrose was the first flower to welcome us as we entered the Yosemite Val-



THE HUTCHINGS' CABIN, YOSEMITE VALLEY.

ley. It was a familiar flower, but what a bright, cheerful face in this deep gorge, dimmed by the evening twilight! The great salver-shaped corolla rivals in brilliancy the evening star sparkling in the overhanging sky. The plant has a stout, hairy, usually single stem, woody below, stained a reddish hue, and punctated with minute red spots. The calyx is four-parted and reflexed in two pairs. The flowers are arranged in a leafy spike, the four stigma lobes linear, capsule an inch or less in length, hairy and strongly ribbed.

Californian Goldenrod (*Solidago Californica*). The goldenrods are not as abundant on the west side of the Rocky Mountains as in the east, and the varieties are fewer, but the flowers are perhaps more gorgeous in their dress of gold. The Californian goldenrod has a rather stout stem, varied in height, with alternate oblong, or the upper oblong-lanceolate, smooth leaves. The sulphur-yellow little heads, with seven to twelve small ray and as many disc flowers, are arranged in a dense pyramidal panicle from four to twelve inches long, with mostly erect, racemose branches.

Wood Violet (*Viola larmentosa*). This modest little violet is found in great abundance in the moist, grassy woods on the banks of the Merced. The delicate, weak, creeping stems, the shapely, round, cordate, finely crenate leaves, and small, light yellow flowers, make a lovely decoration for the green carpet of grass.

Californian Figwort (*Scrophularia Californica*). This somewhat homely plant has a very wide distribution, and in the Yosemite it is found at a high altitude in a somewhat crippled state, yet resembling very closely the more pretending *Scrophularia nodosa* so

common in the middle states. The stem, round and smooth, does not exceed three feet in height. The leaves are opposite, the upper sessile, the lower with short petioles, oblong-ovate below, lanceolate above, and finely serrated. The little hood-like flower is of a dull red or greenish color, with a bilabiate corolla, the upper lip projecting and two lobed. The four stamens in two pairs project from the open corolla like the front teeth of some small rodent.

Alpine Phlox (*Phlox Douglasii*). This charming little alpine plant seems to be almost independent of moisture and soil, as I found it in all its beauty attached to the bare rocks at the very summit of Yosemite Peak. It forms cushion-like tufts three to four inches high, with the delicate snow-white flowers only slightly raised above the green bed of hardy subulate leaves. The corolla is salver-shaped, with five-lobed border, stamens five inserted on the tube of the corolla, style three-lobed. Although this hardy plant thrives on the arid plains and on naked rocks, the delicate little flower withers almost the moment it is severed from the inhospitable host.

Columbine (*Aquilegia canadensis*). The columbine found on the rocky heights of the Yosemite is a very small plant as compared with its relative in the east; the flower is the same. The spurred corolla is scarlet, tinged with yellow, quite in harmony with the similarly spurred petaloid sepals. The radical leaves are divided into thin, distant leaflets.

Western Cardinal Flower (*Lobelia splendens*). The cardinal flower of the Yosemite cannot fail to attract the attention of the tourist. The cardinal red color of the tubular two-lipped corolla is so brilliant



STAIRWAY ON CLOUD'S REST TRAIL.

and fiery that no other flower can excel it in the intensity of color. The flowers are arranged in an elongated wand-like raceme, terminating the smooth stem from one to two feet high. The leaves are alternate, mostly sessile, lanceolate or almost linear.

St. Johnswort (*Hypericum concunum*). This variety of St. Johnswort I found on the mountain slopes and peaks of the Yosemite resembled the same genus elsewhere, only that the flower is small, not exceeding half an inch across.

Spreading Dogbane (*Apocynum androsæmifolium*). This pretty little flower I found on the Yosemite Point among the immense boulders, supported by a dwarfed stem not more than six to twelve inches high. The opposite leaves are short petioled, ovate or roundish, an inch or two in length. The stem is much branched. The pink flowers grow in clusters of from three to ten and more. The corolla is campanulate with five retroflexed lobes, stamens five inserted on the corolla, style sessile. The flesh tint of the shapely corolla is veined with deeper pink within.

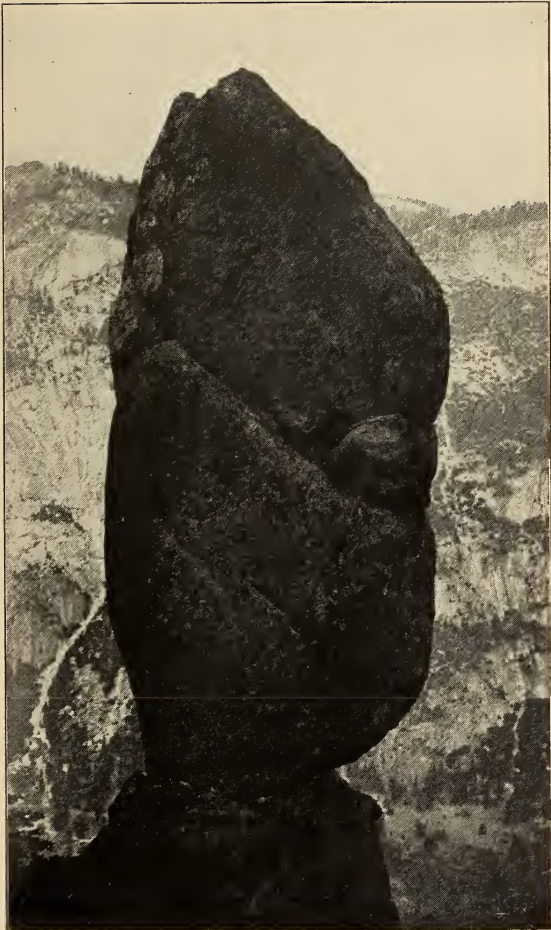
California Laurel (*Umbellularia Californica*). The mountain slopes of the Yosemite Valley from base to summit are populated here and there by a stately shrub—the mountain laurel—the size of it being markedly influenced by the altitude. In other parts of this state this shrub under favorable influences develops into a tree ten to 100 feet in height (State University Park). I came too late to see this handsome shrub in blossom. It was already ripening its olive-like, oily fruit. The bark of the trunk and branches is white and smooth. The leaves are alternate, short petioled, lanceolate-oblong, two to four inches in

length, dark green on the upper and a pale green on the under surface, strongly veined from a central mid-rib, containing an aromatic oil. The flowers are fragrant.

The Yosemite Valley is the cradle of some of the choicest flowers of California, and it was a source of keen regret that I missed so many that beautify it during the spring months, the real floral season of the year. I likewise missed many of the *Compositæ*, which I presume in this locality are at their best after the fall rains revivify vegetation. A variety of asters were beginning to unfold their ray flowers, as well as *Sonchus*, sunflowers and the brown-eyed *Rudbeckia*.

ASCENT OF YOSEMITE PEAK.

The Yosemite Valley is so narrow, and the inclosing granite walls of such stupendous height, that the eyes have to be lifted in the study of its scenic beauties, the great rough walls appearing like a solid mass of granite, which on closer inspection is, however, fissured vertically, obliquely, transversely and in all other possible directions, dividing it into strata and immense blocks, outlined in all imaginable shapes by some terrible upheavals or stupendous pressure. It must have been during such convulsive demonstrations of nature's tremendous forces that the prodigious boulders, some of them as large as houses, found all along the base of the mountains and scattered all over the valley, became detached and made their crashing descent into the gorge below. It is by this rough method of stone-cutting that the steep and, in some places, perpendicular mountain sides present such a wall-like appearance and grotesque figures on



AGASSIZ COLUMN, 85 FEET.

their surfaces. So at a point near Mirror Lake there is a striking bas-relief of the clean-cut features of a stern face, which, if framed and exhibited in an art gallery, would at once be recognized as the face of a Roman soldier. From another point near the Happy Isles can be seen on the perpendicular cliff the outlines of the head of a dog in an attitude suggesting rest after an arduous and long chase. The tree growth on these walls of stone is something remarkable. There are trees that seem to prefer barren, sterile stone to nourishing, loose soil. The live oak, cedar, pine and mountain laurel are fond of a soil of stone. Some of these trees send their bark-covered roots ten and twenty feet over the cold, bare stone in search of some fissure or crevice, into which they can penetrate and find another point of anchorage for the trunk and an additional source of scanty food and water supply. Granite has become proverbial in suggesting hardness, durability and permanence. But nature is never stationary. Permanency with her means ceaseless changes, and granite is not exempt from these.

“Devouring Time and envious Age, all things
yield to you, and with lingering death you
destroy step by step with venomous tooth
whatever you attack.”—*Ovidius*.

This, the hardest and most durable of all stones, exposed to the outward destructive elements—heat, cold and rain—yields to nature’s exacting laws, and in the course of time is softened, crumbles, and is converted into a coarse sand which becomes an important ingredient of the forming soil. The fertile soil at the base of the mountains and on the slopes is made up

largely of this granite sand. On the Yosemite Peak these imperceptible, slow, but inevitable, changes are exhibited in a most striking and instructive manner. The bridle path and the narrow spaces between the immense boulders are covered with this granite debris, the nucleus for the scant surface soil. Large and small flat pieces of granite have become sequestered from the mother rock under the subtle destructive changes wrought by ages, and have been made so brittle that they can be crushed between the fingers. The vertical walls exhibit the same insidious effects of the elements, more especially the slow but sure action of flowing and dropping water. In the course of centuries the little springs issuing from fissures in the rock and flowing down the granite face will chisel deep grooves of the strangest designs.

The proverb, "Distance lends enchantment," applies with special force to Yosemite Valley. It appears in its grandest beauty from one of the many peaks which for thousands of years have guarded its precipitous ramparts and towering ravelins. Looking down into the peaceful, quiet valley from a great height makes an entirely different impression than to look up from it toward the confining, stupendous walls of stone. In the valley a sense of isolation, of imprisonment, overtakes the visitor, all of which leaves him as he ascends the steep walls and looks down upon the placid scenery below, and when he reaches the brim of the great gorge he sees beyond the snow-clad mountains and above him the great blue dome of the sky, seemingly resting on the shoulders of the rugged Sierra Mountains. If Job had seen the sky that overhangs the Yosemite Valley and the bare peaks and



UPPER YOSEMITE FALLS, 1,600 FEET, AND ICE CONE
500 FEET.

tree-clad mountains which guard its entrance, he would not have said:

“Hast thou with him spread out the sky,
which is strong, and as a molten looking-glass?”
—*Job xxxvii, 18.*

If he had seen the deep azure-blue of this great dome, illuminated by the splendor of the rays of the August sun or by the pale full moon at midnight, as we did, he would have exclaimed with Southey:

“Blue, darkly, deeply, beautifully blue.”

Or would have sung with Addison:

“The spacious firmament on high,
With all the blue ethereal sky,
And spangled heavens, a shining frame,
Their great original proclaim.”

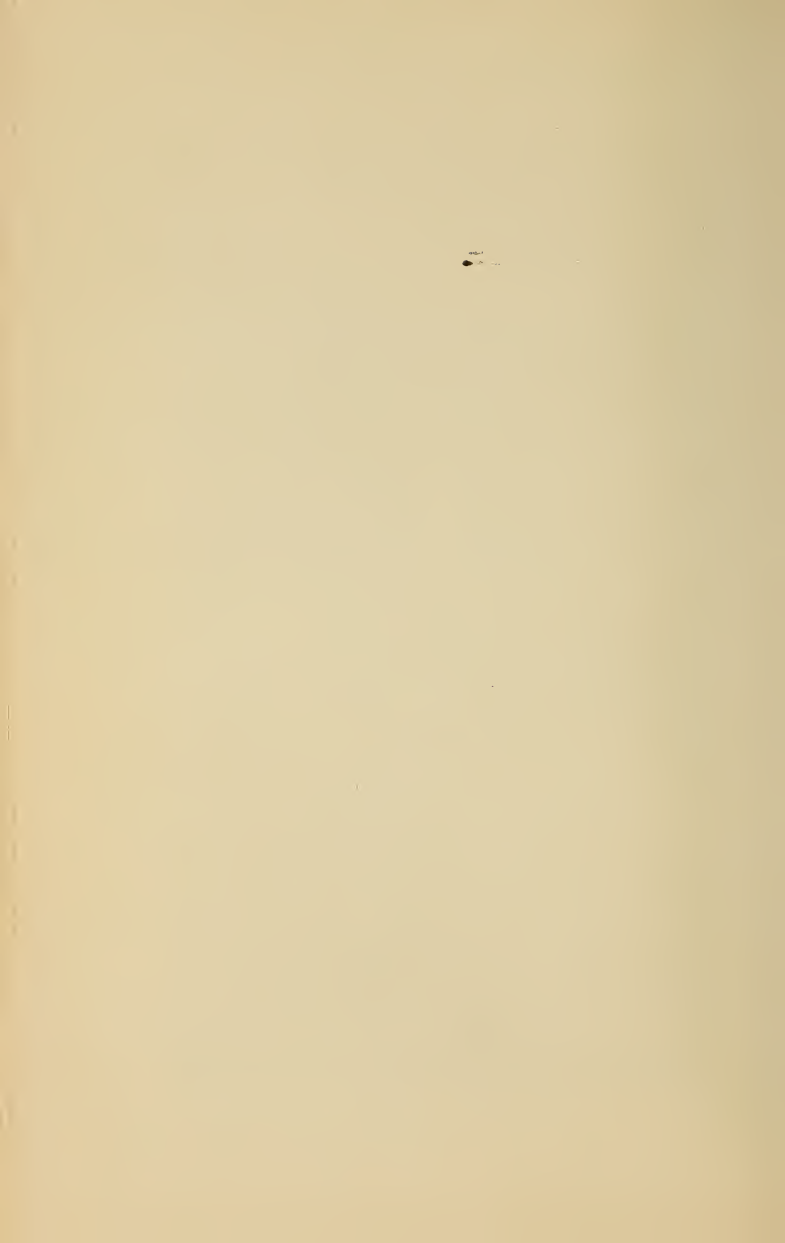
Much has been said about the beauty of the Italian sky. Let those who have never seen the dark blue, the beautifully blue of the Yosemite sky come and see what nature has done here in the way of tinting the sky with an indescribable blue, a blue for which the artist has no colors and no mixture of colors, a royal blue unknown in Italy, a blue worthy of the grand sceneries over which it has pitched its limitless tent.

Of the many trails leading from Yosemite Valley to the different most important peaks, the one by which the Yosemite Peak, at the head of Yosemite Falls, is reached is the steepest and most difficult to ascend. The mules employed for this purpose are well-trained and sure-footed animals. Mules have earned an unenviable reputation for being stubborn—a reputation undeserved by the docile, willing little animals on

special duty here. They understand their business and appear to be conscious of the responsibility placed upon them in carrying their human freight over the narrow, stony, steep and crooked bridle-path from the valley to the peak. There are places where a single misstep would result disastrously to animal and rider, and it is in such places the limber, faithful little animals exercise their greatest caution, reaching out slowly with their feet and measuring with their accurate eyes every inch of ground before the step is taken. The bridle is useless, as the animal knows much more about mountain-climbing than the tenderfoot rider. In making some of the short turns at the very brink of a yawning precipice, the lithe little body is twisted into an acute angle during the sudden change in the direction of the narrow, stony path. The ascent from the valley begins by entering a deep, heavily-timbered canyon, and the path winds its way among boulders of enormous size. The grade becomes at once very steep, and in short, zigzag turns—some of them not more than ten paces apart—the path leads up to a place where, to the uninitiated, it appears impossible to find an escape in an upward direction. A perpendicular wall of stone more than 1,000 feet high frowns upon the expectant and puzzled rider. With a sense of relief he looks back upon the valley as it recedes from view, its river, houses and trees growing smaller with every turn of the terrace-like path. As the forbidding, wall-like cliff is reached, the limber little mule turns to the right and follows a trail that skirts the mountain and, by a long, gentle incline, leads through another canyon to the very feet of the first fall of the Yosemite.



YOSEMITE FALLS.



We see here, standing near, the spray of the sheet of water that in one leap has made a fall of 1,600 feet, and will repeat the same feat twice on a smaller scale before it finds rest in the bed of the sleepy Merced in the valley below. We take a long look at the many new things which have made their appearance in the valley and its mural enclosure, when the climb, steeper than ever, is resumed. The path winds its way through a gap between the Yosemite Peak and Eagle Peak, where a little soil has accumulated and the green grass and stately pine trees and alpine flowers have transformed it into a veritable park. Up to this height the path is shaded much of the time by live oak, black oak, dwarfed red cedar, stunted soft maple and the fragrant mountain laurel. From the Yosemite Peak an inspiring view of the valley is obtained with the many peaks, spires, domes, cliffs and crags that crown the enclosing gigantic granite walls. The hotel below and the adjoining buildings look like toy houses; the Merced is merely an undulating silver band dividing the grassy meadows interrupted here and there by the enormous trees, which the distance from here has reduced to the size of shrubs. Cattle and horses grazing in the meadows are but moving specks, and a passing stage-coach is no larger than a baby carriage. The cool mountain breeze fans our sunburnt faces, and the lungs, used to the dust-laden, smoky Chicago air, we inhale with a hunger that can not be appeased. Way beyond and above the highest spires and domes that form a part of the valley walls, loom up the snow-flecked peaks, the monarchs of the Sierras. From the opposite Glacier Point the charmed tourist can even see a remnant of the glacial

period in the form of a glacier that has so far successfully resisted the warmest breaths of thousands of summer suns. From the peak a well-made stone staircase brings the traveler down to a stone platform consisting of a projecting rock, surrounded by an iron railing almost directly over the precipice from which the Yosemite takes its first fearful leap into the yawning chasm below. The angry, foaming current, in its wild descent, dashes against the unfeeling granite wall and in its fury sends up a column of spray which reaches us in the form of a mist. We see where the water strikes a stone platform 1,600 feet below and recoils in foam and spray, when it again gathers strength and courage and through a deep groove worn out of the rock rushes on in cataracts to the middle and finally the third fall, to mingle in a few moments later with the crystal, clear, smooth, quiet water of the Merced.

The Yosemite Falls, viewed from different points and from different altitudes, are not surpassed in grandeur, grace and beauty by many whose reputations have been immortalized in prose and song. The height of the first fall, the rapids coursing through channels made in the rock by the angry waters, the two lesser falls below, the magnificent mountain scenery, and the charming valley beneath, with meadows and forests, and the lovely Merced receiving the foam-crested, agitated, restless, fleeing waters of the Yosemite, impart to these falls an indescribable charm. Above the falls the Yosemite Creek winds its way on the high mountain plateau, between boulders of prodigious size, through a shallow ravine with a granite floor, and the water finds a moment of rest in two large basins worn



WASHINGTON COLUMN, 1,800 FEET, AND HALF DOME,
5,000 FEET.

out of the rock by its incessant action, before it makes its three successive leaps into the valley below.

MIRROR LAKE.

The most restful, pleasing feature of the Yosemite Valley is the miniature, bewitching Mirror Lake. It is what its name implies, a natural mirror. The little lake is simply an expansion of the river almost as soon as it enters the valley, forcing its way between boulders which have stood immovably in its way since they severed their connection with the towering mountains which here contract the valley to a narrow, dark gorge which is visited by the sun only a few hours during the middle of the day. This little lake has its bays and islets, its sandy banks and rocky shores, and, more than all, its crystal, clear water which reflects the shadows with an accuracy that creates wonder and commands admiration. The time to visit this natural mirror is either at sunrise or sunset, preferably the former. The high mountains are reflected in the water in sharp outlines. Every shadow on them can be seen with marvelous distinctness; every minute detail of outline is made plain. When the sun rises, a little after eight o'clock, a ball of golden splendor is seen in the crystal water, to which the water imparts a silvery hue. As the shadows of the mountains appear in the inverted image in the water, the cliffs, crags, trees and shrubs are seen with a distinctness well calculated to cast reflections on the art of photography. The little sheet of water with its magic power of reflection and romantic surroundings would be an ample reward for all hardships incident to a long and rough stage voyage, but it is only

one of the great many points of interest the Yosemite Valley has in store for the thousands of its annual visitors. The pure, cool mountain air is hostile to the pest of the summer tourist—the mosquito. The many nectar-producing flowers attract butterflies of all hues. They are in the valley, on the mountain slopes, and sail about the rugged peaks sipping the nectar from the dainty corollas of the loveliest alpine flowers. Happy creatures!

“What more felicitie can fall to creature
 Than to enjoy delight with libertie,
 And to be lord of all the workes of Nature,
 To raine in th' aire from earth to highest skie,
 To feed on flowers and weeds of glorious feature.”

—*Spenser.*

A SCANDALOUS SLAUGHTER OF TREES.

On the way from Wawona to the Yosemite Valley, the tourist is made to look upon a scene which is well calculated to sicken the heart of every lover of nature. In the midst of a noble forest of yellow and sugar pine, an immense sawmill has been established, with all modern machinery attached, to carry on a slaughter of trees on a large scale. The murderous implements of destruction of tree-life are of such an effective kind that in a short time miles of the beautiful forest will be laid waste. A company with ample means, bent upon amassing greater wealth, bought here a large tract of land before the timber reserve law went into effect, hence are in possession of the right to deal with the forest at pleasure. A small village of frame huts for the workingmen sprang up near the sawmill like a mushroom. A narrow-gauge railway makes the most remote parts of the tract

accessible. From the sawmill, like a monster octopus, log slides reach out in different directions, over which the immense logs are dragged by a powerful jack engine by means of a strong wire cable a mile in length. A flume sixty-five miles long conveys the lumber from the sawmill to the nearest railway station. Nothing is seen here of the old methods of logging except the cutting down of the trees and segmentation of their trunks into logs of desirable length. Machinery has taken the place of hand labor and animal traction. Slaughter on a larger scale is in progress, and ruin and devastation will soon take the place of a large part of this magnificent pine forest. The work of destruction is well on the way. The buzz of the sawmill has disturbed the solitude. The clash of the woodman's ax, the monotonous rasping sound of the hand-saw, and the dull thud of falling trees, are heard on every side. The logs, stripped of their bark, unwillingly follow the wire rope over the rough timber slides from all available directions to the final place of mutilation. The bleeding stumps and withering foliage of the recent victims appeal in vain for mercy. It is only a question of time before every tree of desirable size in this great tract will meet the same cruel fate. It has taken nature centuries to build this great forest; man, in his greed for gold, will ruin it in as many months. The work carried on here is not humane lumbering; it is slaughter. The woodman's ax knows no discretion. The young must die with the old. Every tree large enough to yield lumber a foot, or even less, in width must be sacrificed. Fire follows this carnage and kills what is left. This company has no thought of the future; has no regard

for coming generations. It has entered the very heart of the Sierran forest to destroy that part of it over which the government, for a paltry sum, has lost control. No one can pass through this place of methodical, mercenary forest-destruction without becoming impressed with the idea that trees, like water, should be common property, entitled to protection by strict and just government regulations, for the benefit of all for whom they were intended.

THE GREAT FORESTS OF THE SIERRAS.

Soil and forests are the wealth of a country. Soil without forests deteriorates, and in the course of time is swept away or buried by floods. Forests are the natural irrigators and builders of the soil. The foliage of the trees and the surface soil are the great sponges which nature employs in storing up the water from the melting snow and the falling rain, and the reservoirs from which adjacent treeless plains receive the needed moisture during the dry seasons. Civilized nations, with their multitudinous needs for timber, and growing desire for wealth, are the most dangerous enemies of nature's greatest boon to man—the primeval forests. The primitive peoples had very little use for wood, and consequently the forests remained in their primeval beauty until the demands of civilization initiated a war of destruction which has continued in a most relentless manner until a large part of the most fertile portions of the globe has been stripped of its trees and converted into a desert. Syria, Palestine, Greece, Turkey, Italy, Spain and the southern part of Austria have met this fate. Floods and drought have everywhere followed the destructive work of the wood-



VERNAL FALL, 350 FEET.

man's ax. What escaped the murderous implements of man yielded to forest fires fed by the parts of the perished trees for which the aggressive enemy had no use.

I have seen the treeless mountains of Syria, Palestine and southern Europe and the terrible consequences of their deforestation by thoughtless, selfish man. All of these countries, formerly the granaries that supplied the then known world with food, have become impoverished; they have lost their water and their soil, with the inevitable consequences following—floods, drought, squalor and famine. The green tree-tops break the heavy downpour of rain and catch the fleecy flakes of snow, and from them a gentle, drizzling rain percolates the soil beneath. Remove these natural storehouses of moisture between clouds and earth, and the heavy rains and melting snow will collect in torrents, carrying with them the fertile soil on their swift journey to the nearest lake or ocean, lost forever to their unfortunate owners. Heavy rains give birth to devastating inundations; vegetation becomes more and more scanty; the soil dry and parched, and in less time than one can imagine, a once fertile country has become a desert, and a once powerful, prosperous nation is impoverished and loses its independence.

The history of the Orient during the last two thousand years has demonstrated the value of forests and the fearful consequences that are sure to follow their destruction by short-sighted, reckless man. The Orient has furnished the world with an object-lesson illustrative of the importance of forest-protection that can not be misunderstood or ignored. Have we Americans profited by the experience of the past?

Let our forests tell the story. When the white man set his foot upon American soil, the country that we now call our own was clad with an unbroken forest extending from the Atlantic to the Mississippi, and which since the last glacial period, 80,000 years ago, had gained a firm foothold upon the slopes of the Rocky and Sierra Nevada Mountains. Great rivers fed by converging streams coursed through the fertile valleys, and a luxurious vegetation covered the vast virgin surface soil, percolated by the water from the immense natural system of irrigation. The savages who inhabited these dense forests made no demands on these enormous timber resources. Occasionally the trunk of one of the giants of the forests was converted into a canoe, some of the saplings had to serve as tepee poles, and the glimmering camp-fires were fed with dry branches of fallen dead trees, and here and there little patches in the forests were cleared for better pastures and to extract from the soil only the very necessities of life.

With the coming of the white man the fate of these stately forests was sealed. The ax and the sawmill began their deadly work, and the onslaught has been maintained with unremitting vigor until the present time, when we begin to realize the extent of the national calamity for which they and they alone are responsible. Thousands of our tree-destroyers have extracted millions from their helpless victims.

Until recently the government has not only tolerated, but has encouraged this systematic war of tree-extermination, and the railway and navigation companies have extended a willing hand for a selfish purpose. The work of extermination has been made more effec-



IN THE MARIPOSA BIG TREE GROVE, FROM THE WAWONA.

tive and remunerative by the substitution of machinery for hand labor and by the organization of wealthy corporations which now monopolize what little available timber is left. Many of the Eastern States have lost their timber and their soil. Thousands of farms have been abandoned. The two Virginias, once so prosperous, have been made to realize that agriculture wanes with the beginning of deforestation. Maryland is undergoing the same bitter experience. The two younger States, Wisconsin and Michigan, have been stripped of their magnificent forests, and as a result millions of acres have been converted into a desert that can never be reclaimed. In northern Wisconsin alone, by forest destruction by ax and fire, some 4,000,000 acres have, during the last generation, been turned into a desert as nearly as is possible in the climate of that State; besides, another 4,000,000 acres have been changed into useless brushwood. These figures are appalling. Here is a loss of 800,000,000 feet, board measure, which this non-arable acreage could produce annually if the soil were rationally used.

The great naturalist, Alexander von Humboldt, sounded a timely alarm when he exclaimed, in his "Cosmos":

"How foolish does man appear in destroying the mountain forests, for thereby he deprives himself of wood and water at the same time."

And he should have added, of soil also! We have lost not only a vast area of surface soil that has impoverished thousands of families that depended on agriculture; we have lost from the same cause many of our navigable rivers. In a very interesting forest

survey of Wisconsin we read: "The flow of all the larger rivers has changed during the last forty years, navigation has been abandoned on the Wisconsin, logging and rafting have become difficult on all the rivers, and what is even a far surer measure, the Fox River is failing to furnish the power which it formerly supplied in abundance." What is stated here applies to all the rivers and water-courses where deforestation has been carried on to the same extent. After ruining the northern part of Wisconsin and Michigan, the lumbermen are laying their greedy hands on the Southern forests, and it will not be many years before Florida, Georgia, Alabama, Mississippi and Louisiana will be in the same deplorable condition. This war against trees has extended to the distant West, where the great forests of the Sierra Nevada, the pride of the Pacific slope, are threatened by mutilation, if not extinction. The citizens of California and the people of the United States as a whole should protest against destructive deforestation of the grandest forest the Creator has seen fit to plant on earth. No other country ever was crowned by such a forest, and no other soil ever produced trees of such gigantic size and such noble bearing. Enter these forests wherever you will and estimate with your astonished eyes the height and breadth of the giant pines and cedars, you will for once feel satisfied that you are indeed in the midst of an ideal forest such as poets and travelers have so often attempted to describe, and you will in your ecstasy repeat to yourself or to your companions, again and again:

"This is the forest primeval."

—*Longfellow.*

In the distribution of the greatest and choicest gifts, Nature has been very partial to the Pacific slope. She has endowed it with a climate that has no equal, with a vegetation more variable and beautiful than can be seen anywhere else over the same extent of country, and with a primeval forest that defies description. If Keats had seen this forest of stately pines, he would have made the pine, and not the oak, the senator of the woods, when he wrote:

“Those green-robed senators of mighty woods,
Tall oaks, branch-charmed by the earnest stars,
Dream, and so dream all night without a stir.”

What a change from the barren, weather-worn, parched soil of the deforested deserts to these mighty evergreen woods with the balmy air filled with the music of bubbling springs, murmuring brooks, splashing cataracts and rippling rivers! Nature has not been sufficiently interfered with here by man to mar her beauty, and as we admire her grandest effort in teaching man what she can accomplish in her vegetable domain, we heartily join in:

“Let us a little permit Nature so to take her own way; she better understands her own affairs than we.”—*Montaigne*.

Indeed, we must arrive at the conclusion that it is wise for man to imitate her example and teachings rather than to oppose them. It is fortunate that these mighty forests of the Sierras have been spared sufficiently long for the people to become aroused to the necessity of resorting to stringent measures calculated to protect them against further mutilation. The giant pines and cedars and the monster sequoias and

the magnificent redwoods of these forests are the pride of California and the admiration of the world. These wonders of the vegetable kingdom are the greatest attractions of California, which induce annually thousands of visitors from every State of the Union and from distant lands to come and see what Nature has on exhibition here in the way of giant growth in her vegetable domain. California is fully aware of the sacredness and responsibility of her trust in the preservation of her forests, the like of which no other country has ever produced. The general government is doing its share toward this end by setting aside for the public benefit and pleasure a number of large forest reserves. Associations and individuals are in hearty cooperation with these movements, and it is to be hoped that these combined efforts will prove effective in preventing further irrational, suicidal deforestation by ax or deflagration. The tourist from the dusty, noisy, busy cities will find in these shady, cool forests the solitude and mental rest he seeks. He will experience here that

“Solitude sometimes is best society, and short retirement urges sweet return.”—*Milton*.

With the majestic trees above him, the varied animal and vegetable life around him, if he is interested in the book of nature, he can not resist the idea:

“They are never alone that are accompanied by noble thoughts.”—*Milton*.

If he will spend a few days among these monarch trees, eat frugal meals, quench his thirst with the purest and coldest water from the mountain springs,

exercise his flabby muscles by mountain-climbing, sleep on boughs of the fragrant balsam fir, and listen to the lullaby in the tree-tops on moonlit nights, he will begin to realize that

“Sleep, gentle that it is, spurns not the humble cots of the peasants and the shady bank.”—*Horatius*.

It is the impressive solitude of a great mountain forest, with the sublime thoughts that it creates in the mind and the physical opportunities it offers, that soothes the irritable brain and invigorates the worn-out body pleading for a change of habitude. The primeval forests of California will become the Mecca for the class of tourists in need of such a radical change. Millions will reap the benefits of its inspiring, sleep-producing, health-restoring mountain forests. The fascination of these forests is to be found in their extent, and the size, beauty and virtue of their trees. To ride or walk through an unbroken primeval forest fifty, a hundred and more miles, is no ordinary source of pleasure; it is an experience that makes a lasting impression. The eyes never tire in studying the vestments and emerald-green crowns of the colossal trees and in measuring their columnar, branchless trunks. The mountain peaks, cliffs and crags, the immense boulders that separated their connection with the mother rocks thousands of years ago and have found a resting-place on the mountain slopes or in some dark, deep canyon, where they are caressed by the rippling waters of a mountain stream, and the cone and needle-strewn surface decorated with sub-alpine and alpine flowers in gay attire, form a background worthy of the leading feature of the forest

picture. The solitude is impressive and is greatly magnified when the retiring sun throws its last rays upon the towering tree-tops and the shadows of the night begin to darken the pillared space beneath. It borders on awe when night takes possession of the scene; when the sighing trees appear like phantoms under the blue dome of the cloudless, starry sky, feebly illuminated by the pale face of the new moon. No pen, no brush, is competent to reproduce in language or pictures what the eye can see here. Nature defies imitation by imperfect, ignorant man everywhere, but here she laughs to scorn the learning as well as the skill of men. In the presence of these mammoth trees, in view of the snow-flecked mountain-peaks, under the influence of the invigorating, cool, balsamic mountain air, we are made willing to admit, if we have not done so before, under less inspiring environments:

“Small draughts of knowledge lead to atheisms, but larger bring man back to God.”

—*Bacon.*

The very size of the trees impress upon us the important lesson that power and influence are not incompatible with modesty and unselfishness. Many a small, scrubby, crippled tree sends out its greedy roots much further than the princely pines; others, equally stunted and deformed, show their selfishness by exerting all their energies in developing their branches and foliage to an extent to inhibit tree-life within the area they claim as their own. They trespass upon the rights of their own kind to the fullest extent of their rapacious capacity, and maintain a bitter hostility toward their most friendly and hospi-

table neighbors. The immense size, vigorous health and noble bearing of these giants of the forest furnish ample proof of their virtue. The largest of these trees are only to be found at an altitude of not less than 2,000 feet, and their size and vigor increase up to an altitude of 6,000 feet. They are fond of a scant, rocky soil, and love to send their roots between massive boulders and deep down into clefts of the underlying rock. They maintain their proud, erect position from earliest infancy until extreme old age, and very often, after life is extinct, the bleached, white, barkless corpse refuses to part from the soil which nourished it so long.

These big trees are sociable, and enjoy the companionship of their equals. The foothills of the Sierras are inhabited by the nut pine, white, black and live oak; then, at a higher elevation, come, first, the yellow pine and white and red cedar; then the sugar pine, and finally, the monarch of the forest, the sequoia. The three largest trees—the yellow and sugar pine and the sequoia—seem to be particularly on the most intimate and friendly terms, and exceedingly fond of companionship among themselves, and yet these ruling princes have never attempted to establish an exclusive society. They recognize and respect the rights of their inferiors, and are charitable in their dealings with the weak and oppressed. Conscious of their noble birth and proud of their ancestry, they maintain a dignity which commands respect and invites emulation. The oaks, cedars and firs, in their companionship and stimulated by their noble example, grow better and straighter, their branches fewer, reaching upward instead of out-

ward and downward, in deference to their neighbors. They try in vain to equal their superiors in height, but in their earnest efforts to do so they add to the betterment of their race. There is no such an intense struggle for existence here as in the dense pine forests of the Yellowstone Park. The trees are sufficiently far apart to not interfere with each other in their commendable ambition to look down upon the naked mountain peaks and pierce the clouds far above. Over-population is carefully avoided by these giant races for the very reason that it takes centuries for their inhabitants to take the place of those who finally succumb to the inevitable consequences of the limitation of life. We find here no unnatural crowding, no crippling or starvation for want of space and nutriment, no indications whatever of premeditated, wilful murder. The trees in the region of the Yosemite and other equally favored places in California attain the maximum size by a combination of a number of causes, each one of which has its influence in the promotion of tree-growth and tree-preservation.

Mr. J. G. Lemmon, of Oakland, Cal., the distinguished naturalist of the Pacific slope, has given this subject careful attention, and his explanations are founded on a scientific basis. According to his views, the plants migrating from the south at the beginning of the Thermal Age, 80,000 years ago, were divided at the outset in southern Mexico and a large part barred out of the Mississippi Valley by the Cordilleras, that killed off unfortunate individuals or families which ascended their foothills, thus giving to the Pacific slope the largest share and largest growths. [J. G. Lemmon, "How to Tell the Trees," 1902.]



THE GRIZZLY GIANT, MARIPOSA GROVE.

The next element of giant growth is to be found in the warm Japan current, the Kuro-Siwa, which has its origin in the North Pacific Ocean, strikes the islands along the southern coast of China, from whence it is deflected northward to Japan, and from there across the Pacific, striking the southern side of the long chain of Aleutian Islands, which turn a part of the current down along the American coast until it breathes its tropical, life-imparting breath upon the forests of the Pacific slope. The mingling of the cool ocean breezes with the warm moisture-laden air of the Japanese current results in an atmosphere most conducive to tree-growth. The last, and perhaps the most important determining cause of giant tree-growth, is the equable and unsurpassed climate of California. Under the influence of these causes the giants of the forest are born, grow slowly, exempt from disease, protected against the fury of the storm and the icy grasp of the Arctic winter, and reach their maximum size and extreme limit of life after a peaceful existence of hundreds and thousands of years.

The salubrious climate of California is as conducive to the preservation and restoration of lost health and the prolongation of human life as it is to the growth of trees to such fabulous size and ripening of the choicest fruits and bringing forth flowers of the most charming beauty and most exquisite fragrance. These great forests have won the admiration of the world, and Californians must remain alive to the fact that upon them will rest the responsibility of their preservation in the future. Nature has lavished upon them so many of her choicest gifts that it would be basest ingratitude on their part to permit the ruination of her

grandest efforts to grow trees such as no other soil and no other climate can produce.

GIANT TREES OF THE SIERRAS.

Yellow Pine (*Pinus ponderosa*, Dougl.). The forests of California possess more species of resinous-wooded, needle-leaved, cone-bearing trees than any equal area in the world, and these trees are either the largest in dimensions or they bear the largest cones that the earth has produced since it was created. They number thirteen genera, comprising forty species. Of the pines, the yellow, great sugar and the Jeffrey are the largest, attaining a height of 220 feet, with a diameter of 10 to 12 feet. Five of the pines are noted for the large size of their cones. The sugar pine has a cone 15 to 20 inches in length; that of the Coulter pine often weighs from 8 to 10 pounds; the Gray pine, 3 to 4 pounds; the Torrey pine, 2 pounds, and the Jeffrey pine, $\frac{1}{2}$ to 2 pounds [Lemmon]. The most useful of the pines are the yellow, sugar and Jeffrey. The yellow pine is one of the trees coveted by the men who enrich themselves by tree-killing and forest-destruction. Its immense, column-like, limbless body yields a rich harvest of knotless, valuable lumber. The tree measures 200 to 300 feet in height, and from 8 to 10 feet in diameter. The trunk is as straight as an arrow, surmounted by a modest crown of strong, rectangular, short limbs with branchlets decorated with dark-green leaves in threes. The wood is yellowish, hard and durable. This tree is closely related to the long-leaf pine of Georgia. The several varieties of this species of pine differ in the structure and color of the bark. The bark varies in color and



WAWONA WITH THE STAGE, MARIPOSA GROVE.

thickness. The most common color is whitish or a light yellow, the large, longitudinal plates connected by depressions of a deeper color, imparting to the surface a mosaic-like appearance. The cones are conical ovate, 2 to 5 inches long. The yellow pine associates freely with the sugar pine and white and red cedar, all of these trees competing with each other in attaining the greatest height and circumference.

Sugar Pine (*Pinus Lambertiana*). This is the largest of the group of white pines, scattered freely among the large trees of the Sierras, never segregating itself in any particular locality. It appears to enjoy communion with its giant neighbors. It attains a height of 120 to 300 feet and a diameter of 10 to 20 feet. The wood is white, very light, and is used extensively for interior finish. It is surpassed in size only by the giant sequoia. The bark is grayish and finely checked, the plates being smaller than those of the yellow pine. It derives its name from a sweet substance which exudes from wounded places. The short leaves are arranged in fives. The cones, the largest known, are 10 to 26 inches long and 2 to 4 inches thick, and are of a bronze-green color until ripe. This tree is an imposing personage in the mighty woods of the high mountain slopes. The massive stem is limbless for 100 to 200 feet, its larger upper limbs outstretched, bearing the dark-green foliage and the immense russet cones, give it a commanding position among the distinguished trees with whom it has so much in common.

Giant Sequoia (*Sequoia Washingtonia*). This is the most wonderful tree on the face of the earth, as it is to the vegetable what the mammoth was to the ani-

mal kingdom. The mammoth is extinct; the sequoia remains. What a story the veterans among them could relate! Some of them had reached maturity when Egypt was in the height of its prosperity and power, and many of them were old when Columbus discovered the land which they selected for their exclusive habitation. The name which this colossal tree now bears has had an eventful history. As it is the largest tree the earth has ever produced, it is very proper that it should be designated by a name that should reflect its greatness. It required a long time and many a heated discussion until this matter was definitely settled. Mr. J. G. Lemmon has taken a keen interest in this transaction, and has given a full and detailed account of it in his excellent little book, "West-American Cone-Bearers" [1900]. The tree was discovered at an unknown early date, and was first described by Lambert in 1803, who called it *Taxodium sempervirens*. In 1847 it was given the present family name *Sequoia* by Endlicher, a German botanist, to which he added the specific name *gigantea*, now known as the redwood tree (*Sequoia sempervirens*). The Sierra big tree, another species and the one now under consideration, was discovered in 1852. Specimens were sent to Dr. Lindley, of London, who named it, in honor of the Duke of Wellington, *Wellingtonia gigantea*. The next year Decaisne, a French botanist, recognizing it as a species of sequoia, changed it to *Sequoia gigantea*. In 1854 Dr. C. E. Winslow, from purely patriotic motives, argued that it should bear the name of the greatest of all Americans, and insisted that it should be called *Taxodium Washingtonianum*, or *Washingtonia Californica*. A

year later Sargent described it in his "Sylva" under the name of *Sequoia Wellingtonia*, a name given it by Seaman in 1855. Sudworth finally settled the difficulty on a permanent basis recognized as being authoritative by substituting for the specific name *Washingtonia*, a change that will meet with the hearty approval of every true American. To know this monarch of the forest it must be seen. No pen-picture can do it justice, and all attempts at illustration convey but a very imperfect idea of its indescribable grandeur and monstrous size. Its greatness can only be appreciated when it is seen in its mountain home, surrounded by the distinguished senators of the woods—the sugar pine, the yellow pine and the cedar—the latter imitating it very closely indeed in its general appearance and dress. Another tree that resembles it very much in height and noble bearing is the *Cryptomeria Japonica*, a tree familiar to all tourists who have visited Japan. The Big Tree—for by this name it will always be known by the layman—is an evergreen, cone-bearing tree, a near relative of the coast redwood (*Sequoia sempervirens*), the famous lumber-tree of the coast of California. The giant sequoias are limited to a few groves in the high Sierras, from Placer and Calaveras counties to Kings county. It was my good fortune to visit the Mariposa grove, eight miles distant from Wawona. This wonder of the vegetable creation loves family life, but is tolerant and hospitable toward its neighbors, and does not encourage segregation. In looking at the small family groups of these giant trees in the magnificent forest of pine and cedar, it occurred to me that I had

before me the best possible illustration of what is meant by

“A brotherhood of venerable trees.”

—*Woodsworth.*

These trees in the Sierras, in the midst of a magnificent forest of pine and cedar, have been determined to be 300 to 400 feet high, limbless for 150 to 200 feet, and 30 to 40 feet in diameter, with an age dating back 1,000 to 5,000 years. Some of these trees were in existence when their near relatives, the cedars of Lebanon, were sacrificed and used as a building material in the erection of the temple of Solomon. Notwithstanding their great age, every standing tree, with its colossal columnar trunk and its immense crown of green foliage, presents the picture of vigorous health. One of the limbs of the Giant Grizzly is six feet in diameter at its base, where it projects at a right angle to a great distance and then makes a sharp bend and terminates from that point in a straight, much-branched trunk which in itself would deserve the name of big tree. This disposition to tree-growth on the part of the large branches seems to be quite common among the biggest trees. The bark is a reddish brown, very thick, deeply corrugated in a longitudinal direction, bearing a close resemblance in color and structure to the bark of the large mountain cedars with which this tree delights to associate. The leaves are scattered, small and scale-like, and the compact cones about the size of a hen's egg. The sequoia is extremely tenacious of life. The interior of the base of many of the trunks of the oldest trees is burned out, and the room-like spaces have for ages served as habitations for the Indians, and yet, as this tree

has no tap-root, this serious encroachment upon the means of obtaining the necessary food-supply has impaired neither the health nor longevity of the trees. Such a burnt-out place at the base of the Wawona has been enlarged sufficiently to permit the passage of a stage-coach, and yet this veteran of the Mariposa Grove shows little indications of marasmus or senile decay. In the "Haverford," sixteen horses have stood at the same time. The "Workshop" has a capacious hollow at its base, 12 by 16 feet. The most famous tree of the Mariposa Grove at the present time is the "Grizzly Giant," that at its base measures 92 feet, with a height of 275 feet. Mr. Hutchings, by counting the concentric growths 130 to the inch, estimates the age of this tree at 4,680 years. According to Prof. J. D. Whitney, State geologist, who made a map of every sequoia over a foot in diameter, ascertained that there are 365 large trees in the Mariposa Grove—corresponding to the number of days in a year. The sequoia is thoughtful in perpetuating its noble race. Thousands of little trees from a few inches to several feet in height are scattered through the grove, and many of them have found new homes in foreign countries through the courtesy of the State commissioners. The transplanting of these little trees to parts of the vast forest region adapted for the growth of the sequoia is one of the things that should receive the early and earnest attention of the officers in charge of the forest reserves for the enjoyment, instruction and benefit of generations thousands of years hence.

THE DYING CEDAR.

The great forests of the Sierra Nevada, in the Yosemite and for many miles around it, differ in many respects from the forests of the Yellowstone Park. The former comprises a great variety of trees, many of them of stupendous size; the latter is made up largely of white pine of uniform size, on an average 100 feet in height and not more than a foot and a half in diameter. The Sierra trees are far apart, the space between them being commensurate with their size. The pine forests of the Yellowstone Park are dense, the scene of bitter struggle to determine the survival of the fittest. The over-population of the forests of the Yellowstone Park results in premature death on a large scale, as is seen from the number of dead, debarked, bleached trees standing erect, leaning against their survivors, or prostrate on the ground, forming an entanglement which in many places offers insurmountable obstacles to man and beast on their way through the forest. No such indications of intense struggle for existence are to be seen in the virgin forests of the Sierras. Although the soil in many places is scanty, by slow, steady growth, interrupted only by a short and comparatively mild winter, these trees reach their maximum giant size free from accident or disease, and finally die slowly, almost imperceptibly, from the effects of decrepitude incident to extreme old age. Contrary to what is seen in the Yellowstone Park, there is very little fallen timber. Storm and fire have inflicted but little damage to the timber untouched by the woodman's ax. These immense trees die as slowly and insidiously as they grow. Death from violence of any kind is rare.

Deforestation from natural causes goes hand-in-hand with reforestation, so that the primeval forest remains the same for hundreds and thousands of years, provided these interstitial processes are not disturbed by the meddlesome interferences of man. It is interesting to observe the gradual changes which take place in these trees when they have reached the limits of their long life and begin to yield to the effects of senile decay. In the unbroken forest these dying monarchs can be studied to greatest advantage. Nature's for-ester is at work here. He marks a tree here and there where over-population is threatened, and the first indications of the slow but sure approach of death become apparent. The sprightliness of childhood, the gayety of youth, the power and endurance of manhood begin to decline almost imperceptibly. The hand of death touches first the parts of the tree most remote from the food-supply, in the peripheries of the expansions of the trunk, where circulation is first impaired. The foliage loses its brightness, here and there fascicles turn yellow, and the dead leaves sever their connection with the dying branchlet. The work of death has begun, and it is only a question of time when the tree thus marked will be counted among the dead. In the depth of the primeval forest, not far from the entrance to the Yosemite Valley, stands a veteran cedar which even to a superficial observer presents all the indications of approaching death. It has been in its day a magnificent tree, the equal of its healthy, vigorous neighbors of the same age. It stands as proud and erect as ever, but unmistakable symptoms denote the consequences of advanced age and failing health. It wears the same familiar brownish-red corduroy coat

of bark as when it was in the prime of life, but death has invaded the peripheral parts of its body and is gradually but surely advancing to more vital regions. Its circulation, once vigorous, has become enfeebled, and in many remote terminal districts it has been completely suspended. The ground underneath the dying tree is strewn with dead leaves and branchlets and sequestered bark. The debarked, lifeless, leafless limbs have been draped by kind neighbors in a sleeve of greenish yellow moss, a service which has done much in lessening the austerity and sadness of the scene of approaching death. Death has claimed the lower limbs and is gradually ascending, grasping limb after limb in its upward march. Not satisfied with its progress in that direction, it has selected a new point of attack. It has already destroyed the top of the beautiful spire. To the mast-like end of the trunk, the mutilated, naked, bleached limbs, devoid of branches, remain attached. The dead tree-top among the green-robed crowns of the vigorous neighbors presents a ghastly scene. What was once the proud, waving crown is now a naked skeleton. The decaying bark is loosening its hold on the lifeless limbs, and here and there trunk and limbs have been denuded by decortication wrought by death. Between the scenes of death above and below a few limbs remain in which life has been sustained by the enfeebled circulation. But it is plain enough that the struggle against death advancing in both directions will soon be over. The foliage has lost the hue of health. None of the leaves are healthy, all have lost their luster, and some of them are already wearing the dull yellow color of death, and are ready, during the next stiff breeze, to



FALLEN MONARCH, MARIPOSA GROVE.

part with the necrosed branchlet that will soon follow them to the last resting-place beneath at the very feet of the dying giant. Nothing can save the dying veteran. The cool, drizzling fall rains will have no influence in stimulating the flagging circulation. The chilling frosts and falling snow will not be felt by the dying cedar. The tree has escaped the woodman's ax, the fury of the storms, the arrows of lightning and the ravages of fire. It has enjoyed a long, useful, peaceful life, during which it exercised its many virtues, and is now dying inch by inch from the effects of a gradual decline of the vital forces incident to extreme old age. There is no possible hope of recovery even with a much mutilated body; the invalid has reached an age that sets a limit on all living things, and must yield to the inevitable. Elements, be kind to the dying veteran! May the cooling dew and the refreshing rains of approaching fall quench thirst; may the winds deal gently with the enfeebled invalid, and may the snow and ice of the coming winter not suffice to crush out life. Let death come slowly and imperceptibly, and let the final spark of life leave the massive body while it is warmed to the heart that had ceased to beat, by the sun in the blue, cloudless, summer sky.

THE DEAD MONARCH OF THE SEQUOIAS OF MARIPOSA.

Five years ago the monarch of the Mariposa Grove of Sequoias, after a long, useful, virtuous life, unexpectedly, suddenly and without any apparent provocation, severed his connection with the soil that had nourished him so well and so long, and fell helpless, crashing through the branches of his loyal neighbors,

and struck the ground with a heavy, dull thud that made the earth tremble and the mountains re-echo the report of his death. For ages he had been the acknowledged ruler of his tribe. He was the veteran among the veterans, and the giant of the giant race. Could this dead monarch speak, what a history he could relate! During his lifetime nations have come and disappeared, empires have been built and destroyed. He was old when Rome was a wilderness and the children of Israel were on their way to the Land of Promise. He was classed with the veterans when Columbus discovered the land he had a right to call his own. Could he but speak, he could tell us all there is to be known of the prehistoric races of America and their migration from north to south. He could relate to us the story of the Indians, their origin, their early habits, their virtues and vices. He could give us a reliable description of animals that inhabited his kingdom, which have disappeared from the face of the earth and whose fossil remains now perplex our men of science. He could speak authoritatively concerning the history of his own noble race; how, in the course of thousands of years, it had been reduced from a mighty nation to a few family groups. Could he but speak, he could give us all that has transpired in his own family during the last five thousand years. But he is dead, prostrate on the ground. The weary body has at last found rest on the friendly bed of his native soil. Thousands of visitors walk annually over the mammoth body to obtain a more accurate idea of the enormity of its size. It has supported a stage-coach crowded with passengers to which four horses were attached. The elements are dealing gently with

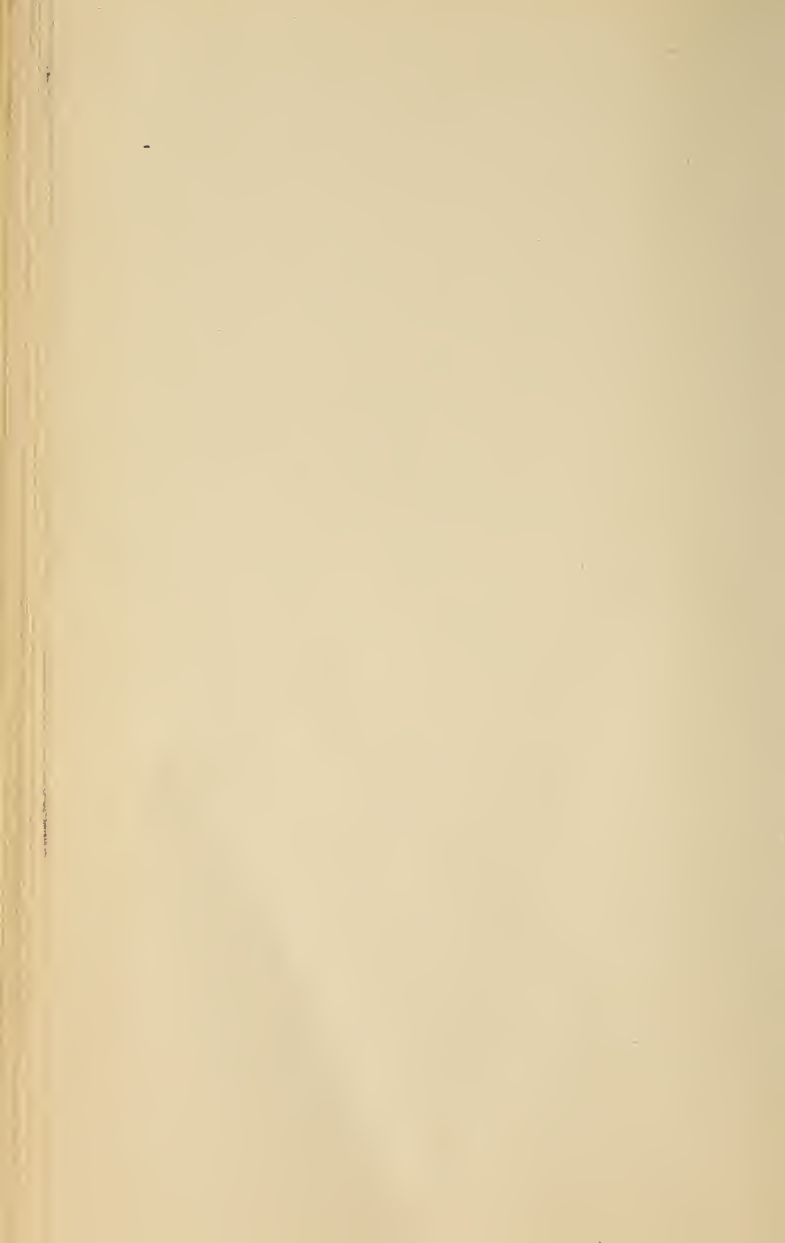


FOUNDATION OF THE GRIZZLY GIANT.

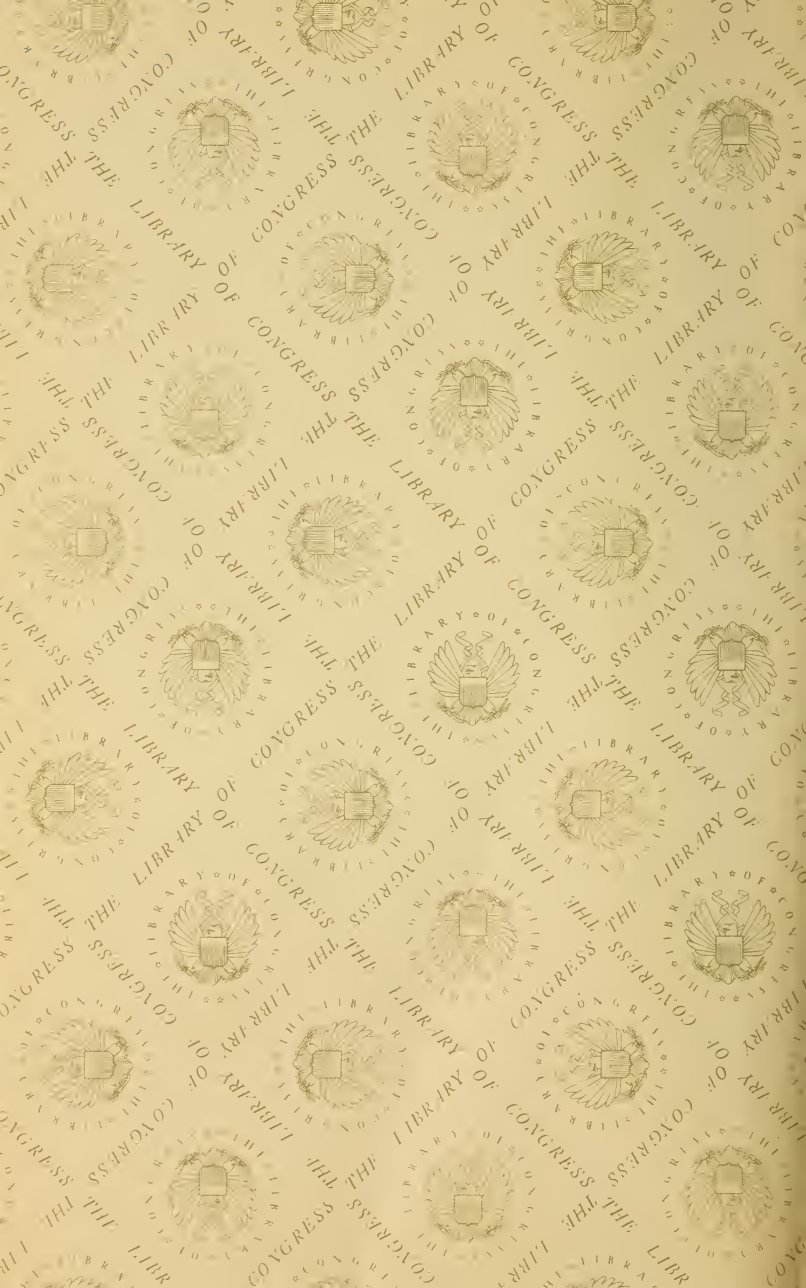
the remains of this monarch. He wears the same rough vestment as he did during life. The head has lost its green crown, but the skeleton, mutilated by the inevitable consequences of old age and by the heavy fall, remains. Coming generations will make pilgrimages to the fallen monarch to view his remains, and when they have seen him, and the giant survivors of his imperial race standing guard over the dead, and the primeval forest of which they form the crowning part, they will be prepared to acknowledge the force and truth of the sentiment:

“Nature, the vicar of the Almighty Lord.”

—*Chaucer.*









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